

ENGINEERING AND RELATED SERVICES
February 15, 2008

STATE PROJECT NO. 736-99-1508
F.A.P. NO. SPR-001(031)
PAVEMENT DISTRESS DATA COLLECTION
STATEWIDE

Under Authority granted by Title 48 of Louisiana Revised Statutes, the Louisiana Department of Transportation and Development (DOTD) hereby issues a Request for Qualification Statements (RFQ) on Standard Form 24-102 (SF 24-102), "Professional Engineering and Related Services", revised January 2003, from Consulting Firms (Consultant) to provide engineering and related services. One Prime-Consultant/Sub-Consultant(s) (Consultant/Team) will be selected for this Contract.

Project Manager – Mr. Said Ismail may be reached at (225) 242-4547.

PROJECT DESCRIPTION

The Consultant/Team shall collect and analyze pavement distress data for planning purposes as well as preconstruction engineering.

SCOPE OF SERVICES

The services to be rendered for this Project shall consist of the following:

SCOPE OF SURVEY

I. General Information

A. Project Description:

1. The consultant will collect and quantify digital right-of-way and pavement images, roughness data - International Roughness Index (IRI), faulting, rutting, Pavement Distress Data, and differential Global Positioning System (GPS) data - by Control Section log mile for approximately 20,000 directional miles as described under item System Description (Section I.B). The consultant shall also collect, for the opposite direction, only the right way images not specified for pavement condition analysis on approximately 15,000 miles of the state network. The consultant will collect and quantify data in one mandatory cycle, and at the option of DOTD, in a subsequent cycle.
2. The consultant will follow the schedule of progress as outlined in Section II.B Master Progress/Damages Schedule for this project.

B. System Description:

The approximate directional miles of pavement included in the study are as follows:

Interstate Highway System	1,775 directional miles
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Arterial/Collector Systems	17,175 directional miles
Non-State Maintained National Highway System (NHS)	140 directional miles
Performance Monitoring System (HPMS) sample Sections	503 directional miles
Frontage/Service Roads	600 directional miles

The Interstate Highway System consists of 1,775 directional miles, and is divided into 240 subsections of which 112 subsections, or 145 directional miles, are classified as urban. The arterial/collector systems consist of 17,175 directional miles, and are divided into 5,828 sub-sections of which 1,584 are classified as urban. The 140 miles of off-system (NHS) routes are all urban sections. The 503 miles of off-system HPMS study sections are distributed throughout the state. Approximate mileage by district:

District 02	1331 miles	District 03	2947 miles
District 04	2406 miles	District 05	2407 miles
District 07	1464 miles	District 08	3074 miles
District 58	1656 miles	District 61	2125 miles
District 62	2185 miles		

C. The project will consist of 4 tasks:

1. Task 1: Preliminary Activities (Section II.E.1)
2. Task 2: District Data Collection (Section II.E.2.)
3. Task 3: Distress Data Quantification; (Section II.E.3)
4. Task 4: Final Documentation (Section II.E.4.)

II. Base Scope of Services for Pavement Condition Survey

A. Quality Control Program:

The consultant will administer a plan that will assure that data is collected accurately and reflects actual pavement condition, within the precision specified under this section.

1. Equipment calibrations are to be done in accordance with specific manufacturer recommendations. A regular maintenance and testing program of the equipment in accordance with the manufacturer’s recommendations should be performed and documented by the consultant. Prior to being authorized by DOTD to collect data in any district, the consultant’s Data Collection Vehicle (DCV) will be calibrated. The calibrations will be initially accomplished on DOTD’s Trial Sections in the Baton Rouge_area. Data acquisition and data evaluation will be performed at least three times on each pavement trial section for the calibration of electronic sensor data. The electronic sensor data will be evaluated for accuracy, under DOTD supervision, to the DOTD’s “South Dakota” style laser profiler and/or a Class I profiling instrument. Such calibration must be maintained for the duration of the data collection (Section II.A.2, of the Base Scope of Services for Pavement Condition Survey). The consultant will document procedures of how the data was collected and reported to DOTD in the final report. All calibrations actually done during this project are to be documented (i.e., results from tests are recorded and any corrective action taken shall be explained in detail) and reported to DOTD as performed and again in the final report.
2. The consultant should address the use of verification, or quality control, sections which are selected with known IRI and Rutting or Faulting values. These sections, which have been measured by the consultant’s equipment previously during data collection (i.e. a section that was collected on a previous Monday morning would be re-collected on the subsequent Monday), should be re-collected and evaluated to

determine if the DCV(s) is still in calibration. Evaluations of these measurements can provide information about the accuracy of field measurements and give insight into needed equipment calibration. These verification, or quality control, sections used during data collection should be documented in writing and electronically (digital images with electronic sensor data). Such documentation is to be delivered to DOTD weekly. **Note: Should data collection in any district, by any DCV, not extend beyond a week, the consultant shall re-calibrate that DCV on the Baton Rouge calibration sites prior to that DCV collecting data in a subsequent district.**

3. The consultant will calibrate the DMI (Distance Measuring Instrument) using sites provided by DOTD. The consultant must provide all findings, inclusive of the calibration number before the calibration process, the calibration number after the calibration process, location of the calibration site, length of the calibration site, and length of calibration site as measured by the DMI before and after calibration, and list any discrepancies found during the calibration process. Any discrepancies that are found should be reported to DOTD with the corrective action taken with a detailed explanation. The calibration of the DMI should be performed and reported weekly to DOTD, and documented in the final report.
4. The consultant shall monitor and document quality control findings and procedures instituted during the crack detection and quantification procedures.
5. The consultant will use an inter-rater consistency testing and training plan if manual rating of pavement distresses are used in this project. The consultant must include a valid plan and test for inter-rater consistency. These consistency tests should apply to items listed the Pavement Condition / Inventory Survey data collection (Section II). The data quantification process should be presented so as to assure rater accuracy and consistency, throughout the state, over the project duration. Consistency means that the data collection and quantification process is applied in the same manner by all raters using the process. The plan must address means to demonstrate and monitor rater consistency throughout the entire data collection process. The consultant will be required to have a unique identification of both their DCV's and their raters, so as to facilitate comparison of the consistency of both. The vendor shall report the results of the testing program monthly for the duration of the project and summarized the test results in the final report.
6. The consultant's digital perspective view images, collected every week (i.e. Monday-Sunday), will be delivered to the DOTD on the following Monday. A DOTD review of such weekly-submitted images would verify "Header information." The consultant will be immediately advised by DOTD of any problems with header information so that it may be corrected. DOTD will also verify that the correct roadway section was surveyed and if any errors are found, the consultant will be advised so that the proper section can be surveyed. (Section II.E.2.C.7.b.)
7. The consultant's pavement view camera image will be measured with a visual measurement instrument (supplied by the consultant) under DOTD supervision to determine the actual footprint (length and width) of the image; this shall be performed for each Data Collection Vehicle prior to data collection. That footprint image must be maintained for the duration of the contract. The consultant will be required to verify daily that the DCV(s) footprint is the same as the previous day. Such verification should be documented (i.e., results from tests are recorded and any corrective action taken explained in detail) and reported to DOTD on a weekly basis and summarized in the final report.
8. If required by DOTD, the consultant should address the requirements to provide to DOTD a workstation and any training necessary to enable the Department to

duplicate the quantification procedure in order to verify quantities reported for a section of road and to store any pavement images to be used in the Department's review of quantified pavement distress data.

B. Master Progress / Damages Schedule:

The consultant shall develop and present a master schedule for the pavement condition data collection and distress quantification for each of the nine (9) districts. The Master Schedule shall, at a minimum, account for the following:

1. The consultant will be allowed to have more than one DCV in use at any given time. Each DCV must meet the requirements as stated in "Multiple Data Collection Vehicles." (Section II.E.2.C.5.)
2. The reporting of quantified pavement distress data will be completed on a schedule that will allow for no more than two districts' quantified pavement distress data to be delivered for acceptance per month. The consultant should use the following table for data delivery, but shall not exceed the two districts per-month delivery limit:

September 5, 2008	At least 1 district delivered
October 3, 2008	At least 2 districts delivered
October 31, 2008	At least 3 districts delivered
December 1, 2008	At least 4 districts delivered
December 23, 2008	At least 5 districts delivered
January 16, 2009	At least 6 districts delivered
February 6, 2009	At least 7 districts delivered
February 27, 2009	At least 8 districts delivered
March 20, 2009	At least 9 districts delivered

3. Data collection in Districts 61, 08 and 04 cannot begin before July 1, 2008. Data collection in the remaining Districts (05, 07, 03, 62, 02 and 58) cannot begin until September 1, 2008.
4. Whenever the DOTD determines that re-runs are necessary to correct image quality or header information (sections II.A.6. and II.E.2.C.7.b.), the DOTD will advise the consultant.
5. Following the reporting of quantified pavement distress data for any district, the Department will advise the consultant if the district is accepted. If so, that district will satisfy the delivery schedule of section II.B.2. If there are problems that cause the district to not be accepted, DOTD will advise the consultant of the problems, and of the need to resolve such problems. Once advised of such a need to resolve a problem, the consultant will have no more than 14 calendar days to do so. Any days exceeding 14, measured from the date of notification of the problem by the Department, will be counted as being subject to damages as per (Section II.B.6).
6. Failure to deliver pavement distress data in accordance with Section II.B will subject the consultant to the damages summarized below:
 - a. Failure to report the required number of districts within the time frame of Section II.B.2 shall subject the consultant to damages at \$300.00 dollars per day, per district. Failure to complete the consultant delivery of all nine (9) districts' quantified pavement distress data by March 20, 2009 shall subject the consultant to damages at \$500.00 dollars per day.
 - b. Failure to complete the contract delivery of the final report by January 1, 2010 shall subject the consultant to damages at \$300.00 per day until all deliverables have been accepted. All reports shall be delivered in hard copy format and in electronic format

(Word 2007) (.doc) on external hard drives (USB 2.0), or other approved media, appropriate in both size and compatibility.

C. System Configuration and Methodology

The positioning of the sensors and the method of calculating rut depth, IRI, Faulting on JCP pavements and GPS data shall be as directed by DOTD.

D. Data Requirements

1. Electronic Sensor Data

The following table contains the summary of electronic sensor data that is to be collected. The following table will be the minimum specifications for each type of data that is to be collected.

Summary of Data Collection Requirement for Sensor Data

	Roughness	Rut depth	Faulting
Scope	All pavements	Asphalt surfaces	Jointed Concrete
Definition	Longitudinal Profile, both wheel paths	Rutting of each wheel path	Elevation difference across joint (trailing slab lower)
Sampling	Max. 1 ft	Max. 4 ft 40 points	Min. all transverse joints
Calculations & Statistics	IRI, each wheel path and average of both wheel paths	Each transverse profile of both wheel paths, for section report average maximum	Each wheel path absolute elevation difference averaged for each joint, for section report average
Units	inches/mile	inches (nearest 1/10th inch)	inches (nearest 0.04 inch)
Equipment Configuration	Lasers & accelerometers, both wheel paths	Laser Rut Measurement System (or other approved device)	Lasers in Right wheel path
Standards	ASTM E950, HPMS Field Manual Class II		
Precision & Bias	Max. error of 5% bias or 20 inches/mile (whichever is less)	Contractor to provide	Contractor to provide
Initial Verification	Section comparison of Longitudinal Profile with Class I profiling instrument and DOTD's S.D. laser Profiler; (see section II.A.1)	Test section comparison with field measurements provided by DOTD, (see section II.A.1)	Test section comparison with field measurements provided by DOTD, (see section II.A.1)
Ongoing Quality Monitoring	QA/QC Sections; (see section II.A.2)		
Special Requirements	Correct/report low speed sections; capability of monitoring data collection in real time in the DCV	the capability of monitoring data collection in real time in the data collection vehicles ; see II.B.1.a	the capability of monitoring data collection in real time in the data collection vehicles

- a. Rutting shall be measured by an INO Laser Rut Measurement System (LRMS), mounted on the DCV(s) on 100% of all asphalt-surfaced roadways. The sampling frequency shall be a maximum of 4 feet. A minimum of 40 points shall be used to produce the transverse profile. Consultant shall have the ability to measure any edge drop off / high shoulder (i.e. measured points that are not in the intended lane for rutting data collection) from the data and report these in separate columns. The positioning of the sensors/scanners and the method of calculating rut depth shall be submitted to DOTD for approval. Raw rutting data shall be collected so that a rut depth is automatically calculated and stored on an on-board computer for pieces of road that do not exceed fifty-two feet (i.e. 0.01 miles). This data will then be aggregated into 0.10-mile increments. The consultant shall report the maximum and the average rutting values, for each wheel path, for each 0.10-mile increment.
- b. Roughness Data: Field roughness data shall be taken longitudinally in both wheel paths for 100% of all roadways. Roughness data shall be acquired using a Class II laser type profiler. Measured output will be given in International Roughness Index (IRI) units (inches/mile). IRI shall be supplied and calibrated using the Quarter Car Simulation Approach. IRI values shall be reported for each tenth (.10) of a mile increment. The consultant shall report separately the average of the left and right wheel paths values, and the standard deviation of left and right wheel paths. The consultant shall address how often and how many individual IRI calculations will be made that will yield the reported IRI at every .10 of a mile. Maximum reporting value for IRI shall be 955 inches/mile.
- c. Faulting Data: Field-faulting data shall be taken longitudinally one to three feet from the outside edge of pavement for 100% of the roadway lane on all jointed concrete surfaces. Faulting data will be reported to the nearest 0.04 inch over each .10-mile increment. The consultant shall report the maximum positive, maximum negative, the absolute average and the number of faulted joints in each corresponding .10-mile increment. If the "approach" slab is higher than the "departure" slab, faulting will be reported as a positive (+) fault if the "approach" slab is lower than the "departure" slab, faulting will be reported as a negative (-) fault. Vendor shall not report values found to be less than .20 inches.

2. Pavement Distress Cracking

The following table contains the summary of Pavement Distress Cracking data that is to be collected. The following table is the minimum specification for each type of distress:

Distresses for Pavements with Asphalt Concrete Surfaces	
<u>Distress Type</u>	<u>Units of Measure</u>
a) Cracking:	
1. Alligator (Fatigue) cracking	Sq.Ft. (Wheelpath)
2. i) Block Cracking	Linear Ft.
ii) Longitudinal Cracking	
iii) Longitudinal Cracking (Wheelpath)	
iv) Transverse Cracking	
v) Reflective Cracking @ Joints	
b) Patching and Potholes:	

- | | |
|------------------------------|-----------------|
| 1. Patch\Patch Deterioration | Sq. Ft. & Count |
| 2. Potholes | Sq. Ft. & Count |
| 3. Blowups | Count |

Distresses for Pavements with jointed and Continuously Reinforced Portland Cement Concrete Surfaces

<u>Distress Type</u>	<u>Units of Measure</u>
a) Cracking:	
1. Longitudinal Cracking	Linear Ft.
2. Transverse Cracking	Linear Ft.
b) Miscellaneous Distress:	
1. Patch\Patch Deterioration	Sq. Ft. & Count
2. Punchouts (CRCP only)**	Sq. Ft. & Count
3. Blowups	Sq. Ft. & Count

**CRCP-stands for Continuously Reinforced Concrete Pavement

The maximum and minimum values for each distress item will be established during Task 1: Preliminary activities (Section II.E.1.). All distresses shall be evaluated and reported on .10-mile increments. The consultant shall use the Louisiana Protocols for Automated Distress Collection, the Distress Identification for Long-Term Pavement Performance Project Manual (SHRP-338), with its appropriate changes and adaptations, and the Louisiana Manual for Pavement Distress Identification for identifying distress. The consultant will report condition data for one hundred percent of the approximately 20,000 directional miles, which is to be reported by Control Section on a DOTD District by District basis. Visual distress identification and quantification in real time from the DCV will not be allowed.

E. Pavement Condition / Inventory Data Collection / Quantification / Reporting

1. Preliminary Activities (Task 1)

A. Consultant Responsibilities

1. The consultant will attend meetings and discussions with DOTD personnel to review DOTD polices, procedures, and guidelines for the project and to familiarize the consultant with the DOTD's Control Section Referencing Method.
2. The consultant will collect and report data on several calibration test sites; will initiate and test the Quality Control Program; and will calibrate raters and or rating schemes for automated crack detection software in identifying typical highway pavement types and distress classifications.
3. Cameras are to be calibrated and aligned to meet DOTD specifications for this project. Once camera positioning and angle are accepted by DOTD, they must be maintained for the course of the project. Any deviation of the accepted camera positioning and alignment may result in re-collection of affected control sections.
4. Provide all necessary traffic control needed during the course of calibration testing. The consultant will be responsible for all traffic control as per the U.S. Department of Transportation - Manual of Uniform Traffic Control Devices for Streets and Highways (MUTCD) and safety related procedures for the mutual protection of the consultant's personnel, DOTD employees, and the public. The consultant will provide seats for DOTD personnel in the Data Collection Vehicle(s). The occupants and DCV(s) must comply with all Louisiana statutes

that regulate vehicle operation (i.e. seat belts, insurance, driver's license, operational permits, oversized vehicle permits, speed limits, etc.).

5. Provide NAS (Network Attached Storage) server(s) to the DOTD in Baton Rouge, LA. The NAS server(s) will be established at the Management System Section.
6. Provide software and training for the software used in the automated quantification of distresses for the images stored on NAS server(s) as directed for up to four DOTD employees (Section II.E.3.C.2)

B. DOTD Responsibilities

1. Identification of roadways for the calibration test and the types of data to be collected for each type of roadway.
2. Provide Consultant with DOTD's dTIMS CT import database.
3. Provide Consultant with the Louisiana Protocols for Automated Distress Collection, the Distress Identification for Long-Term Pavement Performance Project Manual (SHRP-338), with its appropriate changes and adaptations, and the Louisiana Manual for Pavement Distress Identification for identifying distress.

C. Deliverables

The consultant's deliverables for Task 1 will include:

1. A quality control program that is documented and published by the consultant. This document will be presented to DOTD for review and approval prior proceeding with Task 2: District data collection.
2. A copy of the processed results of the calibration test runs (IRI correlation results and pavement distress data).
3. Test loading of processed pavement condition data into the DOTD's dTIMS CT import database.
4. An updated Master Schedule plan for the collection and quantification of the field condition data for all nine (9) districts.
5. Digitized images on external hard drives (USB 2.0), appropriate in both size and compatibility for the calibration sites.
6. Raw electronic sensor data, on external hard drives (USB 2.0) appropriate in both size and compatibility for the calibration sites.
7. The consultant shall provide software that allows the user to automatically retrieve a specific segment of road and view its perspective and pavement images by entering the control section and the control section log mile. The consultant shall also provide software that allows the user to make linear measurements on perspective view images. The server(s) shall have the ability to transfer the digital pavement view images, perspective images, and other pavement distress data and/or sensor data, to DVD disks (4.7 GB or approved equivalent). The consultant shall provide training to DOTD for operating the software and shall furnish camera-ready copies of all manuals pertaining to its operation and use.
8. Draft Preliminary Activities Report, detailing the results of calibration sites, Rater calibration, results of data test load, etc.

9. NAS Server(s) installed at the DOTD Management Systems offices located at 1201 Capital Access road, Baton Rouge, LA. Appropriate training for workstation.

Note: The server(s) will not become DOTD property; it will be returned to consultant upon contract completion.

2. District Data Collection (Task 2)

A. Consultant's Responsibilities

1. Collect Rutting, IRI, Faulting, Pavement Distresses and GPS data on the appropriate pavement type for 100% of the pavement condition assessment roads.
2. Collect clear, digital pavement and perspective view images for 100% of the studied roads.
3. Report the locations of all construction zones and or other route deviations where no data collection was therefore possible.

B. DOTD's Responsibilities

1. Identify roadways to be studied and the types of data to be collected for each type of roadway
2. Supply the consultant with copies of the Department's control section database file, and district control section base map; Listing of GPS coordinates for start and end of each control section. DOTD will also supply electronic copies of the HPMS, NHS and service/frontage road base maps and databases.
3. Supply at least one DOTD representative to assist in the navigation on the State Highway System when deemed necessary by DOTD
4. Determine when conditions are acceptable for data collection, either by being in the consultant's DCV or by a review of the digital images afterward.
5. Determine when images are acceptable, by a weekly DOTD review of submitted images. (Section II.A.6)

C. General Requirements

1. All data is to be collected by the use of the DOTD Control Referencing System. All data shall be collected in the right lane of the ascending direction of Control Section log mile on undivided two, three, and 4 lane roads and from the right lane in each direction on divided roads with four or more lanes. Additionally, there will be a limited number of two lane roadways that will be run in both directions. These sections will be identified and location referenced prior to the beginning of the data collection cycle. DCV shall begin collection of digital images not less than .10-mile before the beginning of each control section and shall stop collection of digital images not less than .10-mile passed the end of the control section.
2. All nine (9) district pavement distress data collections and quantified data deliveries must be completed by March 20, 2009.
3. Data from construction zones, detours and other diversions from the correct travel lane shall not be used in calculating one-tenth mile averages and other statistics, but shall be reported in the database. The consultant shall report the locations of construction encountered during data collection that affects the data collection process. Consultant shall also count all bridges and quantify the totals by 0.100 mile.
4. The consultant shall have the capability of monitoring data collection in real time in the data collection vehicles so as to minimize data errors.

5. If the consultant proposes to use multiple DCV's, it shall be demonstrated that all vehicles are calibrated to produce measurement differences (IRI, rutting and faulting data) of 5% or less between vehicles. This demonstration must be documented and reported in writing to the DOTD whenever the DCV first enters any district or returns to the project after leaving the state. Vehicles must be identified with a unique number and that number must accompany all data reported from that vehicle.
6. DOTD will provide pavement type (i.e., asphalt, composite, and jointed concrete) information for all on-system routes. The consultant shall present a methodology for validating this pave type information prior to, or during, data distress quantification. Before any distress quantification is done, the consultant needs to be certain what the pave type is so as to quantify the correct distress types. (Section II.D.2).
7. Digital Images:
 - a. The consultant will collect clear, high resolution digital pavement images for 100% of the studied roads. The consultant will furnish the images to DOTD on external hard drives (USB 2.0) appropriate both in size and compatibility on a weekly basis. Images shall be collected with a minimum of three cameras: two camera(s) oriented normal to the pavement for distress identification/quantification and one camera approximately horizontal and parallel to the pavement (Right of Way (ROW) view), which shall show the entire roadway, shoulders, roadway signs, and as much of the right-of-way as practical and be compatible to allow linear measurements to be made from the images. The consultant shall supply all software and electronic files needed to measure and quantify asset data from the perspective view images. Use of time codes, distance measurements, and geo-coordinates along a highway for positive location identification, (i.e. Control Section log mile and GPS coordinates), shall synchronize all digital images collected. All images shall be identified to the nearest one-thousandth mile (5.28 feet) or better.
 - b. The perspective view camera(s) color digital images shall be collected and delivered in JPEG format. The collected images shall show the right of way and as much as possible of the left and right shoulder. The right of way images should be collected at a maximum interval of 0.005 miles (26.4 feet). The resolution of the collected images shall be 1920 pixels x 1080 pixels. The consultant shall be responsible for providing a means to simultaneously view and process (i.e., play) all associated images; the provided means should include the synchronization of the pavement and right of way images. The provided means should also be able to operate on most personal computers thus allowing virtually any user to review the images and data from an IBM compatible personal computer. The provided means should include the necessary software licenses (if applicable) for the DOTD headquarters office and all district offices. The data should be summarized to 0.100 miles and also be synchronized with the pavement and right of way images. The images and data should use a location reference method such as by District, Parish, Route, Control Section and Direction. The right of way images shall be provided on external USB 2.0 hard drives or other approved storage media. The consultant shall attach distinguishing information to each image specifically identifying District Number, Parish Number, Control

Section, Route, Direction, Control Section Log mile, Speed, Date, and Global Positioning System (GPS) coordinates (X, Y and Z).

- c. The consultant shall collect the most accurate (GPS) coordinates possible. The use of base stations and alternate data sources shall be required to obtain certifiable evaluations throughout the state. In Districts 02, 03, 07, 61 and 62 the consultant shall use the Louisiana CORS network for the correction in the differential GPS calculations. The consultant shall adhere to all specifications and subscription requirements of the LSU's Louisiana Spatial Reference Center needed to ascertain the GPS calculations.
- d. All exterior mounted cameras must be capable of collecting images during normally encountered fair weather conditions in Louisiana. This includes, but is not limited to, temperature and moisture conditions that cause fogging and condensation on the camera lens. Camera enclosures shall have heating devices or other means to eliminate fogging and condensation on the camera lens. In addition, camera lens or enclosures shall be cleaned regularly to prevent a build up of road debris and bugs.
- e. Pavement Cameras: The consultant shall use camera(s) which are configured to capture at minimum of 12ft transverse road sections with 2 mm resolution or previously approved equivalent. The imaging system shall be configured to allow for the optimum contrast and visibility of both small longitudinal and lateral road cracks
- f. The resolution of pavement images should be sufficient to identify cracks of 0.078 inch (2mm) width in both the transverse and longitudinal directions in all pavements. The consultant must demonstrate that the resultant digital image has a resolution to identify cracking of 0.078 inch (2mm) width when traveling at survey speeds. The consultant should provide these images at the highest resolution possible, such as provided in a progressively scanned image. This shall include the disclosure of equipment specifications, inclusive of any other proprietary information needed to support this resolution requirement. The meeting of this requirement is the responsibility of the consultant and should be accomplished during the calibration procedures. The images shall be indexed to control section number and control section log mile. All data collected for rutting, roughness, and pavement distress data shall be indexed for viewing to both the pavement and the perspective images.
- g. Downward Pavement Images and Forward Perspective Images shall not be collected during times when the visibility of cracking and other distress forms are continuously obstructed by road conditions. This includes, but is not limited to, water on the pavement surface and either sand or mud on the pavement surface, etc. Locations with unacceptable image quality shall be collected again at no additional cost to the department.

D. Deliverables

The consultant's deliverables for task 2 will include:

1. The consultant will furnish the images to DOTD on external hard drives (USB 2.0) appropriate both in size and compatibility on a weekly basis. The weekly delivery shall be accompanied by all required files need for viewing the images with the software to enable the automatic retrieval of a specific segment of road, viewing of its image, allow verification of "Header information", image clarity (i.e. darkness, extreme sun light rain or standing water or other debris in roadway). Raw data from the DCV's electronic sensors (rutting, IRI, faulting,

and GPS data) shall also be included within this deliverable. Locations with unacceptable image quality shall be collected again at no additional cost to the department.

2. All weekly equipment calibrations test results (i.e. DMI, Laser Profiler, video footprint, etc.)
3. All weekly electronic sensor verification results (i.e. re-run of sections that had been run the previous Monday to determine that the DCV is still in calibration).

3. Distress Quantification (Task 3)

A. Consultant's Responsibilities

1. Quantify distresses
2. Evaluate and report pavement distresses on .10 mile increments
3. Supply data that matches the length of the control sections in DOTD's Location Reference System

B. DOTD's Responsibilities

1. Provide to the consultant the Louisiana version of protocols for automated distress data collection, The Distress Identification for Long-Term Pavement Performance Project Manual (SHRP-338), and the Louisiana Distress Identification manual.
2. Supply at least one DOTD representative to review distress quantification and assist the consultant's personnel in the coordination of the quality control program.

C. Distress Quantification Requirements

1. Reporting Increments: All distresses shall be evaluated and reported on .10-mile increments. DOTD will provide, and the consultant shall use, the Louisiana version of Protocols for Automated Distress Data Collection, the Distress Identification for Long-Term Pavement Performance Project Manual (SHRP-338), with the appropriate changes and adaptations, and the Manual for the Identification of Pavement Distresses for Louisiana. The consultant will report condition data for one hundred percent (100%) of the approximately 20,000 directional miles, which are to be reported by control section on a DOTD district by district basis. As previously required in "Quality Control Program" (Section II.A.), the DOTD shall test and verify (as part of the quality control program) the consistency of several quantified processed data. Such verification by the department may result in the consultant being notified to resolve problems with the quantified distress data. (Section II.B.5)
2. The consultant shall supply a NAS server(s) at the DOTD Management Systems offices located at 1201 Capital Access road, Baton Rouge, Louisiana. The server will be for DOTD's use in viewing the digital pavement images and for verifying the consultant's distress data reduction. This server(s) must allow the DOTD to review and verify the quantification results of distresses from pavement images provided by the consultant. The consultant shall also provide software that allows the user to quantify pavement distress data in the same procedure use by the consultant's personnel in the distress quantification for this project. The server(s) shall have the ability to transfer the digital pavement view images, perspective images, and other pavement distress data and/or sensor data, to DVD disks (4.7 GB or approved equivalent). The consultant shall provide training to DOTD for operating the software and shall furnish camera-ready copies of all manuals pertaining to its operation and use. DOTD will have full use of the server(s) and software for the duration of this project. The consultant will

maintain, repair and update the server(s) for the duration of the project. At the end of the project, DOTD will return the server(s) to the consultant.

3. For each district, the consultant shall quantify and summarize distresses and report those quantified distresses (along with the rutting, roughness, faulting, and GPS data) as outlined in Section II.D, Data Requirements. The consultant shall load into the DOTD's dTIMS CT import database and query for errors before delivery. The dTIMS CT import database containing the summarized district data is to be delivered by the consultant's personnel who are responsible for preparing and loading the summarized data into the dTIMS CT import database. The consultant's personnel shall assist DOTD in the review of the data and immediately reschedule for testing any section found to be invalid. Failure to deliver, as per the Master Progress/Damages Schedule (section II.B.), shall subject the consultant to damages of either \$300.00 per day, per district or \$500.00 per day.
4. DOTD will participate with the consultant in administering the consultant's Quality Assurance and Quality Control plan that will monitor the consultant's quantification and assessment of pavement distress data. The consultant is required to work with DOTD and incorporate the results of the QA/QC plan into the data quantification processes.

D. Deliverables

The consultant's deliverables for Task 3 will include:

1. All quantified pavement condition assessment data properly loaded into the dTIMS CT import database (provided to the consultant during Task 1 Preliminary activities) and reported in .10-mile increments as required. Data is to be reported on external hard drives (USB 2.0) appropriate in both size and compatibility or other approved media.
2. Statewide pavement condition assessment associated files, lane pavement surface views, pavement distress quantification results, perspective views for all pavement condition assessments shall be delivered on external hard drives (USB 2.0) appropriate both in size and compatibility or other approved media, which will be loaded on DOTD's own server. This statewide delivery shall be formatted properly to enable the automatic retrieval of a specific segment of road, viewing of its image, allow verification of quantified distresses, and be compatible to allow linear measurements to be made from the images and the digitizing of still frame-displayed images on to a DVD recorder (section II.E.3.C.2). Raw data from the DCV's electronic sensors (rutting, IRI, faulting, pavement distress, and GPS data) shall also be included within this deliverable.
3. Each District shall be delivered on its own NAS (Network Area Storage) with sufficient capacity to store the district's perspective views (i.e. right-of-way view, without the pavement views) for all pavements, accompanied by all associated files, Visidata and Surveyor databases with supporting files (i.e. vst, hdr, 1s0, etc.). The NAS shall have the ability to connect to the DOTD network via an ethernet connection with its own IP address; The media for each of the 9 district deliverables shall be formatted properly to enable the automatic retrieval of a specific segment of road, viewing of its image, be compatible to allow linear measurements to be made from the images and the digitizing of still frame-displayed images on to a DVD recorder. (Section II.E.3.C.2). **Note: These servers will be DOTD's property after the completion of the project.**
4. All nine (9) quantified district pavement distress data deliveries must be completed by May 18, 2009.

4. Final Documentation (Task 4)

The consultant shall provide the following final documentation by January 1, 2010:

- A. A final delivery of all quantified data (i.e. previously delivered district data inclusive of any subsequent required revisions) for all districts, on external hard drives (USB 2.0) appropriate in both size and compatibility.
- B. Copies of all raw electronic files generated during the course of the project.
- C. Copies of all reports, routing sheets, field notes, documents relating to or impacting the project, etc.
- D. All reports shall be delivered in hard copy format and in electronic format (Word 2003) (.doc) on external hard drives (USB 2.0) appropriate in both size and compatibility.

ITEMS TO BE PROVIDED BY DOTD

- DOTD's dTIMS CT Import Database
- Louisiana Protocols for Automated Distress Collection
- DOTD's Control Section Database File
- Pavement Type (i.e. asphalt, concrete, composite) for all on-state system routes

ADDITIONAL SERVICES

The scope of services, compensation and contract time for future services (if required) will be established by Supplemental Agreement(s) for the following:

HPMS pavement data collection cycle: The consultant shall collect the HPMS/NHS pavement distress data fall of 2009 for the 2010 reporting requirements as outline in HPMS mandate. Data collection and delivery shall be completed by April 30, 2010. The 4,026 directional miles are as categorized as follows:

Interstate Highway System	1,775 directional miles
Non-Interstate State Maintained National Highway System (NHS)	1,608 directional miles
Non-State Maintained National Highway System (NHS)	140 directional miles
Performance Monitoring System (HPMS) sample Sections	503 directional miles

Road surface macro texture measurement: The consultant shall collect texture data for 100% of the pavement condition assessment roads. Consultant shall report the data aggregated into 0.10-mile increments. The consultant shall also report all raw texture data and software required for post possessing the texture data to allow statistical analysis. During data collection, the operator shall have the ability to review real-time texture data. The consultant shall document and maintain a correlation with ASTM standard tests for the duration of the project.

REFERENCES

All services and documents will meet the standard requirements as to format and content of the DOTD; and will be prepared in accordance with the latest applicable editions, supplements and revisions of the following:

1. AASHTO Standards, ASTM Standards or DOTD Test Procedures
2. DOTD Location and Survey Manual
3. DOTD Roadway Design Procedures and Details
4. DOTD Hydraulics Manual
5. DOTD Standard Specifications for Roads and Bridges
6. Manual of Uniform Traffic Control Devices
7. DOTD Traffic Signal Design Manual
8. National Environmental Policy Act (NEPA)
9. National Electric Safety Code
10. National Electric Code (NFPA 70)
11. DOTD Environmental Impact Procedures (Vols. I-III)
12. Policy on Geometric Design of Highways and Streets
13. Construction Contract Administration Manual
14. Materials Sampling Manual
15. DOTD Bridge Design Manual
16. Consultant Contract Services Manual
17. Geotechnical Engineering Services Document
18. Bridge Inspectors Reference Manual
19. DOTD Stage 1 Manual of Standard Practice

COMPENSATION

Compensation to the Consultant for services rendered in connection with this Contract will be a negotiated lump sum.

All travel related expenses will be compensated under direct expenses, and will be in accordance with Louisiana Office of State Travel regulations found at: <http://www.doa.louisiana.gov/osp/travel/travelpolicy/travelguide.pdf>. Vehicle rental rates will require prior approval from the DOTD Project Manager.

The selected Consultant/Team will be required to submit a proposal within 14 calendar days following the notification of selection. All negotiations must be completed within 30 calendar days following the notification of selection.

CONTRACT TIME

The Consultant shall proceed with the services specified herein after the execution of this Contract and upon written Notice-To-Proceed from the DOTD. The overall contract time to complete this project is estimated to be **730 calendar days**. The delivery schedule for all project deliverables shall be established by the Project Manager.

MINIMUM PERSONNEL REQUIREMENTS

The following requirements must be met by the Prime-Consultant at the time of submittal:

1. At least one Principal of the Prime-Consultant must be professionally competent in pavement distress data collection and analysis.
2. At least one Principal or other Responsible Member of the Prime-Consultant must have a minimum of five years experience in managing projects in pavement distress data collection and analysis.

In addition to the above requirements, the Prime-Consultant must show in Section 14 of the S. F. DOTD 24-102 expertise, personnel, and equipment necessary to perform the work as outlined in the Scope of Services.

QUALITY CONTROL/QUALITY ASSURANCE

The DOTD requires the Consultant to develop a Quality Control/Quality Assurance program or adopt DOTD's program; in order to provide a mechanism by which all deliverables can be subject to a systematic and consistent review. Consultant's must ensure quality and adhere to established policies, procedures, standards and guidelines in the preparation and review of all deliverables. The DOTD shall provide limited input and technical assistance to the Consultant.

EVALUATION CRITERIA

The general criteria to be used by DOTD (when applicable) in evaluating responses for the selection of a Consultant to perform these services are:

1. Consultant's firm experience on similar projects, weighting factor of 3;
2. Consultant's personnel experience on similar projects, weighting factor of 4;
3. Consultant's firm size as related to the estimated project cost, weighting factor of 3;
4. Consultant's past performance on similar DOTD projects, weighting factor of 6;*
5. Consultant's current work load with DOTD, weighting factor of 5;
6. Location where the work will be performed, weighting factor of 4;*
7. Consultant's proposed work plan (shown in Section 14 of SF 24-102) and field trial data, weighting factor of 6.

* All respondents will receive a 4 in these categories

This is a Complex/Specialty Project.

Consultants will be required to demonstrate their ability to collect and reduce data over eight half-mile segments and one mile segment during the week of **March 24, 2008**. There will be no compensation for this demonstration. This demonstration will provide DOTD evidence of the Firm's understanding of the project requirements. The schedule of demonstrations will be given to all Consultant's via email following the per-submittal meeting.

Consultants will be evaluated as indicated in Items 1- 7. The evaluation will be by means of a point-based rating system. Each of the above criteria will receive a rating on a scale

of 0-4. The rating will then be multiplied by the corresponding weighting factor. The firm's rating in each category will then be added to arrive at the Consultant's final rating.

If Sub-Consultants are used, each member of the Consultant/Team will be evaluated on their part of the contract, proportional to the amount of their work. The individual team member ratings will then be added to arrive at the Consultant/Team rating.

DOTD's Consultant Evaluation Committee will be responsible for performing the above described evaluation, and will present a short list of the three (if three are qualified) highest rated Consultants to the Secretary of the DOTD. The Secretary will make the final selection.

CONTRACT REQUIREMENTS

The selected Consultant will be required to execute the contract within 10 days after receipt of the contract.

INSURANCE - During the term of this contract, the Consultant will carry professional liability insurance in the amount of \$1,000,000. The Prime-Consultant may require the Sub-Consultant(s) to carry professional liability insurance. This insurance will be written on a "claims-made" basis. Prior to executing the contract, the Consultant will provide a Certificate of Insurance to DOTD showing evidence of such professional liability insurance.

AUDIT - The selected Consultant/Team will allow the DOTD Audit Section to perform an annual overhead audit of their books, or provide an *independent* Certified Public Accountant (CPA) audited overhead rate. This rate must be developed using Federal Acquisition Regulations (FAR) and guidelines provided by the DOTD Audit Section. In addition, the Consultant/Team will submit semi-annual labor rate information, when requested by DOTD.

The selected Consultant/Team will maintain an approved Project Cost System, and segregate direct from indirect cost in their General Ledger. Pre-award and post audits, as well as interim audits, may be required. For audit purposes, the selected Consultant/Team will maintain accounting records for a minimum of five years after final contract payment.

Any Consultant currently under contract with the DOTD and who has not met all the audit requirements documented in the manual and/or notices posted on the DOTD Consultant Contract Services Website (www.dotd.louisiana.gov), will not be considered for this project.

PRE-SUBMITTAL MEETING

A *mandatory* pre-submittal meeting will be held at **8:30 a.m. CST, March 4, 2008** in the DOTD Executive Classroom located on the third floor of the DOTD Headquarters

Building, 1201 Capitol Access Road, Baton Rouge, LA. Prospective Consultants should participate in the conference to obtain clarification of the requirements of the RFQ and to receive answers to relevant questions. Any Consultant/team intending to submit a qualification statement should have at least one duly authorized representative attend the pre-submittal meeting.

Although questions will be permitted and answers will be provided during the meeting, the only official answer or position of DOTD will be stated in writing in response to written questions. Therefore, Consultants should submit all questions in writing (even if an answer has already been given to an oral question). After the meeting, questions will be researched and the official response will be posted on the Consultant Contract Service website.

SUBMITTAL REQUIREMENTS

One original (**stamped original**) and four copies of the SF 24-102 must be submitted to DOTD. All submittals must be in accordance with the requirements of this advertisement and the Consultant Contract Services Manual. Any Consultant/Team failing to submit any of the information required on the SF 24-102, or providing inaccurate information on the SF 24-102, will be considered non-responsive.

In Section 14 of the SF 24-102, the Consultant should submit a work plan reflecting their understanding of the project. The Consultant should respond to all areas requested.

Any Sub-Consultants to be used, including Disadvantaged Business Enterprises (DBE), in performance of this Contract, must also submit a SF 24-102, which is completely filled out and contains all information pertinent to the work to be performed.

The Sub-Consultant's SF 24-102 must be firmly bound to the Consultant's SF 24-102. In Section 9, the Consultant's SF 24-102 must describe the **work elements** to be performed by the Sub-Consultant(s), and state the approximate **percentage** of each work element to be subcontracted to each Sub-Consultant.

Name(s) of the Consultant/Team listed on the SF 24-102, must precisely match the name(s) filed with the Louisiana Secretary of State, Corporation Division, and the Louisiana State Board of Registration for Professional Engineers and Land Surveyors.

The SF 24-102 will be identified with State Project No. **736-99-1508**, and will be submitted **prior to 3:00 p.m. CST on Monday, April 7, 2008**, by hand delivery or mail, addressed to:

Department of Transportation and Development
Attn.: Mr. Edward R. Wedge, P.E.
Consultant Contract Services Administrator
1201 Capitol Access Road, **Room 405-T**
Baton Rouge, LA 70802-4438 or

Post Office Box 94245
Baton Rouge, Louisiana 70804-9245
Telephone: (225) 379-1989

REVISIONS TO THE RFQ

DOTD reserves the right to revise any part of the RFQ by issuing an addendum to the RFQ at any time. Issuance of this RFQ in no way constitutes a commitment by DOTD to award a contract. DOTD reserves the right to accept or reject, in whole or part, all Qualification Statements submitted, and/or cancel this announcement if it is determined to be in DOTD's best interest. All materials submitted in response to this announcement become the property of DOTD, and selection or rejection of a submittal does not affect this right. DOTD also reserves the right, at its sole discretion, to waive administrative informalities contained in the RFQ.