The Calhoun County School Board is looking to purchase two (2) Caterpillar Training Simulators to be installed and utilized through the Technical Agriculture Operations classes at Altha High School and Blountstown High School. The simulator system specifications should meet the following minimum requirements:

CAT® SIMULATORS HYDRAULIC EXCAVATOR / ADVANCED CONSTRUCTION EXCAVATOR SIMULATOR SYSTEM

System Design

- Standard SAE and Backhoe Loaderstyle control patterns.
- Authentic Caterpillar joystick controls.
- Caterpillar OEM buttons and switches to include Travel Speed Control, Automatic Engine Speed Control, Travel Alarm Cancel Switch, Work Tool Control, Light Switch, Upper Window Wiper, Upper Window Washer, Heavy Lift Control, Fine Swing Control, Lower Window Wiper, Lower Window Washer, Overload Warning Device, Engine Start Switch, Engine Speed Control, Quick Couple Control, Manual Low Idle.
    - Left pod includes hydraulic lockout control, horn, joystick control.
    - Right pod includes engine start switch, travel speed control, automatic engine speed control, travel alarm cancelswitch, work tool control, light switch, upper window wiper, upper window washer, heavy lift control, fine swing control, lower window wiper, lower window washer, overload warning device, engine start switch, engine speed control, quick couple control, manual low idle, and joystick control.
- Foot pedals with travel levers(tramming forward/backward, counterrotate.) •
Keyboard and touchpad mouse for easy navigation ofsoftware.
- Durable tubularsteel frame
- Replica operator's seat that slides forward and backward on frame and tilts forward and backward.
- Fully functionalseat belt with sensor connected to computersoftware.
- Computer requirements:
    - Base Unit- Dell Precision T5820
    - Processor- Intel Xeon W-2125 (4.0GHz, 4.5 GHz Turbo, 4C, 8.25MB Cache, H T, (120W)) DDR4-2666
    - Memory- 8GB, Ag Sim moving to 16GB
    - Video Card: (Depends on simulator)
    - EVGA GeForce GTX 960 - 02G-P4-2966 (02G-P4-2966-KR)
    - EVGA GeForce GTX 1060 3GB FTW+(03G-P4-6367-KR)
    - EVGA GeForce GTX 1070 - 08G-P4-5173-KR oHard Drive: 512 GB
    - Media Drive - 16x Slimline DVD Drive
    - Operating System – Windows 10 Professional, x64, English Language
- Monitorstand with three vertically hung 43" LED 1080P TVs
- Power requirements: Simulator-100 – 250V – 50/60HZ power supply, PC-100-250V – 50/60hz power supply, Monitor-100 – 250V – 50/60HZ power supply
- Training Records Management System:

- Used to set up individual student accounts
- Group students into classes
- Archive student records for grades or future reference
- Allowsthe ability to change metric standards for each exercise
- Choose which exercises a student must complete
- Print detailed reports for the class, individual student, orspecific exercises
- Restrict accessto simulator results in the database as needed
- Set which metrics you want your students to achieve

• After completion of exercise, a report will be generated with metrics measured and a pass or fail score. Scoring for each exercise should be generated based on time, productivity, equipment damage (number of contacts with external objects), and training exercise success. • Training Metrics

- 27 unique metrics included for all exercises excluding Machine Walkaround and Controls Familiarization
- 23 exercise specific metrics across 6 exercises
- Controls Familiarization – 51 measuredmetrics.
- Machine Walkaround – 52 inspections points. o Examples of Metrics measured:
- Execution Time
- Productivity
- Volume of Material Moved
- Fuel Burned
- Average Bucket Fill Factor
- Distance Trammed

• Deformable terrain: 68x68 meter

• While simulation is in practice mode, the simulation exercises give step by step onscreen instruction to complete an exercise.

• When in exam mode, the simulation exercise removes the onscreen instruction and automatically saves the record in Training Records Management System database for the instructor and student to review.

• 3D Modeling of the Advanced Construction Excavator is based on the Cat actual equipment. SimU generates reports with metrics after each exercise that reflects how the operator would work in a real-life environment.

• Languages available: English, Spanish, French and Chinese.

• 1 year hardware and software warranty. The warranty is offered to the purchaser for defects in workmanship or materials for one year after the date of original purchase invoice date. This warranty includes replacement of defective simulator hardware pieces and/or software due to defects in workmanship or materials during the warranty period. • 3 years of phone, emailsupport and maintenance software updates.

• Complete excavator simulator software must be pre-loaded and tested as a fully functional operating system before shipment.

Training Exercises

Hydraulic Excavator Level 1 Training Exercises:

- Machine Walkaround: Pre-operation machine inspection procedures to ensure proper operating and safety conditions, includes faulty points of non-operational parts.
- Controls Familiarization: Operator controls and proper sequences for machine operations including start-up and shut-down procedures.
- Maneuvering Machine. Learn fundamental movements of the machine to place the machine's bucket at various locations around the worksite.
- Maneuver Hoisted Object. Learn the movements of the machine implements while carrying an object using the bucket.
- Trenching and Pipe Installation. Learn to perform trenching operations along with pipe placement for continuing underground utilities at a worksite.
- Dig Footings. Learn to perform excavation operationsto dig footings for abuilding. • Clear Debris Piles. Learn to utilize the Excavator and the Thumb attachment work tool to load debris into a truck.
- Bench Loading. Learn to load an On-Highway Truck from a bench position in a tightspace. •
  Samples of metrics measured:
    - Execution Time
    - Fuel Burned
    - Number Of Instructions Ignored
    - Number Of Other Collisions
    - Time Spent Counter Rotating
    - Time Spent with Tracks Slipping
    - Volume Of Material Moved
    - Number Of Bucket Slams
    - Time Spent Tramming

Advanced Construction Excavator Level 2 Training Exercises:
Note: Training exercises include Grade Control and an option for Open Training.

- Machine Walkaround: Pre-operation machine inspection proceduresto ensure proper operating and safety conditions, includes faulty points of non-operational parts.
- Controls Familiarization: Operator controls and proper sequences for machine operations including start-up and shut-down procedures.
- Maneuvering Machine. Learn fundamental movements of the machine to place the machine's bucket at various locations around the worksite.
- Maneuver Hoisted Object. Learn the movements of the machine implements while carrying an object using the bucket.
- Trenching and Pipe Installation. Learn to perform trenching operations along with pipe placement for continuing underground utilities at a worksite.
- Dig Footings. Learn to perform excavation operationsto dig footings for a building. •
  Clear Debris Piles. Learn to utilize the Excavator and the Thumb attachment work tool to load debris into a truck.
- Bench Loading. Learn to load an On-Highway Truck from a bench position in a tight space.
    - Samples of metricsmeasured:

- Execution Time
- Fuel Burned
- Number Of InstructionsIgnored
- Number Of Other Collisions
- Time Spent Counter Rotating
- Time Spent with Tracks Slipping
- Volume Of Material Moved
- Number Of Bucket Slams
- Time Spent Tramming

Motion Platform

- Requires four actuators that are removable
- Motion Platform is removable – customer has the option to operate the simulator with or without motion.
- Motion Platform provides three DOF (degree of freedom)
- Provides the student with a realistic working environment that simulates motions associated with:
  - Tramming
  - Turns
  - Swing
  - Tipping
  - Grade ascent and decent
- Motion cues associated with:
  - Maneuvering over flat and sloped terrain
  - Operating with an unbalanced load/tipping
  - Equipment vibration
  - Effects of bucket and soil interaction

Virtual Reality Edition

- One Headset, two controllers and two sensors
- Leap Motion device
- Software/Hardware allows for 110-degree instantaneous Field of View / 360 degree fully capable Field of View
- Software/Hardware allows for operator to gain greater depth perception and overall, more realistic virtual experience by feeling as though in the actual machine.
- Powered with patented VR Now™ technology.

SimScholars Curriculum

- Online platform accessible from anywhere in the world
- Allows for individual or group development monitoring and progress to competency tracking, with leveled industry standard benchmarks.
- Accessible to instructor and learner for lesson plans and schedules, instructor guides, learner material, lessons, assessments and more.

- Find kinesthetic movement instructions for faster muscle memory and competency skillset acquisition.
- Includes multi-level assessment and instruction including machine or region-specific background knowledge and skillsets by exercise. Bridges classroom learning to cost effective simulator training to on the iron field applications.
- Features videos of correct way to perform training exercises for extra guidance. • Includes additional resources beyond simulator for ongoing education and growth. • Multiple languages available.

Prospective vendors wishing to provide such commodity and/or service should provide information regarding their ability to supply the commodity and/or service described. All information should be directed to Dr. Debbie Williams at *debbie.williams@calhounflschools.org*.