



**SOLICITATION INFORMATION
SEPTEMBER 2, 2011**

RFP# 7449019

TITLE: MAINTENANCE-INSTALLATION OF NEW GROUND SPREADER CONTROL SYSTEM

**NON-MANDATORY PRE-BID: 9/12/11 9AM
DIVISION OF PURCHASES
ONE CAPITOL HILL
PROVIDENCE, RI 02908
2ND FLOOR, BID ROOM**

SUBMISSION DEADLINE: 9/20/11 10:30AM

**QUESTIONS CONCERNING THIS SOLICITATION MAY BE E-MAILED TO THE DIVISION OF PURCHASES AT:
BIDINFO@PURCHASING.RI.GOV NO LATER THAN SEPTEMBER 14, 2011 AT 12 NOON EST. QUESTIONS SHOULD BE SUBMITTED IN A *MICROSOFT WORD ATTACHMENT*. PLEASE REFERENCE THE RFP / LOI # ON ALL CORRESPONDENCE. QUESTIONS RECEIVED, IF ANY, WILL BE POSTED ON THE INTERNET AS AN ADDENDUM TO THIS SOLICITATION. IT IS THE RESPONSIBILITY OF ALL INTERESTED PARTIES TO DOWNLOAD THIS INFORMATION.**

**SURETY REQUIRED: No
BOND REQUIRED: Yes**

**DAVID CADORET
BUYER**

**VENDORS MUST REGISTER ON-LINE AT THE STATE PURCHASING WEBSITE AT
WWW.PURCHASING.RI.GOV**

**NOTE TO VENDORS:
OFFERS RECEIVED WITHOUT THE ENTIRE COMPLETED THREE-PAGE RIVP GENERATED BIDDER CERTIFICATION FORM ATTACHED MAY RESULT IN DISQUALIFICATION.**

THIS PAGE IS NOT A BIDDER CERTIFICATION FORM

GROUND SPEED SPREADER CONTROL SYSTEM & NEW GPRS CELLULAR TRANSMITTER SYSTEM

GENERAL CONTRACT TERMS

The Rhode Island Department of Transportation Division of Highway & Bridge Maintenance seeks the services of a contractor to provide and install closed loop/GPRS spreader controls for a portion of its winter operations fleet of equipment. The Contractor will be expected to provide these services for two sets of specifications:

ITEM 1 – Install NEW closed loop/GPRS spreader controls in thirty-four (34) trucks.

ITEM 2 – Install new closed loop/GPRS spreader control in twenty-seven (27) trucks which are currently equipped with an antiquated closed loop spreader control system.

The Contractor shall provide all equipment, materials and labor necessary to complete the installation of these devices and accessories.

The Contractor shall be responsible for all transportation, and any associated costs, related to moving the RIDOT equipment from its assigned facility to the location of installation.

The Contractor shall prioritize and expedite the thirty-four (34) NEW installations (ITEM 1) prior to commencing with any of the twenty-seven (27) RETRO-FIT installations (ITEM 2).

The Contractor shall provide a schedule for completion of each of the trucks with his/her bid. This schedule shall consider that the RIDOT Winter Season runs from November 15, 2011 – April 15, 2012. During the period of the Winter Season the Contractor shall consider that only a maximum of two (2) trucks will be available for installation in order that RIDOT has sufficient amounts of equipment available for its winter operations. The Contractor may coordinate with the RIDOT Motor Pool in the event that a considerable duration of fair weather is expected, but should not base their schedule on this.

Payments will be made for each truck upon acceptance of the work by RIDOT Motor Pool.

The completion date for this contract shall be no later than December 30, 2011.

NOTE: *Proposals received after the above referenced due date and time will not be considered.*

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EVALUATION AND SELECTION

The State will commission a Technical Review Committee, which will evaluate and score all proposals, using the following criteria:

Firm's Capability, Capacity and Staff Qualifications	0-30 Points
References/Customer Satisfaction	0-15 Points
Quality of the Project Work Plan/Schedule	0-25 Points
Capabilities of Data Transfer	0-20 Points
<i>Sub-Total of Technical Criteria</i>	<i>0-90 Points</i>
Cost Proposal (Evaluated Separately)	0-10 Points
<i>Maximum Score</i>	<i>100 Points</i>

Notwithstanding the foregoing, the State reserves the right to award on the basis of cost alone, accept or reject any or all bids, and to act in its best interest.

Proposals found to be technically or substantially non-responsive at any point in the evaluation process will be rejected and not considered further. **The proposal must receive a minimum of 50 out of the 90 available technical points to warrant further consideration. Proposals receiving less than this minimum number of technical points will not have their cost proposals opened or evaluated.**

The State may, at its sole option, elect to require presentations by offerors clearly in consideration for award.

The Technical Review Committee will present findings, to the State Purchasing Agent, or their designee, who will make the final selection for this requirement.

The successful bidder will be required to submit a performance bond in the amount of \$50,000.00 (Fifty thousand dollars and no cents).

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Bidder Name: _____

Submitted By: _____

Below are the specifications established by the State of Rhode Island for the GROUND SPEED SPREADER CONTROL SYSTEM & NEW GPRS CELLULAR TRANSMITTER SYSTEM requested in this RFP. Please use these specifications as the basis for your offer.

The successful bidder must be an Authorized Manufacturer or Authorized Manufacturer Representative located within a one hundred (100) mile radius of the Department of Transportation "DOT" Highway & Bridge Maintenance Facility, 360 Lincoln Avenue, Warwick, RI 02888.

No alternatives to the specifications will be accepted. All bids must meet or exceed specifications. Only one (1) set of specifications will be accepted per bidder. Specifications must be submitted in quadruplicate (4 complete sets).

Delivery must be completed by December 30, 2011. DOT will accept early delivery and pay for each unit upon receipt. The State agrees to pay the vendor the manufacturer's invoice amount upon delivery to the Division of Maintenance, 360 Lincoln Avenue, Warwick, RI 02888.

Errors or Omissions in the Specification: In the event of errors or omissions in the specifications, it is nonetheless the responsibility of the bidder to provide an operational system that meets the intent and technical requirements of the specification to the satisfaction of the Rhode Island Department of Transportation.

INTRODUCTION

The Rhode Island Department of Administration/Division of Purchases, on behalf of the Rhode Island Department of Transportation, is soliciting proposals from qualified firms for the purchase of GROUND SPEED SPREADER CONTROL SYSTEM & NEW GPRS CELLULAR TRANSMITTER SYSTEM as described elsewhere herein, and in accordance with the terms of this Request for Proposals and the State's General Conditions of Purchases, which may be obtained at the Rhode Island Division of Purchases Home Page by Internet at: <http://www.purchasing.ri.gov>.

This is a Request for Proposals, not an Invitation for Bid. Responses will be evaluated on the basis of the relative merits of the proposal, in addition to prices; there will be no public opening and reading of responses received by the Division of Purchases pursuant to this Request, other than to name those offerors who have submitted proposals.

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INSTRUCTIONS AND NOTIFICATIONS TO OFFERORS:

- Potential offerors are advised to review all sections of this Request carefully and to follow instructions completely, as failure to make a complete submission as described elsewhere herein may result in rejection of the proposal.
- All costs associated with developing or submitting a proposal in response to this Request or to provide oral or written clarification of its content shall be borne by the offeror. The State assumes no responsibility for these costs.
- Proposals are considered to be irrevocable for a period of not less than sixty (60) days following the opening date, and may not be withdrawn, except with the express written permission of the State Purchasing Agent.
- All pricing submitted will be considered to be final and fixed unless otherwise indicated herein.
- Proposals misdirected to other State locations or which are otherwise not present in the Division of Purchases at the time of opening for any cause will be determined to be late and may not be considered. The "Official" time clock is in the reception area of the Division of Purchases.
- In accordance with Title 7, Chapter 1.1 of the General Laws of Rhode Island, no foreign corporation shall have the right to transact business in the State until it shall have procured a Certificate of Authority to do so from the Rhode Island Secretary of State (401-222-3040). This will be a requirement only of the successful bidder (s).
- It is intended that an award pursuant to this Request will be made to a prime contractor, who will assume responsibility for all aspects of the work. Joint venture and cooperative proposals will not be considered, but subcontracts are permitted, provided that their use is clearly indicated in the offeror's proposal, and the subcontractor (s) proposed to be used are identified in the proposal.
- Interested parties are instructed to peruse the Division of Purchases web site on a regular basis as additional information relating to this solicitation may be released in the form of an addendum to this RFP/LOI.
- **Equal Employment Opportunity (RIGL 28-5.1) § 28-5.1-1 Declaration of Policy:** (A) Equal opportunity and affirmative action toward its achievement is the policy of all units of Rhode Island state government, including all public and quasi-public agencies, commissions, boards and authorities, and in the classified, unclassified, and non-classified services of state employment. This policy applies in all areas where the state dollar is spent, in employment, public service, grants and financial assistance, and in state licensing and regulation. For further

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information, contact the Rhode Island Equal Employment Opportunity Office at 401-222-3090.

- The successful offeror may be required to certify to the Rhode Island Department of Transportation that it is in compliance with applicable civil rights laws and regulations. These laws and regulations relate to issues concerning Equal Employment Opportunity, Limited English Proficiency, and other anti-discrimination laws. The successful offeror may also be required to prepare an Equal Employment Opportunity Plan. A certification of assurances form will be provided to you upon notification of tentative award.
- Offerors are advised that all materials submitted to the State of Rhode Island for consideration in response to this Request for Proposals will be considered to be public records, as defined in Title 38 Chapter 2 of the Rhode Island General Laws.

PROPOSAL SUBMISSION

Questions concerning this solicitation also may be e-mailed to the Division of Purchases at bidinfo@purchasing.ri.gov, no later than the date and time listed on the cover page of this solicitation. Please reference the RFP # on all correspondence. Questions received, if any, will be posted on the Internet as an addendum to this solicitation. It is the responsibility of all interested parties to download this information. For computer technical assistance, call the Purchases Help Desk at 401-222-3766.

Interested offerors may submit proposals to provide the services covered by this Request on or before the date listed on the cover page. Proposals received after this time and date will not be considered.

Proposals should include the following:

1. A completed and signed three page RIVIP Bidder Certification Cover Form available at www.purchasing.ri.gov.
2. A separate sealed Cost Proposal reflecting the fee structure proposed for this scope of services, including completion of the Cost Proposal Summary form enclosed and
3. A separate SEALED Technical Proposal describing the qualifications and background of the applicant and experience with similar projects as well as the work plan or approach proposed for this requirement
4. A completed and signed W-9 (taxpayer identification number and certification). Form is downloadable at www.purchasing.ri.gov.

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- 5 In addition to the multiple hard copies of proposals required, respondents are requested to provide their proposal in electronic format (CD rom), Microsoft Word/Excel or PDF format in preferable. Only one electronic copy is requested and it should be placed in the proposal marked "original".

The Technical Proposal Format:

- a) Technical Proposal Cover - the RIVIP Certification Cover Form is a mandatory submission
- b) Executive Summary - The Executive Summary is intended to highlight the contents of the Technical Proposal and to provide State evaluators with a broad understanding of the contractor's technical approach and ability
- c) Offeror's Organization and Staffing - This section shall include identification of all staff and/or subcontractors proposed as members of the project team and the duties, responsibilities and concentration of effort which apply to each (as well as resumes, curricula vitae, or statements of prior experience and qualification)
- d) Work Plan/Approach/Delivery Proposed - This section shall describe the contractor's understanding of the State's requirement, including the result (s) intended and desired, the approach and/or methodology to be employed and a work plan for accomplishing the results proposed. The description of approach shall discuss and justify the approach proposed to be taken for each task, and the technical issues that will or may be confronted at each stage on the project. The work plan description shall include a detailed proposed project schedule (by task and sub-task), a list of tasks, activities, and/or milestones that will be employed to administer the project, the assignment of staff members and concentration of effort for each, and the attributable deliverables for each.
- e) Previous Experience and Background including the following information:
 - i. A comprehensive listing of similar projects undertaken and/or similar clients served, including a brief description of the projects and a contact name and telephone number from the clients
 - ii. A description of the business background of the offeror (and all subcontractors proposed) including a description of their financial position
- f) Products: Detailed oral description of each product offered, including capabilities of wireless data transfer, construction and any other relevant information

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- g.) The **Cost Proposal** should identify the unit cost for each invoiceable unit. It will be assumed that any necessary part or service that is identified in this solicitation that is not included in the price sheet is provided at no additional cost

PROSPOSALS – An original plus three (3) copies of the Technical component and an original plus one (1) of the Cost component should be mailed or hand delivered in a sealed envelope marked with the RFP # and title as listed in the cover sheet of this RFP.

By Mail or Courier:
RI Department of Administration
Division of Purchases (2nd floor)
One Capitol Hill
Providence, RI 02908-5855

NOTE: Proposals misdirected to other State locations or which are otherwise not present in the Division of Purchases by the scheduled due date and time of opening will be determined to be late and will *not* be considered. Proposals faxed or e-mailed to the Division of Purchases will *not* be considered. **For the purposes of this requirement, the official time and date shall be that of the time clock in the reception area of the Division of Purchases.**

ITEM 1

**INSTALL NEW CLOSED LOOP/GPRS SPREADER
CONTROLS IN THIRTY-FOUR (34) TRUCKS**

**GROUND SPEED SPREADER CONTROL SYSTEM & GPRS CELLULAR
TRANSMITTER SYSTEM (34 TRUCKS)**

General: The RIDOT Maintenance Division desires to equip 34 trucks with a ground speed control system that regulates the quantity of materials applied to the road surfaces during winter storm events. In addition the RIDOT also desires to install a GPRS cellular transmitter system in each truck. The transmitter must be compatible with the ground speed control system and capable of transmitting data to a home base web site managed by the manufacturer where it can then be accessed and downloaded by the RIDOT.

Manufacturers submitting proposals in response to this request must have a history of satisfactorily deploying this type of equipment in states or municipalities, in the United States, with fleets compatible in size with that of the RIDOT, for a period of at least five years. Respondents to this bid request shall submit contact information for at least three references that may be contacted regarding the performance of this equipment. References should be supervisory personnel that are directly involved with the deployment of this equipment and have first hand knowledge of its performance. Contact information for references shall include the name, title, address and phone number of each individual. In addition, the vendor is advised that the controller for the spreader system must be mounted in the cab of the truck, in front of the vehicle operator, such that it can be fully viewed and accessed by the operator without impeding operation of the vehicle.

SPREADER CONTROL:

The electronic spreader control shall be designed for precise, closed-loop control of granular and pre-wet liquid application as standard and shall have the ability to control direct application liquid when optional equipment is selected. The electronic spreader control shall have a field replaceable battery back up that protects memory functions. Data memory shall be at least 512K RAM. Unit shall retain a minimum of four thousand (4000) events for data logging. The electronic spreader firmware shall be upgradeable by downloading files from the supplier's web site at no charge to the RIDOT for the life. The unit must be protected from reverse polarity, as well as over-voltage by using a five-amp reset circuit breaker. All circuit boards to be conformal coated. The spreader control shall be capable of self-diagnostics for system errors and correction procedures. Error codes shall be displayed in plain English. Coded messages that require additional documentation to be interpreted are not acceptable.

Application rates for granular material shall be between 50-500 pounds per lane mile with the capability for "pre-wetting" the material at the chute as it is dispensed.

The control unit shall have password protection to prevent unauthorized use of set up function as a standard option. iButton technology shall be provided in the form of a Supervisor access key and a universal calibration key for saving and loading of calibration parameters. The control unit shall be capable of self-calibration of auger/conveyor feed rates and require no additional timepieces to calibrate. Programming shall allow for blast function to be set one of three ways: momentary, timed or by distance traveled. The unit must also be capable of spreading up to four different granular materials and at least five programmable spread rates. Controller shall have programmable nomenclatures for granular and pre-wet materials. Programming shall provide for automatic default to open loop in the event of a feedback failure. The unit must provide three

GROUND SPEED SPREADER CONTROL SYSTEM & GPRS CELLULAR TRANSMITTER SYSTEM (34 TRUCKS)

operational modes: manual, open loop (ground speed only) and closed loop (ground speed with auger/conveyor feedback). Programming shall also provide for two-speed axle input as required.

Text display that shall consist of a two line alphanumeric fluorescent display and shall inform the operator of spread rate information (US units of measurement) and calibration parameters. The unit must be capable of displaying logged spread run information for intermediate reference and be able to download data to a serial printer or PC computer when complete data is required. The unit will provide real time and date. The unit must provide for three compensated valve outputs. In addition the unit shall have a bi-directional RS232 port for printer or data collection. Unit shall have a standby (pass) and blast feature as standard. Unit shall provide stationary unload functions on granular, pre-wet and direct functions. The unit shall also be upgraded for event logging. The control shall have a programmable jump-start feature to provide immediate material flow at start up. The unit must be programmable to interface with road temperature sensors, direct liquid application systems, and AVL/data management equipment.

FEEDBACK SENSOR KIT:

Closed loop operation will require a feedback sensor coupled to the auger/conveyor motor via a mechanical coupler. The mechanical coupler shall adapt to either a 1" or 1.25" round shaft. The coupler shall be constructed of stainless steel and house a sealed bearing. Sensor shall be successfully tested for shock and vibration to MIL-STD-202. LEDs on the encoder shall provide indication of power and feedback signal status. Sensor kit shall include dust plugs for removal of the spreader from the chassis. In addition, a shield shall be fabricated and mounted on the spreader to deflect material away from the sensor, protecting it while the truck is being loaded. The feedback sensor and coupler shall be covered by a minimum 3-year warranty.

SPREADER VALVE:

A dual flow spreader valve shall control the Auger and Spinner independently via a 12V DC pulse width modulated signal. Valve must be a mono-block design with two pressure compensated cartridges that are a single piece design with hardened cartridge bores and spools and capable of flows up to 14 GPM with pressures to 3000 PSI. Valve is to be adaptable for use with a load sensing system or open center system with an unloader valve capable of 30 GPM. A full flow adjustable relief valve must be integrated into the mono-block design. This may also serve as a main relief valve if the power beyond feature is used. A pilot relief will not be accepted. The auger and spinner cartridges shall have a heavy duty manual over-ride that is adjustable from no flow to full flow. All plumbing shall come out of the bottom of the valve for ease of mounting it into an enclosure.

VALVE ENCLOSURE:

The valve assembly shall be mounted in weather-tight enclosure. The enclosure shall be designed without gaskets and shall not allow humidity to be trapped inside. The valve shall mounted with all ports coming out of the bottom and holes allowing for hose adapter fittings shall be connected directly to the valve. Bulkheads shall not be allowed. The use of internal plumbing shall not be permitted. The valve enclosure lid shall be removable by unlatching 3 rubber latches. The use of bolts to secure the lid shall not be permitted. The valve shall be

GROUND SPEED SPREADER CONTROL SYSTEM & GPRS CELLULAR
TRANSMITTER SYSTEM (34 TRUCKS)

"Boxed In" with the cover and not the base. All plumbing shall be external, directly out the bottom of the valve enclosure.

GPRS DATA TRANSCEIVER:

A Mobile Data Collection System (MDCS) with AVL/GPS system shall be supplied with each vehicle. The MDCS shall be fully integrated with all aspects of the system.

- a. The system must support the manufacturers advanced firmware/protocol. Device Communication must be bi-directional, to include device handshaking with Send/Receive/Delete routine. Data integrity must be protected. (This allows for accurate and verified communication between the spreader controller and the AVL modem)
- b. The system must communicate at a 19200 baud rate between the controller and the AVL modem
- c. The system must be able to collect and show at least 20 separate events off the spreader control unit.
- d. The communications technology to be used for transmitting data shall be GPRS. System shall include all necessary hardware items, processors, antennas, etc.
- e. The system shall provide a RS-232 serial connection, six (6) discrete inputs, J1939 and J1708 connections. (The variety of connectors provides flexibility in reading spreader controllers, plow positions, hoist positions, etc. as needed.)
- f. System shall support at least 16MB flash memory for storage of data over extended periods of connectivity loss. (This allows for storing all readings until GPRS coverage is re-established then transmitting the stored data to provide an updated history of the vehicle.)
- g. System shall provide *Store and Forward* capabilities. (System collects vehicle activity data and geo-stamp data and stores onboard until data can be securely transmitted to provide a detailed historical record of activity while in the field.)
- h. The system shall provide ability to detect and report previous power loss if unit is disconnected then reconnected. (This reports if someone was to disable the system during their shift whether inadvertent or intentional.)
- i. GPS receiver shall be accurate to less than 8 meters, for at least 90% of readings. (Provides accurate mapping data for corresponding application rates from spreader controller.)
- j. System shall have less than 8mA typical current draw in key-off mode. (Provides minimal battery discharge when not in use.)

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- k. System shall meet SAE J1455 environmental specifications and provide +/- 25g shock rating (Provides a ruggedized solution in the high abuse environment that system will be used in.)
- l. System shall support over-the-air firmware updates. (This allows for updating the system without the need to return to the district shop to be updated.)
- m. System shall support over-the-air configuration updates for the following:
 - 1. Start time report intervals
 - 2. Reporting transmit intervals
 - 3. Reporting power up/down
 - 4. Setting GPS database triggers for distance, time, speed and angle.
- n. System shall include notifications when a vehicle is due for preventive maintenance based on engine hour readings.
- o. The system shall provide hourly usage reports to reflect how many minutes in each hour a vehicle was in use.
- p. The system shall provide mileage reports to reflect how many miles in each day, month, and year vehicle drove.
- q. The system shall provide the ability to draw geo-fences, label fences, and show the accumulation of time and mileage within said fence
- r. System shall provide user-configurable notifications for excess speeds, excess idle times, and operation after normal operating hours, previous power loss, maintenance exceptions, geo-fence violation, and battery voltage.
- s. The system shall provide user-configurable odometer and hour meter synching to the vehicle's actual odometer and hour meter. System shall also include the ability to readjust both odometer and hour meters if a variance occurs.

Hardware/Firmware:

- a. Vehicle Automatic Vehicle Locator/Global Positioning System (AVL/GPS) shall be of rugged design, constructed of components intended and suitable for the mobile equipment market. To ensure longevity in harsh mobile environments, the system shall conform to SAE1455 for chassis-mounted devices, as well as not be damaged by mechanical shock of +/- 25g. For guaranteed low-temperature operation, the device must operate without degradation of performance in ambient temperatures of -30°C to 60°C.
- b. The modem shall be a Global System Management/Global Positioning Real Time System (GSM/GPRS). It shall include two RS-232 serial connections and one J1939 and J1708 connections. The unit will support a minimum 16MB flash memory for storing data over

GROUND SPEED SPREADER CONTROL SYSTEM & GPRS CELLULAR TRANSMITTER SYSTEM (34 TRUCKS)

extended periods of connectivity loss and also provide ability to detect and report previous power loss if unit is disconnected then reconnected.

- c. The AVL/GPS system shall be protected and immune to over-voltage conditions and reverse polarity. System shall utilize a live 12V connection to the vehicle battery. To minimize vehicle battery drain, unit current draw shall not exceed 8mA during sleep mode (key off).
- d. The system shall contain all necessary hardware and on-board memory to log GPS coordinates including (latitude/longitude), speed, heading and time, engine hours (ignition "on" time) and spreader data.
- e. Data strings of outputting data collected by the system from the on-board electronic spreader control shall include comprehensive spreader activity including spreader status, material feed rates, actual materials applied, operating modes, and warning and error conditions and be capable of supporting new spreader functions and features as added. Spreader event data shall be produced and collected based on programmable event triggers that can be based on a field status change. This is to reduce the flow of data and monthly charges due to larger volumes of data being transmitted.
- f. The AVL/GPS system shall also log the status change of (6) discrete digital inputs to allow for monitoring the state and condition of various optional vehicle sensors. Connections to unit shall be made with plug-in connectors (not hardwired) to facilitate simple field replacement of components.
- g. The unit shall come with two antennas. One shall be GPS dual-band and the other is GPRS-850/1900 MHz. The GPS antenna is 3-5Vdc, 23.5-32.5dB of gain, and is equipped with a male SMA connector. The GPRS antenna is 3-5Vdc, has less than 3dBi gain, and is equipped with a RP-SMA connector. Both antennas shall be mounted on the driver's side of the truck.

The trucks requiring the above specified equipment may be inspected at the following locations.

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TRANSMITTER SYSTEM (34 TRUCKS)

TRUCKS REQUIRING GROUND SPEED SPREADER CONTROL SYSTEM & GPRS CELLULAR
TRANSMITTER SYSTEM (34 TRUCKS)

Truck Year Make and Model	Truck Registration Number	Maintenance Facility Location	Contact Person Phone Number
Washington South/Hope Valley Facility			
2005 Sterling 6 Wheeler	132	51 Bank Street Hope Valley	Dennis Baker (401) 641-5697
2005 Sterling 6 Wheeler	142		
2005 Mack 10 Wheeler 1W	1563		
2004 Mack 6 Wheeler	223		
2003 Mack10 Wheeler 2W	537		
2003 Mack10 Wheeler 2W	631		
Newport Division/Portsmouth Facility			
2005 Sterling 6 Wheeler	141	170 Anthony Road Portsmouth	Don Iannuccilli (401) 641-5710
2005 Sterling 6 Wheeler	153		
2003 Volvo 6 Wheeler	771		
Bristol Division-East Providence Facility			
2005 Sterling 6 Wheeler	154	31 Sachem Road East Providence	Dennis Doyle (401) 641-5719
2005 Mack 10 Wheeler 1W	1582		
2004 Mack 6 Wheeler	157		
2004 Mack 10 Wheeler 1W	1084		
2003 Mack10 Wheeler 1W	914		
2003 Mack10 Wheeler 1W	2240		
Washington North/Belleville Facility			
2003 Volvo 6 Wheeler	531	439 Tower Hill Road Belleville	John Auger (401) 641-5696
2003 Mack10 Wheeler 2W	804		

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TRANSMITTER SYSTEM (34 TRUCKS)

TRUCKS REQUIRING GROUND SPEED SPREADER CONTROL SYSTEM & GPRS CELLULAR
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Truck Year Make and Model	Truck Registration Number	Maintenance Facility Location	Contact Person Phone Number
Kent Division/Midstate Facility			
2005 Sterling 6 Wheeler	159	2400 New London Tp'k Midstate - East Greenwich	Robert Tassoni (401) 641-5761
2005 Mack 10 Wheeler 1W	1577		
2004 Mack 10 Wheeler 1W	446		
2004 Mack 10 Wheeler 1W	485		
2003 Volvo 6 Wheeler	821		
2003 Mack 10 Wheeler 2W	864		
2003 Mack 10 Wheeler 2W	2761		
Providence Division/Lincoln Facility			
2005 Mack 10 Wheeler 1W	1588	359 George Wash. Hwy Lincoln	David Riley (401) 641-5745
2004 Mack 6 Wheeler	349		
2004 Mack 10 Wheeler 1W	1089		
2004 Mack 6 Wheeler	1480		
2003 Mack 10 Wheeler 2W	91		
2003 Mack 10 Wheeler 1W	1604		
2003 Mack 10 Wheeler 2W	2210		
Northwest Division/Glocester Facility			
2004 Mack 6 Wheeler	216	648 Putnam Pike Glocester	Christine Giammarco (401) 641-8422
2004 Mack 6 Wheeler	450		
2003 Volvo 6 Wheeler	1359		

ITEM 2

**INSTALL NEW CLOSED LOOP/GPRS SPREADER
CONTROLS IN TWENTY-SEVEN (27) TRUCKS
CURRENTLY EQUIPPED WITH AN
ANTIQUATED CLOSED LOOP SYSTEM**

**MODIFICATIONS TO GROUND SPEED SPREADER CONTROL SYSTEM & NEW
GPRS CELLULAR TRANSMITTER SYSTEM (27 TRUCKS)**

General: Twenty-seven (27) of the RIDOT Maintenance Division's trucks are currently outfitted with Rexroth spreader control systems without a GPRS cellular transmitter device. It is the desire of the RIDOT Maintenance Division to modify these control systems and to provide GPRS cellular transmitter devices in each of these trucks. The transmitter must be compatible with the modified ground speed control system and capable of transmitting data to a home base web site managed by the manufacturer where it can then be accessed and downloaded by the RIDOT. All work shall be done in accordance with the following specifications.

Manufacturers submitting proposals in response to this request must have a history of satisfactorily deploying this type of equipment in states or municipalities, in the United States, with fleets compatible in size with that of the RIDOT, for a period of at least five years. Respondents to this bid request shall submit contact information for at least three references that may be contacted regarding the performance of this equipment. References should be supervisory personnel that are directly involved with the deployment of this equipment and have first hand knowledge of its performance. Contact information for references shall include the name, title, address and phone number of each individual. In addition, the vendor is advised that the controller for the spreader system must be mounted in the cab of the truck, in front of the vehicle operator, such that it can be fully viewed and accessed by the operator without impeding operation of the vehicle.

SPREADER CONTROL:

The electronic spreader control shall be designed for precise, closed-loop control of granular and pre-wet liquid application as standard and shall have the ability to control direct application liquid when optional equipment is selected. The electronic spreader control shall have a field replaceable battery back up that protects memory functions. Data memory shall be at least 512K RAM. Unit shall retain a minimum of four thousand (4000) events for data logging. The electronic spreader firmware shall be upgradeable by downloading files from the supplier's web site at no charge to the RIDOT for the life. The unit must be protected from reverse polarity, as well as over-voltage by using a five-amp reset circuit breaker. All circuit boards to be conformal coated. The spreader control shall be capable of self-diagnostics for system errors and correction procedures. Error codes shall be displayed in plain English. Coded messages that require additional documentation to be interpreted are not acceptable.

Application rates for granular material shall be between 50-500 pounds per lane mile with the capability for "pre-wetting" the material at the chute as it is dispensed.

The control unit shall have password protection to prevent unauthorized use of set up function as a standard option. iButton technology shall be provided in the form of a Supervisor access key and a universal calibration key for saving and loading of calibration parameters. The control unit shall be capable of self-calibration of auger/conveyor feed rates and require no additional timepieces to calibrate. Programming shall allow for blast function to be set one of three ways:

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momentary, timed or by distance traveled. The unit must also be capable of spreading up to four different granular materials and at least five programmable spread rates. Controller shall have programmable nomenclatures for granular and pre-wet materials. Programming shall provide for automatic default to open loop in the event of a feedback failure. The unit must provide three operational modes: manual, open loop (ground speed only) and closed loop (ground speed with auger/conveyor feedback). Programming shall also provide for two-speed axle input as required.

Text display that shall consist of a two line alphanumeric fluorescent display and shall inform the operator of spread rate information (US units of measurement) and calibration parameters. The unit must be capable of displaying logged spread run information for intermediate reference and be able to download data to a serial printer or PC computer when complete data is required. The unit will provide real time and date. The unit must provide for three compensated valve outputs. In addition the unit shall have a bi-directional RS232 port for printer or data collection. Unit shall have a standby (pass) and blast feature as standard. Unit shall provide stationary unload functions on granular, pre-wet and direct functions. The unit shall also be upgraded for event logging. The control shall have a programmable jump-start feature to provide immediate material flow at start up. The unit must be programmable to interface with road temperature sensors, direct liquid application systems, and AVL/data management equipment.

FEEDBACK SENSOR KIT:

Closed loop operation will require a feedback sensor coupled to the auger/conveyor motor via a mechanical coupler. The mechanical coupler shall adapt to either a 1" or 1.25" round shaft. The coupler shall be constructed of stainless steel and house a sealed bearing. Sensor shall be successfully tested for shock and vibration to MIL-STD-202. LEDs on the encoder shall provide indication of power and feedback signal status. Sensor kit shall include dust plugs for removal of the spreader from the chassis. In addition, a shield shall be fabricated and mounted on the spreader to deflect material away from the sensor, protecting it while the truck is being loaded. The feedback sensor and coupler shall be covered by a minimum 3-year warranty.

SPREADER VALVE:

A dual flow spreader valve shall control the Auger and Spinner independently via a 12V DC pulse width modulated signal. Valve must be a mono-block design with two pressure compensated cartridges that are a single piece design with hardened cartridge bores and spools and capable of flows up to 14 GPM with pressures to 3000 PSI. Valve is to be adaptable for use with a load sensing system or open center system with an unloader valve capable of 30 GPM. A full flow adjustable relief valve must be integrated into the mono-block design. This may also serve as a main relief valve if the power beyond feature is used. A pilot relief will not be accepted. The auger and spinner cartridges shall have a heavy duty manual over-ride that is adjustable from no flow to full flow. All plumbing shall come out of the bottom of the valve for ease of mounting it into an enclosure.

VALVE ENCLOSURE:

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The valve assembly shall be mounted in weather-tight enclosure. The enclosure shall be designed without gaskets and shall not allow humidity to be trapped inside. The valve shall be mounted with all ports coming out of the bottom and holes allowing for hose adapter fittings shall be connected directly to the valve. Bulkheads shall not be allowed. The use of internal plumbing shall not be permitted. The valve enclosure lid shall be removable by unlatching 3 rubber latches. The use of bolts to secure the lid shall not be permitted. The valve shall be "Boxed In" with the cover and not the base. All plumbing shall be external, directly out the bottom of the valve enclosure.

GPRS DATA TRANSCEIVER:

A Mobile Data Collection System (MDCS) with AVL/GPS system shall be supplied with each vehicle. The MDCS shall be fully integrated with all aspects of the system.

- a. The system must support the manufacturers advanced firmware/protocol. Device Communication must be bi-directional, to include device handshaking with Send/Receive/Delete routine. Data integrity must be protected. (This allows for accurate and verified communication between the spreader controller and the AVL modem.)
- b. The system must communicate at a 19200 baud rate between the controller and the AVL modem.
- c. The system must be able to collect and show at least 20 separate events off the spreader control unit.
- d. The communications technology to be used for transmitting data shall be GPRS. System shall include all necessary hardware items, processors, antennas, etc.
- e. The system shall provide a RS-232 serial connection, six (6) discrete inputs, J1939 and J1708 connections. (The variety of connectors provides flexibility in reading spreader controllers, plow positions, hoist positions, etc. as needed.)
- f. System shall support at least 16MB flash memory for storage of data over extended periods of connectivity loss. (This allows for storing all readings until GPRS coverage is re-established then transmitting the stored data to provide an updated history of the vehicle.)
- g. System shall provide *Store and Forward* capabilities. (System collects vehicle activity data and geo-stamp data and stores onboard until data can be securely transmitted to provide a detailed historical record of activity while in the field.)
- h. The system shall provide ability to detect and report previous power loss if unit is disconnected then reconnected. (This reports if someone was to disable the system during their shift whether inadvertent or intentional.)

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- i. GPS receiver shall be accurate to less than 8 meters, for at least 90% of readings. (Provides accurate mapping data for corresponding application rates from spreader controller.)
- j. System shall have less than 8mA typical current draw in key-off mode. (Provides minimal battery discharge when not in use)
- k. System shall meet SAE J1455 environmental specifications and provide +/- 25g shock rating (Provides a ruggedized solution in the high abuse environment that system will be used in.)
- l. System shall support over-the-air firmware updates. (This allows for updating the system without the need to return to the district shop to be updated.)
- m. System shall support over-the-air configuration updates for the following:
 - 1. Start time report intervals
 - 2. Reporting transmit intervals
 - 3. Reporting power up/down
 - 4. Setting GPS database triggers for distance, time, speed and angle.
- n. System shall include notifications when a vehicle is due for preventive maintenance based on engine hour readings.
- o. The system shall provide hourly usage reports to reflect how many minutes in each hour a vehicle was in use.
- p. The system shall provide mileage reports to reflect how many miles in each day, month, and year vehicle drove.
- q. The system shall provide the ability to draw geo-fences, label fences, and show the accumulation of time and mileage within said fence.
- r. System shall provide user-configurable notifications for excess speeds, excess idle times, and operation after normal operating hours, previous power loss, maintenance exceptions, geo-fence violation, and battery voltage.
- s. The system shall provide user-configurable odometer and hour meter synching to the vehicle's actual odometer and hour meter. System shall also include the ability to readjust both odometer and hour meters if a variance occurs.

Hardware/Firmware:

- a. Vehicle Automatic Vehicle Locator/Global Positioning System (AVL/GPS) shall be of rugged design, constructed of components intended and suitable for the mobile equipment market. To ensure longevity in harsh mobile environments, the system shall conform to

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SAE1455 for chassis-mounted devices, as well as not be damaged by mechanical shock of +/- 25g. For guaranteed low-temperature operation, the device must operate without degradation of performance in ambient temperatures of -30°C to 60°C.

- b. The modem shall be a Global System Management/Global Positioning Real Time System (GSM/GPRS). It shall include two RS-232 serial connections and one J1939 and J1708 connections. The unit will support a minimum 16MB flash memory for storing data over extended periods of connectivity loss and also provide ability to detect and report previous power loss if unit is disconnected then reconnected.
- c. The AVL/GPS system shall be protected and immune to over-voltage conditions and reverse polarity. System shall utilize a live 12V connection to the vehicle battery. To minimize vehicle battery drain, unit current draw shall not exceed 8mA during sleep mode (key off).
- d. The system shall contain all necessary hardware and on-board memory to log GPS coordinates including (latitude/longitude), speed, heading and time, engine hours (ignition "on" time) and spreader data.
- e. Data strings of outputting data collected by the system from the on-board electronic spreader control shall include comprehensive spreader activity including spreader status, material feed rates, actual materials applied, operating modes, and warning and error conditions and be capable of supporting new spreader functions and features as added. Spreader event data shall be produced and collected based on programmable event triggers that can be based on a field status change. This is to reduce the flow of data and monthly charges due to larger volumes of data being transmitted.
- f. The AVL/GPS system shall also log the status change of (6) discrete digital inputs to allow for monitoring the state and condition of various optional vehicle sensors. Connections to unit shall be made with plug-in connectors (not hardwired) to facilitate simple field replacement of components.
- g. The unit shall come with two antennas. One shall be GPS dual-band and the other is GPRS-850/1900 MHz. The GPS antenna is 3-5Vdc, 23.5-32.5dB of gain, and is equipped with a male SMA connector. The GPRS antenna is 3-5Vdc, has less than 3dBi gain, and is equipped with a RP-SMA connector. Both antennas shall be mounted on the driver's side of the truck.

The trucks requiring the above specified equipment may be inspected at the following locations.

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TRUCKS REQUIRING MODIFICATIONS TO GROUND SPEED SPREADER CONTROL SYSTEM &
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Truck Year Make and Model	Truck Registration Number	Maintenance Facility Location	Contact Person Phone Number
Washington South/Hope Valley Facility			
2010 Mack 10 Wheeler 1W	212	51 Bank Street Hope Valley	Dennis Baker (401) 641-5697
2010 Mack 10 Wheeler 1W	277		
2007 Mack 10 Wheeler 1W	701		
2007 Mack 6 Wheeler	715		
Newport Division/Portsmouth Facility			
2007 Mack 6 Wheeler	1551	170 Anthony Road Portsmouth	Don Iannuccilli (401) 641-5710
2007 Mack 6 Wheeler	1610		
2007 Mack 6 Wheeler	1659		
Bristol Division-East Providence Facility			
2010 Mack 10 Wheeler 1W	292	31 Sachem Road East Providence	Dennis Doyle (401) 641-5719
2007 Mack10 Wheeler 1W	702		
2007 Mack10 Wheeler 1W	2455		
Washington North/Belleville Facility			
2010 Mack10 Wheeler 1W	1276	439 Tower Hill Road Belleville	John Auger (401) 641-5696
2007 Mack10 Wheeler 1W	966		
2007 Mack 6 Wheeler	1275		
2007 Mack 6 Wheeler	1670		
Northwest Division/Glocester Facility			
2007 Mack 6 Wheeler	362	648 Putnam Pike Glocester	Christine Giammarco (401) 641-8422
2007 Mack 6 Wheeler	1256		
2007 Mack 6 Wheeler	1905		

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TRUCKS REQUIRING MODIFICATIONS TO GROUND SPEED SPREADER CONTROL SYSTEM &
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Truck Year Make and Model	Truck Registration Number	Maintenance Facility Location	Contact Person Phone Number
Kent Division/Midstate Facility			
2010 Mack 10 Wheeler 1W	194	2400 New London Tp'k Midstate - East Greenwich	Robert Tassoni (401) 641-5761
2010 Mack 10 Wheeler 1W	286		
2010 Mack 10 Wheeler 1W	1655		
2007 Mack 10 Wheeler 1W	749		
2007 Mack 10 Wheeler 1W	757		
2007 Mack 6 Wheeler	2715		
Providence Division/Lincoln Facility			
2010 Mack 10 Wheeler 1W	1782	359 George Wash. Hwy Lincoln	David Riley (401) 641-5745
2010 Mack 10 Wheeler 1W	1792		
2010 Mack 10 Wheeler 1W	1867		
2007 Mack 10 Wheeler 1W	602		