Storm Plastics (SA) Pty Ltd

ABN: 46 008 075 661 ACN: 008 075 661

4 Dunorlan Road Edwardstown SA 5039
Ph: 08 8374 3277 - Fax: 08 8374 3279
Email: info@stormplastics.com.au
Website: www.stormplastics.com.au

STORM PLASTICS Australia

TECHNICAL NOTES

" A WELL DESIGNED DRAINAGE SYSTEM WILL BENEFIT YOU AND THE ENVIRONMENT "

All soils are affected by water. - Clay soils in particular react physically. They swell and shrink (expand and contract), with changes in moisture content. - Maintaining absolute stability of the moisture in the soil around a building, be it a house or a shed, is rarely achievable but much can be done to control it and minimise its effects.

Adopting a "risk management" philosophy in such circumstances could well prevent litigation at a later date.

Qualified Geotechnical (soil) Engineers are able to assess the potential for any soil type to react to variations in moisture content. - Such assessments require samples of the soil at the site be taken and given engineering assessment in accordance with the Australian Standard AS 2870 - 1996 . - Results from site testing are collated and transformed into easily identifiable Site Classifications. **IT IS A MANDATORY REQUIREMENT** that all Builders obtain a "Soils Report" from a qualified Soils Engineer prior to commencing on-site structural works.

REACTIVE SOILS
"SITE CLASSIFICATIONS " (In brief)

Class	A	Little or no ground movement (Non-reactive).		
Class	**S**	Slightly Reactive.		
Class	**M**	**Moderately Reactive.**	**Extending to :**	**Class M - D**
Class	**H**	**Highly reactive.**	**Extending to :**	**Class H - D**
Class	**E**	**Extremely reactive.**	**Extending to :**	**Class E - D**
Class	P	Applies to "Problem sites" (eg., filled soil or potential to collapse), special provisions apply.		

" D " means Deep clay soils.

IN GENERAL TERMS reactive soils expand and contract (move), in accordance with the moisture content. Example, from a dry state to a saturated state: Class "M" may move 50mm – Class "H" 80mm – Class "E" 110mm.

For allotments containing reactive soils classified as H , E , H - D or E - D it is a mandatory requirement for compliance with AS 2870 - 1996, Section 5 Clause 5.5.4 , that stormwater and sewer, Drain Waste and Vent (DWV) pipes be lagged through external footings and **flexible connections be provided** adjacent to the footings prior to connection to the drainage system. (AS 2870 - 1996 also contains further useful information relevant to the preparation and ongoing maintenance of work sites prior to and after construction has taken place to minimise the effects of reactive soils and subsequent damage.)

Although AS 2870 - 1996 emphasises the point that it is a mandatory requirement for sites with soils classified as "H," "E," "H - D" and "E – D" that flexible connections be provided in drainage systems adjacent to footings and other predominant structures, the problems associated with reactive soils extend far beyond such works, they extend the length and breadth of the drainage system. The most reactive area being 'near surface clays'.

SUMMARY in perspective: All of the above information relates to soils or the environment into which a drainage system may be laid.

In addition to reactive soils serious consideration should also be given to the inherent performance characteristics of PVC - U drainage systems in their own right.

PVC - U has an expansion rate of approximately seven times that of steel and as such is much more reactive to extremes of heat and cold. Internal thermal stresses from direct sunlight, the temperature of the soil/fill surrounding the pipework and of the liquid waste being conveyed, are natural enemies which impose stress upon a PVC - U drainage system. Provision for movement is therefore a "must do" for all such drainage systems.

In the past very little consideration was directed at provisions for underground drainage systems to move as Nature dictated albeit that the need was acknowledged for above ground PVC - U drainage installations. The horror of tree roots entering underground drainage systems was constantly on the minds of the Authorities. In consequence elastomeric (rubber ring) joints were shunned for underground drains in the early days of PVC - U plumbing.

Needless to say, with the passage of time, tree root intrusion is an ongoing and frequent source of annoyance to property owners. Fully solvent cement jointed drainage systems are rigid and cannot move in harmony with Nature. Inevitably the pipework system fails and releases water into the ground or ground water comes back into the system. House movement and cracking is a typical outcome when a drainage system fails.

Storm Plastics (SA) Pty Ltd recommends that provision be made for movement in the design and installation of all PVC - U drainage systems without exception, i.e., Site Classes A, S, M, H, E and P to manage and mitigate the risk of cracked buildings.

It is considered that flexible joints, swivel and longitudinal expansion fittings, be a mandatory requirement for all drainage systems.

The designated location for such fittings should be given consideration by a qualified Soils Engineer with a working knowledge of the performance characteristics of pipework drainage systems.

All installation works are to be conducted by a COMPETENT LICENCED TRADESPERSON in accordance with the manufacturer's directions, where applicable, to best works practices.

Storm Plastics (SA) Pty Ltd DWV expansion and swivel joint fittings are accredited with **"WaterMark"** certification in accordance with participating Water Authority requirements.

Storm Plastics (SA) Pty Ltd also has an excellent range of expansion and repair fittings available for Stormwater applications in addition to an extensive range of supplementary fittings for the Plumbing and Drainage Industry.

More detailed information is available on our product brochures.

FOR TECHNICAL ENQUIRIES CONTACT:

STORM PLASTICS (SA) PTY LTD

ABN: 46 008 075 661

Phone (08) 8374 3277 • Fax (08) 8374 3279

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Website: www.stormplastics.com.au