Selecting Tower Cranes

by Joseph R. Proctor, Jr., 936 Evergreen Road, Lake Oswego, Oregon 97034,

**Serial Information:** Civil Engineering—ASCE, 1995, Vol. 65, Issue 2, Pg. 52-56

**Document Type:** Feature article

**Abstract:**

Looming over the skyline like steel dinosaurs, tower cranes can look deceptively similar. But these beasts of burden are not a homogenous species, and selecting and positioning the right crane is critical to project planning for high-rise construction. Tower cranes offer several advantages over conventional cranes, and though the advice of the crane vendor can be helpful, the entire project management team should have a thorough understanding of tower cranes special needs and characteristics to be able to use them correctly. Tower cranes are available in a wide variety of types, sizes and capacities. As in any other type of crane, lifting capacity is one of the more important considerations. However, length of reach (radius), maximum hook height above ground and the crane's positioning also factor into the selection. Tower cranes have a distinct advantage over conventional lattice-boom crawler or truck cranes because the boom, or jib, looms high above the work site. The tower crane's jib can place its load anywhere within its radius of operation without interfering with the structure over which it swings. In addition, the operator can be either on the crane or control the crane remotely using instrumentation located on the building structure, while enjoying an excellent view of the load and its surroundings at all times.

**Subject Headings:** Cranes | Project management | Load factors | Homogenity | Team building | Trucks | High-rise buildings | Traffic engineering

To select the proper tower crane for any given project the following aspects should be considered: 1. Weight and radius of the heaviest lift(s) and the farthest pick(s). 2. The boom/jib length and tail swing of the crane. a. Consider how jib length and tail swing relate to fixed obstructions on or near the jobsite such as high power lines, buildings, bridges or future obstructions such as cranes or equipment to be used or erected on the project. 3.1 Selecting the crane. Matters to be considered in the selection of cranes are outlined in AS 2550.4: Cranes, hoists and winches – Safe use – Tower cranes. There are basically three types of tower cranes operating in Queensland – luffing (see figure 1 below), hammerhead (see figure 2 below) and self-erecting tower cranes (see figure 3 on page 49). Each type of tower crane has advantages and disadvantages, and the best crane type should be selected for the job to be undertaken. Figure 1 – Luffing tower crane. Tower cranes are a common fixture at any major construction site. They’re pretty hard to miss they often rise hundreds of feet into the air, and can reach out just as far. When you look at one of these cranes, what it can do seems nearly impossible: Why doesn’t it tip over? How can such a long boom lift so much weight? How is it able to grow taller as the building grows taller? If you have ever wondered about how tower cranes work, then this article is for you. Here, you will find out the answers to all of these questions and more!