

ENGINEERING COMMUNIQUÉ

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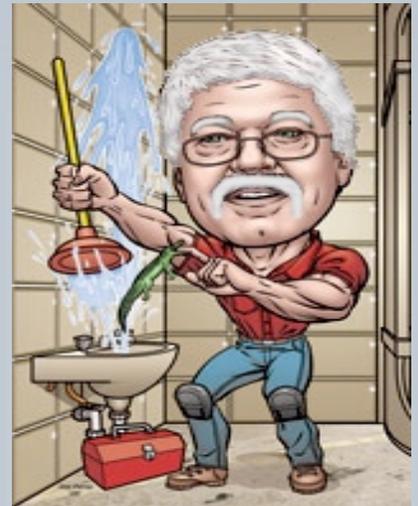
From: **THE SMITH ENGINEERING GROUP**

Subject: **Grate Loading Classifications**

Floor and trench drain grates are subjected to many types of loads. Jay R. Smith Mfg. Co. is able to provide the customer with a wide variety of grates suited for their specific application. The most important consideration when selecting a floor or trench drain is the anticipated load drain and grates will be subject to. Depending on the type of drain being specified and the intended use, different standards for the load rating classification apply. For typical floor, shower, area and any interior drain, ASME Standard A112.6.3 establishes testing criteria and load rating classifications. For many trench drain selections including our Smith/ACO line, the DIN19580/EN 1433 Standard applies.

Testing and categorizing a typical floor drain grate (Jay R. Smith Figure number 2120 for example) per ASME A112.6.3 Section 5 (Top Loading – Classification) is accomplished by utilizing a high capacity press equipped with a gauge calibrated in pounds or kilograms. A 3.5" platen is placed in the center of the grate and pressure slowly applied with the press. The point of failure is recorded and a "**Safe Live Load**" is determined by dividing the load at failure by two. Loading Classifications are Light Duty (under 2,000 lb/900 kg), Medium Duty (between 2,000 lb/900 kg and 4,999/2,250 kg), Heavy Duty (5,000 lb/2,250 kg and 7,499 lb/ 3,375 kg), Extra Heavy Duty (between 7,500 lb/3,375 kg and 10,000 lb/4,500 kg) and finally Special Duty (over 10,000 lb/ 4,500 kg).

Trench Drains are internationally classified in classes (A thru F) by Load Standard DIN19580, which is being superseded by EN 1433. Both the DIN and EN standards test products identically. The testing is similar to the above described method with the platen being rectangular and varying in length and width depending on the width of the grate. The largest platen is 10" Diameter and is utilized for grates over 12" wide. Results are recorded in kN (kilonewtons) or pounds. Class A is up to 15 kN (3,372 lb), Class B 125 kN (28,100 lb), Class C 250 kN (56,200 lb), Class D 400 kN (89,920 lb), Class E 600 kN (134,800 lb) and Class F 900 kN (202,320 lb). Jay R. Smith's Smith/ACO Division offers grates up to Load Class F.



CLEANOUTS:

One of the most frequent mistakes made by specifying engineers is the mis-application of cleanouts. Cleanout load ratings are established in the same manner as floor drains. Typically, the engineer specifies the standard cleanout (fig. no. 4020 series) for all general use areas. This cleanout is provided with a nickel bronze or polished bronze top for finished areas. So far, so good but the type of facility must be considered. If observant, you will notice in many food stores and hospitals, the cleanout covers are dished. It always seems there will be one or more cleanouts in front of the warehouse doors in food stores where the product & produce carts are rolled in and out. All cleanouts in food stores should be heavy duty because of the product carts and customer food baskets constantly rolling over them. Most of these carts particularly the produce carts are considered heavy duty wheeled traffic. Many cleanouts in hospitals are installed in the center of the corridors and often times the same dishing is observed. Be aware of the type of facility and suggest to the engineer they change their specification to a heavy duty cover (Fig. No. 4100 series).

A typical mistake made by the specifying engineer is to apply ASME load ratings to drains located in auto/truck traffic areas. The ASME load rating described above does not apply to auto/truck traffic. The standard itself states: **This Standard establishes design requirements for floor, area, adjustable floor, and trench drains that are used inside of building structures that are typically nonresidential.**

Jay R. Smith Mfg. Co. offers grates for almost any application. Please refer to our website for our many selections and contact Sales Engineering for any specific load ratings you may require.

Note:

The kilonewton (abbreviation and symbol: kN) is the unit of force in metric system (SI). The kilonewton is equal to the amount of force needed to accelerate a one thousand kilograms mass at a rate of one meter per second squared.

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