



**AISC Live Webinars**

Thank you for joining our live webinar today.  
We will begin shortly. Please standby.

Thank you.

Need Help?  
Call ReadyTalk Support: 800.843.9166





**AISC Live Webinars**

Today's audio will be broadcast through the internet.

Alternatively, to hear the audio through the phone,  
dial 800-893-0176.


*For additional support, please press \*0 and you will be connected to a live operator.*






**AISC Crane Safety**

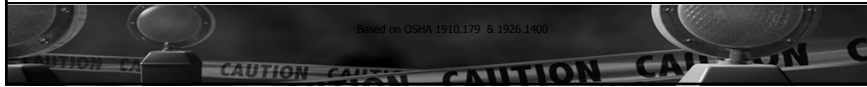
Bryan McClure  
Sr. Training Manager  
L.P.R. Construction Co

**OSHA**® Occupational Safety and Health Administration

“This presentation is based upon information derived from OSHA publications. Questions and requests for interpretations of this information or these publications should be directed to OSHA. AISC does not endorse any interpretation of these publications other than those interpretations formally issued by OSHA.”

Based on OSHA 1910.179 & 1926.1400




### Objectives

**Participants will:**

- Understand the OSHA required Inspections of Overhead Cranes
- Understand the OSHA required qualifications of overhead crane operators
- Understand the OSHA requirements for mobile crane annual inspections
- Understand the new OSHA subpart cc power line safety requirements.

5

### Electric Overhead Trolley Crane Safety

6

### Top 5 Serious OSHA Violations for Electric Overhead Cranes

1. 1910.179(J)(3) Periodic Inspections
2. 1910.179(j)(2) Frequent Inspections
3. 1910.179(j)(2)(iii) Hooks, records of inspection
4. 1910.179(g)(1)(v) Pendant boxes controls marked
5. 1910.179(j)(2)(iv) Hoist Chains Visual Inspections

7

### Types of Inspections: Frequent and Periodic

Inspections defined in three general classes:

1. Initial
2. Frequent
3. Periodic

8



### Periodic Inspections 1910.179(j)(3)



- Completed 1 -12 month intervals
  - Deformed, cracked, or corroded members
  - Loose bolts or rivets
  - Cracked or worn sheaves and drums.
  - Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices



9

### Periodic Inspections 1910.179(j)(3)



- Excessive wear on brake system parts, linings, pawls, and ratchets.
- Load, wind, and other indicators over their full range, for any significant inaccuracies.



10

### Periodic Inspections 1910.179(j)(3)



- Gasoline, diesel, electric, or other power plants for improper performance or noncompliance with applicable safety requirements
- Excessive wear of chain drive sprockets and excessive chain stretch
- Electrical apparatus, for signs of pitting or any deterioration of controller contactors, limit switches and pushbutton stations.



11

### Frequent Inspections 1910.179.(j)(2)



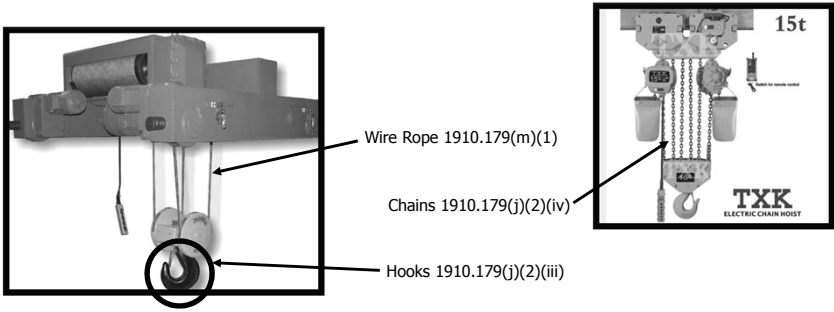
- Completed Daily to Monthly
  - Check all operational systems for proper operation
  - Check Air or Hydraulic systems for leaks
  - Inspect Hooks
  - Inspect Hoist Chains
  - Check rope reeving
  - Perform limit switch checks



12



### Documented Monthly Inspections



13

### Operators must be designated personnel 1910.179(b)(8)

“Designated personnel - Only designated personnel shall be permitted to operate a crane covered by this section.”

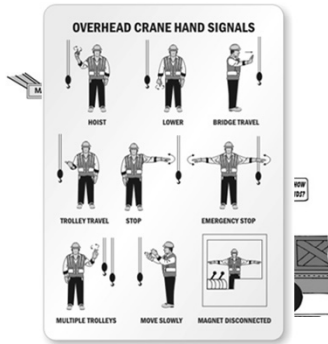
Crane owners need to also check local state requirements for additional operator licensing requirements



14

### Training E.O.T. Operators

- Daily/ monthly equipment inspection including testing of limit switches
- Daily / monthly maintenance operations
- Crane controls / dynamics
- Weight estimation
- Safe rigging inspection/ application
- Crane signals



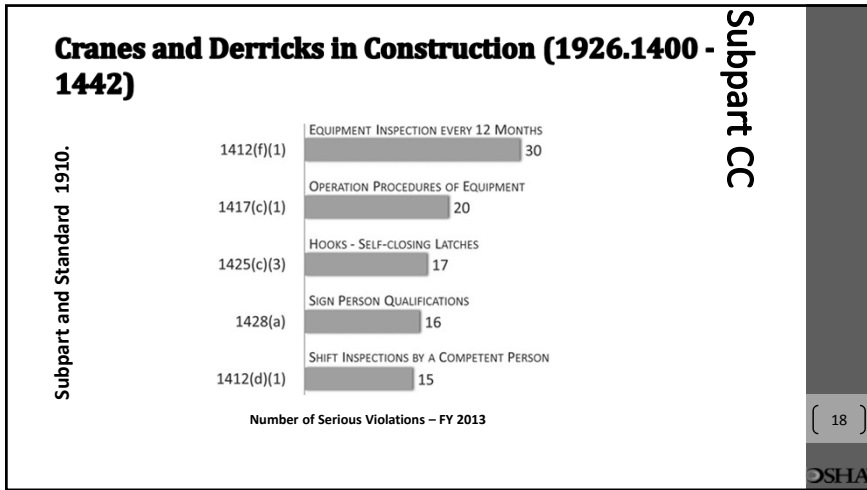
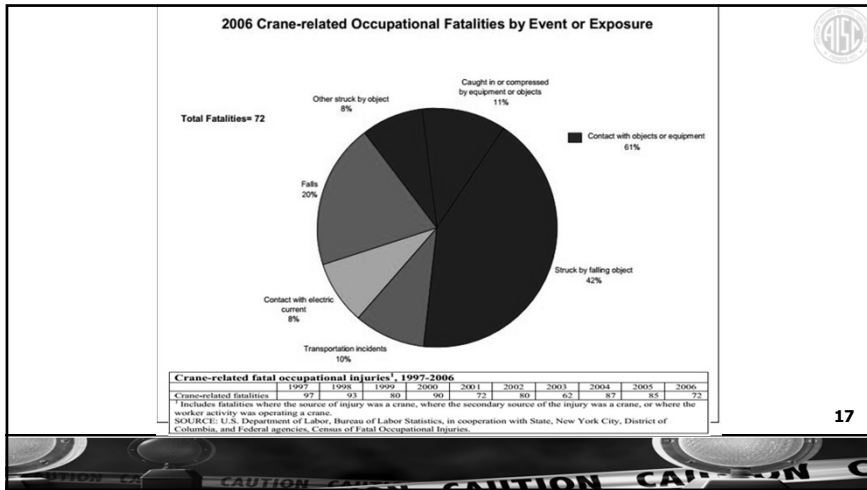
15

### Mobile Construction Crane Safety



16





### Annual Inspections 1926.1412(f)(2)

Every 12 months, the equipment must be inspected by a qualified person

19

### Ground Conditions 1926.1401 definitions



Controlling Entity :

- Prime contractor
- General contractor
- Construction manager

20



**Ground Conditions** 1926.1402(c)






The controlling entity must provide:

- Firm, drained & graded ground
- Sufficient ground to support the crane (in conjunction with blocking, mats etc.)

21


**Ground Conditions** 1926.1402(c)(2)


**Controlling Entity must inform equipment user & operator of known underground hazards(voids, utilities, etc.)**

22

**Ground Conditions** 1926.1402(e)




**If the operator finds the ground conditions to be unsuitable, the operators employer must have a discussion with the controlling entity to fix the ground conditions, with the use of supporting materials if needed.**

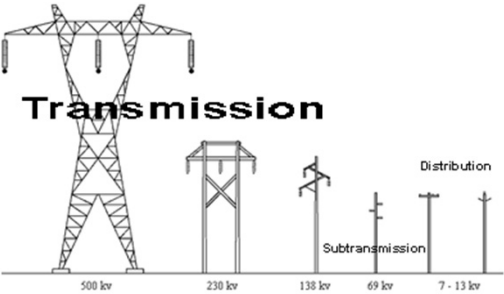


23

**OSHA Power Line Safety**

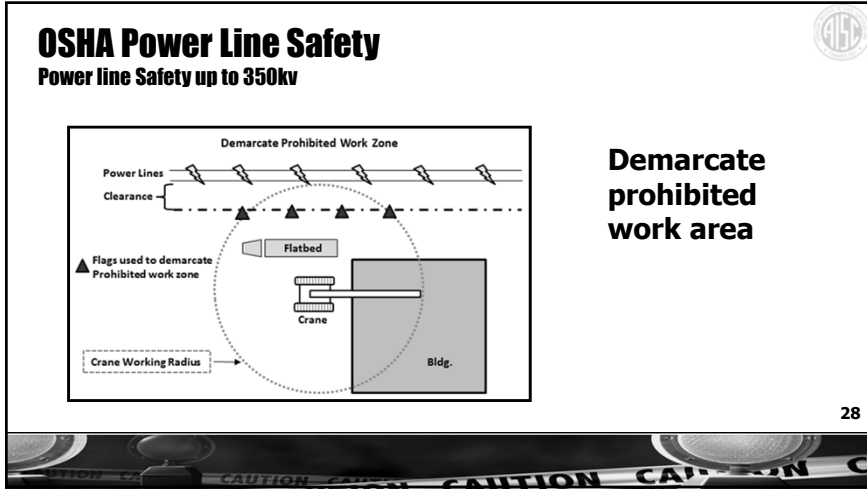
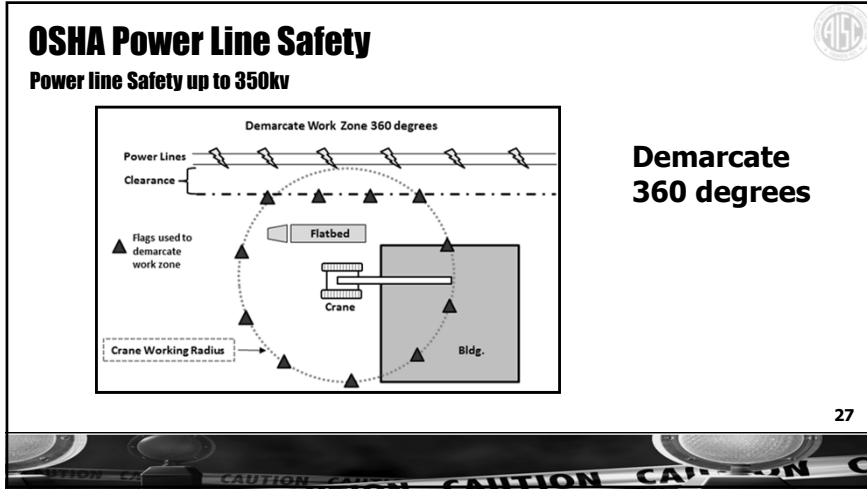
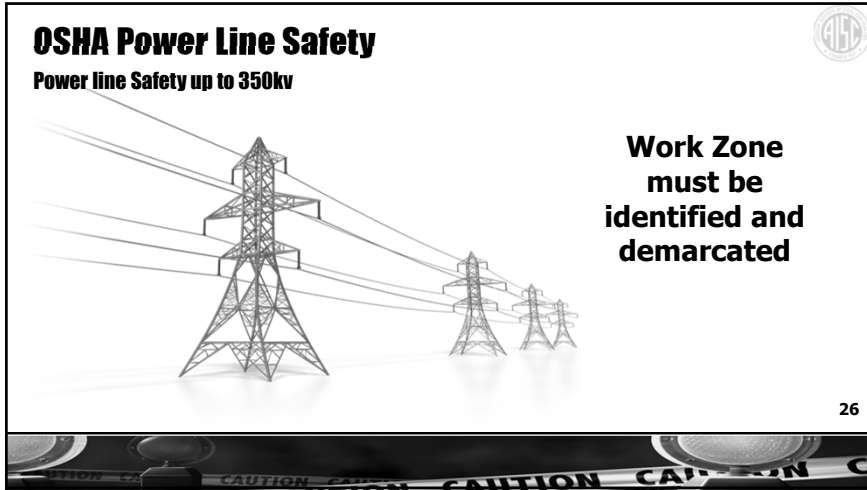
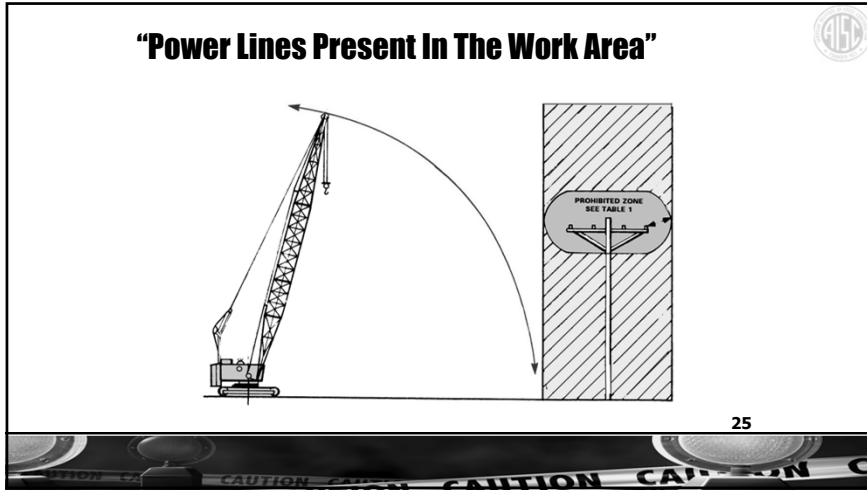


**<350kv Or >350kv**



24





### OSHA Power Line Safety

Power line Safety up to 350kv

**Demarcate within work zone**

29

### OSHA Power Line Safety

Power line Safety up to 350kv

**Three options;**

1. De-energize and ground

**OR**

2. 20 Foot clearance

**OR**

3. Table A clearance

30

Could you get within 20 feet of power line?

**YES**

- Option #1**  
De-energize & Ground
- Option #2**  
20 foot clearance
- Option #3**  
Ask Utility for Voltage and Use Table A (with minimum clearance distance)

**NO**

No further action

**Encroachment Prevention Measures (Equipment Operations)**

- Planning meeting
- If tag lines used — Non-conductive
- Elevated warning lines, barricade or line of signs

**PLUS (Choose one):**

- Proximity alarm, spotter, warning device, range limiter, or insulating link

31

### Table A - Minimum Clearance Distance

Voltage (Nominal, kV, AC)	Minimum Clearance Distance (feet)
Up to 50	10
Over 50 up to 200	15
Over 200 up to 350	20
Over 350 up to 500	25
Over 500 up to 750	35
Over 750 up to 1,000	45
Over 1,000	as established by facility owner or RPE qualified in electrical transmission & distribution

32






### Intentionally Working Closer Than Table A Zone

**Must Show:**

- Staying Outside Zone is Infeasible
- Infeasible to De-energize and Ground

**All of the following are required:**


1. Power Line Owner - **Sets Minimum Approach Distance**
2. Planning Meeting - Minimum Procedures
  - Dedicated Spotter
  - Elevated Warning Line or Barricade
  - Insulating Link/Device
  - Nonconductive Rigging
  - Range Limiter (if equipped)
  - Nonconductive Tag Line (if used)
  - Barricades - 10 feet from Equipment
  - Limit Access to Essential Employees
  - Prohibit Non-Operator Workers From Touching Above Insulating Link
  - Properly Ground Crane
  - Deactivate Automatic Re-energizer
  - Insulating Line Cover-up Installed



33

### Power Line Safety over 350kv


Same requirements apply except;  
Voltages = or < 1000 kv's substitute 50' everywhere 20' is used



34


### Over 1000 kvs

Utility owners must establish minimum clearance



35

### Questions



**Safety Resources**

- AISC Safety Website – [www.aisc.org/safety](http://www.aisc.org/safety)
- Sample Safety Program Elements
- Safety Awards Program
- Sample Safety Forms
- Top 10 OSHA Citations
- OSHA Interpretations
- Safety Product Reviews
- Safety Details or 'Tool Box Talks'
- Daily Safety Focus
- And more

Next week...

**October 8 –  
Crane/Rigging Safety  
Part 2**

**Thank You**

Please take our survey at the conclusion of the webinar.  
We appreciate your feedback!

American Institute of Steel Construction  
One East Wacker Drive, Suite 700  
Chicago, IL 60601

