

Grate Load Class Definitions

There are two main grate definitions in the trench drain industry to help specifiers select the appropriate grate: ANSI A112.21.1M and DIN 19580.

ANSI A112.21.1M		
Grates and top rims shall be designed to meet the following loading classifications in a static condition.		
	Light Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard) under 2,000 lbs. (900 kg.) For pedestrian foot traffic only.
	Medium Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard) between 2,000 lbs. (900 kg.) and 4,999 lbs. (2,250 kg.) For light pneumatic tire traffic only. Sidewalks and residential parking.
	Heavy Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard) between 5,000 lbs. (2,250 kg.) and 7,499 lbs. (3,375 kg.) For Commercial Pneumatic tire traffic patterns and tractor trailers.
	Extra Heavy Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard) between 7,500 lbs. (3,375 kg.) and 10,000 lbs. (4,500 kg.) For forklift traffic. Roads and Highways. H-20 Load Rated.
	Special Duty	All grates having safe live load (as calculated in paragraph 6.1.6 of the ANSI Standard) over 10,000 lbs. (4,500 kg.) For airport traffic.

DIN 19580		
Grates and top rims shall be designed to meet the following loading classifications in a static condition.		
	Load Class A	Light Duty Grate design load up to or exceeding 3,372 lbs per foot. (15 kn). For pedestrian foot traffic only.
	Load Class B	Medium Duty Grate design load of at least 28,100 lbs per foot. (125 kn). For light pneumatic tire traffic only. Sidewalks and residential parking.
	Load Class C	Heavy Duty Grate design load of at least 56,200 lbs per foot. (250 kn). Commercial Applications.
	Load Class D	Grate design load of at least 89,920 lbs per foot. (400 kn). For pneumatic forklift traffic. Extra Heavy Duty. Roads and Highways. H-20 Load Rated.
	Load Class E	Grate design load of at least 134,800 lbs per foot. (600 kn). For Commercial Solid tire traffic patterns, and impacts from steel struts or metal wheels (forklifts). Extreme Heavy Duty.
	Load Class F	Grate design load of at least 202,320 lbs per foot. (900 kn). For airport traffic.

Transportation Classifications

The American Association of State Highway and Transportation Officials' (AASHTO) "Standard Specification for Highway Bridges" defines H-20 loading as a two-axle truck with a maximum dual-wheel load of 16,000 lbs. **H-20 loading is defined as a tractor truck with a tandem axle semi-trailer with a dual-wheel load of 16,000 lbs.**

The FAA (Federal Aviation Administration) Advisory Circular AC 150/5320-6D describes aircraft loading as 100,000 lbs. placed over a 9" x 9" area.

The Americans with Disabilities Act (ADA) stipulates that the slot width be limited to 1/2" or less on gratings in walkways and elongated slots must be placed longitudinally so that they are perpendicular to the dominant direction of travel.

Heel Proof is defined as slots or perforations that are less than 1/4" in width or diameter.

The maximum safe live load is calculated by dividing the load at failure by two.