OSHA Subpart W: Rollover Protective Structures & Overhead Protection
Section 22
1926 Subpart W

Rollover Protective Structures (ROPS)

1926.1000(a)(1) This section applies to the following types of material handling equipment: To all rubber-tired, self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders, with or without attachments, that are used in construction work. This requirement does not apply to side boom pipe laying tractors.
1926.1000(c)(1) All material handling equipment described in paragraph (a) of this section and manufactured or placed in service (owned or operated by the employer) prior to September 1, 1972, shall be fitted with rollover protective structures no later than the dates listed below:

1926.1000(c)(1)(i) Machines manufactured on or after January 1, 1972, shall be fitted no later than April 1, 1973.
**ROPS Design Objective**

**1926.1000(c)(2)(i)** The design objective shall be to minimize the likelihood of a complete overturn and thereby minimize the possibility of the operator being crushed as a result of a rollover or upset.

**1926.1000(c)(2)(ii)** The design shall provide a vertical clearance of at least 52 inches from the work deck to the ROPS at the point of ingress or egress.
Material Handling Equipment

1926.1001(a) General. This section prescribes minimum performance criteria for rollover protective structures (ROPS) for rubber-tired self-propelled scrapers; rubber-tired front-end loaders and rubber-tired dozers; crawler tractors, and crawler-type loaders, and motor graders. The vehicle and ROPS as a system shall have the structural characteristics prescribed in paragraph (f) of this section for each type of machine described in this paragraph.
1926.1001(f)(1)(i) No repairs or straightening of any member shall be carried out between each prescribed test.

1926.1001(f)(1)(ii) During each test, no part of the ROPS shall enter the critical zone as detailed in SAE J397 (1969). Deformation of the ROPS shall not allow the plane of the ground to enter this zone.

1926.1001(f)(2) Specific performance requirements.

1926.1001(f)(2)(i) The energy requirement for purposes of meeting the requirements of paragraph (e)(1) of this section is to be determined by referring to the plot of the energy versus weight of vehicle (see Figure W-6 for rubber-tired self-propelled scrapers; Figure W-7 for rubber-tired front-end
ROPS Performance Criteria

\textbf{1926.1001(b)(1) (2) & (3) …} Operating between 0 and 10 miles per hour over hard clay where rollover would be limited to a maximum roll angle of 360 deg. down a slope of 30 deg. maximum.
Track type equipment tested on 45 degree slope for 360 degree rollover

Equipment travel speed up to 10 MPH

Rubber Tired Equipment tested on 30 degree surface.
ROPS Test Procedure

Must withstand specified test loads without excess deflection