



This policy was written by Warren Davison in December 2006 as a result of a near-miss accident and has been included in the Safety Manual as a guide to all Steward Observatory employees and departments.

### **Purpose:**

To provide guidelines and a method to establish a safe and intelligent way of moving materials. Although this applies to the Mirror Lab cranes explicitly the directions are applicable at other facilities for moves by forklifts or other conveyances. The main directive is to get more help when you need it whether it involves something as simple as asking another person to check the rigging or as complex as a written and controlled procedure.

### **Definition of a Significant Lift:**

Significant lifts are lifts in which you need to get more information or experience involved to ensure the lift goes safely. The idea is, the more guidelines listed below that apply to the lift, the more help and therefore the more familiar you become with the task until the task can be accomplished safely. These include but are not limited to the following guidelines.

- a) If you are unsure the lift is safe, then it is a significant lift and you need to seek help. ASKING is always correct.**
- b) When the action is infrequent or complex. The handling of a 5,000 lb. spreader bar may be routine, but a 500 lb. special device may be a significant lift, since it has never been done before.**
- c) The weight is large. This is again a relative term and depends on what you are doing. Special considerations should be given to the following.**
  - Relative capacity of the device. Lifting 4 tons with a 5-ton crane is more of a significant lift than 10 tons with a 50-ton crane. If you are over 50% of the rated capacity of the device, unless this is a very repetitive lift, it is a significant lift.
  - When the absolute weight of the lift exceeds 10 tons, it is a significant lift, even if it is a repetitive lift.
  - When hand lifting something, which weighs over 150 lbs. and requires several people to share the load, it is a significant lift and needs consideration and planning.



**d) The clearance is small or the size is large.**

- Proximity of people is an important consideration. No one is allowed under a load, but if they need to be near it to secure it with bolts, or around it when it could swing, then it is a significant lift.
- The clearance around an object could make a significant lift. When a little swing could damage something, there needs to be consideration given.

**e) The stability of the move is another important consideration.**

- If you are close to a condition when turning a load over and it may flop, it is a significant lift.
- When a load may topple when released, it is a significant lift.
- When you use more than one device, like one side lifted with a crane and the other side with a forklift, it is a significant lift.
- When you know the load will swing or slide when lifted it is a significant lift.

**f) When the load is fragile or very costly, increased vigilance is demanded.**

- Mirrors are always a significant lift. The only exceptions are mirrors less than 3 meters, the move has been repeated many times, and the rigging and procedure approved and proven.
- Mirrors over 3 meters in size are required to have a senior engineer or scientist present when lifted by a crane.
- Mirrors over 6 meters in size are required to have a written and approved procedure in place and have a senior engineer or scientist present before the lift is made.

**g) Complex or special rigging**

- Rigging to more than 3 points is tricky. When done for the first time on a load, it is a significant lift.
- When using rigging more than 50% of the rated rigging capacity, is a significant lift.
- An unusual shaped object where the center of gravity is unknown is a significant lift.



### **Methods of Handling a Significant Lift**

- a.) The method of handling a significant lift depends on how significant it is. If you are in doubt, then assign a higher level to the action. Seek help and guidance until questions and doubts are answered. Never deny help to anyone who asks. You can delay the lift for a short period of time and help in finding more experience.

The following levels are escalations in complexity and formality and should have an appropriate level for any activity. A knowledgeable person can also reduce the levels if appropriate.

- **Discuss the lift and gain the information required.**
- **Find a coworker with more knowledge or experience to guide the lift.**
- **Find a supervisor or engineer with sufficient knowledge to guide the lift.**
- **Have a written procedure for the lift.**
- **Have a written and reviewed procedure for the lift.**
- **Have a written and reviewed procedure and an approved safety observer for the lift.**