

SECTION SIXTEEN

LANDSCAPE WORKS

16.01 DESCRIPTION

This specification covers the requirements for planting, grassing, installation of irrigation systems, installation of street furniture and associated maintenance.

16.02 SUPPLY OF MATERIALS

All materials shall be supplied by the Contractor unless otherwise specified.

16.03 SETTING OUT PLANTING AREAS AND PLANTS

The Contractor shall set out the planting beds and the location of individual plants in accordance with the drawings by scaling dimensions from the drawings or by scaling drawings or by complying with plant number and density requirements or by locating by reference to existing features.

16.04 GROUND PREPARATION

(a) Grassed Areas

Areas to be grassed which have no topsoil shall be topsoiled to a depth of 75mm minimum or as specified on the drawings.

Topsoil shall comprise unscreened sandy loam free from plant debris, stones, clods, weeds or other unacceptable matter unless otherwise specified. Ph shall be in the range 5.5 to 6.5.

On batters steeper than 4:1, prior to spreading topsoil, the Contractor shall roughen the ground to ensure the topsoil is keyed into the ground to minimise slippage and erosion.

(b) Planting Areas

Planting areas shall be prepared by removing any grass or weeds using an approved herbicide or by mechanical means and ripping to a minimum depth of 500mm at the specified planting locations.

Immediately prior to planting the beds shall be cultivated to a depth of 300mm.

Rocks and other material 75mm in diameter or greater dislodged during cultivation shall be removed and disposed of by the Contractor.

Additional top soil shall be used to fill any depressions caused by the removal of rock and debris.

In the event of saturated ground conditions, cultivation shall be delayed until the ground has satisfactorily dried out.

Details of chemical herbicides and the method of application proposed shall be submitted to the Superintendent for review prior to use.

16.05 GRASSING

(a) General

Except for those areas in which trees and shrubs are to be planted all areas to be grassed shall be cultivated to a fine tilth for sowing with premixed grass seed and fertiliser.

(b) Fertiliser

An approved prepared mix lawn seed starter fertiliser NPK 10:4:6 plus trace elements shall be spread evenly over the prepared seed bed at a rate recommended by the supplier at the time of sowing or not more than forty-eight hours prior to sowing and then raked into the seed bed to a depth of 50mm.

(c) Grass Seed

All grass seed shall be an approved pre packed commercially prepared lawn seed mix.

(d) Seeding

Grass seeding shall be carried out during Spring and Autumn on a calm day.

The grass seed shall be sown in two equal sowings in a transverse direction by an approved machine and lightly raked over to cover seed. The grass seed shall be applied at a rate recommended by the supplier.

The seeded areas shall be lightly rolled immediately after sowing with an approved roller weighing not more than 90 kg per metre of width.

The seed bed shall be watered immediately after sowing and then as necessary to keep it moist, but not wet, until germination and then to produce a satisfactory sward.

16.06 PLANTING

(a) General

The natural soil shall be damp at the time of planting, but excess water shall be allowed to drain.

Plants shall be thoroughly watered 24 hours prior to and immediately after planting.

Planting shall be carried out in such a manner to ensure healthy, vigorous growth of plants. All plants shall be planted, mulched and fertilised as specified.

Initial planting shall be completed by the date as agreed with the Superintendent.

(b) Materials

- (i) Stakes shall be hardwood, free from knots, splits and gum veins and in accordance with the following requirements:
 - Advanced specimen trees: 2 No. 50 x 50 x 2400mm per tree
 - Tubestock: 3 No. 25 x 25 x 750mm per plant
- (ii) Mulch shall be shredded or chipped wood product mulch, free from weeds and toxins, and of material which does not decompose within two years. Particle size shall be no wider than 25mm and no longer than 150mm. The Contractor shall submit samples of mulch to the Superintendent for review prior to use.
- (iii) Tree guards shall be vermin proof opaque plastic tubes, 450mm high by 450mm diameter and be of sufficient gauge and UV - inhibited to ensure a two year life.
- (iv) Gypsum supplied by the Contractor shall be from a natural source.
- (v) Fertiliser shall be a proprietary slow release fertiliser suitable for the establishment of indigenous and non-indigenous trees and shrubs and applied at the manufacturer's recommended rate.
- (vi) Only herbicides and pesticides which are registered for use in Victoria shall be used. All herbicides and pesticides shall be used strictly in accordance with the manufacturer's instructions and at the recommended rates.

(c) Supply of Plant Stock

(i) General

The Contractor shall provide all plant stock required for the works under the Contract. Plants shall be supplied in the sizes specified. All plants shall show healthy growth, be undamaged, free of disease, have a size in proportion to their pot size and species, have roots penetrating to the edge of the pot and not be potbound.

Samples of all plant species shall be made available for inspection by the Superintendent prior to commencement of planting.

The Contractor is advised that plant species and quantities specified for landscape works may not be immediately available through nurseries.

(ii) Advanced Trees

Advanced trees shall have straight trunks and when planted be of minimum height of 3.5m and minimum calliper 65mm at 300mm above ground. Head growth shall be strong and well formed. Any container grown trees shall be supplied in 750mm minimum diameter drums, or equivalent container.

(iii) Shrubs

Shrubs shall be in 150mm pot containers or equivalent. Heights shall not be less than 300mm.

(iv) Ground Covers

Ground covers shall be supplied in established 75mm minimum diameter pots or equivalent containers.

(d) Planting - Advanced Specimen Plants

Planting shall be carried out in accordance with the landscape drawings and standard drawings and in such a manner to ensure healthy, vigorous growth of plants.

The contractor shall take care that the roots of the plant material are not exposed to drying influences such as sun, wind or frost. On hot windy days, the stock shall be covered with damp hessian during planting operations.

All stock shall be set plumb and placed to ensure a normal relationship of the crown to the soil surface. Plants shall be planted to a standard not less than specified in the drawings.

(e) Mass Planting - Tubestock in Mulched Beds

Mass planting of tubestock shall be carried out in accordance with the landscape drawings. Mulch shall be placed over the whole of the garden bed shown on the landscape drawings and extending at least 0.5 metre beyond plants at the outer edge of the garden beds.

(f) Planting - Tubestock in Grassed Areas

Planting tubestock in grassed areas shall be carried out in accordance with the landscape drawings and standard drawings. Mulch shall be placed at 500mm radius around each plant.

(g) Staking

Plants shall be staked in accordance with the landscape drawings and standard drawings.

(h) Tree Guards

Tree guards shall be placed around plants at the time of planting and shall be securely anchored. Tree guards shall be installed in accordance with the landscape drawings and standard drawings.

(i) Mulching

Approved mulch shall be placed at least 500mm around all plants.

Mulch shall be placed to a minimum depth of 100mm, and shall be kept clear of stems to avoid collar rot.

When planting in garden beds, mulch shall extend beyond plants at the outer edges of the beds.

16.07 WATERING SYSTEM

(a) General

This section provides for the installation of a manually controlled low volume watering system with micro irrigation.

The watering system shall be set out and installed in accordance with the specification, landscape drawings and standard drawings.

(b) Materials

- (i) UPVC pipe and fittings shall be in accordance with Australian Standard Specification AS 1477 'Unplasticised PVC (UPVC) pipes and fittings for pressure applications'.
- (ii) Low density polyethylene pipe and fittings will be in accordance with Australian Standard Specification AS 2698 'Plastic Pipes and Fittings for Irrigation and Mineral Applications'.

(c) Connections to Mains

The Contractor shall obtain all necessary permits from Gippsland Water, pay all fees due to Gippsland Water and carry out all works to install a water supply connection from Gippsland Waters Reticulation System. The water supply connection shall comply with Gippsland Water's requirements.

The connection between the Gippsland Water Reticulation system and the meter pit shall be copper.

(d) Meter Pit

The meter pit shall be an approved proprietary prefabricated pit with the top plumb with the finished surface and shall be drained into the nearest stormwater drain by a 90mm diameter UPVC stormwater drainage pipe. The top shall be fitted with a trafficable lid which is capable of being locked. The locking device shall not protrude above ground level. The internal dimensions of the meter pit should provide sufficient space around the meter assembly for ease of maintenance.

The meter pit assembly shall incorporate a standard stop valve, water meter, pressure gauge connection, pressure reducing valve and a filter.

Filters should be of an appropriate capacity with a manual flush valve. The filtration for microsprinklers shall be 80 mesh, for drippers 120 mesh and for perforated pipes 150 mesh.

(e) Pipe Trenches

Where irrigation pipes are installed in nature strips, pipes shall be laid parallel or at right angles to the kerb. Pipes laid in nature strips or other areas where service mains may be placed require a metallic core tape to be placed over the pipes 200mm under the ground surface.

Irrigation pipes shall be installed in conduits wherever a pipe passes under a footpath, road, carpark or other paved area unless otherwise specified. Conduits shall be of a minimum diameter of 50mm larger than the outside diameter of the pipe.

Trenches under road and carpark pavements shall have a minimum cover of 600mm below finished surface level and for nature strips a minimum cover of 330mm below finished surface level.

(f) Trench Bedding and Backfill

Trench bedding and backfill for a minimum cover of 100mm shall be a coarse washed river sand. Backfill above the layer of coarse washed river sand shall comply with the provisions of Section 4 - 'Drainage'.

(g) Pipe Laying and Jointing

The Contractor shall take every precaution to lay PVC irrigation pipes evenly without twisting, buckling or kinking. The pipes shall be continuously supported on the bottom of the trench.

Pipes laid under mulch in garden beds shall be pegged down with pegs at least 100mm long at intervals of 1.0 metre.

PVC irrigation pipes shall be joined with bayonet fittings together with racket clamps or screwed compression fittings. PVC irrigation pipes shall be cut with secateurs. The Contractor shall ensure that PVC irrigation pipe is pushed completely onto bayonet fittings.

Where solvent welded UPVC pipe and fittings are used, joints shall be dry-fit tested prior to the internal surface of the socket and the external surface of the spigot are dried, cleaned and degreased with approved coloured solvent cleaner.

An even coating of solvent cement shall be applied to the cleaned surfaces. Particular care shall be taken to apply a light application of solvent cement to the socket in order to prevent an excess of solvent cement accumulating in the pipe and socket after spigots are forced into sockets only to the witness mark.

Excess solvent cement shall be wiped from the pipe surface immediately and the joint shall be held firm for 30 seconds and undisturbed for a minimum of five (5) minutes.

Changes in direction of pipes ie., with T or Elbow joints, shall not be made under pavement surfaces unless absolutely necessary.

The Contractor shall plug the open end of the pipe at the finish of a day's work to prevent entry of dirt into the irrigation system.

Pipe ends shall be closed with gate valves and the buried ends of the pipe marked to enable flushing.

The whole of the irrigation system is to be flushed out once pipes are laid and before sprinklers or emitters are attached and ends sealed.

(h) Testing

After completion of laying and jointing of pipes, the system shall be tested insitu at reticulation main pressure and all defects and leaks shall be remedied.

(i) Valves

All valves shall be located in PVC lockable valve boxes or in garden beds covered with mulch. Valves are to be inconspicuous to avoid vandal damage.

All gate valves shall be clearly marked to indicate the direction of operation.

(j) Concrete Thrust Blocks

Concrete thrust blocks are to be constructed at T or Elbow joints in UPVC pipes and fittings as shown on the drawings.

Concrete thrust blocks shall not completely encase the pipe or fittings. The maximum, encasement shall be 180 degrees.

Thrust blocks shall be installed against compacted subgrade.

(k) Drippers

'Turbulent flow' emitters should be used.

Location of drippers should anticipate problems with vandalism. Drippers may be placed on the surface buried under mulch or buried.

Buried drippers shall be encased in a buried plastic or glass jar filled with pea-gravel and sealed with sheet plastic. The buried jar shall have a minimum opening of 30mm, a minimum depth of 150mm and should have a volume of at least 500ml.

Buried drippers shall be marked by a masonry nail in adjacent paving or with a white painted stake. Buried drippers shall be placed at the same location around each tree.

Drippers shall not be installed until all other work on site is complete and final levels achieved.

(l) Inspections

The Superintendent will carry out an inspection of the irrigation system with the Contractor at the following stages:

- after laying of pipes and valves, but before backfilling and installation of drippers;
- after installation of drippers, but before backfilling; and
- conclusion of the maintenance period.

16.08 STREET FURNITURE

(a) General

This section covers the requirements for the supply and installation of street furniture.

Street furniture includes rubbish bins, bicycle racks, banner poles, bench seats, bollards, tree guards and parking signs.

(b) Supply of Street Furniture

Street furniture supplied by the Contractor shall be manufactured in accordance with the standard drawings. The Superintendent will inspect the manufactured street furniture prior to installation.

(c) Installation of Street Furniture

Street furniture shall be set out and installed in accordance with the landscape drawings and standard drawings and conform to the following requirements:

- street furniture is to be located within \pm 100mm of the locations indicated in the drawings;
- street furniture is to be plumb and straight to within a tolerance of 1 in 100;
- concrete foundations shall be poured such that the finished surface of the foundation is flush with finished surface level of the foundation indicated on the standard drawings; and
- the surface of the street furniture shall be free from twists, cracks, indentations, scratches or any other faults after erection.

16.09 MAINTENANCE

(a) General

The Contractor shall maintain the whole of the landscape works performed under the contract for the term of the Defects Liability Period as stated in the Annexure.

Maintenance of the works to be carried out by the Contractor shall include:

- replanting;
- weed control;
- watering;
- reseeding;
- pest and disease control;
- mulching; and
- pruning.

(b) Inspections

A joint inspection of all landscape work by the Contractor and Superintendent shall be carried out at the commencement and conclusion of the maintenance period. The Contractor shall carry out any remedial works identified during the inspections within two (2) weeks of the date of the inspection unless otherwise directed by the Superintendent. Between these inspections at three (3) monthly intervals the Contractor shall conduct inspections of the work and remedy any defects identified.

(c) Maintenance Works

Landscaping works shall be maintained as follows:

(i) Replanting

Plants which die or do not show healthy growth within the maintenance period for any reason shall be replaced and replanted by the Contractor.

(ii) Weed Control

All mulched areas, including mulch around individual plants, shall be maintained in a weed free state.

All grassed areas shall be maintained free of broad leaf and noxious weeds.

(iii) Watering

All plants shall be watered to ensure healthy and vigorous growth.

(iv) Pest and Disease Control

All plants shall be maintained free of insect infestation and plant disease.

(v) Mulching

All areas covered with shredded or chipped mulch shall be maintained at a minimum depth of 100mm of mulch.

(iv) Pruning

The Contractor shall prune plants as required to remove damaged branches.

(d) Maintenance Works to be Carried Out by Others

Council shall be responsible for mowing grassed areas, control of litter and rectifying vandalism.