

# Great Western Painting

## Signaling Cranes

### Cranes and Derricks in Construction - Signaling

1926.1419 Signals--general requirements.

1926.1420 - Signals--radio, telephone or other electronic transmission of signals.

1926.1421 - Signals--voice signals--additional requirements.

1926.1422 - Signals--hand signal chart.

A signal person must be provided in each of the following situations:

1. The point of operation, meaning the load travel or the area near or at load placement, is not in full view of the operator.
2. When the equipment is traveling, the view in the direction of travel is obstructed.
3. Due to site specific safety concerns, either the operator or the person handling the load determines that it is necessary.

Signals to operators must be by hand, voice, audible, or new signals.

#### **Hand signals.**

When using hand signals, the Standard Method must be used. See attached Standard Method extracted from the Federal Register.

**Exception: Where use of the Standard Method for hand signals is infeasible, or where an operation or use of an attachment is not covered in the Standard Method, non-standard hand signals may be used.**

**When using non-standard hand signals, the signal person, operator, and lift director (where there is one) must contact each other prior to the operation and agree on the non-standard hand signals that will be used.**

Signals other than hand, voice, or audible signals may be used where the employer demonstrates that:

1. The new signals provide at least equally effective communication as voice, audible, or Standard Method hand signals, or
2. The new signals comply with a national consensus standard that provides at least equally effective communication as voice, audible, or Standard Method hand signals.

The signals used (hand, voice, audible, or new), and means of transmitting the signals to the operator (such as direct line of sight, video, radio, *etc.*), must be appropriate for the site conditions.

During operations requiring signals, the ability to transmit signals between the operator and signal person must be maintained. If that ability is interrupted at any time, the operator must safely stop operations requiring signals until it is reestablished and a proper signal is given and understood. If the operator becomes aware of a safety problem and needs to communicate with the signal person, the operator must safely stop operations. Operations must not resume until the operator and signal person agree that the problem has been resolved.

Only one person may give signals to a crane/derrick at a time, except when anyone who becomes aware of a safety problem. That person **must** alert the operator or signal person by giving the stop or emergency stop signal.

**Note: the operator must obey a stop or emergency stop signal!**

All directions given to the operator by the signal person must be given from the operator's direction perspective.

### **Communication with multiple cranes/derricks**

Where a signal person(s) is in communication with more than one crane/derrick, a system must be used for identifying the crane/derrick each signal is for, as follows:

For each signal, prior to giving the function/direction, the signal person must:

1. identify the crane/derrick the signal is for, or
2. use an equally effective method of identifying which crane/derrick the signal is for.

### **Signal Transmission**

The device(s) used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear, and reliable.

Signal transmission must be through a dedicated channel, except:

1. multiple cranes/derricks and one or more signal persons may share a dedicated channel for the purpose of coordinating operations.
2. where a crane is being operated on or adjacent to railroad tracks, and the actions of the crane operator need to be coordinated with the movement of other equipment or trains on the same or adjacent tracks.

The operator's reception of signals must be by a hands-free system.

### **Coordination Prior to Work**

Prior to beginning operations, the operator, signal person and lift director (if there is one), must contact each other and agree on the voice signals that will be used. Once the voice signals are agreed upon, these workers need not meet again to discuss voice signals unless another worker is added or substituted, there is confusion about the voice signals, or a voice signal is to be changed.

Each voice signal must contain the following three elements, given in the following order: function (such as hoist, boom, *etc.*), direction; distance and/or speed; function, stop command.

The operator, signal person and lift director (if there is one), must be able to effectively communicate in the language used.

Hand signal charts must be either posted on the equipment or conspicuously posted in the vicinity of the hoisting operations.

## Signal person qualifications

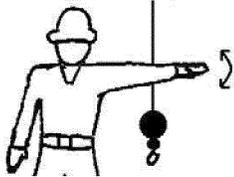
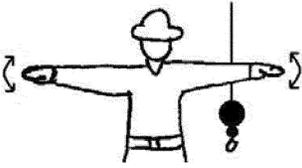
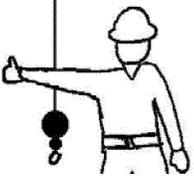
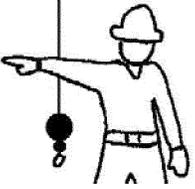
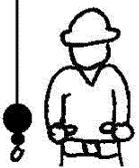
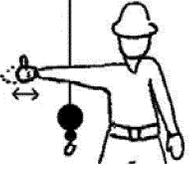
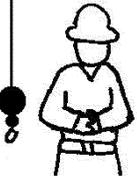
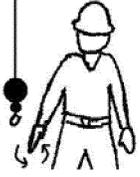
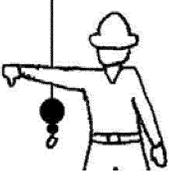
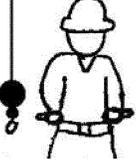
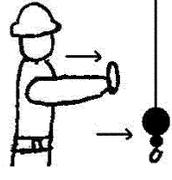
Each signal person must:

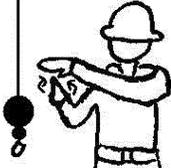
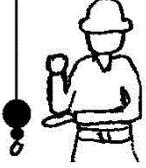
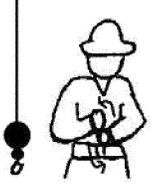
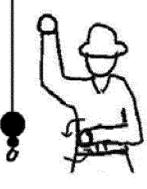
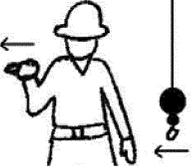
1. Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the Standard Method for hand signals.
2. Be competent in the application of the type of signals used.
3. Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.
4. Know and understand the relevant requirements of § 1926.1419 through § 1926.1422 and § 1926.1428.

The signal person must demonstrate that he/she meets the above four (4) requirements through an oral or written test, and through a practical test.

The signal person must have training documentation from either a third party evaluator or our **qualified** evaluator. This documentation must be available at the site. Additionally this documentation must specify each type of signaling (e.g. hand signals, radio signals, etc.) for which the signal person meets the requirements of the above.

If subsequent actions by the signal person indicate that the individual does not meet the Qualification Requirements, the individual must not continue to work until re-training is provided and a re-assessment is made.

 <p><b>STOP</b> – With arm extended horizontally to the side, palm down, arm is swung back and forth.</p>	 <p><b>EMERGENCY STOP</b> – With both arms extended horizontally to the side, palms down, arms are swung back and forth.</p>	 <p><b>HOIST</b> – With upper arm extended to the side, forearm and index finger pointing straight up, hand and finger make small circles.</p>
 <p><b>RAISE BOOM</b> – With arm extended horizontally to the side, thumb points up with other fingers closed.</p>	 <p><b>SWING</b> – With arm extended horizontally, index finger points in direction that boom is to swing.</p>	 <p><b>RETRACT TELESCOPING BOOM</b> – With hands to the front at waist level, thumbs point at each other with other fingers closed.</p>
 <p><b>RAISE THE BOOM AND LOWER THE LOAD</b> – With arm extended horizontally to the side and thumb pointing up, fingers open and close while load movement is desired.</p>	 <p><b>DOG EVERYTHING</b> – Hands held together at waist level.</p>	 <p><b>LOWER</b> – With arm and index finger pointing down, hand and finger make small circles.</p>
 <p><b>LOWER BOOM</b> – With arm extended horizontally to the side, thumb points down with other fingers closed.</p>	 <p><b>EXTEND TELESCOPING BOOM</b> – With hands to the front at waist level, thumbs point outward with other fingers closed.</p>	 <p><b>TRAVEL/TOWER TRAVEL</b> – With all fingers pointing up, arm is extended horizontally out and back to make a pushing motion in the direction of travel.</p>

 <p><b>LOWER THE BOOM AND RAISE THE LOAD</b> – With arm extended horizontally to the side and thumb pointing down, fingers open and close while load movement is desired.</p>	 <p><b>MOVE SLOWLY</b> – A hand is placed in front of the hand that is giving the action signal.</p>	 <p><b>USE AUXILIARY HOIST</b> (whipline) – With arm bent at elbow and forearm vertical, elbow is tapped with other hand. Then regular signal is used to indicate desired action.</p>
 <p><b>CRAWLER CRANE TRAVEL, BOTH TRACKS</b> – Rotate fists around each other in front of body; direction of rotation away from body indicates travel forward; rotation towards body indicates travel backward.</p>	 <p><b>USE MAIN HOIST</b> – A hand taps on top of the head. Then regular signal is given to indicate desired action.</p>	 <p><b>CRAWLER CRANE TRAVEL, ONE TRACK</b> – Indicate track to be locked by raising fist on that side. Rotate other fist in front of body in direction that other track is to travel.</p>
 <p><b>TROLLEY TRAVEL</b> – With palm up, fingers closed and thumb pointing in direction of motion, hand is jerked horizontally in direction trolley is to travel.</p>		

### Appendix B to Subpart CC of Part 1926—Assembly/Disassembly: Sample Procedures for Minimizing the Risk of Unintended Dangerous Boom Movement

1. Section 1926.1404(f)(1) provides that when pins (or similar devices) are being removed, employees must not be under the boom, jib, or other components, except where the requirements of § 1926.1404(f)(2) are met. The exception in § 1926.1404(f)(2) applies when the employer demonstrates that site constraints require one or more employees to be under the boom, jib, or other components when pins (or similar devices) are being removed. In such a situation, the A/D director must implement procedures that minimize the risk of unintended dangerous movement and minimize the duration and extent of exposure under the boom.

The following scenario is an example of how the exception applies: A boom cannot be disassembled on the ground because of aboveground piping (as might be found, for example, in an oil refinery) that precludes lowering the boom to the ground. The boom must therefore be disassembled in the air, and the employees who remove the pins must perform that work from an aerial lift whose base is positioned on one side (the near side) of the boom. To gain access to the pins on the far side, the aerial lift basket must move under the boom, since, due to lack of room, the aerial lift cannot be repositioned on the far side. Due to lack of room, the aerial lift cannot be repositioned on the far side, so the aerial basket must move under the boom to gain access to the pins on the far side.

To minimize the risk of unintended dangerous movement while the pins are removed, the A/D director uses an assist

crane that is rigged to support the boom section that is being detached, using particular care to ensure that the section end that is near the employee(s) removing the pins is well supported. The duration and extent of exposure is minimized by removing the far side pins first, moving the aerial lift basket as soon as possible to the near side so that the employees are no longer under the boom, and then removing the near side pins.

2. Section 1926.1404(h)(6)(i) provides that, during assembly/disassembly, the center of gravity of the load must be identified if that is necessary for the method used for maintaining stability. Section 1926.1404(h)(6)(ii) states that, where there is insufficient information to accurately identify the center of gravity, measures designed to prevent unintended dangerous movement resulting from an inaccurate