Sunshine Coast

Open Space Landscape Infrastructure Manual

Shade sails

Also see:

Information sheet (INFO)

Technical drawings (DWGS)

Sunshine Coast COUNCIL

Embellishments

April 2021

1.0 Overview

This category of the LIM has been developed to provide guidance for the design and construction of shelters.

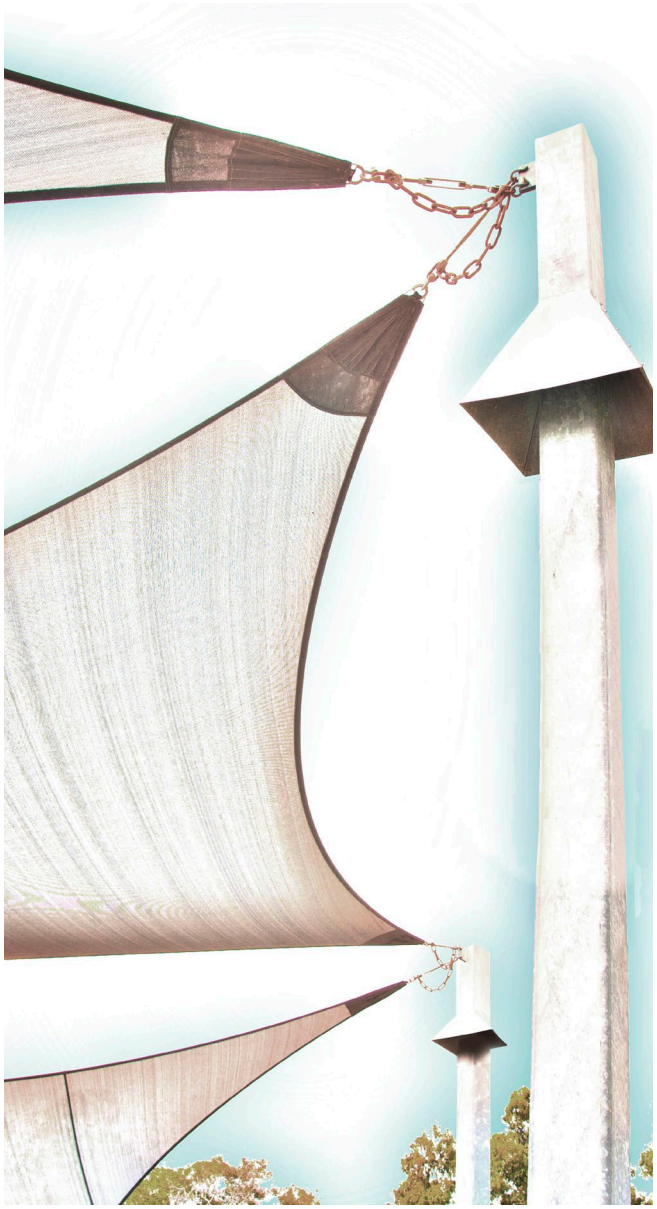
This specification section addresses the following:

- **Project specifications**

Important notes:

- This resource does not try to replicate all of the provisions of Legislation, Australian Standards (AS) and corporate documentation in words and pictures, nor does it seek to define their requirements.
- This specification does not over ride requirements stipulated in a development approval.
- This resource aims to draw attention to the fact that effectively applied technical requirements translate into desirable qualities for end users.
- Please refer to the relevant authority websites for updated information and current document distribution dates. These documents are subject to amendments from time to time.
- Product design, manufacture and installation requires appropriately qualified professional, fabricators and installers to provide site specific solutions.
- The specifications outline councils minimum acceptable standard, which may be above the expectations of current workplace standards.
- Project specific variations may be appropriate as a result of site, environmental or other constraints.
- Any variations to these standards must be approved in writing by council prior to commencement of variation works.
- This document is intended for use as a component within a contract document, however the accuracy and execution may vary as site and project specific conditions dictate.

This shade sail package is prescribed for parks and environmental reserves. Sports ground specific design will be developed further in future.



Project specifications

1.0 General

- Unless otherwise specified, all materials, methods and workmanship shall be in accordance with the current Building Code of Australia, relevant Australian Standard or best practice industry standard where no Australian Standard exists.
- Shade structures to be built to a locally approved wind rating in line with *AS 4055:2012 - Wind loads for housing* as determined by an RPEQ based on the specific site conditions and any recommendations specified within the development building approval.
- Written certification from a structural engineer that the finished shade structure installations are safe, suitable and fit for the purpose.
- Geotechnical investigation and report to be supplied and footings designed and certified by a structural engineer.
- Shade structure cloth to be of the highest UV rating protection and fire retardant as per *AS 4174:2018 Knitted and woven shade fabrics*
- Smaller multiple sails are preferred over larger single units. Where larger single units are necessary, a hole or flap must be engineered to release wind pressure in storm events.

2.0 Frame and rigging

- To prevent failure, components of the shade structure must not rub and wear against each other.
- Frame and steelworks to be hot dipped galvanised after manufacture (powdercoating tends to fail on posts).
- Poles to include a concrete apron at the base (to minimise brush cutting around the pole).
- Fasteners, and perimeter wires to be 316 Stainless Steel.
- Tensioning devices and turnbuckles to incorporate a failsafe system to prevent dislodgement. For example; double lock nuts and spring washers, Loctite or similar screw/nut locking compound. A safety chain is to be installed.
- An additional failsafe wire or safety chain to be fastened from the shade sail to the post.
- There must be adequate provision for adjustment and tensioning of shade sails by way of turnbuckles, chain systems or similar (must be independent of fabric tension).
- D shackles to be a minimum of 12mm in diameter.
- D shackles to include a failsafe tie wire inserted through the eye of the pin and secured to the D shackle to ensure that the pin remains secure.
- Rigging etc. must be ‘closed’ (hooks, hook turnbuckles, ‘S’ hooks, snap links etc. must not be used).
- Corner of shade sail to be sandwiched between circular aluminium plates to form fabric clamp, to minimise tearing of fabric
- All attachment points to be fitted with safety chains, chain and shackles rated to the relevant Australian Standards - Safe Working Load (SWL) and certified by a Registered Professional Engineer Queensland (RPEQ).
- Load rating certificates, foundation details, structural details and engineering certification must be supplied to confirm that materials used comply with engineering certified specifications and notes. The engineering certification must provide evidence that the fittings comply with *AS 2741- 2002: Shackles*.

3.0 Membrane specification

- Membrane to be shade cloth complying with *AS 4174:2018 Knitted and woven shade fabric*. The material grade to be extra heavy.
- Shade sail colours to be dark colours to minimise staining and to meet UV requirements.
- Membranes to be cut to ‘form’ and not stretched to ‘form’.
- Tear strength, minimum - Warp 172N, Weft 196N.
- Breaking strength, minimum - Warp 799N, Weft 2147N.
- UV Protection, minimum - 91%+ (very effective)
- Membrane to be fire retardant.
- Wire inside the hem to be protected (inside a tube/hose) and prevented from rubbing through the fabric.
- Perimeter wire to be a minimum diameter of 5.0mm.
- Perimeter wire sockets - to be PVC reinforced
- Corners - to be PVC reinforced and concealed by the shade cloth fabric.
- Fixing points to include reinforced eyelet plates.
- Wire exit points to be reinforced.
- Reinforcing patches to be oriented to match the membrane.
- All shade sail stitching is to be PTFE (polytetrafluoroethylene) UV stabilised sewing thread.

4.0 Footings, fixings and finishes

- Concrete work (footings etc.) associated with the installation of shade structures must have a minimum compressive strength of 25MPA or as nominated by an RPEQ.
- Finishes and fittings to be vandal proof and corrosion resistant.
- Fixings to be marine grade 316 Stainless Steel to ensure longevity.
- Footing details to include geotechnical report with footings designed and certified by an RPEQ.
- Concrete footings to be as per 'foundations' listed in *AS4685.1:2021 and AS16630:2021*. Where posts are installed in turf areas, a concrete apron is to be provided to minimise mower damage.

5.0 Shade compliance

- A shade diagram (shade modelling) must be illustrated to provide a minimum of 50% shade cover of the equipment between 9.00am and 3:00pm (EST) in summer. Dependent on the size, orientation and activity elements, shade modelling shall be extended for a longer duration of the day, as well as, autumn, winter and spring months. This will ensure the shade sail is appropriately orientated.
- Future shade provision, shade trees to be planted on the northern and western side of the playground structures, not closer than 2.5 metres and not further than 3.5 metres. Root barrier to be installed along the edge of the playground surfacing closest to the tree planting to prevent root incursion, dependant on the chosen species (refer to project Arborist for advice).
- Shade trees to be selected to minimise fruit drop and limb drop. Trees to be lift pruned to ensure clear surveillance.

6.0 Heights and clearances

- Any sail connection point shall be a minimum of 4.5m above ground level to limit access.
- When installed, shade sails to have a minimum vertical clearance of 3.0m above the highest point of play equipment. In special cases this distance may be reduced to 2.5 metres where the likelihood of vandalism is low, or equipment restricts access (e.g. swings are hard to balance upon).
- In special cases where shade profile diagram proves shade is inadequate, the post and shade sail connection point may be reduced, however the height clearances must be maintained (as per diagrams) and there must not be unintended access opportunities onto the shade sail itself (i.e. from an adjoining embellishment). Anti-climb vandal barriers must be installed as per drawing.
- Ensure embellishments (e.g. bin enclosures, seating, shelters) are located a minimum of 2.5 meters away from the shade sail posts, to prevent people from using them as leverage to climb upon shade sail.
- Consideration must be given to the positioning of shade sails adjoining natural elements - to not allow people to climb shade sails from overhanging branches (either via post or side of shade sail).
- Shade sail posts should allow ample space for run up and landings at the beginning and end of elements to reduce conflict and enhance safety (particularly important for skate parks).
- Shade sail post location in **play spaces**:
  - Shade sail posts should be located outside of the playground surfacing footprint as the preferred option
    - position posts in garden beds, or where posts are located in turf, provide a concrete mowing collar.
  - Where this isn't possible, posts may be located within the playground surfacing footprint, provided the following requirements are met
    - a risk assessment must be undertaken and the post location approved by P&G
    - the posts must not be located in play space fall zones as per *AS* requirements
    - the post must not be placed in any transition zones between play equipment elements (i.e. path of travel)
    - the post should be placed at the outer edge of the playground footprint where possible
    - adequate luminance contrast between the posts and surfacing must be achieved
- where possible, posts should not be embedded in rubber surfacing, due to post / footing maintenance. Shade sail posts must not provide easy unintended access to playground equipment.
- Sail to be designed to drain into garden, not onto play equipment
- Shade sail posts in exercise areas, play spaces and skate parks, must be placed appropriately so they don't create collision points.

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Acknowledgements
Council wishes to thank all contributors and stakeholders involved in the development of this document.

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Details in this document are deemed to be the minimum standard and the user may wish to apply a higher standard subject to approval by council.

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