



# THE PROFESSIONAL RIGGER

Volume 21 Number 3

September 2006

## TECHNICAL WORKSHOP

### Load Weight Estimation

Estimating a load's approximate weight is always an important part of any rigger's checklist and must be done before choosing the rigging system.

Have some fun and estimate the weight of the storage tank and its attached field stand at the right. To help you in your calculations we have reprinted Section 6 of ITI's Journeyman Rigger's Reference Card, which details weights of various materials and quick estimation formulas. Check your answers in Column 3 on Page 2.

The workshop at the right was taken from Mike's Rigging Mysteries, Yellow Book.

All 110 workshops are available at: [www.mikesriggingmysteries.com](http://www.mikesriggingmysteries.com).

The Professional Rigger is a publication of Industrial Training International, Inc.

It is distributed to those whose occupations require the safe and proper use of lifting and rigging equipment.

For more information contact

**The Professional Rigger**

PO Box 1660

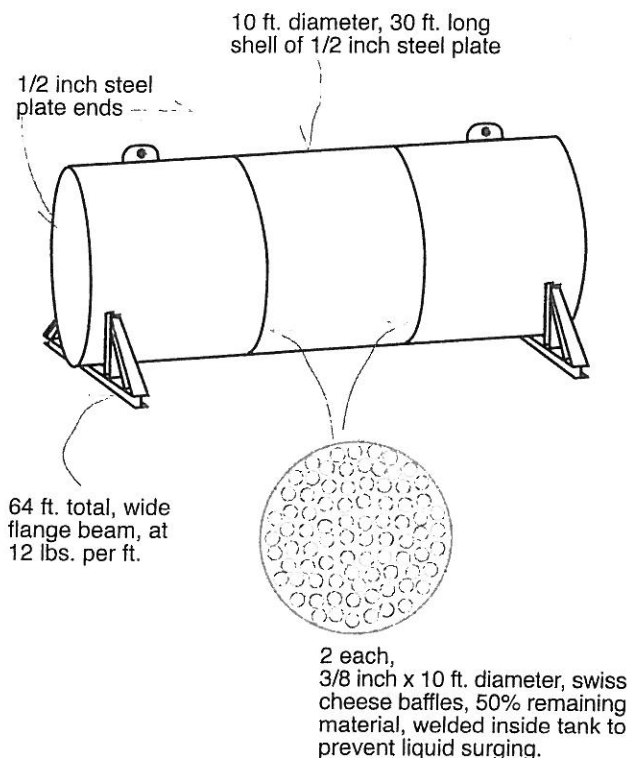
Woodland WA 98674

(360) 225-1100

or visit our web site: [www.wrrc.com](http://www.wrrc.com)



### Tank & Stand



Stand wt: \_\_\_\_\_

Baffle wt: \_\_\_\_\_

Tank wt: \_\_\_\_\_

Total wt: \_\_\_\_\_

Hint: The stand is welded to the tank and will lift with it. Once the total weight is determined, a rigger should round up slightly to account for lifting lugs, weld, and misc.

Hint: Review the JRRRC-P6: note that area of a circle =  $d \times d \times .8$ , circumference =  $\pi \times d$ , see Section entitled Formulas & Information.

Wide flange beam: 32' at each end of the load, baffle is 10' diameter.

## JRRC SECTION 6

### Load Weights - Calculating

Materials and Liquids - Pounds / cu. ft.			
Aluminum	165	Iron Casting	450
Asbestos	153	Lead	708
Asphalt	81	Lumber - Fir	32
Brass	524	Lumber - Oak	62
Brick	120	Lumber - RR Ties	50
Bronze	534	Oil, Motor	58
Coal	56	Paper	58
Concrete, Reinf.	150	Portland Cement	94
Crushed Rock	95	River Sand	120
Diesel	52	Rubber	94
Dry Earth, Loose	75	Steel	480
Gasoline	45	Water	63
Glass	162	Zinc	437

Pounds / sq. ft.	
Steel plate	
• 1/8"	5
• 1/4"	10
• 1/2"	20
• 1"	40
Aluminum plate	
• 1/8"	1.75
• 1/4"	3.50
Lumber	
• 3/4" Fir	2
• 3/4" Oak	4

Pounds / gal.	
Gas	6.0
Diesel	7.0
Water	8.3

• 7.5 gallons of liquid to a cubic foot  
• 27 cubic feet to a cubic yard  
• 2,000 lbs = 1 U.S. ton

### Formulas and Information

• H = Height • W = Width • L = Length • d = diameter • r = 1/2 diameter •  $\pi = 3.2$  (approx.)  
• Area of square or rectangle = LW • Vol. of cube = HWL • Area of circle =  $\pi r^2$  • Circumference =  $\pi d$   
• The area of a circle is approx. 80% of its diameter squared (diameter x diameter)  
• Load Weight (to estimate) — Volume in cu. ft. x 500 lbs. x density factor .02, .05, .10, .20, .30 etc.

## NEWS • NEWS • NEWS • NEWS • NEWS

### ASME B30 Committee

The current B30.1 volume titled "JACKS" is being revised. It will remain in the development stages through mid 2007, when the B30 Main Committee votes on whether to accept the new changes.

The Subcommittee has approved the reorganization and expansion of the following items into the B30.1 volume:

- Chapter 1 Mechanical Jacks
- Chapter 2 Hydraulic Jacks
- Chapter 3 Industrial Rollers
- Chapter 4 Air Casters
- Chapter 5 Telescopic Hydraulic Gantry Systems

In addition, the Subcommittee will recommend that Air Bags for Lifting be included in the volume. If approved, it would become Chapter 6 of the new B30.1 volume. The next publication for B30.1 is scheduled to be in 2009.

### CEU Credits Now Available!

We are pleased to announce that Industrial Training International, Inc. has become certified as an Authorized Provider by the International Association for Continuing Education and Training (IACET). ITI is certified to offer IACET Continuing Education Units (CEU's) for all current training programs.



### NCCCO Certification Available!

ITI is now offering NCCCO certification for Mobile and Overhead Crane Operators. See our 2006/2007 Training Schedule for a list of these programs.



### Industrial Training International Celebrates 20 Years!

To say "Thank You", ITI invites you to join us for our Customer Appreciation Open House.

**Thursday, September 28th**

**11 AM - 4 PM**

### ITI Training Center

9428 Old Pacific Hwy  
Woodland, WA

R.S.V.P. 1-800-727-6355

### Workshop Answer Key (for page 1)

Stand wt. =  $64 \times 12 = 768$  lbs.  
Baffles =  
 $(10 \times 10 \times .8) \times 2 \times 15 \times .50 = 1,200$  lbs.  
Tank ends =  
 $(10 \times 10 \times .8) \times 2 \times 20 = 3,200$  lbs.  
Tank pipe =  $(10 \times 3.2) \times 30 \times 20 = 19,200$  lbs.  
Tank total =  $3,200 + 19,200 = 22,400$  lbs.  
Stand, Baffle & Tank weight total =  
 $768 + 1,200 + 22,400 = 24,368$  lbs.

## ITI's Training Center Programs

### RIGGING

- Journeyman Rigger
- Master Rigger
- Crane & Rigging Management

### INSPECTION

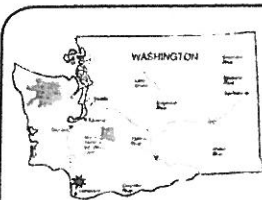
- Rigging Inspection Basics
- Rigging Gear Inspector Level I
- Rigging Gear Inspector Level III
- Mobile Crane Inspector

### CRANE OPERATOR

- Boom Truck Operator
- Mobile Crane Basics
- Mobile Crane Operator
- NCCCO Mobile Crane Operator Certification

See ITI's "Training Schedule" or visit [www.wrrc.com](http://www.wrrc.com) for more program details and registration.

## TWO TRAINING LOCATIONS



Woodland, WA



Birmingham, AL



INDUSTRIAL TRAINING INTERNATIONAL, INC. • 9428 Old Pacific Hwy • Woodland, WA 98674  
Bus. (360) 225-1100 • Fax (360) 225-1122 • Email: [rightright@wrrc.com](mailto:rightright@wrrc.com) • Web site: [www.wrrc.com](http://www.wrrc.com)