

INDUSTRIAL BUILDINGS AND PLANT LAYOUT

Roadways and walkways

The safety engineer should always be alert to opportunities where he can assist the civil engineer in designing for maximum safety. Roadways in plant yards and grounds are sources of frequent accidents unless they are carefully laid out, substantially constructed, and well surfaced and drained, and kept in good condition. Recommendations of the *Asphalt Handbook*, published by the Asphalt Institute, or of *Concrete Pavement Design*, published by the Portland Cement Association, should be followed.

Heavy duty motor truck hauling requires roadways up to 50 ft wide for two-way traffic with ample radii at curves. Grades, in general, are limited to a maximum of 8 per cent. A slight crown is necessary for drainage, with ditches to carry off water.

Roadways should be located at least 35 ft from buildings, especially at entrances. At loading docks an allowance of 1½ truck lengths is desirable to facilitate backing.

The regulation and control of traffic, signs, road layout, and markings should conform to local and state practices. Good guidance is provided in the *Manual on Uniform Traffic Control Devices for Streets and Highways*, U.S. Dept. of Commerce, Bureau of Public Roads, Washington, D.C. (1961). As American Standard D61, it is being adopted by all the states.

Traffic signs and signals regulating speed and movements at hazardous locations are essential. Stop signs are specified for railroad crossings and entrances to main thoroughfares, and SOUND YOUR HORN signs are necessary at sharp curves where view is obstructed and at entrances to buildings. Mirrors mounted to afford views around sharp turns or corners of buildings are of great help in preventing accidents if roadways must be built thus close to buildings. Barricades and MEN WORKING signs are needed for construction and repair work. If roadways are used at night, traffic signs should be made of reflective or luminous materials.

Good walkways between outside facilities prevent injury from employees' stepping on round stones or into holes and ruts in rough ground. As far as possible, walkways should be the shortest distance from one building to another to discourage short-cutting. A

walkway that must be next to railroad tracks should be separated from them by a fence or railing. Warning signs should be installed at railroad crossings and other hazardous places. If walkways are located clear of the eaves of buildings, danger from falling icicles is reduced.

Concrete is preferred for sidewalks, especially in principal areas like entrances and between main buildings. Crushed rock surfaced with gravel or asphalt makes a good walk for less used locations.

Walkways should be kept in good condition, especially where they cross railroad tracks, and should be cleared of ice and snow.

Parking lots

To reduce travel in the plant grounds, a desirable location for a parking lot is between an entrance and the locker room. The entire parking area should be fenced. The surface of the parking lot should be smooth and hard to eliminate the frequent injuries that would occur from falls on stony or rough ground. Good drainage is essential.

The use of white lines 4 to 6 in. wide to designate stalls reduces confusion and the number of backing accidents. Standard stalls are from 7½ to 8½ ft wide. The center-to-center distance between parked cars varies according to the method of parking. (See Fig. 14-1.) Be sure parking does not encroach on fire hydrant zones, approaches to corners, bus stops, loading zones, and clearance spaces for islands. Driveways should be a minimum of 26 ft for two-way traffic and there should be no obstructions to viewing.*

Oblique parking demands less skill in maneuvering and results in fewer backing accidents, but requires more space per car. If the herringbone arrangement for parking is adopted, than as many cars can be parked as in 90-degree parking. The herringbone system utilizes the small triangular space unused in standard oblique parking.

Separate entrances for incoming and out-

*Details for signs and marking pavement are given in U.S. Department of Commerce, Washington, D.C. *Manual on Uniform Traffic Control Devices for Streets and Highways*. See also National Safety Council Industrial Data Sheet No. 451, *Plant Parking Lots and Public Loading Points*.