



Weldlok® Grating, Handrail, Drainage
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AS3996 – 2006 ACCESS COVERS & GRATES

COMPLIANCE – ROAD PROJECTS vs. BUILDING PROJECTS

Current Case Studies

Nepean Building & Infrastructure is one of Australia's largest designers, manufacturers & suppliers of stormwater grates. Our **Weldlok®** grates are used by Councils, Road Authorities, and in Industrial, Commercial and Residential projects across Australia.

We maintain a NATA accredited test facility at our Yagoona site in Sydney.

Our aim is to supply stormwater grates to the highest quality and functionality with compliance to the Australian Standard. **AS3996 -2006 Access Covers & Grates**

In Australia, at this time, all Access Covers & Grates are referenced in the National Construction Code N C C as referenced below.

The N C C edition 2012 Volume Two Part 3.1.1 DRAINAGE

Performance requirement for drainage is satisfied for drainage if designed & constructed in accordance with AS/NZS 3500 .3

AS/NZS 3500 3 2.13.3 requires Metal Access Covers & Sump Grates to meet AS:3996:2006

In practice, unfortunately, the compliance of Drainage Grates into differing building projects varies greatly. Almost all State Road Authorities and Municipal Councils across Australia are vigilant on the correct specification and compliance of their Drainage Grate assets.

The same cannot be said for Industrial, Commercial or Residential building projects. In these cases the issue of compliance for what is essentially a load bearing asset is almost completely disregarded by many builders, where grates are sourced and installed based only on price.

In many cases these Drainage Grates will fail, with consequences requiring at best the need for replacement at an inflated reconstruction cost or at worst, serious accident in the public domain due to product failure.

Since it is unclear which authority is responsible for the regulation compliance, of Drainage Grates and Covers in the Industrial, Commercial & Residential building sectors, builders and future owners face very real risk over which they have no control.

Case Study – Injured Cyclist

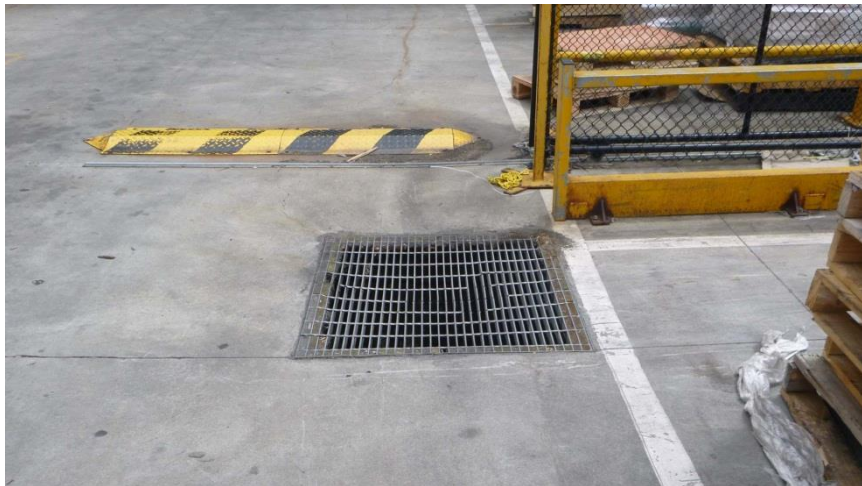
On-going case involving a cyclist who has received serious facial injuries as a result of a bicycle tire becoming jammed in a grate whilst traversing through a convenience store. The convenience store had undergone renovations in 2007 and additional stormwater grates were installed again after that time.

The grate shown below is in a serious state of failure and doesn't comply with AS3996-2006 in either Load Capacity, Pedestrian tolerances or Bicycle Safety. The failing grate should have been replaced once identified as failing. No action at this time has been undertaken by the site owner and the grates are still in service.



Case Study 1 - Distribution Warehouse subject to transverse impact load from low speed heavy transport

On this particular site the hardstand had 10 stormwater pit grates which were all in various stages of failure. 900mm x 900mm clear opening pits were covered with grates of an unknown load capacity. The owner, in one case, had attempted a repair, which quite obviously, had been inadequate. Had grates manufactured to AS3996-2006 Load Class D been used this would have been avoided. Replacement cost for all grates on the site could be in excess of \$10,000.00



Case Study 2 – Small Manufacturing Facility

In this location, in the foreground we can see a Council Gully Grate installed as per their specification, product compliant with AS3996- 2006. In the background (and inset) we see a small painted grate, according to the owner of the factory the grates in the parking areas have been replaced 3 times due to either theft and/or failure under load. The likelihood of further replacement of these grates is high. Had the builder used grates complaint with AS3996-2006 with a Class C load capacity, lockable, they would almost certainly still be in service.



Case Study 3 – Private Body Corporate Housing Development

Clearly, in the construction of this development, the builder has not used any grates that are compliant with AS3996-2006. All grates observed at this location were non-identifiable by manufacturer. All were of insufficient structure to carry the required Class D loading. In the case of the main picture the wide span of this particular pit and the inadequacy of the grate will lead to inevitable failure under load.



None of the Stormwater grates at this location were compliant with the requirements of AS3996. All were of insufficient structural capacity and were not identifiable by manufacturer.

Case study--4-Commercial Car park-Sunshine- Vic

This newly constructed car park, at a commercial premises-contractor has used cheap non-compliant stormwater grates. These failed within 6 months and will require replacement. AS3996-Class C was required, but these product load capacities cannot be determined



Case Study 5 - Commercial Car park, at Derrimut Victoria

Manufacturer demonstrates clear disregard for the Australian Standard. In this case the grate has been tagged with a label indicating Class D when it is clearly not, having failed in the car park of a commercial premises. The manufacturer in this case indicated to the contractor that the Class D tag was only his "internal code" and if he wanted AS3996 compliant " he should have asked for it"



Not all grates are the same!

Class D - We don't think so!

Case Study 6 – Commercial Car Park – Brisbane

As per AS3996-2006 the grate used in this application should have been Load class C, but here we have a Load Class B grate being used. However given the location and limited access to heavy vehicular traffic a Class B load grate should not sustain this type of failure leading to questions on the integrity of the manufacturers load capacity claim.



Case Study 7 - Non identifiable imports

Very large numbers of cheap, non-compliant, non-identifiable imports are being sold around Australia. This should be a cause for concern. The construction of the grating material can be quite inferior (as seen in this image) and in case of failure the supplier cannot be identified. *Whether the product is locally made or imported is not the issue but compliance to Australian Standard AS3996 2006 certainly is.*



Case Study 8 – Doesn't require commentary!



Case Study 9–Multi-Unit Commercial Development–Thomastown

This development contained grates installed from 3 separate manufactures, of which only one brand of grate was AS3996-2006 compliant. The example below of obvious insufficient load capacity, was in a state of failure and unidentifiable by manufacturer.



Both grates below were non-compliant and unidentifiable.



Case Study 10 – Kerb Profile Gully Grate. Sanctuary Lakes Vic



Products of inadequate load capacity will fatigue and deflect under load. In this case we see a bad imitation of an approved product that has deformed dramatically and damaged the surrounding concrete. The original specification was for a Class C grate, It is clear in this image that grate was incapable of being used in any trafficable installation. The cost of reinstatement will be 2-3 times the original cost of installation.

Case Study 11-Gully Grate-Vic

The installation below is a retro fit situation that has been poorly designed. The grate frames have experienced fatigue at the centre support and the grates dislodged from the frame.

The effect, had it not immediately been reported to council, would have been of, a car or truck completely dislodging the first grate and driving into the pit. These grates were not marked with any manufacturer's name and it would be unclear if they comply to AS3996 - 2006



Case Study 12 – Liverpool CC – NSW

The grates below are imitations of a compliant product, but clearly do not have the load capacity of an AS3996 Class D product or this dramatic deformation would not have occurred in service. The products have no tagging, so the supplier/manufacturer cannot be traced.



Case Study 13 – Commercial Car park – Tuggerah . NSW

The grate below again demonstrates lack of load carrying capacity for the given span. The grate has deformed dramatically and the expectation will be the failure of the welded cross bars leading to ultimate product failure.



Note: It should be stated that all the grates shown above may be either Australian or Imported manufacture; the commonality is that all are non-compliant to AS3996-2006

The Australian Standard for Access Covers & Grates

AS3996 – 1992

Prior to 16th March 1992, the load rating system for stormwater grates was determined by each manufacturer or supplier. A national standard was not available and relative generic terms such as 'light', 'medium' and 'heavy' were generally used to describe the 'duty' or 'weight' capacity of the products. Because of the multiplicity of interpretations by suppliers, purchasers and installers, these terms frequently failed to provide an adequate indication of structural capacity and durability. The variability of the descriptions was usually most obvious when grates and covers, manufactured from different materials, were compared.

The Australian Standard removed the ambiguity of the generic descriptors. End-users could then be assured that they would be protected from the costs and nuisances which arise when products are incorrectly specified through the design, procurement and installation process. The ambiguous performance descriptors of "light", "medium" & "heavy" were replaced with "Load Classes A,B,C,D,E,F & G"

AS3996 -2006 Access Covers & Grates

The Australian Standard was updated in 2006 with a number of minor changes. Whilst maintaining the A – G load rating, the reintroduction of performance descriptors aligned to each Class was added. "extra light", "light", "medium", "heavy" as appropriate.