



ACT
Government

FURNITURE AND FIXTURES 08D

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INFRASTRUCTURE
TECHNICAL
SPECIFICATION
08 - INCIDENTAL WORKS

Transport Canberra and
City Services

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1 FURNITURE AND FIXTURES

1.1 General

General: This Specification comprises the construction of proprietary landscape furniture and fixtures including seats and benches, bin enclosures, tree grates, bicycle racks, bollards, design and construct shade sails, fixed shelters, BBQ's, drinking fountains, flag poles.

Exclusions: custom design elements, proprietary toilet blocks, fencing and barriers, signage, connections to sanitary drainage.

1.2 Responsibilities

Requirement: Provide for all works and activities associated with the supply and installation of furniture and fixtures in accordance with the design documents including Authority Approvals.

1.2.1 Cross references

General: The following documents are related to this Specification:

1.2.1.1 ACT Legislation

Environmental Protection Act

Work Health and Safety Act

Waste Minimisation Act

1.2.1.2 Specifications

Requirement: Conform to the following:

MITS 00 Preliminaries

MITS 02 Earthworks

MITS 03 Underground services

MITS 09 Landscape

1.2.1.3 Design Standards

General: The following Design Standards are related to this Specification:

MIS 16 Urban open space

MIS 17 Shopping centres and commercial areas

MIS 19 Sportsground design

MIS 20 Street and park furniture

MIS 21 Recreation Facilities

Attachment B Design acceptance requirements

1.2.1.4 TCCS Reference Documents

General: The following TCCS reference documents are related to this Specification:

- Reference document 04 Protection of public landscape assets
- Reference document 07 Operational acceptance submissions
- Reference document 08 Works as executed quality records
- Reference document 09 Final acceptance submissions
- Reference document 10 Landscape consolidation
- Reference document 11 Drafting Standard for Civil and Landscape works

1.2.2 Referenced documents

1.2.2.1 Standards

General: The following documents are incorporated into this Specification by reference:

- AS 4174 Synthetic Shade Cloth
- AS 1170 Structural Design Actions
- AS 4100 Steel Structures
- AS 1554 Welding of Steel Structures
- AS 2741 Shackles
- AS 3500 Plumbing and Drainage – Water services
- AS/ NZS 3000 Electrical Installations
- AS 1530.2 Methods for fire tests on building materials, components and structures Fire-resistance test of elements of construction
- AS 4020 Testing of products for use in contact with drinking water
- AS 3688 Water supply – metallic fittings and end connectors
- AS/NZS 3718 Water supply – tap ware
- AS 5200 Technical specification for plumbing and drainage products
- AS 3996 Access, Covers and Grates
- AS 1254 uPVC-U pipes and fittings for stormwater and surface water applications
- AS 1477 PVC pipes for pressure applications
- AS1646 Elastomeric seals for waterworks purposes
- AS 2033 Installation of polythene pipe systems
- AS 2053 Conduits and fittings for electrical installations Rigid metal conduits and fittings
- AS 2280 Ductile iron pipes and fittings
- AS 2566 Buried flexible pipelines Structural design
- AS 1477 PVC pipes and fittings for pressure applications

1.2.2.2 Other Publications

Building Code of Australia (BCA) Volumes 1 and 2

HB 295.3.21 Australian Handbook – Product Safety Framework- Gaps and Openings Finger entrapment

Proprietary products: To *TCCS Products previously considered for use list*

1.2.3 Interpretation

1.2.3.1 Abbreviations

General: For the purposes of this Specification the following abbreviations apply:

TCCS: Transport Canberra and City Services

1.2.3.2 Definitions

General: For the purposes of this Specification the definitions given below apply:

Proprietary item: a product sold under a brand name owned by a company, rather than a generic name (a general name for a type of product).

Furniture/fixture: any proprietary fixed item which is to be installed in the landscape

Authorised person: PAP/ Superintendent/Client of the Works

1.2.4 Hold points and witness points

1.2.4.1 Notice

General: Give notice so that the documented inspection and submissions may be made to the **Hold point table**, the **Witness point table**.

Table 8D-1 Hold points table

Item	Clause title	Requirement	Notice for inspection	Release by
Materials				
8D.1	Standard drawings - furniture and fixtures	Submit installation details and colour schedule for each element	Four (4) weeks prior to commencement of installation	Authorised person
8D.2	Shop Drawings – Shade Sails	Submit shop drawings for shade sails	Four (4) weeks prior to commencement of installation	Authorised person
8D.3	Samples	Submit samples for each element	Four (4) weeks prior to commencement of installation	Authorised person
Execution				
8D.4	Compaction - Subgrade	Submit information confirming conformance	48 hours prior to installation of base	Authorised person

Item	Clause title	Requirement	Notice for inspection	Release by
8D.5	Compaction - Base	Submit information confirming conformance	48 hours prior to installation decomposed granite gravel	Authorised person
8D.6	Compaction – decomposed granite gravel	Submit information confirming conformance	Completion of installation of decomposed granite gravel	Authorised person
8D.7	Set out – Furniture, Fixtures, Shade sails etc	Advise that setout is complete	Two (2) days prior to installation	Authorised person
8D.8	Setout – all services (electrical, water, drainage etc)	Advise that setout is complete for alignment of electrical conduit	Two (2) days prior to excavation of trenching	Authorised person
8D.9	Shade Sails – footing excavation	Advise that footings have been excavated	Two (2) days prior to installation of posts and backfilling	Authorised person
8D.10	Decomposed Granite Gravel	Incorporation of Stabiliser	During installation of decomposed granite gravel	Authorised person
8D.11	Furniture delivery to site	Advise that the furniture / fixtures have been delivered to site and are ready for installation	Prior to installation of items	Authorised person
8D.12	Line and level	Advise that furniture has been installed to conforming line and level	At completion of installation of furniture / fixtures	Authorised person
8D.13	Shade Sails	Mousing off of all connections	At completion of installation	Authorised person
8D.14	Operation and Maintenance Manuals	Submit warranty and maintenance manuals	Prior to Operational Acceptance	Authorised person

Table 8D-2 Witness points table

Item	Clause title	Requirement	Notice for inspection
Execution			
8D.1	Operation and Maintenance Manuals	Submit warranty and maintenance manuals	Prior to Operational Acceptance

1.3 Pre-construction planning

1.3.1 Submissions

1.3.1.1 Standard drawings – Furniture and Fixtures

General: Submit the manufacturer's standard drawings showing installation details; and colour schedule for each item.

Requirement: Ensure coordination between finished design surface and in ground or surface fixing requirements for all items before commencement of construction.

This is a **HOLD POINT**

1.3.1.2 Ordering of proprietary items

Requirement: Order proprietary items with sufficient lead time to achieve program dates.

1.3.1.3 Shade Sails - Shop Drawings and Structural Certification

Requirement: Provide shop drawings and structural certification for approval prior to ordering of shade sails. Shop drawings will include:

- > Accurate location of other elements (equipment, pavement, furniture etc) in relation to shade sails
- > Footing designs
- > Height of each post including depth of bury in support ground (Shop drawings must clearly demonstrate installation in different pavement surfaces including playground softfall materials such as organic loose fill)
- > Setout and clearances as follows:
 - Between shade sail fabric and the accessible points of any playground equipment– minimum 3.0m
 - Between posts and fences / furniture and climbable items – minimum 1.5m
 - Posts to be outside the fall zones of playground equipment
 - No interference by the sail fabric or posts with tree canopies
- > Fail safe back up at each connection of posts to sail
- > Shade diagrams
- > Anti climb features (where detailed)

Certification: provide certification from a structural engineer that the shade sail design conforms to the following

- > Wind region A
- > Terrain category (project specific)
- > Fittings load rated with minimum 4 x safety factor
- > Connections engineered to maximum design loads

1.3.1.4 Shade Sails Sample

Samples: Submit the following samples:

- > 300mm x 300mm sample of the sail material accompanied by the associated material specifications
- > 300 x 300mm square sample of corner and edge section demonstrating the incorporation of stainless steel fittings and quality of seams and finish

1.4 Materials

1.4.1 Decomposed granite gravel

Description: Naturally occurring granitic gravel material, free from vegetable matter and other adverse constituents.

Plasticity Index: between 9 and 15

Maximum Liquid Limit: 35

Colour: As per design documents

Grading: 100% of material shall pass through a 25mm sieve.

1.4.2 Subgrade

Standard: To *AS 3798 Section 4*

Quality: Clean, stable, free from perishable materials and capable of compaction to the nominated density.

Re-use excavated material: Only re-use material in conformance with *AS3798 Clause 4.4*.

1.4.3 Base

1.4.3.1 General:

Specification: Crusher dust, road base or granular material to conform to this specification.

Maximum particle size: not more than one third of the sub base thickness

Maximum amount passing 75µm sieve: 15%

Material properties: unless noted otherwise, conform to the following:

- > Liquid limit: ≤35% to *AS 1289.3.1.1*
- > Plasticity index: ≤12% to *AS 1289.3.3.1*
- > Linear shrinkage: ≤6% to *AS 1289.3.4.1*

1.4.4 Electrical and water services

Stormwater pipe specification: un-plasticised uPVC in DWV Quality in accordance with *AS1260*

Water pipe specification: Copper tube in accordance with *AS1432*

Electrical conduits: orange uPVC electrical conduit>

1.4.5 Shade sail materials

Fittings and Fixings: High grade stainless steel.

Steel columns: pre galvanised steel (suited to powdercoat/ paint finish), continuous length, minimum 350 grade structural CHS, capped with continuous filet weld, minimum 160mm dia

Chain: closed connection load rated stainless steel chain links sufficient to withstand worst load case on shade sail as per AS1170.

Rejection: Jointed sections of steel for posts, tap on caps for posts, eyebolts, turnbuckles, wire slings and friable links will not be accepted

Sail fabric qualities: conform to the following minimum requirements:

- > 1400N Warp,
- > 2200n weft per 50mm
- > 4700kPa bursting pressure
- > Commercial 95% UV high density polyethylene monofilament
- > UV protection for fabric to be minimum UVR of 80%, desirable 90%
- > UV stabilised PTFE stitching
- > Fabric reinforcement in areas of concentrated stress such as corners, seams and connection points
- > Flammability of materials index to have a spread factor of 0 and a heat factor of less than or equal to 1 in accordance with *AS1530.2*
- > Sail edge binding: nominal 8mm stainless steel cable edge reinforcing
- > All stress points on sails to be double layer reinforced e.g. corners, catenary curves, seams.

Warranties: Provide warranty certificates with the following minimum requirements:

- > Steelwork: 10 years
- > Membrane: 10 years UV degradation on fabric
- > Membrane stitching: 15 years UV graduation
- > Webbing: 5 years UV degradation
- > Workmanship: 5 years
- > Paint finish 10 years

1.5 Execution

1.5.1 Decomposed granite gravel

1.5.1.1 Excavation and Subgrade Preparation

Clearing and Grubbing: To *MIT S 02A Clearing and grubbing*

General: Construct in accordance with the design documents

Subgrade: Compact to 95% MMDD

Proof roll: where required, proof roll in the presence of the authorised person. If directed, remove unsatisfactory subgrade and replace with clean granular select fill to achieve required compaction.

Base: Where detailed, install base material and compact to 95% MMDD.

1.5.1.2 Installation

Decomposed Granite Gravel: Install decomposed granite gravel to depth nominated on the design drawings.

Stabiliser: Incorporate proprietary stabiliser additive in accordance with manufacturer's recommendations. Cement shall not be used.

This is a **WITNESS POINT**

Compaction: 95%MMDD for path areas. If required, roll the surface in the presence of the Authorised Person to demonstrate compaction.

Testing: Compaction testing frequency. Refer to *MIT S 00B Quality construction*

Finish: Visually homogenous surface with no dips or hollows of even gradient.

Tolerance: ± 10 mm over a 3m straight edge. Refer to *MIT S 00B Quality construction*

Rejection: Non homogenous surface finish with dips and hollows.

Rectification: If rectification is required, surface shall be scarified and regraded until the regular finish of the required surface density at the required levels, grades, profiles and tolerances has been achieved.

1.5.2 General – installation of proprietary items

1.5.2.1 General

Requirement: Order items as nominated on the design documents with sufficient lead time to achieve program dates.

Coordination: The contractor is responsible for co ordination with each supplier.

TCCS requirement: Local Authority Building Approval of shade sails.

1.5.2.2 Setout

Setout: Accurately setout all furniture and fixtures in accordance with the drawings.

This is a **HOLD POINT**

1.5.2.3 Installation

Delivery to site: Deliver furniture to site in a secure location. Inspect and confirm compliance with design documentation. Inspect condition upon delivery. Replace and keep intact protective wrappings on and do not remove until construction completion.

This is a **WITNESS POINT**

Installation: Install in accordance with manufacturer's recommendations and details unless otherwise detailed. Make allowance for co-ordination with the supplier/ manufacturer to ensure warranties are not voided.

Fixings and fittings: Use fittings and fixings supplied with the items. Where not provided, fixings shall be galvanised or stainless steel to meet the requirements of the manufacturer's details. Fixings to be compatible with the metal type of the item to avoid galvanic corrosion.

Line and Level: All items shall be installed plumb unless otherwise detailed.

This is a **WITNESS POINT**

1.5.3 Items requiring electrical connection

Requirement: Install all works in accordance with the approved electrical design documents.

Specification for installation of electrical conduits: to *IMITS 03G Service conduits*.

Requirement: Works shall be carried out by a licensed electrician.

Standards: *Building Code of Australia, AS3000 and AS3008*

Mains disconnection: Contractor to confirm Authority Approvals, permits, and pay any associated fees and charges prior to works commencing.

Supply capacity: Prior to commencement of works, where required by the design documentation test on site to confirm that sufficient capacity is available from the supply source for the item being installed.

Setout: Prior to commencement of excavation setout accurately onsite the following

- > Location and orientation of fixture to achieve requirements as per the design documents.
- > Conduit routes. Conduit routes shall be outside Tree Protection Zones or in accordance with the Tree Management Plans.
- > Location of pull pits
- > Meter location

This is a **HOLD POINT**.

Installation of conduits and wiring: Complete installation of trenching / boring as required by the design documents.

Meter: Install meter and meter pit/ switch board etc in accordance with the approved design and to meet the Authority requirements. Install in ground meters with surrounding surface treatments. Where in grass install with a minimum 150mm wide x 100mm depth concrete edge or as per the design documents.

Earthing: Contractor to ensure that all items are earthed in accordance with *AS3000*.

1.5.4 Items requiring water connection

Requirement: Install all works in accordance with the approved Hydraulic Services plans.

Specification: To *MITS 03E Water Supply Reticulation and MITS 03B Pipe drainage*.

Plumbing approval: Obtain plumbing approval if required by the design documentation.

Standards: *Building Code of Australia, Water and Sewerage Act, Water and Sewerage Regulations, Plumbing Code of Australia and AS3500*

Requirement: Works shall be carried out by a licensed plumber.

Mains water connection: Contractor to confirm Authority Approvals, permits, and pay any associated fees and charges prior to works commencing works.

Supply Pressure: Where required by the design documentation, the Contractor shall test onsite to confirm pressure and flow rate of existing water supply and notify Superintendent if minimum / maximum working pressure is unsuitable for item being installed.

Setout: Prior to commencement of excavation, setout accurately onsite the following:

- > Location and orientation of fixture to achieve requirements as per the design documents.
- > Pipe route. Pipe route shall be outside Tree Protection Zones or in accordance with the Tree Management Plans.
- > Meter location.
- > Stop Valve location between mains line and meter.

This is a **HOLD POINT**

Meter: Install meter in accordance with the approved design and to meet the Authority requirements. Install flush with surrounding surface treatments. Where in grass install with a minimum 150mm wide x 100mm depth concrete edge or as per the design documents

Taps: Tapware must be secured to a solid heavy duty standpipe in accordance with the design documents.

Drainage: All new drainage to be constructed of uPVC pipe and connected to SW outflow or as per approved design documentation.

1.5.5 Shade sails

1.5.5.1 General

Co ordination: The contractor is responsible for co ordination with the supplier.

Installer requirements: Installation must be by an installer licensed to carry out shade sail installation with minimum Class B Licence.

Standards: *AS4174, AS1170, AS4100, AS2741, AS4055, AS1530 BCA*

1.5.5.2 Building Approval

Building Approval: arrange for and pay for the appointment of an ACT licensed building surveyor for certification of the shade sail installation and lodgement of necessary documentation to local authorities.

1.5.5.3 Setout

Requirement: Setout the shade sail posts in accordance with the design documentation. Mark accurately onsite for review by Authorised Person to demonstrate compliance.

This is a **HOLD POINT**.

Clearances to play equipment and fixed elements: Ensure minimum clearances as shown on the design documentation. Seek direction from the Authorised Person where the following are not achieved (Refer **Preconstruction planning**)

Tree Pruning: If directed, carry out tree pruning to *MITS 02A Clearing and grubbing* and in accordance with the design documentation.

1.5.5.4 Installation

Excavation for columns: Arrange for building certifier/ structural engineer to inspect footings prior to installation of posts.

This is a **HOLD POINT**

Footings in organic playground softfall: finish minimum 300mm below finish surface of loose fill material. Top and leading edges of concrete footing to have a continuous 15mm rounded chamfer all round. Finish to top of footing shall be smooth. Grind off any dags or rough finish.

Posts in grass: install concrete mowing edge in accordance with design documents. Where not shown, a minimum collar of 150mm wide x 100mm depth is to be installed.

Mousing: Mouse off all connections to prevent from working loose.

This is a **WITNESS POINT**

1.6 Completion

1.6.1.1 Submissions

Work as Executed Records: To *MITS 00B Quality Requirements*.

1.6.1.2 Connection to existing services

Completion: Carry out all authority approvals and testing in accordance with Authority requirements including payment of any associated fees and charges prior to connection.

1.6.1.3 Operation and Maintenance Documents

Requirement: Supply product installation, inspection and maintenance information.

Proprietary Items: Provide the following documents:

- > Manufacturers / suppliers installation drawings for each piece of equipment.
- > Operation manuals, inspection / maintenance requirements
- > Manufacturers guarantees and warranty certificates
- > Construction / maintenance tools including non standard tools for bolt tightening and replacement parts.

Shade sails: Provide the following documents:

- > Manufacturers maintenance instructions including type, frequency and method of inspection
- > Maintenance requirements for the membrane, structure and components
- > Running in requirements such as tightening of fastenings
- > Provide non-standard tools for bolt tightening and replacement parts.
- > Warranties.

This is a **HOLD POINT**.

2 MEASUREMENT AND PAYMENT

2.1 Measurement

2.1.1.1 General

Payments made to the Schedule of Rates: To *MITIS 00 Preliminaries*, this Specification, the drawings and **Pay items** inclusive.

2.1.1.2 Methodology

The following methodology will be applied for measurement and payment:

- > Allow for all work, materials, testing and quality assurance requirements in each Pay Item.
- > Clearing and grubbing to *MITIS 02A Cleaning and grubbing*
- > Detailed excavation, disposal of spoil and preparation of subgrade: to this Specification
- > Removal of unsuitable material: to *MITIS 02B Bulk earthworks*
- > Base: to this Specification
- > Slotted drainage pipe and filter material: to *MITIS 03I Subsurface drainage*
- > Soakage pit to *MITIS 08C Rubber impact attenuating surface*
- > Solid uPVC SW pipe including connections to existing drainage structures: to *MITIS 03B Pipe drainage*
- > Electrical conduits and wiring : to this Specification
- > Electrical meter and meter pit : to this Specification
- > Water meter and meter pit : To *MITIS 03E Water Supply Reticulation*
- > Disconnection / Re-connection to Mains Electrical Supply: to this Specification
- > Disconnection / Re-connection to Mains Water Supply: To *MITIS 03E Water Supply Reticulation*
- > Water pipe: To *MITIS 03E Water Supply Reticulation*

2.2 Pay items

Table 8D-3 Pay items table

Item No	Pay Item	Unit of measurement	Schedule of rates scope
8D.1	Decomposed Granite Gravel	m ²	All activities associated with the supply, detailed excavation, removal of material and compaction of base and decomposed granite gravel layers, complete with stabiliser. A separate pay item shall be included in the contract for each pavement design.
8D.2	Proprietary Furniture and Fixtures	Item	All activities associated with supply and installation of proprietary Furniture and Fixtures. A separate pay item shall be included in the Contract for each proprietary furniture and fixture element.
8D.3	Installation and connection of Power Supply cable by Evoenergy	Provisional Sum	All activities associated with the supply and installation of electrical cable, connection to existing infrastructure and the new POE and commissioning of the cable. The pay item shall also allow for liaison with Evoenergy and include all fees payable. All works are to be undertaken by Evoenergy.
8D.4	Installation and connection of Power Supply cable by Licensed electrician	Item	All activities associated with the supply and installation of electrical cable, connection to POE and connection to the new proprietary furniture including commissioning of the cabling. All works are to be undertaken by a licensed electrician.
8D.5	Building Approval for shade sails	Provisional Sum	All activities associated with the engagement of a licensed building certifier, including approvals and inspections.

ANNEXURE A - SCHEDULES

The following schedule shall be completed by the Designer for each furniture and fixture item:

Furniture and Fixture proprietary items
(i.e. Bins/ Seats/ Benches/ Tables/Tree Grates and Guards/ Bollards/ Bike racks/ Drinking Fountain/ BBQ etc)

Description

Product Code / Model Number	
------------------------------------	--

Dimensions

Supplier Name and Details	
----------------------------------	--

Material

Finish	
---------------	--

Colour

Fixing / Mounting	
--------------------------	--

Shade Sail Material

Shade Sail Colour	
--------------------------	--

Shade Post Colour



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