

## Included in Package:

- Specified quantity of Rigging Safety Manuals:
  - M-50-2011.IN (Instructor Manual with Powerpoint Presentations)
  - M-50-2011.ST (Student Manual)
- Protocol for Rigging Written Test
- OSHA Fact Sheet
- Roster
- Qualified Rigger/Signal Person Application
- Rigger/Signal Person Evaluator Qualification Verification Form
- Rigging Test
- Rigging Test Answer Key
- Wire Rope Quiz
- Wire Rope Quiz Answer Key

## Additional Materials Available Upon Request:

- M-51-2010 (Cranes and Derricks in Construction - Final Rule (29 CFR 1926 Subpart CC))
- M-53-2012 (Sling Rigging Equipment for Material Handling)
- M-54-2011 (Small Entity Compliance Guide for Cranes and Derricks in Construction)

## INSTRUCTIONS:

**DO NOT SEND the tests to the National HAZMAT Program.**

**All paperwork must be filled out completely and must be legible.**

The following paperwork is required for any card requests:

- Rigger Package Cover Sheet with checklist and address information
- Roster of applicants with pass/fail report
- Qualified Rigger/Signal Person Application

**Please submit all required paperwork to:**

IUOE NTF - National HAZMAT Program  
1293 Airport Road  
Beaver, WV 25813  
(304) 253-8674  
hazmat@iuoehazmat.org

**Please list below the address where cards are to be sent:**

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Class ID  Funding  Grant Class Code



## **Protocol for Rigging Written Test**

### **Evaluators:**

After the applicants' successful completion of the written evaluation and practical tests:

Maintain Written Test for your records.

Do not send the test to the National HAZMAT Program

The following paperwork is required for any card requests.

1. Roster of applicants with pass/fail report
2. Qualified Rigger/Signal Person Application

**All paperwork must be filled out completely and must be legible.**

Sent to:       The National HAZMAT Program  
                  1293 Airport Rd  
                  Beaver, WV 25813

Requests for cards with any missing paperwork will not be processed.

## **Scoring Protocol for Rigging Written Test**

### **Written Evaluation**

**Passing score - 80% = 80 points**

Each question is worth 10 points.

10 Questions @ 10 points each = 100 points



# OSHA<sup>®</sup> FactSheet

## Subpart CC – Cranes and Derricks in Construction: Qualified Rigger

This fact sheet describes the qualified rigger requirements of subpart CC – Cranes and Derricks in Construction, as specified in 29 CFR 1926.1401, 1926.1404, and 1926.1425. These provisions are effective November 8, 2010.

### When is a *qualified rigger* required?

Employers must use *qualified riggers* during hoisting activities for assembly and disassembly work (1926.1404(r)(1)). Additionally, *qualified riggers* are required whenever workers are within the fall zone and hooking, unhooking, or guiding a load, or doing the initial connection of a load to a component or structure (1926.1425(c)).

### Who can be a *qualified rigger*?

A *qualified rigger* is a rigger who meets the criteria for a qualified person. Employers must determine whether a person is qualified to perform specific rigging tasks. Each *qualified rigger* may have different credentials or experience. A *qualified rigger* is a person that:

- possesses a recognized degree, certificate, or professional standing, or
- has extensive knowledge, training, and experience, and
- can successfully demonstrate the ability to solve problems related to rigging loads.

The person designated as the *qualified rigger* must have the ability to properly rig the load for a particular job. It does not mean that a rigger must be qualified to do every type of rigging job.

Each load that requires rigging has unique properties that can range from the simple to the complex. For example, a rigger may have extensive experience in rigging structural

components and other equipment to support specific construction activities. Such experience may have been gained over many years. However, this experience does not automatically qualify the rigger to rig unstable, unusually heavy, or eccentric loads that may require a tandem lift, multiple-lifts, or use of custom rigging equipment. In essence, employers must make sure the person can do the rigging work needed for the exact types of loads and lifts for a particular job with the equipment and rigging that will be used for that job.

### Do *qualified riggers* have to be trained or certified by an accredited organization or assessed by a third party?

No. Riggers do not have to be certified by an accredited organization or assessed by a third party. Employers may choose to use a third party entity to assess the qualifications of the rigger candidate, but they are not required to do so.

### Does a certified operator also meet the requirements of a *qualified rigger*?

A certified operator does not necessarily meet the requirements of a *qualified rigger*. Determining whether a person is a *qualified rigger* is based on the nature of the load, lift, and equipment used to hoist that load plus that person's knowledge and experience. A certified/qualified operator may meet the requirements of a *qualified rigger*, depending on the operator's knowledge and experience with rigging.

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For more complete information:



U.S. Department of Labor

[www.osha.gov](http://www.osha.gov)

(800) 321-OSHA

DOC 10/2010



# Roster

Please check all which apply:

Rigger     Signal Person

Please PRINT and SIGN your full name.

Instructor Use

	Full Name	Signature	Pass	Fail
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

Approved by: \_\_\_\_\_  
(Instructor)

\_\_\_\_\_  
(Instructor's Qualification #)

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_





## Qualified Rigger/Signal Person Application

**Please check all for which you are applying:**

**Rigger** - Rigger qualification will conform to OSHA regulation 29 CFR 1926.1401;1404;1425.

Testing will consist of a written or oral evaluation.

**Signal Person** - Signal person qualification will conform to OSHA regulation 29 CFR 1926.1401;1419;1422;1428. Testing will consist of a written or oral evaluation and a practical evaluation.

**Please PRINT all information clearly.**

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Qualification #: \_\_\_\_\_ (Note: If you are a new applicant leave blank)

Register #: \_\_\_\_\_

Name: \_\_\_\_\_  
(Last) (First) (Middle) (Nickname) (Suffix)

Male  Female

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Local: \_\_\_\_\_

Telephone (Work): \_\_\_\_\_

Telephone (Home): \_\_\_\_\_

Telephone (Cell): \_\_\_\_\_

Fax: \_\_\_\_\_

Birthdate (optional): \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Email: \_\_\_\_\_

I have approximately \_\_\_\_\_ hours of signal person experience.

I have approximately \_\_\_\_\_ hours of rigger experience.

\_\_\_\_\_  
(Applicant's signature)

Accepted by: \_\_\_\_\_  
(Instructor)

\_\_\_\_\_  
(Instructor's Qualification #)      Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_



# Rigger/Signal Person Evaluator Qualification Verification Form

Please PRINT all information clearly.

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Qualification #: \_\_\_\_\_ (Note: If you are a new applicant leave blank)

Register #: \_\_\_\_\_

Name: \_\_\_\_\_  
(Last) (First) (Middle) (Nickname) (Suffix)

Male  Female

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Local: \_\_\_\_\_

Telephone (Work): \_\_\_\_\_

Telephone (Home): \_\_\_\_\_

Telephone (Cell): \_\_\_\_\_

Fax: \_\_\_\_\_

Birthdate (optional): \_\_\_\_/\_\_\_\_/\_\_\_\_

Email: \_\_\_\_\_

Please check all for which you are applying. You should make sure you meet all criteria before having your Training Director sign to verify that you meet the qualification criteria.

**Rigger Evaluator**

1. Must have 5 years in crane related experience.
2. Must have 1 or more years teaching crane operation or crane certification  
**\*\*OR\*\*** a combination totaling 6 years of both 1 & 2 with at least 1 year of crane operation.
3. Must possess an OSHA 10 hour Construction Outreach course card or better.
4. Must have a general awareness of the new OSHA crane regulation 29 CFR 1926 Subpart CC.

In addition, the Qualified Evaluator must:

1. Have the signature of his/her Training Director or equivalent title verify that all criteria are met.
2. Agree to use NTF rigging safety course materials. May use additional local materials to supplement the course.
3. Agree to use NTF testing protocols.

**Signal Person Evaluator**

**General Construction Industry**  
 **Pipeline**

1. Must have 5 years in crane related experience.
2. Must have 1 or more years teaching crane operation or crane certification  
**\*\* OR\*\*** a combination totaling 6 years of both 1 & 2 with at least 1 year of crane operation.
3. Must possess an OSHA 10 hour Construction Outreach course card or better.
4. Must have a general awareness of the new OSHA crane regulation 29 CFR 1926 Subpart CC.

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**Evaluator:**

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Signature)

\_\_\_\_/\_\_\_\_/\_\_\_\_  
(Date)

**Training Director (or equivalent title):**

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Signature)

\_\_\_\_/\_\_\_\_/\_\_\_\_  
(Date)



**Rigging Test**

Name \_\_\_\_\_

Date \_\_\_\_\_

1. The size of a shackle is determined by the:

- A. Diameter of the body
- B. Diameter of the pin
- C. Length of the body
- D. Length of the pin

2. Hooks should be removed from service when twisted or bent \_\_\_\_\_.

- A. 5°
- B. 10°
- C. 15°
- D. Any sign of twist or bend



3. Rigging equipment for material handling shall be inspected \_\_\_\_\_ and as necessary during its use to ensure that it is safe.

- A. Prior to use
- B. Once a week
- C. Once a month
- D. Once a year

4. If any portion of a chain is worn more than \_\_\_\_\_, the chain should be removed from service.

- A. 10%
- B. 15%
- C. 20%
- D. 25%

5. Which of the following markings would indicate a chain that could be used for rigging, circle all correct answers?
- A. 80
  - B. A
  - C. 6
  - D. 60
6. The markings on a synthetic web sling must list the name of the manufacturer, manufacturer's code or stock number, type of material, and the \_\_\_\_\_.
- A. Date of manufacture
  - B. Place of manufacture
  - C. List of compatible softeners
  - D. Rated capacity for types of hitches used
7. What is the capacity of a 3/8" grade 80 alloy lifting chain in a single vertical pick?
- A. 18,400
  - B. 8,800
  - C. 7,100
  - D. 1
8. To pick 8,000 lbs. with a 2 leg wire rope slings, what stress will each leg have on it? Sling length 20', Sling height 15'
- A. 10,666
  - B. 5,320
  - C. 3,000
  - D. 7,130
9. To pick 9,000 lbs. load, with a 4 leg bridle, what stress will each leg have on it? Sling length 15' Sling height 10'
- A. 13,500
  - B. 6,000
  - C. 3,375
  - D. 4,500

10. What is the safety factor for rigging?

- A. 3.5 to 1
- B. 4 to 1
- C. 5 to 1
- D. 7 to 1

11. What is the capacity of a vertical 1" EEIP-MS-IWRC wire rope choker?

- A. 16,000
- B. 44,000
- C. 22,000
- D. 11,000

12. Name the three basic hitches from weakest to strongest. (Weakest =1; Strongest=3)

- A. \_\_\_\_\_ Choke
- B. \_\_\_\_\_ Vertical
- C. \_\_\_\_\_ Basket

13. What would the load diameter need to be with a 25:1 D/d ratio basket hitch, with a ½" wire rope choker?

- A. 25"
- B. 15.5"
- C. 12.5"
- D. 25.5"

14. What is the load angle factor of two slings at a horizontal angle of 30 degrees?

- A. 1.555
- B. 2.00
- C. 1.155
- D. None of the above

15. What is the maximum throat opening stretch of a rigging hook?

- A. 5%
- B. 5 degrees
- C. 10 degrees
- D. 15%

16. Can a spreader beam be used as an equalizer beam?

- A. Yes
- B. No

17. At what percent must a custom designed lifting accessory be tested at?

- A. 150%
- B. 110%
- C. 200%
- D. 125%

18. Shackle size is measured at the?

- A. Body or bow
- B. Shoulder
- C. Pin
- D. Threads

19. To pick a 10,000 lb. load, with a 2 leg sling, what stress will each leg have on it, both slings 30 degrees?

- A. 20,000
- B. 5,000
- C. 10,000
- D. 30,000

20. What capacity does a 7/16" carbon steel shackle have?

- A. 1,500 lb
- B. 4,000lb
- C. 2,000lb
- D. 3,000 lb.



## Rigging Test

Name \_\_\_\_\_

Date \_\_\_\_\_

1. The size of a shackle is determined by the:

- A. Diameter of the body (*Rigging Manual page 4-7*)
- B. Diameter of the pin
- C. Length of the body
- D. Length of the pin

2. Hooks should be removed from service when twisted or bent \_\_\_\_\_.

- A. 5°
- B. 10°
- C. 15°
- D. Any sign of twist or bend (*Rigging Manual page 4-22*)



3. Rigging equipment for material handling shall be inspected \_\_\_\_\_ and as necessary during its use to ensure that it is safe.

- A. Prior to use (*1926.251(a)(1)*)
- B. Once a week
- C. Once a month
- D. Once a year

4. If any portion of a chain is worn more than \_\_\_\_\_, the chain should be removed from service.

- A. 10% (*Rigging Manual page 2-4*)
- B. 15%
- C. 20%
- D. 25%

5. Which of the following markings would indicate a chain that could be used for rigging, circle all correct answers?

- A. 80
- B. A
- C. 6
- D. 60

6. The markings on a synthetic web sling must list the name of the manufacturer, manufacturer's code or stock number, type of material, and the \_\_\_\_\_.

- A. Date of manufacture
- B. Place of manufacture
- C. List of compatible softeners
- D. Rated capacity for types of hitches used (1926.251(e))

7. What is the capacity of a 3/8" grade 80 alloy lifting chain in a single vertical pick?

- A. 18,400
- B. 8,800
- C. 7,100 (Pocket Guide page 26)
- D. 1

8. To pick 8,000 lbs. with a 2 leg wire rope slings, what stress will each leg have on it? Sling length 20', Sling height 15'

- A. 10,666
- B. 5,320 (Rigging Manual page 5-5)
- C. 3,000
- D. 7,130

9. To pick 9,000 lbs. load, with a 4 leg bridle, what stress will each leg have on it? Sling length 15' Sling height 10'

- A. 13,500
- B. 6,000
- C. 3,375
- D. 4,500 (Rigging Manual page 5-10)

10. What is the safety factor for rigging?

- A. 3.5 to 1
- B. 4 to 1
- C. 5 to 1 (ANSI B-30.9-2.2)
- D. 7 to 1

11. What is the capacity of a vertical 1" EEIP-MS-IWRC wire rope choker?

- A. 16,000
- B. 44,000
- C. 22,000 (Pocket guide page 12)
- D. 11,000

12. Name the three basic hitches from weakest to strongest. (Weakest =1; Strongest=3)

- A. \_\_\_\_\_ Choke (Pocket guide page 7)
- B. \_\_\_\_\_ Vertical
- C. \_\_\_\_\_ Basket

13. What would the load diameter need to be with a 25:1 D/d ratio basket hitch, with a ½" wire rope choker?

- A. 25"
- B. 15.5"
- C. 12.5" (Rigging Manual page 5-15)
- D. 25.5"

14. What is the load angle factor of two slings at a horizontal angle of 30 degrees?

- A. 1.555
- B. 2.00 (Pocket guide page 38)
- C. 1.155
- D. None of the above

15. What is the maximum throat opening stretch of a rigging hook?

- A. 5% (Rigging Manual page 4-22)
- B. 5 degrees
- C. 10 degrees
- D. 15%

16. Can a spreader beam be used as an equalizer beam?

- A. Yes
- B. No (Rigging Manual page 4-18)

17. At what percent must a custom designed lifting accessory be tested at?

- A. 150%
- B. 110%
- C. 200%
- D. 125% (Rigging Manual page 4-19)

18. Shackle size is measured at the?

- A. Body or bow (Rigging Manual page 4-3)
- B. Shoulder
- C. Pin
- D. Threads

19. To pick a 10,000 lb. load, with a 2 leg sling, what stress will each leg have on it, both slings 30 degrees?

- A. 20,000
- B. 5,000
- C. 10,000 (Pocket guide page 38)
- D. 30,000

20. What capacity does a 7/16" carbon steel shackle have?

- A. 1,500 lb
- B. 4,000lb
- C. 2,000lb
- D. 3,000 lb. (Pocket guide page 33)

# Wire Rope Quiz

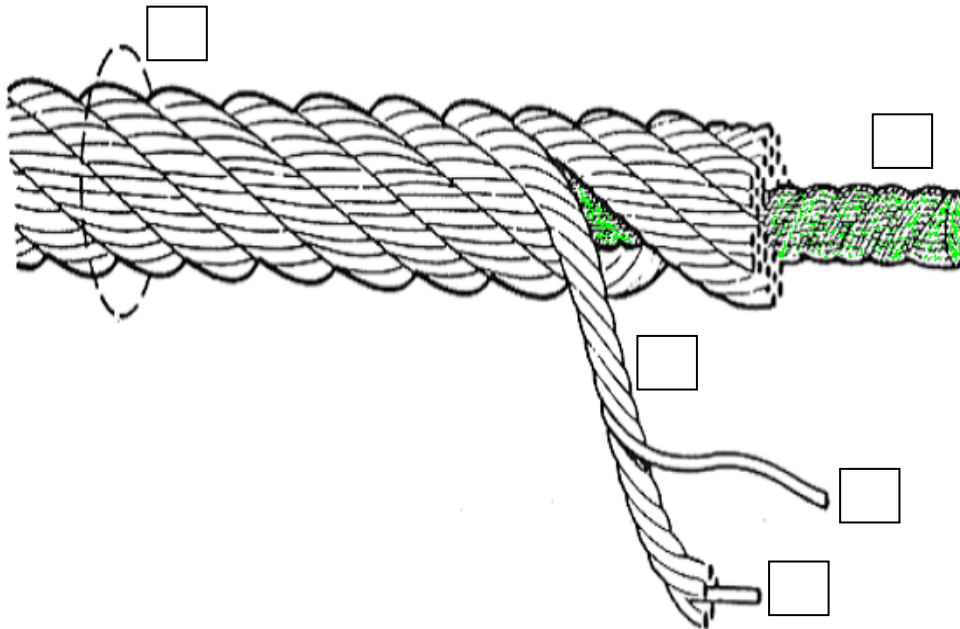
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Which is not a component of a wire rope?  
(A) Wire  
(B) Braid  
(C) Core  
(D) Strand
  
2. The more wires per strand provides for better:  
(A) Flexibility  
(B) Abrasion  
(C) Wear  
(D) Durability
  
3. I.W.R.C Stands for:  
(A) Internal Wire Rope Center  
(B) Independent Wound Rope Core  
(C) Internal Wiring Resistant Core  
(D) Independent Wire Rope Core
  
4. The term rope lay length refers to:  
(A) The strands wound to the right  
(B) The strands wound to the left  
(C) The wires are wound the in same direction as the strands  
(D) The distance that a strand makes one complete revolution around the rope
  
5. The \_\_\_\_\_ refers to the direction of the wires in the strand and the direction of the strands around the wire rope.  
(A) Lay  
(B) Rotation  
(C) Core  
(D) Strand
  
6. Wire rope that has the wires running in the same direction as the strands is called:  
(A) Regular lay  
(B) Alternate lay  
(C) Directional lay  
(D) Lang lay

7. The safety factor for rotating hoist line rigging slings:
- (A) 3 to 1
  - (B) 5 to 1
  - (C) 3.5 to 1
  - (D) 4.5 to 1
8. When the wires rotate in the opposite direction of the strands it's refer to as:
- (A) Regular lay
  - (B) Opposite lay
  - (C) Lang lay
  - (D) Alternating lay
9. The maximum number of broken wires allow in one rope lay in a wire rope sling:
- (A) 5
  - (B) 7
  - (C) 8
  - (D) 10
10. Label the following diagram
- (A) Wire
  - (B) Rope
  - (C) Core
  - (D) Strand
  - (E) Strand core

Place correct letter in its place



## Wire Rope - ANSWER KEY

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Which is not a component of a wire rope?  
(A) Wire  
(B) Braid  
(C) Core  
(D) Strand
  
2. The more wires per strand provides for better:  
(A) Flexibility  
(B) Abrasion  
(C) Wear  
(D) Durability
  
3. I.W.R.C Stands for:  
(A) Internal Wire Rope Center  
(B) Independent Wound Rope Core  
(C) Internal Wiring Resistant Core  
(D) Independent Wire Rope Core
  
4. The term rope lay length refers to:  
(A) The strands wound to the right  
(B) The strands wound to the left  
(C) The wires are wound the in same direction as the strands  
(D) The distance that a strand makes one complete revolution around the rope
  
5. The \_\_\_\_\_ refers to the direction of the wires in the strand and the direction of the strands around the wire rope.  
(A) Lay  
(B) Rotation  
(C) Core  
(D) Strand
  
6. Wire rope that has the wires running in the same direction as the strands is called:  
(A) Regular lay  
(B) Alternate lay  
(C) Directional lay  
(D) Lang lay

7. The safety factor for rotating hoist line rigging slings:

- (A) 3 to 1
- (B) 5 to 1
- (C) 3.5 to 1
- (D) 4.5 to 1

8. When the wires rotate in the opposite direction of the strands it's refer to as:

- (A) Regular lay
- (B) Opposite lay
- (C) Lang lay
- (D) Alternating lay

9. The maximum number of broken wires allow in one rope lay in a wire rope sling:

- (A) 5
- (B) 7
- (C) 8
- (D) 10

10. Label the following diagram

- (A) Wire
- (B) Rope
- (C) Core
- (D) Strand
- (E) Strand core

Place correct letter in its place

