

Statement of Work for Invitation for Bid (IFB) 6100060721

Snowplow Simulator

1. General Information

Pennsylvania Department of Transportation (PennDOT) is soliciting electronic bids to procure a Truck Driver Training Simulator (Simulator) to use in the training and development of Department truck drivers who assist with snowplowing operations. The Simulator should replicate how to drive and operate a dump truck equipped with snow removal equipment, including dump body, front plow, wing plow, and tow plow.

2. Simulator Specifications

The proposed Simulator shall meet the following minimum requirements:

Software Simulation Requirements:

- Standalone System that will not be connected to a network.
- Front and wing mounted plow unit configurations.
- Dashboard should have actual gauges and controls which are laid out in the same relative location and position as in an actual snowplow vehicle. Virtual dashboard will not be accepted.
- The Cab Simulator component shall include the minimum: adjustable air ride seat, tilt and telescoping steering column, steering wheel, accelerator pedal, brake pedal, warning lights, indicators, light and chassis switch panels, ignition switch, hazard switch, turn signal switches, front and side wipers controls, headlight (low and high beam), work light switches and manual transmission shifter.
- Simulated 6-speed automatic transmission control.
- Simulated manual 8 & 10, speed transmission that requires double clutching technique.
- System must provide the instructor the ability to select simulated 6 speed automatic or manual shift transmissions with different manual transmissions available for the instructor to select. Manual shift 8 & 10 speed transmission must be available as manual options.
- Seat belt sensor and seat vibrations.
- Simulated air brake system that supports Low Air Warning System (LAWS) test
- Digital force feedback steering system that provides realistic steering feel. For example, when simulated vehicle hits a curb, driver feels realistic response from steering wheel.
- Driver must be able to adjust Simulated side-view mirrors.
- Integrated radio communication unit can communicate with instructor radio and other simulators in system.
- Snow removal operator's position features include Joysticks to control virtual front snowplow and wing blade as well as emergency light controls, dump box controls and sander controls.
- Selection of virtual drivable vehicles including at a minimum tandem dump truck with and without snowplows and pickup truck. Each drivable vehicle includes a virtual model with accurate forward, left, right and mirror views from the perspective of the driver/operator.
- Each virtual drivable vehicle must contain realistic simulated vehicle dynamics incorporating actual vehicle properties such as vehicle weight, engine characteristics,

transmission shift ratios, suspension, and steering characteristics.

- Integrated virtual training environment with typical roadways, highways, interchanges, gas stations, highway yard, etc.
- The virtual environment must include various types of surfaces including concrete, asphalt, and gravel each containing its unique physical characteristics that affect performance and handling of the simulated vehicle.
- The virtual environment must also include realistic and appropriate signs, light poles, buildings, and other objects typically found along roadways in the U.S. These objects must include physical properties so that when struck by the virtual vehicle, they react as they would in reality.
- Lights must be functional and interact realistically by casting light and shadows and interacting with weather conditions, such as rain, snow, and fog.
- Simulator must mirror realistic weather conditions (snow, ice, rain, fog, and wind) which are adjustable by the instructor.
- Snow accumulates on the ground and on vehicles. Frost can accumulate on the simulated vehicle's windows limiting vision.
- Realistic snowplow dynamics: Plow blade can be maneuvered (raised, lowered, and angled) by controls in simulator. Snow can be plowed into windrows and windrows can be plowed by simulated vehicles within scenarios.
- Instructor must be able to adjust the Time-of-day visual effects. The sun or moon positions moves accordingly to the selected time of the day. Realistic shadows, Sun Glare, Real Life Obstacles should appear in the scenarios as they would in real life.
- Library of at least 20 training scenarios such as; startup process, location and operation of vehicle controls, double clutch technique, driving in poor visibility and various weather conditions and advanced team scenarios such as Conga lines in a collaborative training environment and the federal CDL driver skills test.
- Lesson feature includes the ability for the instructor to group scenarios sequentially into specific lesson plans to more efficiently maneuver through a specific curriculum to achieve training objectives.
- Vehicle malfunctions should include the following: air brake failure, tire blowout, engine overheat, low fuel, low coolant, low-DEF fluid and low oil pressure which can be initiated by the instructor in real time.
- Collision detection identifies when two or more objects collide and then produces the resulting action(s). Collisions can be minor such as a plow blade knocking over a sign. This collision has little to no effect on a large snowplow but destroys the edge light. Collisions can be major such as two vehicles colliding, causing damage resulting in the vehicles being partially or completely disabled. Collision detection provides realistic and proper results when driving in a virtual environment. Major collisions cause a broken windshield to be displayed in the virtual drivable vehicle and alert the student and instructor that a collision occurred. Collisions are recorded by analytics.
- Scenarios driven can be recorded, replayed, restarted, and saved for after action review
- Various views (including overhead, left side, right side, front, and rear) – driver can initiate various view during scenarios and instructor can initiate various views during scenario replay

Hardware and Physical Simulator Requirements:

- Includes an Instructor workstation with a desk, computer, & lockable compartment to secure computer in the workstation when not in use.
- High-Definition LED 4K flat screen displays that allows for 225° field of view
- Accelerator, brake, and clutch (manual) pedals
- System must have the ability to store student records and share with external drive
- Snowplow, wing plow joystick controls
- Dimensions of footprint overall area for machine to fit in- 16' X 12'

3. Additional Specifications

Manuals

The successful bidder will furnish all applicable manuals including a comprehensive User Manual and an Instructor Guide which, includes each scenario detailing the specific training objectives of the scenario and suggestions for training. Delivery of these manuals shall be completed with the delivery and installation of the Simulator. Manuals shall be supplied on thumb drives (in PDF format) along with paper manuals.

Warranty

The Simulator shall be warranted for a period of five (5) years. The warranty shall cover all parts, labor, shipping, and travel required to repair the Simulator. If the Simulator needs returned to the successful bidder's place of business for repairs, it shall be the sole responsibility of the successful bidder to pick up & return the unit to the PennDOT location. The warranty start-up date shall be defined as the date installation of the Simulator is completed. It is the responsibility of the successful bidder to ensure that the equipment manufacturer recognizes and applies the Department's actual warranty start-up date in their database. The warranty shall not be voided due to Department operation as explained in the General Information section. If the manufacturer neglects or fails to correct defect(s) during the warranty period, their responsibility shall continue until such time as it takes to correct the defect(s). The manufacturer is expected to respond to warranty problems and administrate effective solutions in the best interest of the Commonwealth.

4. Tasks

1. Delivery & Installation

All costs including shipping/handling and installation of the Simulator shall be included in the unit price. The Simulator shall be delivered within three (3) months of the successful bidder receiving a Notice to Proceed. Delivery and installation of the Simulator shall be coordinated with the PennDOT District 2 contact. Delivery and performance of installation work will only be conducted during PennDOT standard business hours Monday through Friday from 8:00am to 4:30pm EST. Deliveries and installation services will not be accepted on weekends or State holidays and will not negatively impact PennDOT business operations.

Note: Holidays shall consist of twelve (12) days being; New Year's Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Juneteenth, Independence Day, Labor

Day, Columbus Day/Indigenous People's Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving, and Christmas Day and shall be the day that the holiday is observed.

Delivery Location

PennDOT District 2-0
70 PennDOT Drive
Clearfield, PA 16830

Dimensions for delivery

Door: 32"
Overall room: 18' X 23'
Assembly Area: 18' X 19'

2. Training

The successful bidder shall provide two (2) on-site one-day instructor trainings to help integrate simulation into current training program. Trainings shall be coordinated with the PennDOT District 2 contact.

3. Software and Support

The successful bidder will provide all technical support and run, maintain, and update the software for a period of five (5) year after the delivery and installation of the Simulator. All requests for technical support will be responded to within 36 hours.

5. Pre-Bid Conference

There will be no Pre-Bid Conference conducted for this procurement.

6. Questions and Answers

All questions regarding this IFB or contracting procedures should be directed to Cheryl Bailey at cherbailey@pa.gov. Bidder questions are due no later than 3:00 PM EST on April 5, 2024. Questions and answers will be posted, via an Addendum, by 3:00 PM EST on April 9, 2024.

7. Bid Requirements

All Electronic Bids must be submitted at www.pasupplierportal.state.pa.us
Worker Protection and Investment Certification Form, Reciprocal Limitation Act Document, Software License Agreement (SLA), and Accessibility Conformance Report (completed VPAT) for both hardware and software product against the revised section 508 standards and the current version of WCAG as required in ITP-ACC001 shall be completed in their entirety and electronically attached to the bid submission.

8. Worker Protection and Investment

Pursuant to Executive Order 2021-06, Worker Protection and Investment (October 21, 2021), the Commonwealth is responsible for ensuring that every Pennsylvania worker has a safe and healthy work environment and the protections afforded them through labor laws. To that end, contractors and grantees of the Commonwealth must certify that they are in compliance with all applicable Pennsylvania state labor and workforce safety laws. Such certification shall be made through the Worker Protection and Investment Certification Form (BOP-2201) and submitted with the bid, proposal, or quote.

9. Method of Award

The award will be based upon the lowest cost from a responsible and responsive bidder. PennDOT reserves the right to reject the lowest bidder if PennDOT determines, at its sole discretion, that the bidder's bid fails to meet the Bid Requirements.

10. Contract Term

The term of the contract will commence on the Effective Date and will end 60 months after the effective date. The Issuing Office will affix the Effective Date after the contract has been fully executed and all approvals required by Commonwealth contracting procedures have been obtained. The successful bidder shall not start the performance of any work prior to the Effective Date of the contract, and the Commonwealth shall not be liable to pay the successful bidder for any service or work performed or expenses incurred before the Effective Date of the contract. No work may begin or be reimbursed prior to issuance of the purchase order. The successful bidder will be paid after submitting invoices. Final payment will not be made until Tasks 1 and 2 have been successfully completed.

11. Contract Quantities

The quantities are estimated and may increase or decrease depending upon the needs of PennDOT. While not guaranteed, PennDOT reserves the right to purchase additional simulators and services during the term of the Contract, through change orders at the same rate of the successful bidder's bid with a three percent (3%) escalation increase over the prior contract each year.

12. Insurance

The successful bidder shall purchase and maintain, at its expense, during the term of this contract and any renewals or extensions thereof, the following types of insurance issued by companies acceptable to the Commonwealth of Pennsylvania.

1. Workmen's compensation insurance sufficient to cover all of the employees of the contractor working to perform this contract, as required by the laws of the Commonwealth.
2. Comprehensive general liability insurance, property damage insurance, and where appropriate, automobile liability insurance. The minimum amounts of coverage shall be \$250,000 per person and \$1,000,000 per occurrence for bodily injury, including death, and \$250,000 per person and \$1,000,000 per occurrence for property damage.
 - a. These coverages shall be occurrence-based. The policy(ies) shall name the Commonwealth as an additional insured and shall contain a provision that the coverages afforded thereunder shall not be cancelled or changed unless at least thirty (30) days prior written notice has been given to the Commonwealth.
 - b. Prior to the commencement of work, the contractor shall provide PennDOT with a current certificate(s) of insurance showing the required coverages and provisions.

3. Your attention is directed to the hold harmless and indemnification provisions: “Contractor agrees to serve harmless and indemnify the Commonwealth, its officers or agents from all damages, costs of expenses that may at any time be imposed or claimed as a result of the performance of this contract.”

13. Invoicing and Payments

Payment Milestones are as follows:

#	PO line Item	Milestone Date (on or before)
1.	Delivery & installation of Simulator	3 Months after Notice to Proceed
2.	Training	2-3 weeks after installation
3.	Software Fees	Upon completion of Task 1

Prior to invoicing, the successful bidder shall submit Attachment F - Confirmation of Services Form (OS-501) to the PennDOT Program Manager for review and verification at each payment milestone. Supporting documentation shall be required upon submission of the OS-501. Each OS-501 is to be itemized to include sufficient detail to validate that the Payment Milestone has been completed. The Project Manager will notify the successful bidder if corrections are needed. PennDOT will compare records and be required to approve before any invoice will be paid.

Untimely or incomplete submissions of Form OS-501 and required supporting documentation may delay payment as required by the Payment section of the Terms and Conditions.

PennDOT reserves the right, throughout the life of the contract, to make changes to Form OS-501, and its instructions, content, and all other requirements.

PennDOT is tax-exempt and invoices shall not include Pennsylvania State Sales Tax. The successful bidder will be provided a tax-exempt form for purchases specific to this contract.

Additional information regarding invoice submission and payments may be found on the Office of Budget website.

14. Attachments

- Attachment C - Worker Protection and Investment Certification Form
- Attachment D – Reciprocal Limitation Act Document
- Attachment E – Software License Agreement (SLA)
- Attachment F – OS-501 Confirmation of Services
- Accessibility Conformance Report (completed VPAT) for both hardware and software product against the revised section 508 standards and the current version of WCAG as required in ITP-ACC001.