Section 8 - Hardware Selection and Sizing

Objectives

When you have completed this section you should be able to:

- ❑ Explain how to select the appropriate type of hitches, slings, and fittings for a lift.
- ❑ Explain how to select the appropriate size of rigging hardware for a lift.
  - Calculate the stress in angular slings using the vertical leg length, the sling leg length, and load weight.
  - Explain why slings used to lift a load at an angle are under more load than when lifting in the vertical position.
  - Measure the vertical load angle with a protractor and use cosine tables to find the load on the sling.
  - Calculate the forces on the rigging hardware and use manufacturers' tables to select the proper size slings and hardware.
- ❑ Explain why it is so important to keep a load under control.

Hardware Selection

Once the load has been identified, its weight and center of gravity determined, and the required movement defined, the next step is to select and size the rigging hardware by:

1. Selecting the appropriate hitch style.
2. Deciding what type of sling is best suited for forming the hitch.
3. Identifying what fittings, accessories, and hardware will be required to form the hitch, attach it to the load, and to the hoist or crane hook.
4. Determining the load on each piece of rigging hardware.
5. Using manufacturers' data to identify the minimum sizes of the sling and fittings that can be used to safely make the lift or move the load.

Select hardware from reputable manufacturers. Make sure each item is properly marked and includes the manufacturer's logo, trademark or name.

Selecting the Hitch

Hitch selection depends on the type of load and how it will be attached. The hitch must be compatible with both the load and the lifting equipment. For example, if a load has pad eyes or other built-in attachment points for lifting, the point of attachment to the load is defined by the manufacturer; the choice of hitch is usually obvious.