Collapse of fabric shade sail support structures

What is the problem?

Shade sails are often erected in children's play areas on school premises, playgrounds and public parks.

Employers, designers and installers need to be aware of the dangers of installing these types of structures without site-specific design and maintenance considerations.

What are the risks?

WorkSafe is aware of at least two recent incidents where the structures intended to support shade sails located in school grounds have had major structural failures. Although no-one was injured in either of these incidents, both had the potential for serious injuries or death.

Shade sails are not heavy structures and are usually supported by independent poles or by framed structures that act as supports. They are strongly affected by wind loads and require secure connections at the base of the supporting structures to sustain the momentum imparted by lateral wind forces.

It is essential to ensure that these structures are built to the required structural integrity so as to sustain likely forces that may act upon them.

Since wind loads can act in compression, suction or in cyclic sequence, shade sail structures can be subject to fatigue, which may affect both welded and bolted connections of the supporting structures.

What is a solution to this problem?

Design and Construction

Ensure that the shade sail system is designed and installed by a competent person[1]. In addition, the following should be undertaken:

- Obtain soil tests for each structure to determine the nature of the soil on the subject site.
- Check and certify all site specific designs. This should be done by a suitably qualified and registered civil engineer.
- Inspections by a competent person should occur during construction.
- The structure should be 'signed-off' on completion by the competent person.

Maintenance and Inspection

Have the shade sail system regularly monitored and inspected by a competent person to ensure that it is maintained in a safe condition throughout its life.

Building Commission Requirements

Generally, all shade sail structures will require a building permit.

However, Schedule 8 of the Victorian *Building Regulations 2006* describes certain buildings and building work that are exempt from the requirement to obtain a building permit and occupancy permit.

Either a municipal building surveyor or private building surveyor can provide advice about whether a proposed building or structure, such as a shade sail, is exempt from the requirement to obtain a building permit.

Where a building surveyor provides verbal advice to a builder that a permit is not required, the builder should request that advice in writing.

The building permit process ensures that a thorough check of engineering principles has been done, along with mandatory inspections being undertaken during construction, to ensure on-site design compliance is achieved. Refer to Part 12 of the *Building Regulations 2006*.

[1] A competent person is a person who, by their training or experience, has the skills and knowledge to carry out the task they are to undertake.

Further Information

WorkSafe Advisory Service
Toll-free 1800 136 089
Email info@worksafe.vic.gov.au
Website www.worksafe.vic.gov.au

Acts and Regulations
Building Regulations 2006
Acts and regulations are available from Information Victoria on 1300 366 356 or order online: go to www.bookshop.vic.gov.au

Other Information
Health and Safety Alert – Awning collapse available from http://www.deir.qld.gov.au/workplace/publications/alerts/awnings/index.htm

VWA Keycode – HSS0007/01/06.07