



# CUSTOMER TRAINING CENTER

» COURSE CATALOG



TECHNICIAN TRAINING, SAFETY TRAINING, AND MORE

# WESTERN STATES CUSTOMER TRAINING CENTER

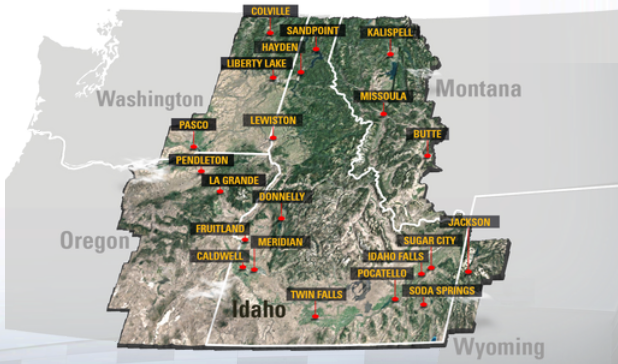
## EXCELLENCE IN DEVELOPMENT EXPERIENCES

The Western States training team provides world class, engaging education and coursework to ensure our customers are knowledgeable, safe, and confident in their ability to service Caterpillar machinery.

### What sets us apart:

- Engaging educators with valuable and relevant industry experience
- Unique, live, hands-on training ensures students gain new skills and knowledge and apply them safely and effectively
- Our Dealer Performance Center subscription offers over 100 web-based courses for students requiring the flexibility and convenience of e-learning

To learn more about our standard, custom, or online course offerings, call Western States Cat at **800-852-2287**.



Since 1956, Western State's has been providing premier Caterpillar machinery and professional services to construction, infrastructure, forestry, mining, and other clients across the Intermountain Northwestern United States.

We take great pride in building our communities for a better tomorrow, and delivering effective training to our employees and clients is an integral part of that mission. We look forward to helping develop your workforce with the training and skills needed to keep your business and the world running and growing.

# » POLICIES AND PROCESSES

## LOCATION

- Training is most often conducted onsite at WSECO locations. We can also deliver training at customer sites as long as sufficient A/V and shop accommodations are secured to support classroom and lab needs. Additional shipping costs apply for training conducted at non-WSECO locations
- Training which requires overnight instructor travel will include an overnight travel fee of \$300 per night; this is based on the specific class requested, dates, and instructor availability

## ONSITE REQUIREMENTS

- Safety toe boots, safety glasses, cut resistant gloves (Cut-3 or greater), and high visibility clothing are required at all WSE locations
- Participants must abide by all WSE safety policies while onsite.

## CLASS SIZE & LOGISTICS

- Minimum class size requirement is 5 people or minimum class fee equivalent to 5 people
- Some course rates are adjusted to cover logistic costs to ship training aids and equipment to the training site (Tier 4, Electrical, etc.)
- Classes scheduled to be taught on WSECO property may combined with WSECO technicians. This enables WSECO to optimize instructor time and scheduling
- Customers who do not wish to have their technicians in combined classes will be required to pay the minimum class size fee
- Snacks, drinks, and lunches for full-day classes conducted on WSECO property are provided for registered participants at no extra charge.

## PAYMENT

- Customers will be invoiced with Net 30 terms
- Cancellations within 7 days of the class will be invoiced at full price. Learners can be substituted at no additional cost so long as the agreed learner count is met.
- Travel and lodging arrangements are the responsibility of the participant. Class fees do NOT include participant travel or lodging expenses

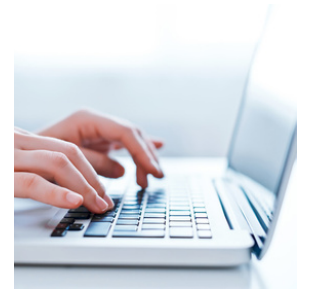
# » QUICK PRICING GUIDE

| CLASS                                  | LENGTH | MIN. PARTICIPANT COUNT | MAX. PARTICIPANT COUNT | PRICE PER STUDENT | PRICE PER STUDENT WHEN 6 OR MORE SEATS FILLED |
|--|--------|------------------------|------------------------|-------------------|---|
| Apprentice Electrical                  | 3 days | 5                      | 10                     | \$1,495           | \$1,350                                       |
| Apprentice Hydraulics                  | 3 days | 5                      | 10                     | \$1,495           | \$1,350                                       |
| Apprentice Engines                     | 2 days | 5                      | 10                     | \$995             | \$895   |
| Apprentice Powertrain                  | 2 days | 5                      | 8                      | \$995             | \$895   |
| HVAC Operation & Diagnostics           | 2 days | 5                      | 6                      | \$1,195           | \$1,075                                       |
| SIS 2.0 and ET (electronic technician) | 1 day  | 5                      | 10                     | \$500             | \$449   |
| Journeyman Electrical                  | 3 days | 5                      | 8                      | \$1,495           | \$1,350                                       |
| Journeyman Hydraulics                  | 2 days | 5                      | 8                      | \$995             | \$895   |
| Component Reusability                  | 3 days | 5                      | 10                     | \$995             | \$1,350                                       |
| Tier 4 Diagnostics                     | 3 days | 5                      | 8                      | \$1,595           | \$1,435                                       |
| Technical Analysis Inspection (TA1)    | 1 day  | 5                      | 6                      | \$500             | \$449   |
| Paving Fundamentals                    | 3 days | 5                      | 6                      | \$1,495           | \$1,350                                       |
| F Series Paver - Technical             | 4 days | 5                      | 8                      | \$1,995           | \$1,795                                       |
| Master Electrical                      | 3 days | 5                      | 8                      | \$1,495           | \$1,350                                       |
| Applied Failure Analysis (AFA)         | 3 days | 5                      | 10                     | \$1,495           | \$1,350                                       |

# ONLINE LEARNING

---

For optimal technician skill development, our subscription to Caterpillar's DPC grants your workforce access to hundreds of CAT web-based training courses.



These web-based trainings are ideal for online, self-paced learning and development and are also key in preparing your technicians for instructor-led service training classes.

## DEALER PERFORMANCE CENTER (DPC) SUBSCRIPTION

---

Access to the DPC is obtained by purchasing an annual subscription, assigned to each individual learner.

### Cost Per Person:

| Up to 5 subscriptions | 6-14 subscriptions | 15 or more subscriptions |
|-----------------------|--------------------|--------------------------|
| \$1,000               | \$750              | \$665                    |

Learner progress is recorded within the DPC and completion records can be provided to supervisors upon request.

**TO SETUP OR FOR QUESTIONS CALL**  
**800-852-2287**

**COURSE**

**COST**



**SERVICE INFORMATION SYSTEMS: SIS 2.0** (1 day class taught with ET)

**\$500**  
per person

In 2021 Caterpillar made a large step forward with the transition from SIS web to SIS 2.0 for all parts, service, operation and maintenance documentation. SIS 2.0 has several new navigation tools available as well as an entirely new look and feel that is a significant improvement over its predecessor. This four-hour hands-on course is designed to help participants increase their knowledge and efficiency when navigating SIS 2.0. Participants will navigate through several live examples that will explore all features of the new system. To conclude the class, there is a challenging exercise to verify that all learners can find key information that is available in SIS 2.0. This class is great for technicians, parts personnel and anyone else that needs to access Caterpillar documentation.

**Learning Outcomes**

- » What information is available in SIS 2.0
- » How to efficiently find Parts, Service, Operation and Maintenance information
- » Differences between SIS web and SIS 2.0



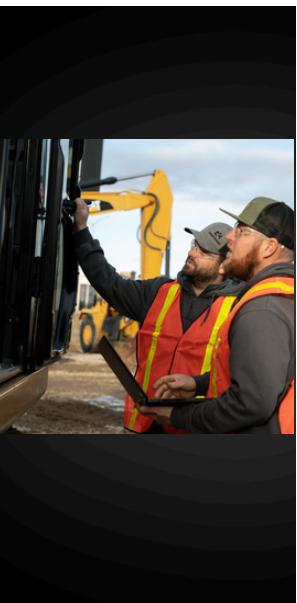
**ELECTRONIC TECHNICIAN (ET)** (1 day class taught with SIS 2.0)

**\$500**  
per person

Caterpillar Electronic Technician (ET) is a vital tool for working with any Caterpillar equipment built in the last 20+ years. The knowledge and skills required to use ET to its full capability for troubleshooting, configuration changes and calibrations is even more important than the tool itself. This four-hour hands-on course is designed to build participants confidence and efficiency when working in ET. The class concludes with a hands-on exercise that will challenge the participants to find a variety of information on live machines to verify they can efficiently connect and utilize Cat ET.

**Learning Outcomes**

- » What information and tools are available within ET
- » How to efficiently navigate and utilize ET
- » How to connect to a machine using the Communications Adapter 3



**APPRENTICE ELECTRICAL** (3 day class)

**\$1,495**  
per person

As heavy equipment electrical systems have become more and more advanced, the need for a technician that is confident and accurate when troubleshooting electrical problems has become more important than ever. Our Advanced Electrical Training is a fast paced and challenging three-day class that will form a strong foundational understanding of electrical concepts and how they relate to modern equipment.

The hands-on approach of our training will constantly task the participants with building electrical circuits, and properly testing them using correct procedures. Concepts covered include reading and understanding electrical schematics, basic circuit function, operating and reading a multimeter, and using it as a tool to diagnose multiple types of faults. There is a strong emphasis on using voltage drop techniques to properly diagnose live circuit faults, as well as in-depth instruction on relay operated circuits.

**Learning Outcomes**

- » Understand electrical theory and how it applies to heavy equipment
- » Understand basic electrical component operation, troubleshooting and repair
- » Proper operation of multimeter and understanding of readings

**COURSE**

**COST**



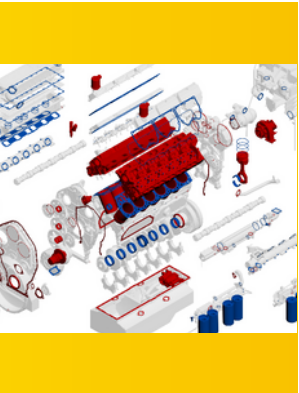
**APPRENTICE HYDRAULICS** (3 day class)

**\$1,495**  
per person

Heavy equipment is becoming more advanced every year. Understanding the fundamentals of hydraulics has never been more important. Machine implement hydraulics, truck PTO hydraulics, steering systems, brake circuits, transmission control circuits, cooling systems, and pneumatic systems all become easier to understand and troubleshoot if the technician can apply the fundamentals of hydraulics. This non-manufacturer specific, three-day class focuses on hydraulic safety throughout, as well as building knowledge of hydraulic theory and the operation of all major hydraulic components including gear, piston, and vane pumps; pressure and directional control valves; and cylinders and motors. Participants will also perform a fitting identification exercise that will help them quickly recognize an assortment of commonly used fitting types. A large amount of time is also dedicated to ensuring participants fully understand how to read hydraulic schematics and utilize them for troubleshooting.

**Learning Outcomes**

- » Thorough understanding of hydraulic safety, theory and principles
- » Ability to identify all major hydraulic components and an in-depth understanding of their operation
- » Understanding how to read hydraulic schematics and use them for troubleshooting



**APPRENTICE ENGINES** (2 day class)

**\$995**  
per person

Heavy equipment engines have become increasingly more complex in recent years in order to meet stringent emissions standards. In order to effectively troubleshoot these, or even older, much simpler engines, a basic understanding of the diesel engine and all of its systems and their operation is critical for successful troubleshooting. This two-day class will accomplish all of this as well as develop skills for basic troubleshooting and testing techniques.

**Learning Outcomes**

- » Ability to identify and describe operation of basic engine components and systems
- » Understanding of basic troubleshooting techniques and tests
- » Understanding of proper engine servicing and adjusting procedures



**HEATING, VENTILATION AND AIR CONDITIONING (HVAC) OPERATION AND DIAGNOSTICS** (2 day class)

**\$1,195**  
per person

The large temperature variations that we see in our territory between the peak of summer and the lows of winter makes the HVAC system just as important as any other machine system when it comes to keeping the machine and operator productive and safe. This two-day class utilizes several live demonstrations as well as hands on parts identification and live troubleshooting labs on both the heating and air conditioning systems to increase a technician's ability to efficiently troubleshoot operator complaints caused by electrical, mechanical and air flow issues in the HVAC system.

**Learning Outcomes**

- » Understand fundamentals of how heating and air conditioning systems function
- » Develop understanding of purpose and function of all major HVAC components
- » Understand how to service and troubleshoot heating and air conditioning systems

## »» TECHNICIAN CLASSES: LEVEL 1

### COURSE

### COST



#### APPRENTICE POWERTRAIN (2 day class)

Caterpillar is known for their heavy duty and rebuildable powertrain components that keep the dirt moving for tens of thousands of hard hours over the life of a machine. Powertrain repairs are rarely inexpensive or quick, so an accurate diagnosis of powertrain components is critical. This makes a basic understanding of power flow, transmission and hydraulic systems, and powertrain fundamentals very important for the technician tasked with solving these problems. This two-day class will cover all of this and more to help increase the efficiency and accuracy of the technician.

##### Learning Outcomes

- » Understanding of powertrain fundamentals and power flow
- » Ability to identify and explain operation of all powertrain components
- » Ability to properly diagnose and service powertrain components

**\$995**  
per person

## »» TECHNICIAN CLASSES: LEVEL 2



#### TECHNICAL ANALYSIS INSPECTION (TA1) (1 day class)

The Cat Inspect App is another great digital tool from Caterpillar targeted at technicians and operators that allows them to efficiently complete consistent, thorough machine TA1 inspections. Unplanned machine downtime can be significantly reduced by completing regular visual TA1 inspections. This one-day workshop will guide the participants on how to not only navigate the Cat Inspect app but also how to complete a quality TA1 inspection. To complete the class, all participants will conduct their own TA1 inspections that will be reviewed so that the strengths and any potential room for improvement can be discussed.

##### Learning Outcomes

- » Why quality, thorough inspections are vital to machine uptime
- » How to download and utilize the Cat Inspect App
- » How and why to take plenty of clear pictures to insert into the inspection
- » What to look for when completing an inspection and common areas of wear

**\$500**  
per person



#### JOURNEYMAN ELECTRICAL (3 day class)

Troubleshooting ECM inputs and outputs can be very challenging and frequently leads to diagnostic codes being misdiagnosed and the incorrect parts being replaced. This three-day class will give participants plenty of hands-on time to explore how a variety of analog and digital sensors, solenoids, switch circuits and ECMs function, as well as how to troubleshoot each of them efficiently and accurately. Once a basic understanding of these circuits is established, the participants will be challenged with hands-on troubleshooting of failed sensors, harness opens and shorts and even a failed ECM on a live C15 electrical system.

##### Learning Outcomes

- » Understanding of how all sensor types function and their output signals
- » Understanding of how all outputs are controlled and operate
- » Increased confidence and efficiency when troubleshooting electronic inputs, harnesses and ECMs

**\$1,495**  
per person

**COURSE**

**COST**



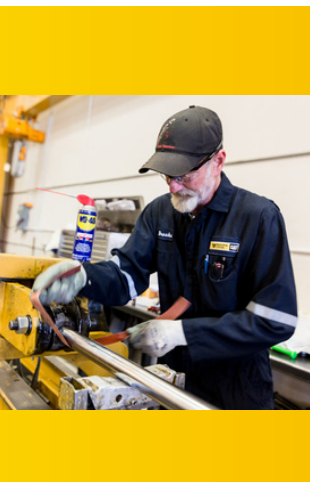
**JOURNEYMAN HYDRAULICS** (2 day class)

A majority of Caterpillar equipment uses either Load Sensing, Pressure Compensated (LSPC), Proportional Priority, Pressure Compensated (PPPC) or hydrostatic hydraulic systems to allow the operator to have fine control of the speed and power of all circuits in the machines' implement and travel hydraulic systems. While the basic parts of these systems are simple, when it comes to troubleshooting one of these systems, a technician without the opportunity to study these systems in-depth will typically struggle to accurately recognize the failed part in a timely manner. This two-day class not only takes a deep dive into the operation of both systems, but also explores the evolution and "why" hydraulic systems have progressed from older, inefficient, simple systems to the modern LSPC and PPPC systems widely used in equipment today.

**\$995**  
per person

**Learning Outcomes**

- » Have the ability to identify a LSPC or PPPC by looking at a hydraulic system schematic
- » Have the ability to identify all LSPC and PPPC components and their operation
- » Thorough understanding of LSPC, PPPC and Hydrostatic hydraulic systems
- » In depth comprehension of how a variable displacement piston pump compensator functions



**COMPONENT REUSABILITY** (3 day class)

The option to rebuild all major components on Caterpillar equipment is what has set them apart from other equipment manufacturers in owning and operating costs. Making accurate internal part reusability decisions is key to avoiding midlife component failures and keeping rebuild costs as low as possible. Built from the experience of rebuilding thousands of engine, powertrain, and hydraulic components, this three-day class is designed to help technicians make those decisions accurately and efficiently with several hands-on examples of parts that would and wouldn't meet reusability guidelines.

**\$1,350**  
per person

**Learning Outcomes**

- » Efficiently differentiate between reusable and non-reusable parts
- » Understand what makes a part non reusable and how the wear will progress
- » Understanding of how to get as much life out of a part as possible to reduce costs



**TIER 4 DIAGNOSTICS** (3 day class)

The off-road diesel tier 4 emissions that were rolled out in 2008 brought with them several new systems that are now commonplace on all modern diesel engines. This three-day class focuses on the C9.3, C13, C15, C18, C27 and C32 group of engines and will increase the confidence and accuracy of technicians when troubleshooting these systems. Participants will be challenged with hands-on parts identification exercises as well as live troubleshooting labs on the NRS, Fuel, DPF and SCR systems on our C9.3 training engine.

**\$1,595**  
per person

**Learning Outcomes**

- » Ability to identify all tier 4 specific components and their function
- » Confidence in efficiently troubleshooting tier 4 specific engine systems
- » Knowledge of proper repair and service procedures available to keep equipment operating

COURSE

COST



**NEXT GENERATION EXCAVATOR** (3 day class)

Caterpillar’s introduction of Next Generation hydraulic excavators (HEX) in 2019 revolutionized the excavator market and are continuing to evolve to this day. This Next Gen HEX course is specific to those excavators and covers a wide range of models from the 301.5 to the 352. This three-day class is broken into three segments: mini, medium and large excavators. This is a technical course and focuses, in depth, on the Next Gen HEX’s electrical and hydraulic architecture specific to these machines. The content will include ease-of-use features, ethernet circuits, monitor capabilities, calibrations and data input. Participants will identify and locate Next Gen components; test, adjust and calibrate electrohydraulic components; and learn to understand and utilize the hydraulic and electronic schematics. Labs, exercises and hands-on will be incorporated to strengthen comprehension of the class content.

**\$1,495**  
per person

**Learning Outcomes**

- » Identify components specific to the Next Gen excavators
- » Understand the hydraulic and electronic architecture utilized by the Next Gen Excavator
- » Understand how to measure, test, adjust and calibrate Next Gen systems and components
- » Understand schematic layouts to assist in troubleshooting



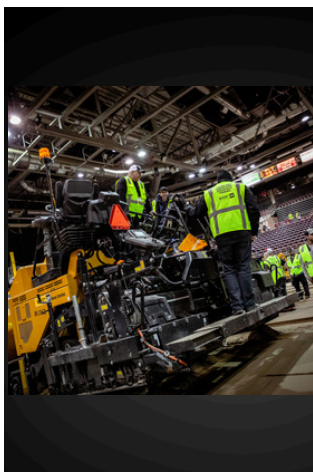
**F SERIES PAVER / TECHNICAL** (4 day class)

The paving world has always been a demanding and quickly evolving industry. The Cat F Series Pavers were built to meet the challenges of being highly productive but still flexible by making some big strides in technology. This four-day training will take an extensive deep dive into each individual system on the F series pavers as well as the SE series screeds. Participants will be challenged with a hands-on parts identification and live troubleshooting lab on each of the paver’s systems including propel, material feed, vibratory, hydraulics, cooling, electrical and screed heat systems.

**\$1,995**  
per person

**Learning Outcomes**

- » Ability to locate, identify and explain operation of all components of each of the F series paver systems
- » Gain the confidence to be able to quickly and accurately troubleshoot issues and operator complaints
- » Understand all overrides and service procedures available to keep the job moving when down time is not an option



**PAVING FUNDAMENTALS** (3 day class)

Learning what it takes to properly operate a paver is easily more complicated than just about any other type of construction equipment. This three-day class is targeted to technicians but is great for anyone in the paving industry looking to learn more about the basics or more specifically about the operation of F Series Pavers. This class will give participants a great head start by challenging them to lay several sand mats to the correct specifications both with and without the use of grade control.

**\$1,495**  
per person

**Learning Outcomes**

- » Understanding of all F series tractor and screed controls and their proper use and application
- » Understanding of paving fundamentals and what will affect ride or matt quality
- » How to properly set up and use the integrated Cat Grade Control on the F Series Pavers
- » How to properly check and set all adjustments on the SE Series of screeds

## » TECHNICAL CLASSES: LEVEL 3



### **APPLIED FAILURE ANALYSIS (AFA)** (3 day class)

Low hour or repeat part failures are always unexpected and rarely inexpensive. Applied Failure Analysis is the process of finding and resolving the true root cause of a failure in these situations. Participants will learn how to utilize the AFA process to assemble the facts so we can understand how and why a part failed by identifying fracture and wear types to find the most probable root cause while avoiding preconceived ideas or bias. The three-day AFA 1 has participants complete a hands-on failure analysis of several engine failure types but the fundamentals learned in this class also apply to a large variety of components.

#### **Learning Outcomes**

- » Understanding of the Failure Analysis process and how to utilize and manage it
- » How to identify different wear and fracture types as well as what they mean
- » Understanding of basic metallurgy and how to identify and explain a metallurgical failure

**COST**

**\$1,495**  
per person



### **MASTER ELECTRICAL** (3 day class)

As heavy equipment becomes more and more technologically advanced, so do their electrical systems. With an increasing number of ECM's and sensors connected to a machine's communication network, there is a growing opportunity for CAN, CDL and Ethernet diagnostic codes that can be very difficult to troubleshoot. This three-day, hands-on course will give participants an increased level of understanding and confidence to accurately diagnose these network faults. They will have the opportunity to not only learn how the networks function but will also get the chance to practice what they learned on several live troubleshooting labs that are based upon real world failures seen in a variety of applications.

#### **Learning Outcomes**

- » Understanding of how CDL, CAN and Ethernet function and communicate
- » Confidence in accurately troubleshooting all types of network faults or issues
- » How to properly repair found faults to avoid machine downtime in the future

**\$1,495**  
per person

End of Technician Service Trainings Offered -  
More Trainings Offered Below

**COURSE**

**COST**



**PART 48 MSHA NEW MINER TRAINING - SURFACE** (3 day class)

All MSHA training is not created equal since most MSHA training gets a bad reputation for being boring and outdated. Our MSHA training is delivered with a customized program that engages new miners in not only receiving federally required MSHA certification, but also making the training worthwhile, engaging, and informative for technicians and miners new to the mining industry. This training is conducted virtually but may be delivered in-person.

Call for Pricing

**Learning Outcomes**

- » Understand the basics of mining practices and operations
- » Understanding important factors of staying alive at a mine-site
- » How to avoid getting a citation from MSHA
- » Obtain a thorough understanding of risks and strategic methods of safely working around powered haulage, conveyors, heavy machinery, blasting operations, highwalls, and other mining hazards

\*Minimum class size: 5 people or class fee equivalent to 5 people

\*Group discount rate for clients who have 8 or more participants



**PART 48 MSHA ANNUAL REFRESHER TRAINING - SURFACE**

(1 day class)

All MSHA training is not created equal since most MSHA training gets a bad reputation for being boring and outdated. Our MSHA training is delivered with a customized program that engages experienced miners in not only renewing their MSHA certification, but also making the training worthwhile, engaging, and very informative for technicians and miners familiar with and experienced in mining. Our MSHA training is led by mining industry experienced educators who know the dynamics of what it is to be a miner. This training is conducted virtually.

Call for Pricing

**Learning Outcomes**

- » Understand the basics of mining practices and operations
- » Understanding important factors of staying alive at a mine-site
- » How to avoid getting a citation from MSHA
- » Obtain a thorough understanding of risks and strategic methods of safely working around powered haulage, conveyors, heavy machinery, blasting operations, highwalls, and other mining hazards

\*Minimum class size: 10 people or class fee equivalent to 10 people

\*Group discount rate for clients who have 11 or more participants

COURSE

COST



**TELEHANDLER SAFE OPERATOR TRAINING**

(1 day class)

Federal and state regulations require employers to certify telehandler operators and ensure they have received initial mandatory training and instruction, including passing a practical hands-on evaluation prior to operating the telehandler for work. This certification is valid for 36 months. Training records must be maintained by the employer. Our one-day program includes the core telehandler classroom instruction, student workbooks, written knowledge checks verifying comprehension, fundamental practical operating evaluation, proof of training ID card (valid for 36 months), and copies of all training and evaluation documents for employer record retention.

**\$150**  
per person

**Learning Outcomes**

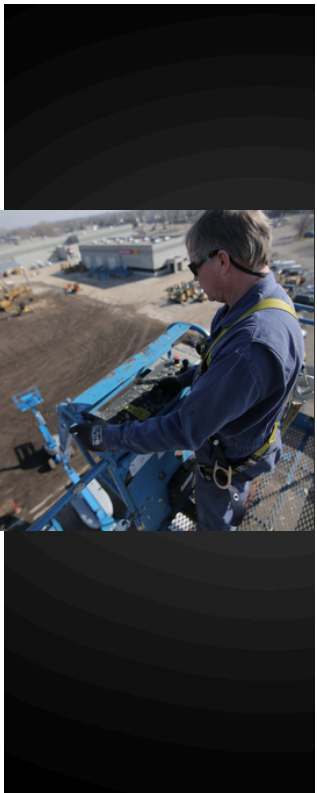
- » Understand all instructions, warnings, decals and precautions
- » Recognize location and function of all controls
- » Competent in steering, maneuvering, and adjusting for restricted visibility
- » Knowledgeable in forklift capacity and stability ratings
- » Properly conduct pre-shift and site-specific inspections



**Train-The-Trainer Option**

Available for clients interested in training someone who can teach it to other members of their company.

**\$1,000**  
per person



**MOBILE ELEVATING WORK PLATFORM (MEWP) SAFE OPERATOR TRAINING** (1 day class)

**\$150**  
per person

Federal and state regulations require employers to ensure mobile elevating work platform operators have received initial training, instruction, familiarization and evaluation on the safe use of the equipment. They must understand their responsibilities and be re-trained if necessary based on the employer's observations and evaluation of the operator. Training records must be maintained by the employer. Our one day program includes the core MEWP classroom instruction, student workbooks, written knowledge checks verifying comprehension, donning-doffing-fit-use of applicable personal fall protection equipment, fundamental practical operating evaluation, proof of training ID card (valid for 36 months), copies of all training and evaluation documents for employer record retention.

**Learning Outcomes**

- » Understand proper terminology used with various types of mobile elevating work platforms
- » Be able to identify the correct aerial platform to use for various applications
- » Understand the operator's responsibility regarding safe use and operations of aerial platforms
- » Develop safe operating practices when using mobile elevating work platforms
- » Know the five principles of safe machine operation



**Train-The-Trainer Option**

Available for clients interested in training someone who can teach it to other members of their company.

**\$1,000**  
per person



# **CUSTOMER TRAINING CENTER**

**800-852-2287**

**WesternStatesCat.com**