

The Professional Rigger®

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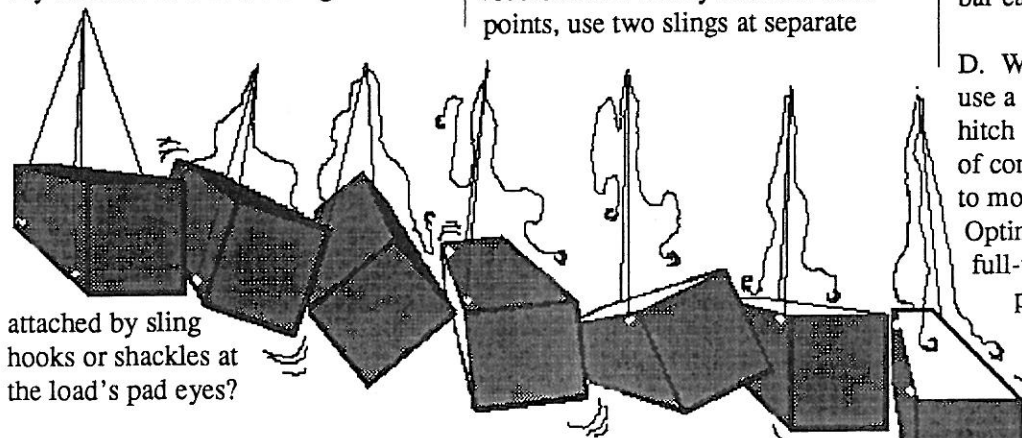
December 1989

Technical News

Load Control

Load control is an important issue to address any time a rigging task is undertaken. There are many questions which must be answered before a rigger can choose the safest and most efficient rigging system for a given load. (See decision tree pg.4)

1. Can any part of the load (fluid, sand etc.) shift during the lift?
2. Is the load's CG (center of gravity) above or below the sling attachment points?
3. Should the sling assembly used to make the lift be a single leg, 2-leg, 3-leg or 4-leg bridle?
4. Will it be basketed or choked at any location or will the slings be



attached by sling hooks or shackles at the load's pad eyes?

Whenever possible, a rigger should:

A. Stabilize the load so as to prevent any shifting of the load's contents. A container that is 1/2-full is always one of the most dangerous types of loads. Transfer the contents and move the container empty or fill it all the way up so it can be lifted as a solid volume with no shifting.

B. Attach to the load ABOVE the

C.G. Two leg lifts are obvious for adhering to this rule. On 3-leg and 4-leg sling bridle lifts, the rigger should plan for a worse-case-scenario, i.e. a sling leg becoming disconnected and the load flipping over causing a shock load resulting in load damage and or crew injuries.

When the load's attachment points are below the CG, inspect the pad eyes, shouldered eye bolts, etc. for previous wear and damage. ALWAYS use a positive device as the "connector" between the sling and the pad eye. A shackle or similar type of clevis connector should be used instead of a sling hook which has a sheet metal hook latch.

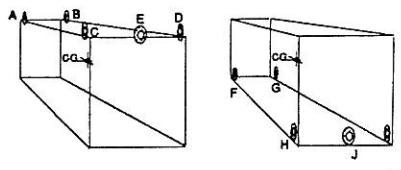
C. Single leg lifts are OK, but if the load offers a variety of attachment points, use two slings at separate

locations on the load instead of one. If there is a failure of the single lifting attachment point, shackle or sling, it is hoped that the second sling could withstand the shock load and hold until the load is landed.

Use a 3-leg instead of a 4-leg bridle since the actual loading on a 4 point attachment generally results in the load being carried by one of the

Options 1-4, Most Favored to Least Favored

- 1.) 3-legs, above C.G. (A/B/E)
- 2.) 4-legs, above C.G. (A/B/C/D)
- 3.) 3-legs, below C.G. (F/G/J)
- 4.) 4-legs, below C.G. (F/G/H/I)



diagonal pairs. The old rule of thumb regarding 4-leg bridles, which have no means for adjustment, "Two legs carry the load, while the other two balance". When forced to use 4 sling legs to lift a load, use two, 2-leg bridles and place both master links into a rigging shackle. This allows for multiple "hinge-points" and helps to equalize the loading on all four sling legs. A strongback or spreader bar can help equalize leg loading.

D. When no pad eyes are available, use a choker hitch versus a basket hitch to create a slightly higher degree of compression and better friction due to more square inches of contact. Optimize either hitch by placing a full-wrap around the load contact point for maximum potential holding power, "double-wrap basket or double-wrap choker hitch".

E. Use positive attachment devices for connecting to the load. Create the situation such that a component would have to fail rather than "slide out" resulting in the loss of the load.

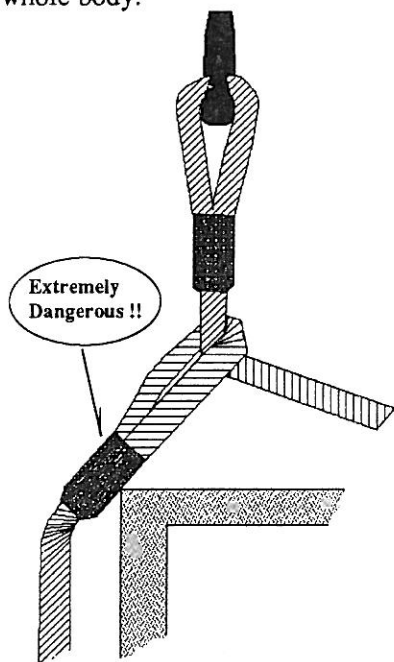


Sling hook slid out of eye due to uneven sling length and unequal leg loading

Safety Tip

Sling Attachment

Anytime a wire rope sling is used in a basket or choker hitch, there is an opportunity for the sling's sleeves to come in contact with a corner or sharp bearing point. The sleeve is designed to hold or restrain the rope's tails and has been mechanically pressed with an even amount of pressure over its whole body.



Should a concentrated loading point occur, there is a chance for the sleeve to crack or split, releasing the rope tail and possibly the load!

Client News

Reynolds Metals

Mr. Mike Murphree, Safety Director for Reynolds Metals of Longview, WA asked that WRRC provide a series of rigging mini-courses for maintenance and operations people within the plant. A brief rigging applications course was followed by a hands-on session requiring all course participants to assist in rigging and moving loads within the Longview facility.

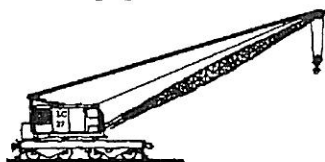
Adolph Coors Co.

The Adolph Coors Company of Golden, CO sponsored a five day WRRC comprehensive rigging course for members of their Construction Dept. at the request of Gene Cox, Crane Supt., and Del McDonald, Instructional Training Supv.

A special addition to the program was the Jacking & Rolling Section as instructed by Mr. Walter Hirth. The program included three days of classroom activities and workshops followed by two days of hands-on rigging task assignments. The participants were required to move a variety of loads between 2,000-16,000 lbs. They were asked to complete a rigger's checklist while moving the loads using three conventional means; bridge crane, mobile cranes and floor rollers.

Alaska Railroad Corp.

Mr. Clay Murphy, Heavy Eqpt. Supervisor for the Alaska Railroad Corp. has asked WRRC to return and conduct a second series of rigging courses for yard, shop and B & B crews. The February '90 programs will be focusing on safe and efficient rigging techniques for a variety of loads which ARR employees must pick, move, turn and/or skid depending on the equipment available.

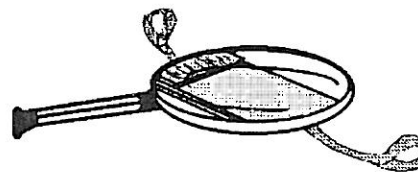


LaValley Industrial Plastics

Mr. Cliff "Larry" Brown, Operations Supv. of LaValley Industrial, contracted WRRC to conduct a one-day crane course for yard, shop and management personnel. The November program centered around the safe and efficient operation of their rough terrain Grove using a series of load chart workshops and hands-on activities.

Giant Yellowknife Mines Ltd.

Mr. Bill Parnell, Manager of Maintenance for Giant Yellowknife Mines, Ltd. in Timmins, Ontario requested that WRRC conduct a three day Certified Inspector Program for selected members of the work force working at the Pamour No. 1 and Schumacher Mines. The course is designed to develop and enhance a high skill level in the area of rigging gear inspection (see CIP Course in WRRC News section).



The Giant Yellowknife participants serve as inspectors for their surface and underground operations along with their regular job descriptions.

Wyodak

Mr. Baird Langworthy, Training Coor. for Wyodak, PP&L's power generating facility in Gillette, WY, contracted WRRC to conduct a series of rigging courses for maintenance personnel. The classroom and hands-on portions addressed rigging applications which required the use of mobile, bridge and gantry cranes, plus come-a-long and chain fall rigging operations.

Kidd Creek Mine

A one-day rigging course was presented for a select group of Kidd Creek Mine employees. Minesite Maintenance Training Officer, Mr. Paul Giustizia requested that WRRC

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(Kidd Creek cont.)

present information which can be used by maintenance and operations personnel for both surface and underground activities. Kidd Creek plans to expand their rigging training program using in-house and outside resources.

Idaho Power Company

Nine Idaho Power Company employees gathered in Boise this fall to participate in WRRC's Mobile Crane Operator Training Program. Lead instructor Devon Beasley created a battery of workshops designed specifically to the mobile cranes owned by Idaho Power. Each participant was required to pass a series of written load chart tests then successfully perform live lifts using IPC's 2 Groves and 1 P&H. As a result of their scores, all nine participants received a Certificate of Completion at the course conclusion.

Mr. "Flip" Howell, Line Training Instructor will have WRRC return in February 1990 to conduct a series of Line Crew Rigging Courses for IPC employees located in southern and western Idaho.



Industry News

Crane Certification Association of America

The 1990s promises to bring many changes to the workplace, especially in our industry. Already, a number of state OSHA or compliance regulation departments require an annual "certified" crane inspection complete with load test for lifting devices over 3 tons. This is for general industry, not just maritime or construction. More states will be requiring crane operators to qualify for and obtain an operator's license for most construction activities.

(CCAA cont.)

Many cities and states have legislation pending which will put these two requirements into effect; 1) Annual certified crane inspection, and 2) Crane operator licensing for construction crane operators.

The Crane Certification Association of America is very involved in assisting legislative and compliance enforcement groups to write or create regulation requirements for the above and other subjects which relate to the crane and rigging industry.

If your company uses cranes and rigging to produce or maintain the operations of your organization, or your company could benefit from having a VOICE as state and federal regulations are being created, then join the CCAA. Call CCAA Exec. Dir., Mr. John Davis, (209) 251-2133 for membership information.

The CCAA is a non-profit organization established to promote a safer working environment as pertains to cranes, rigging and all other lifting devices. Professional or Associate Membership is available to any person, company or organization.

WRRC News

Certified Inspector Program

The 1990 CIP - Rigging Gear will be held in Vancouver, WA USA on March 20-22, 1990. The five CIP sections cover wire rope, wire rope slings, synthetic web slings, alloy chain slings and rigging hardware/proof testing. The instructional format is based on OSHA CFR 29 1910, ANSI B30 series, ASTM A-391, ASTM E-4 and RR-W-410D.

The participants are required to pass written and hands-on field inspection tests to complete each course section. Clients are encouraged to register soon due to limited class size.

Rigging Conference 1990

Slated for March 27-28, 1990 at the Vancouver, WA Red Lion at the Quay, WRRC has designed this program for mine, mill, plant and utility personnel who participate in or oversee rigging and load moving activities.

Plans now include 10 speakers to address the following subjects:

- **JACKING & ROLLING** Machinery moving
Mr. Walt Hirth - Sheedy Drayage
- **ACCIDENTS, RIGGING & CRANES**
Preparing for legal action
Mr. Dave Schaner - WRRC
- **SUPER LIFT** Hoisting Loads 100 - 3,000 tons
Mr. Walt Trask - Neil F. Lampson, Inc.
- **RIGGING HARDWARE** Standard & custom
Mr. Andy Ulven - Ulven, RopeMaster/Skookum, Inc.
- **RIGGING INSPECTION** Hands-on workshop
Mr. Devon Beasley - EG&G of Idaho
- **LOAD CHARTS** Rigger's perspective
Mr. Jim Headley - Crane Inst. of America
- **HOIST ROPES** Shaft, drag line & shovel
Mr. George Delorme - Wire Rope Indust.
- **RIGGING PRACTICES** Proper & improper
Mr. Mike Parnell - WRRC
- **CRANE INSPECTION** Repair, replace or refuse
Mr. Arnold Smith - Crane Consultants
- **TRANSMISSION LINE CREWS**
Rigging applications
Mr. Dave Schaner - WRRC
- **NEW ROPES** Kevlar & Synthetic Braids
Mr. John Graham - Riggers Services, Inc.
- **RIGGING GEAR** Special load handling devices
Mr. Bill Wall - WRRC

Leading experts from every walk of our industry will be delivering the latest information in a series of fast paced presentations. Presenters have developed the programs so millwrights, maintenance mechanics and supervisors alike can walk away with a handful of new "tools" or valuable pieces of information.

Program fees range between \$265-\$335 depending on the number of people attending from one organization. Fees include a course manual complete with workshop hand-outs and reference materials from all 12 programs, special WRRC Rigger's Reference Cards, special session handouts, a course hat, lunch for each course day and more. **SIGN UP TODAY!**

Rigger's Reference Card

WRRC is pleased to announce the recent introduction of its Rigger's Reference Card. The specially designed card, which folds to credit card dimensions, offers the user a tremendous volume of solid information. Portions of the card include:

- Off-set center of gravity
- Coefficients of friction
- Load factors
- Snatch block & fairlead systems
- Weights of materials
- Sling - wire rope, web & chain
- Formulas - areas, volume etc.
- Dead-ending poles & towers
- Skyline loading
- Mobile crane hand signals
- Rigging hardware capacities

Only available since late September, the Rigger's Reference Card is already in its 3rd edition.

Clients may wish to customize certain portions of the card to meet the specific needs of their business or industry. Contact WRRC for details.

Washington Governor's Safety & Health Conference

WRRC president Mike Parnell delivered presentations to the Communications Panel and the Longshore Panel during the 38th Annual Washington Governor's Safety & Health Conference held November 7-9, 1989 in Seattle, WA. The safe and efficient use of rigging gear pertinent to the respective industries was discussed, with additional time available for question and answer sessions.

OSHA / ANSI

Slings

Excerpts, 7-1-88 ed. of 29CFR Ch. XVII§1910.184(e) *Alloy Steel Chain Slings*

(1) Sling identification

Alloy steel chain slings shall have permanently affixed durable

(OSHA cont.)

identification stating size, grade, rated capacity and reach.

(2) Attachments

(i) Hooks, rings, oblong links, pear shaped links, welded or mechanical coupling links or other attachments shall have a rated capacity at least equal to that of the alloy steel chain with which they are used or the sling shall not be used in excess of the rated capacity of the weakest component.

(ii) Makeshift links or fasteners formed from bolts or rods, or other such attachments, shall not be

(OSHA cont.)

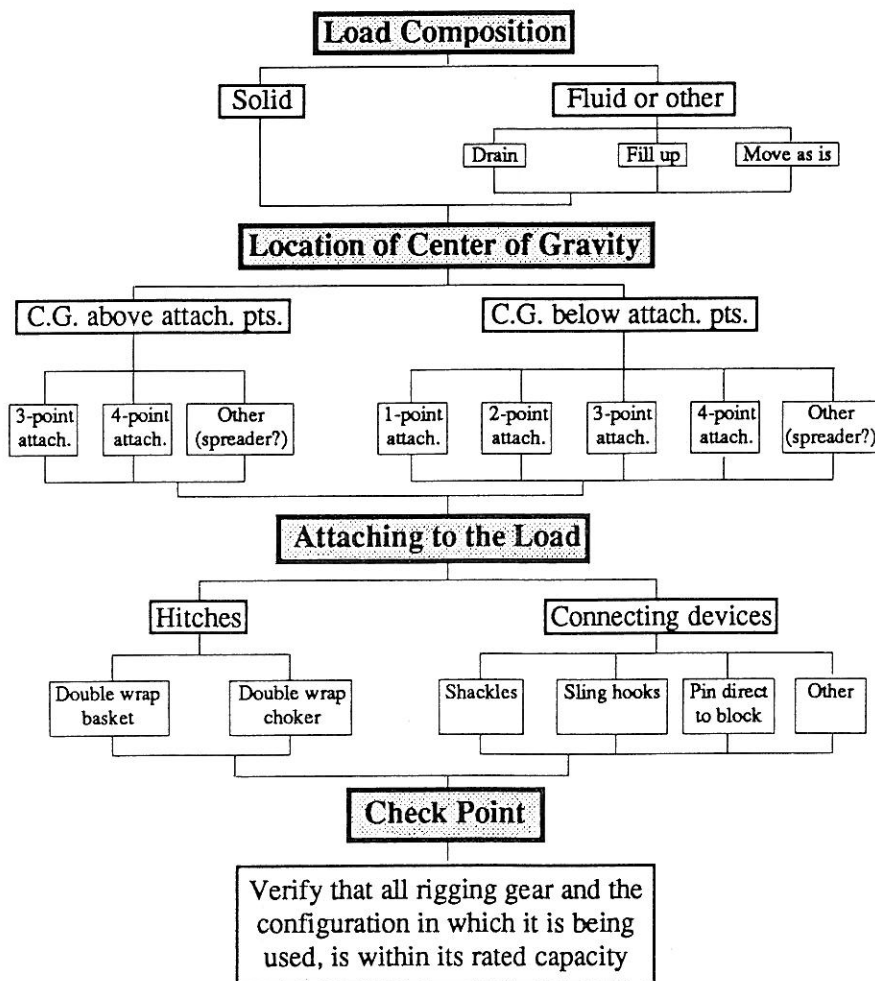
used.

(7) Repairing and reconditioning alloy steel chain slings

(i) Worn or damaged alloy steel chain slings or attachments shall not be used until repaired. When welding or heat testing is performed, slings shall not be used unless repaired, reconditioned and proof tested by the sling manufacturer or an equivalent entity.

(ii) Mechanical coupling links or low carbon steel links shall not be used to repair broken lengths of chain.

Decision Tree Choosing rigging gear and configuration



(cont. from Load Control pg. 1)