



Angelo State University
Operating Policy and Procedure

OP 34.20: Material Handling Devices

ORIGIN

DATE: September 1, 2007

LAST

REVIEW: November 4, 2011

PURPOSE: The purpose of this Operating Policy/Procedure (OP) is to ensure that material handling devices are used correctly and safely.

REVIEW: This OP will be reviewed in June of odd numbered years by the director of environmental health, safety, and risk management (EHS&RM) with recommended revisions forwarded through the vice presidents to the president by July 15 of the same year.

POLICY/PROCEDURE

1. Safe Operating Practices

The following practices shall be followed when a sling is used:

- a. Slings that are damaged shall not be used.
- b. Knots shall not be used to shorten a sling.
- c. Slings shall not be loaded above their rated capacity.
- d. Slings shall be protected from sharp edges on the load.
- e. All employees shall stay clear of a load while it is lifted or suspended.
- f. Shock loading is prohibited.
- g. Slings should not be pulled out from under a load while it is sitting on the sling.

2. Inspections

Slings shall be visually inspected before each use. The fasteners and attachments shall be inspected for damage by a competent person. The slings shall also be inspected during use to ensure that they are not being damaged from the load. Any damaged sling shall be removed from service immediately. A competent person is one who is knowledgeable, experienced, and capable to perform the outlined skills of this OP.

3. Alloy Steel Chain Slings

- a. This type of sling shall have a permanently attached identification tag stating size, grade, rated capacity, and reach.
- b. All the attachments on steel slings shall have a rated capacity. No makeshift attachments will be authorized. The rated capacity of the sling shall be determined by the weakest component of the sling.
- c. Inspections shall be done before each use. Slings will also be inspected on a regular basis according to the following:
 - (1) Frequency of use;
 - (2) Severity of conditions; and
 - (3) Nature of lifts being made.

Inspections shall be made at least every year when slings are idle for longer than a year.

- d. A thorough inspection by a competent person shall include looking for wear, defective welds, or an increase in length. If any of these conditions are present, the sling shall be taken out of service immediately.

4. Proof Testing

The employer shall ensure that all new, repaired, or reconditioned alloy steel chain slings, including all welded components, are proof tested by the sling manufacturer or equivalent entity. The proof testing will be in accordance with paragraph 5.2 of the American Society of Testing and Materials Specification A 391-65 (ANSI G 61.1-1968). The proof test shall be maintained on file for examination.

5. Repairs and Reconditioning

- a. Mechanical coupling links or low carbon steel repair links shall not be used to repair broken chains.
- b. Slings shall be removed from service if the hook is cracked or has 15 percent or more throat opening past normal, or if the hook is twisted more than 10 degrees past plane of the hook.

6. Wire Rope Slings

- a. This type sling shall not be used in excess of the rated capacity.
- b. The wire rope sling shall have a minimum clear length of wire rope 10 times the diameter of the rope between splices, sleeves, or end fittings.

- c. Braided slings shall have a minimum length of wire rope 40 times the diameter of the component between the loops or end fittings.
- d. Fiber core wire rope slings shall be removed from service if they are exposed to temperatures in excess of 200 degrees Fahrenheit.
- e. When new fiber core wire rope slings are exposed to temperatures above 400 degrees Fahrenheit or minus 60 degrees Fahrenheit, the manufacturer's recommendations shall be followed.
- f. All welded end attachments shall not be used until a proof test by the manufacturer is accomplished at twice the rated capacity of the wire rope. The employer shall maintain a certificate of the proof test and make it available for examination.

7. Removal from Service

If any of the following conditions exist (not all-inclusive), the wire rope sling shall be removed from service:

- a. Ten randomly broken wires in one lay or five broken wires in one strand in one rope lay;
- b. Wear or scraping of one-third the original diameter of outside wires;
- c. Kinking, crushing, bird-caging, or any other condition distorting the structure of the wire rope sling;
- d. Evidence of heat damage;
- e. End attachments that are cracked, deformed, or worn; or
- f. Corrosion of the wire rope sling.

8. Metal Mesh Slings

All metal mesh slings shall have a permanently affixed identification tag showing the rated capacity.

- a. The handles of the sling shall have the same rated capacity of the metal mesh sling.
- b. Ensure the load is evenly distributed across the wire mesh sling.
- c. Any type of coating that changes the rated capacity shall not be used.
- d. All new and reconditioned wire mesh slings, including the handles, shall not be used unless proof testing has been accomplished by the manufacturer or equivalent entity at one and one-half times the rated capacity of the wire mesh sling.
- e. Wire mesh slings that have not been impregnated with elastomers may be used in temperatures from minus 20 degrees to 550 degrees Fahrenheit without decreasing the working load capacity.

- f. For wire mesh slings that have been impregnated with elastomers, the working range is 0 degrees to 200 degrees Fahrenheit.
- g. Wire mesh slings that are repaired must not be used unless the repairs were done by the manufacturer or an equivalent entity.
- h. When a wire mesh sling has been repaired, it shall be tagged with a permanent marking, indicating the nature of the repair and date. This information shall be available for inspection upon request.
- i. Wire mesh slings shall be removed from service immediately if any of the following conditions exist:
 - (1) Broken welds;
 - (2) Reduction in diameter of 25 percent from abrasion or 15 percent from corrosion;
 - (3) Lack of flexibility;
 - (4) Distortion of the female handle so the depth of the slot is increased more than 10 percent or distortion of the width of the eye is decreased 10 percent or more; or
 - (5) A 15 percent reduction of metal at either of the handle eyes.

9. Synthetic Web Slings

- a. Each sling shall have marked or coded rated capacity.
- b. All slings shall be uniform in thickness and width and the edges shall not be split from the main body of the sling.
- c. The end attachments shall be of the same capacity as the sling.
- d. Stitching shall be the only method used to attach end fittings. The stitching should be uniform and contain sufficient stitches to equal the capacity of the sling.
- e. Nylon web slings shall not be used where fumes, vapors, sprays, mist, or liquids of acid or phenolics are present.
- f. Polyester and polypropylene web slings shall not be used where fumes, vapors, sprays, or mists of liquid caustics are present. Slings with aluminum fittings shall not be used in this environment.
- g. Nylon and polyester slings shall not be used in temperatures in excess of 180 degrees Fahrenheit.
- h. Polypropylene slings shall not be used in temperatures in excess of 200 degrees Fahrenheit.
- i. Web slings shall only be repaired by the manufacturer or equivalent entity.

- j. Each repaired sling shall be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to return to service. A certificate shall be kept on file for all repairs.
- k. Synthetic slings shall be removed from service if any of the following conditions are present:
 - (1) Acid or caustic burns;
 - (2) Melting or charring of any part of the sling;
 - (3) Snags, punctures, tears or cuts;
 - (4) Broken or worn stitches;
 - (5) Distortion of fittings; or
 - (6) Wear thread exposure.