



# Iowa Department of Transportation

800 Lincoln Way, Ames, IA 50010

515-239-1310

Fax 515-239-1538

## **Fax Back Immediately**

(This Page Only)

To above fax number, ATTN: Jerry B Giebelstein

Internet Bid Proposal Download Acknowledgement

This form must be faxed back to the Iowa Department of Transportation Purchasing Department so your company can receive any notifications or addendums to this proposal. Sealed bids may not be returned by fax. Sealed bids must be returned using the envelope provided or by attaching the label page provided in this package.

Failure to do so, may be cause to disqualify your bid proposal submission.

**Proposal No.:** 4326

**Proposal Description:** Roadway Digital Image Capture Equipment

**Company Name:** \_\_\_\_\_

**Contact:** \_\_\_\_\_

**Email Address:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City/State/Zip:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Fax:** \_\_\_\_\_

**Cell Phone:** \_\_\_\_\_

**Federal Tax ID:** \_\_\_\_\_

If you have any questions or concerns, please call 515-239-1347 or Email [jerry.giebelstein@dot.iowa.gov](mailto:jerry.giebelstein@dot.iowa.gov)

Date Bids Due 11/18/2009		Time of Bid Opening 1:00 PM	Bid Opening Location Iowa DOT Purchasing, Ames, IA	
Proposal Number 4326	Description Roadway Digital Image Capture Equipment			
Contract to Begin 11/20/2009	Date of Completion 11/19/2010	Proposal Guaranty Amount \$0.00		Liquidated Damages \$0.00
Additional Information Contact Jerry Giebelstein	E-Mail Address jerry.giebelstein@dot.iowa.gov	Phone (515) 239-1347		Fax (515) 239-1538
Company Name			Federal Tax ID	
Street Address		City	State	Zip Code
Individual preparing bid (type or print)	E-Mail Address	Phone	Fax	
Will you sell these items/services to political subdivisions within the State of Iowa under the same prices, terms and conditions as specified? <input type="checkbox"/> YES <input type="checkbox"/> NO			Are you a Iowa Targeted Small Business? <input type="checkbox"/> YES <input type="checkbox"/> NO	

## GENERAL INFORMATION

This bid package includes the proposal, schedule of prices, standard terms and conditions, supplemental terms, specifications, mailing label and other information you need to prepare your bid. The pages of the document labeled "Bid response" must be typed or completed in ink, signed, and returned in a flat style envelope prior to the bid opening date and time. Please use the furnished mailing label, or indicate on your return bid by marking "Iowa Department of Transportation, proposal number & letting date" on the outside of the return envelope. The bidder may personally deliver, mail, or select a carrier that ensures timely delivery. Faxed bids will not be accepted.

If required, each bid must be accompanied by a proposal guaranty in an accepted form, in the sum indicated above. Refer to the Standard Terms and Conditions for the accepted forms in which the proposal guaranty requirement may be fulfilled. Bids lacking a required proposal guaranty will not be considered for award. If the contractor fails to enter into a formal contract within fifteen (15) days after award is made, the proposal guaranty may be retained by the State.

## PROPOSAL STATEMENT

The entire contents of this Proposal, Addendums to the Proposal, Specifications, Supplemental Terms and Conditions, Standard Terms and Conditions, and Schedule of Prices shall become part of the contract.

We promise to enter into a contract within fifteen (15) days after award or forfeit the proposal guaranty furnished herewith.

We promise to furnish all materials, equipment and/or services specified, in the manner and the time prescribed, at prices hereinafter set out.

We certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a bid; that this bid has been independently arrived at without collusion with any other bidder, competitor, or potential competitor; and that this bid has not been knowingly disclosed prior to the opening of bids to any other bidder or competitor.

We certify that all materials, equipment and/or services proposed meet or exceed the specifications and will be supplied in accordance with the entire contents of this proposal.

We promise to complete the contract within the contract period, or pay any liquidated damages, if stipulated, for each calendar day as set forth in the bid documents.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



# Schedule Of Prices

Proposal Number 4326

Letting Date

## Roadway Digital Image Capture Equipment

11/18/2009 1:00 PM

### Group A Roadway Digital Image Capture Equipment

These 5 systems are to be installed in a vehicle supplied by the Iowa DOT. The vehicle will be dropped shipped to an auto dealer near the supplier of this equipment.

The Iowa DOT will pick up the vehicle after assembly and testing. They will then be trained for one week.

These systems must be expandable to accommodate future potential expansion of the options listed in Group B.

Item	Qty	Price	Unit	Shipping Terms
A.1	1	_____	Each	None

Roadway Digital Image Capture Equipment

Integrated Distance Measurement Instrument (DMI), Global Positioning System (GPS), and Inertial Measurement Unit (IMU) sensors for continuous vehicle and image location data. System will consist of a DMI for linear distance travelled accurate to within +/- one-thousandth (0.001) mile per mile, dual GPS receivers with OmniStar real-time sub-meter differential GPS and an Applanix position and orientation IMU system or similar providing precise, high-rate, low-latency, real-time vehicle data.

As per Iowa DOT Spec. No.10-FC27-1009

List Make \_\_\_\_\_ Model \_\_\_\_\_

Item	Qty	Price	Unit	Shipping Terms
A.2	1	_____	Each	None

Two Prosilica digital high-performance cameras or similar at 2400 x 1200 resolution, 200 frame rate per mile, one front view, one angled right-of-way view with a minimum 110 degrees of view total.

As per Iowa DOT Spec. No.10-FC27-1009

List Make \_\_\_\_\_ Model \_\_\_\_\_

Item	Qty	Price	Unit	Shipping Terms
A.3	1	_____	Each	None

Image collection at full highway speeds up to 70 mph

As per Iowa DOT Spec. No.10-FC27-1009

Item	Qty	Price	Unit	Shipping Terms
A.4	1	_____	Each	None

An on-board computer to process and store the data

As per Iowa DOT Spec. No.10-FC27-1009

List Make \_\_\_\_\_ Model \_\_\_\_\_



# Schedule Of Prices

Proposal Number 4326

Letting Date

## Roadway Digital Image Capture Equipment

11/18/2009 1:00 PM

Item	Qty	Price	Unit	Shipping Terms
A.5	1	_____	Each	None

Open formats and standards to allow custom system or interface development with images and data collected. The collected images and data are expected to seamlessly import into an Oracle Spatial environment utilized by the Iowa DOT. The new images and data will seamlessly interface with existing images and data that have been collected in previous years. The software used by DOT staff to review the information will read new images and data as well as previously collected images and data."

As per Iowa DOT Spec. No.10-FC27-1009

Group B Future Potential Expansion				
------------------------------------	--	--	--	--

Item	Qty	Price	Unit	Shipping Terms
B.1	1	_____	Each	None

LIDAR system for high-definition, three-dimensional, real time collection of points surrounding the roadway to model horizontal and vertical clearances and other roadway assets for inventory and management.

Item	Qty	Price	Unit	Shipping Terms
B.2	1	_____	Each	None

Real time collection of longitudinal profile elevations, International Roughness Index (IRI), Slab Faulting, and Texture.

Item	Qty	Price	Unit	Shipping Terms
B.3	1	_____	Each	None

Digital image collection of pavement surface.

Item	Qty	Price	Unit	Shipping Terms
B.4	1	_____	Each	None

Utilization of the Iowa DOT's Real Time Kinematic GPS network

I HEREBY CERTIFY THAT THIS PROPOSAL MEETS OR EXCEEDS THE MINIMUM REQUIREMENT INCLUDING SPECIFICATIONS AND ADDENDUMS

(Please Print)

COMPANY NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_ E-MAIL: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ FED TAX ID: \_\_\_\_\_

AVAILABILITY AFTER RECEIPT OF P.O. (IN DAYS): \_\_\_\_\_

I ACKNOWLEDGE RECEIPT OF ADDENDUM NUMBERS: \_\_\_\_\_

# Iowa Department of Transportation

## PURCHASING PROPOSAL

### Standard Terms and Conditions

**Contents of Contract:** The entire contents of this proposal shall become a part of the contract or purchase order. In case of a discrepancy between the contents of the contract documents, the following items listed by descending order shall prevail:

- Addendums
- Purchasing Proposal/Schedule of Prices
- Specifications, Plans and Drawings
- Supplemental Terms and Conditions
- Standard Terms and Conditions

For example, if there is a statement in the specifications that contradicts a statement in the Standard Terms and Conditions, the statement in the specifications shall apply.

**Preparation of Proposal:** All proposals must be completed in every respect and must clearly answer all questions contained in the proposal. Bids must be typed or completed in ink on the forms supplied by the department. **You must sign your bid and seal it in the envelope.** Bids must be received prior to the bid opening date and time. The bidder may personally deliver, mail, or select a carrier that ensures timely delivery

**Proposal Guaranty:** If required, a proposal guaranty, in the sum listed on the proposal form, can be supplied in one of the following ways: (1) A certified check or credit union certified share draft, cashier's check, or bank draft, drawn on a solvent bank or credit union, may be certified furnished with your bid. Certified checks and certified share drafts shall be drawn and endorsed in the amount indicated. Checks or drafts shall be made payable either to the Iowa Department of Transportation (Iowa DOT) or to the bidder. If payable to the bidder, the check or draft shall be endorsed, without qualifications, to the Iowa DOT by the bidder or his authorized agent. (2) An insurance or surety company may be retained to provide a bond in fulfillment of the proposal guaranty requirement. A properly completed and signed copy of the Proposal Guaranty (Form 131071) must accompany the bid. The Iowa DOT's Proposal Guaranty form must be used, no other forms or formats will be accepted.

**Bid Opening:** Bid Openings are public and conducted at the Ames complex unless otherwise specified. Proposals received after the time of the bid opening will be returned unopened.

**Debarment and Vendor Suspension:** By submitting a proposal, the contractor is certifying that it and its Principals and/or subcontractors are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by the State of Iowa or any Federal department or agency.

**Communications:** Questions concerning this proposal should be directed to the Purchasing Agent listed on the Purchasing Proposal. Inquiries can be written, phoned, or faxed. In all cases, written communication will take precedence over verbal communication.

**Acceptance/Rejection:** The State of Iowa reserves the right to accept or reject any or all bids and to waive irregularities or technicalities, provided such waiver does not substantially change the offer or provide a competitive advantage to any vendor, in the judgement of the Iowa DOT. The Iowa DOT also reserves the right to accept that bid which is deemed to be in the best interests of the state. Any unauthorized changes, additions, or conditional bids including any ties to another bid or proposal or any reservations about accepting an award or entering into a contract, may result in rejection of the bid. Bids must remain available for award for thirty (30) days from date of bid opening.

**Method of Award:** Award shall be made to the lowest responsible, responsive bidder unless otherwise specified. By virtue of statutory authority preference will be given to products and provisions grown and coal produced within the State of Iowa.

**Award Protests:** Protests of award recommendations are to be addressed to the Director of Purchasing, and shall be made in accordance with paragraph 761--20.4(6)"e", Iowa Administrative Code.

**Bid Results & Disclosure:** A bid tabulation will be sent to all responsive bidders with an award recommendation indicated. At the conclusion of the selection process, the contents of all proposals will be placed in the public domain and be open to inspection by interested parties, according to state law. Trade secrets or proprietary information that are recognized as such and are protected by law may be withheld if clearly identified as such in the proposal.

**Contracts:** Successful contractor(s) may be sent either a formal Contract or a Notification of Award as confirmation of acceptance and award. Contracts shall be for the term stated on the Proposal and may be extended for additional period(s) under the same terms and conditions upon mutual agreement. The contractor may not assign the contract to another party without written authorization from the Office of Procurement and Distribution.

**Pricing and Discount:** Unit prices shown on the bid/proposal shall be quoted as the price per unit (e.g., gal., case, each, etc.) as stated on the request. If there is a discrepancy between the unit bid prices, extension, or total amount of bid, the unit prices shall prevail. Unless otherwise indicated, prices shall be firm for the duration of the contract or purchase. Discounts for early payment are allowed, but not considered in award of the contract.

**Taxes:** Prices quoted shall not include state or federal taxes from which the state is exempt. Exemption certificates will be furnished upon request.

*Faxed bids will not be accepted.*

**Payment Terms:** The Iowa DOT will normally pay properly submitted vendor invoices within fifteen (15) days of receipt, providing goods and/or services have been delivered, installed or inspected (if required), and accepted. Invoices presented for payment must be only for quantities received by the Iowa DOT, must reference the purchase order number, and be submitted for processing.

**Quality:** All material shall be new and of first quality. Items which are used, demonstrators, refurbished, obsolete, seconds, or which have been discontinued are unacceptable without prior written approval by the Iowa DOT.

**Recycled Content:** The Iowa Code encourages purchase of products and materials with recycled content, including but not limited to paper products, oils, plastic products, compost materials, aggregate, solvents, and rubber products. When bidding recycled items or alternatives, note on your bid the recycled content, if known.

**Infringement:** Goods shall be delivered free of the rightful claim of any third party by way of infringement. Contractor shall indemnify and save harmless the State of Iowa and the Iowa DOT against all claims for infringement of, and/or royalties claimed under, patents or copyrights on materials and equipment furnished under this bid.

**Default:** Failure of the contractor to adhere to specified delivery schedules or to promptly replace rejected materials shall render the contractor liable for all costs in excess of the contract price when alternate procurement is necessary. This shall not be the exclusive remedy and the Iowa DOT reserves the right to pursue other remedies available to it by law or under the terms of this contract.

**Ames Deliveries:** Materials delivered to the Distribution Center's Receiving Section, 800 Lincoln Way, Ames, IA shall be delivered between the hours of 7:30 a.m. and 3:30 p.m. on any day except Saturday, Sunday, or a holiday. For deliveries to locations other than the Distribution Center, the contractor may wish to contact the destination location for available times to deliver, as some Iowa DOT offices and locations work a non-standard work week.

**Delivery:** Deliveries shall be F.O.B. destination unless otherwise specified. All deliveries shall be accompanied by a packing slip indicated the vendor, quantities shipped, and the purchase order number(s). All delivery charges shall be included in the bid price and paid by the contractor. No collect or C.O.D. deliveries will be accepted. When entering into a contract, the contractor shall notify the freight company that all freight and delivery charges are to be prepaid by the contractor. The Iowa DOT will not be liable for any freight claims or unpaid freight bills arising from this contract.

**Applicable Law:** The contract shall be governed under the laws of the State of Iowa. The contractor shall at all times comply with and observe all federal and state laws, local laws, ordinances, and regulations which are in effect during the period of this contract and which in any manner affect the work or its conduct. Any legal action relating to the contract shall only be commenced in the Story County, Iowa, District Court or the United States District Court for the Southern District of Iowa.

**Administrative Rules:** For Additional details on the rules governing the actions of the Office of Procurement and Distribution refer to 761 IAC, Chapter 20, Iowa Administrative Code, entitled "Procurement of Equipment, Materials, Supplies and Services".

**Equal Opportunity:** Firms submitting bids must be an "Equal Opportunity Employer" as defined in the Civil Rights Act of 1964 and in Iowa Executive Order Number Thirty-four.

**Affirmative Action:** The contractor (and also subcontractor, vendor, or supplier) is prohibited from engaging in discriminatory employment practices forbidden by federal and state law, executive orders and rules of the Iowa Department of Management, pertaining to equal employment opportunity and affirmative action. Contractor may be required to have on file a copy of their affirmative action program, containing goal and time specifications. Contractors doing business with Iowa in excess of \$5,000 annually and employing 50 or more full time employees may be required to file with the Iowa Department of Management a copy of their affirmative action plan. Failure to fulfill these non-discrimination requirements may cause the contract to be canceled and the contractor declared ineligible for future state contracts or subject to other sanctions as provided by law or rule.

**Targeted Small Businesses:** The Iowa DOT seeks to provide opportunities for women and/or minority small business enterprises. To apply for certification as an Iowa Targeted Small Business, contact the Iowa Department of Inspection and Appeals (515-281-7357). Contractors shall take documented steps to encourage participation from Targeted Small Businesses for the purpose of subcontracting and supplying of materials.

**Interest in Contract:** No state or county official or employee, elective or appointive shall be directly or indirectly interested in any contract issued by the Iowa DOT, See Code of Iowa 314.2.

**Records Audit:** The contractor agrees that the Auditor of the State of Iowa or any authorized representative of the state, and where federal funds are involved, the Comptroller General of the U.S. Government, shall have access to and the right to examine, audit, excerpt, and transcribe any directly pertinent books, documents, papers, and records of the contractor relating to orders, invoices, or payments of this contract.

**Iowa Department of Transportation**  
**SUPPLEMENTAL TERMS & CONDITIONS**  
**For**  
**10|FC27: Roadway Photolog/Location Collection Vehicle**  
**Proposal No.: 4326**  
**Letting Date: November 18, 2009**

**Proposal Guarantee**

Proposal guarantee is not required on this proposal.

**Exceptions or Equals**

Any equipment being offered as an equal to the specified make/model must be submitted on the enclosed form "Bidder's Request for Exceptions or Equal." The form must specifically state the requested equal and be accompanied by adequate supporting information to evaluate the request.

The "Bidder's Request for Exceptions or Equal" form must be received in sufficient time *prior* to the bid opening to evaluate and respond with the appropriate action. It is suggested that any requests for equal be submitted either by mail or fax immediately upon receipt of the proposal in order to receive full consideration. Fair treatment to all vendors shall be the primary concern in evaluation of requests for equal, particularly those submitted just prior to the bid opening. **Do not submit "Bidder's Request for Exception or Equal" with your bid.**

**Separate Bids**

A bidder may quote prices on more than one model. Complete a separate Schedule of Prices for each make/model bid. Only one proposal guaranty (if required) is needed for bids on multiple makes\ models.

**Approved Brands**

Brands listed have been pre-approved by the Iowa DOT. Equivalent brands may be bid, but if not previously tested may be subject to testing by the Iowa DOT prior to the award.

**Product Literature**

Two(2) complete sets of catalogs, specification sheets, or other literature giving detailed information about the item bid shall be included with the proposal. The items shall be identified in the literature by make/model name or number. Modifications or deviations from the printed literature or accessory items not covered shall be described by a written statement, unless included in the information supplied on the Detailed Information Sheet if included with this proposal.

**Additional Information**

If any additional information is required to properly evaluate the bid, the bidder shall furnish the requested information within three (3) working days after notification from the Office of Procurement and Distribution.

**Ties and Reservations**

No ties and reservations by the bidders are permitted on this proposal.

**Contract Award**

One contract will be awarded. All items are tied.

**Contract Period**

Only one (1) award will be made for the contract period.

**Contract Quantities**

The Iowa DOT will make a one-time purchase of the entire quantity listed on this proposal.

**Purchase Orders**

One purchase order will be issued for each item.

**Delivery Location**

Material shall be delivered to the Iowa Department of Transportation, Garage Listed on the bid line item.

**Invoicing & Packing List**

Each Packing list and invoice must reflect only the merchandise relating to one purchase order. Multiple orders may be shipped together but each order requires individual invoicing and packing list stating purchase order number.

(Vendor may copy as needed)

**Due on or Before  
7 days before letting  
date**

**If Required  
Mail At Once**

**Letting Date: November 18, 2009**

**If Required  
Mail At Once**

**Iowa Department of Transportation  
Bidders Request for Exceptions or Equal  
Proposal No.: 4326**

Item: **Roadway Photolog/Location Collection System**

Spec. No. \_\_\_\_\_

Bid Proposal

Requests: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Bidder Proposes to furnish in lieu of above: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Mail/Fax to:

Iowa Department of Transportation  
Attention: Jerry Giebelstein  
Office of Procurement and Distribution  
800 Lincoln Way  
Ames, Iowa 50010  
Phone No. 515-239-1347  
Fax No. 515-239-1538  
[jerry.giebelstein@dot.iowa.gov](mailto:jerry.giebelstein@dot.iowa.gov)

By \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City State Zip Code

Phone No. \_\_\_\_\_

Fax No. \_\_\_\_\_

=====  
DOT USE ONLY

Approved \_\_\_\_\_

Disapproved \_\_\_\_\_

Reason \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Iowa Department of Transportation  
Specification  
For  
Roadway Photolog/Location Collection Vehicle  
Proposal No.: 4326  
Letting Date: November 18, 2009**

## **Roadway Photolog/Location collection vehicle specifications.**

### ***Location collection (Base foundation of mobile asset data collection)***

- The location of all imagery and data should be handled with an integration of the following: Distance Measurement Instrument (DMI), Differential Global Positioning System (DGPS), and Inertial Measurement Unit (IMU) sensors for continuous vehicle and image location data.
  - System will consist of a DMI for measuring linear distance traveled with an accuracy to within +/- one-thousandth (0.001) mile per mile. This distance measurement must be displayed or captured with at least 3 decimal place precision.
  - A dual GPS receiver with real-time sub-meter differential GPS correction. This DGPS collection device should be capable of receiving differential correction from radio-based signals or subscription services such as OmniStar. In the future, this unit must also facilitate the differential signal from the Iowa High-Accuracy GPS network which is facilitated through cell-phone communications technology.
  - A position and orientation IMU system or similar device providing precise, high-rate, low-latency, real-time vehicle position data.

### ***Photolog collection***

- At least two digital high-performance cameras with at least 2400 x 1200 pixel resolution. One front view and one angled right-of-way view with a minimum 110 degrees of view total. These cameras must capture the lane of travel, a right of way (ROW) zone, and overhead signs.
- Digital images must be captured in full frame format (non-interlaced and without measurable degradation of resolution at frame edges).
- System must be capable of collecting all images at a minimum 200 frames (26.4 ft.) per mile at highway speeds up to 70 mph.
- An on-board computer to capture process and store the image data along with tagged information for the location. Each front and side image must be tagged to a matching digital file with the following information:
  - Highway system
  - Highway number
  - Direction of travel
  - County name or number
  - Travelled way distance (DMI) from the beginning of the route index reference location. (Usually the county border)
  - GPS location
  - Collection date and time
- Portable hard drives or other cost-effective and efficient methods such as Wi-Fi to move data from the on-board system to main office network storage.
- Open formats and standards to allow custom system or interface development with images and data collected. The collected images and data are expected to seamlessly import into an Oracle Spatial environment or other GIS software utilized by the Iowa DOT.
- This new equipment and collected data will seamlessly interface with existing images and data that have been collected in previous years.
- A free and unlimited use, front and side image viewer must be provided, by the vendor, for use by the Iowa DOT and its customers or contractors. The viewer must have the ability to go forward and backwards, frame by frame,

or continuous play. It must be capable of displaying front and side images together with full operations with the tagged data and location. The viewer must also have a magnification feature for zoom in and out capability. This viewer must also facilitate searching for routes within counties and by location or with a simple map (GIS) interface.

- Annual yearly maintenance performed at an Iowa DOT facility for calibration and to ensure system software is up-to-date and hardware is fully functional. Operator refresher training will be performed at the same time to review basic system operation and updates to software.
- The vehicle and equipment should be enabled for remote connection and debugging from either the maintenance vendor or the Iowa DOT home office or both. This remote connection is for the resolution of any problems, fixes, patches or non-mechanical system failures while in the field.
- Initial contract will include one week of onsite training and system documentation.
- Initial contract will include one-year parts and labor warranty on system.
- In the event of a failure of the system while under warranty or under service plan, the DOT and the vendor will work together for a maximum of 4 hours to resolve the problem. After that time, vendor will send a technician to the location to diagnose and repair the system. Equipment failure that results in two or more lost collection days will result in a \$500.00 per day penalty assessed to vendor for each day the system is down.
- Vendor will provide timeline for installation, configuration, and training of new system. The new system must be in place for the 2010 photolog collection season anticipated to begin in April.
- Vendor will provide contact information for a minimum of three current customers utilizing the vendor's equipment.

**It is necessary to have the expansion capabilities and integration with this base Photolog/Location framework to facilitate add-ons to this equipment in the near future. This system must have the potential for expansion and integration of the following add-ons:**

- High Definition 3D LIDAR and feature inventory extraction
- Automated Vertical and Horizontal Clearance Measurement
- Pavement Distress Data Collection

**High-Definition LIDAR Data Collection Requirements:**

- System must collect data using a minimum sixty-four (64) pairs of laser and sensors.
- The vehicle collecting the data using the laser sensors and data collection software must be capable of maintaining highway speeds up to 70 mph.
- The LIDAR system must be capable of providing a minimum of one million points collected per second. The resolution of the points must be within one (1) millimeter.
- The LIDAR collection hardware must be capable of a 360° field of view (azimuth) and a 0.09° angular resolution (azimuth).
- The system must be capable of day and nighttime operation, and the ability to withstand wind, rain and other adverse weather conditions.
- The lasers included in the system must meet class IM laser safety specifications.
- Software must be capable of compensating for vehicle movement on the road. The system must use an instrument to calculate sensor changes caused by vehicle movement on the road.
- The software included with the system must produce an interactive, three-dimensional representation of the collected data.

This LIDAR data must integrate and synchronize with the collected photolog images and the location with the above mentioned equipment. The LIDAR data must be able to provide, paired with the GPS and photolog data, the following automatic and manual measurements as specified:

- The distance of trees, non-breakaway poles and walls to the edge of pavement must be manually extracted to differentiate between breakaway and non-breakaway features.
- The shoulder slope must be automatically extracted from LIDAR data. Output will include the beginning and ending points or sections with the percent slope for each section.
- Shoulder width and lane width must be automatically extracted from the LIDAR data.
- The sizes and absolute location of signs must be extracted from the LIDAR data, including both an automatic method of extraction as well as a manual quality check of data. Sign legend will then be determined from the

- photolog images.
- Roadway slope must be calculated with the GPS collection, with the output containing slope as sections of constant percent grade with starting and ending route distances, or alternatively as percent grade over defined section sizes.
- Degree of curvature must be calculated from the GPS/LIDAR collection, with the output containing degrees of curvature, radius and length for sections of constant curvature though the route.
- Superelevation must be automatically extracted from the LIDAR data. Output will list a begin and end point (in route distance, miles) for a superelevation section that is either a transition or a constant superelevation percentage. E.g. 0.0 - 1.0 mi = 0%, 1.0-1.2mi = transition, 1.2-1.3 = 6%, 1.3-1.45 = transition, 1.45-3.0 = 0%.
- Passing areas, acceleration and deceleration lanes must be automatically extracted from LIDAR data and then a quality check performed from the photolog images.
- Speed limits must be able to be extracted manually from the photolog images.

The following maintenance features must be able to automatically or manually be measured as specified from the integrated location, photolog and/or LIDAR:

- Acres of landscape, wildflowers and mowing area must be identified with the start/end GPS location and the type of acreage.
- Miles of fence must be able to be manually identified from the LIDAR data.
- Number of attenuators must be able to be manually identified from the photolog images.
- Number of Bridges must be automatically extracted from the LIDAR data.
- Number of Delineators must be able to be manually identified from the LIDAR data.
- Number of raised pavement markers must be able to be manually identified from the photolog images.
- Miles of paved/PCC/total/unpaved of roadway/shoulder must be able to be manually identified from the photolog images.
- Square Feet of Signs must be able to be manually identified from the photolog images, with the possibility of future LIDAR extraction.
- Line miles and color of pavement markings must be able to be manually identified from the LIDAR data.
- Specialty Markings square footage must be automatically extracted from the LIDAR data.
- Shoulder rumble strips must be able to be manually identified from the photolog images.
- Curb and gutter mileage must be automatically extracted from the LIDAR data.
- Length of guardrails and guardrail terminals must be able to be singly manually identified from the photolog images.

#### **Automated Vertical and Horizontal Clearance Measurement Requirements:**

- System must collect data automatically and integrated with the Location framework described above.
- System must provide all LIDAR sensor data for all vertical road lane and horizontal shoulder clearances.
- All vertical and horizontal distance measurements must be in metric format. The system must have a minimum resolution equal to or less-than one millimeter.
- Collected data must be integrated with the Location data as described above and must provide the highway system and route number of the underpass, the direction of travel, measurement date, underpass log mile (DMI) along with GPS, and optionally the overhead system/route ID, structure ID.
- The vendor will be required to provide a free, standalone viewer displaying all the above data, plus a structure height data display showing the structure's profile/cross section.

#### **Pavement Data Collection Requirements:**

- System will report distress measurements as an average based on 10 meter OR 0.005-mile segments.
- System will report cracking with the following categories: transverse, fatigue, reflection, longitudinal, and block (% affected, severity 1, 2 or 3). Also, the system will report centerline cracking.
- System must have the ability to provide complete transverse profile reaching to the shoulder/lane markers with points no further apart than 15 mm and no equipment extending beyond the sides of the vehicle.
- System must have ability to measure vehicle position in the lane for roughness (IRI), and rutting for left and right wheel paths, rutting average, slope, PSI and speed.
- Collection of pavement roughness must comply with procedures for Class I or Class II equipment as outlined in Appendix E of the most recent HPMS Field Manual (See <http://www.fhwa.dot.gov/ohim/hpmsmanl/appe.cfm>)

Bidder \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## SEALED BID

LETTING DATE: Wednesday, November 18, 2009  
PROPOSAL NO: 4326  
PROPOSAL DESCRIPTION: Roadway Digital Image Capture Equipment

Iowa Department of Transportation  
PURCHASING - SEALED BID PROPOSAL  
800 Lincoln Way  
Ames, IA 50010