

Master Specification

Part RD-PV-C7

Permeable Paving for Trees

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Contents

Contents	3
RD-PV-C7 Permeable Paving for Trees	4
1 General	4
2 Documentation	4
3 Permeable paving requirements	5
4 Site preparation	5
5 Tree root care	6
6 Structural soils	6

RD-PV-C7 Permeable Paving for Trees

1 General

- a) This Master Specification Part sets out the requirements for site assessment, site preparation, tree root care, soil amendment and backfill, load support and permeable paving surfaces for the installation of permeable paving over tree root systems including:
 - i) the documentation requirements, as set out in section 2;
 - ii) the permeable paving requirements, as set out in section 3;
 - iii) the site preparation requirements, as set out in section 4;
 - iv) the requirements for tree root care, as set out in section 5; and
 - v) the structural soil requirements, as set out in section 6.
- b) This Master Specification Part does not apply to the supply and installation of permeable paving products which are addressed by RD-PV-C5 “Construction of Minor Pavements”.
- c) The permeable paving for trees must comply with the Reference Documents, including:
 - i) AS 4373 Pruning of amenity trees;
 - ii) ISO 9001 Quality management systems - Requirements;
 - iii) AS 1289.5.2.1 Methods of testing soils for engineering purposes Soil compaction and density tests - Determination of the dry density/moisture content relation of a soil using modified compactive effort; and
 - iv) AS 4970 Protection of trees on development sites.
- d) The Contractor must ensure that the arborist specified in this Master Specification Part is prequalified under the Arborist (Tree Assessment) Services in the Department Application Guidelines: Professional and Technical Services Framework (Pre-qualification No. 17C811). The Contractor must submit details of the arborist’s qualifications, experience and recommendations to the Principal as part of the Construction Documentation.

2 Documentation

2.1 Construction Documentation

In addition to the requirements of PC-CN3 “Construction Management”, the Construction Documentation must include:

- a) details of the arborist’s qualifications and experience as required by section 1d);
- b) the arborist report as required by section 2.2;
- c) details of the Tree Protection Zone (TPZ), as required by section 3b); and
- d) structural soil analysis report, as required by section 6.1b).

2.2 Arborist report

- a) A report must be prepared by the arborist appointed pursuant to section 1d) addressing all requirements in this Master Specification Part.
- b) The arborist report must be included as part of the Construction Documentation.
- c) The Contractor’s site assessment, site preparation, tree root care, soil amendment and backfill, load support and permeable paving surfaces for the installation of permeable paving over tree root systems must be undertaken in accordance with the arborist report.

3 Permeable paving requirements

- a) Where permeable paving is required around existing trees, the Contractor must ensure that the arborist assesses the trees that are to be retained and formulates a TPZ for each individual tree before any site Works occurs, details of which must be included in the arborist report.
- b) The Contractor must submit details of the TPZ as part of the Construction Documentation.

4 Site preparation

4.1 General

- a) The Contractor must ensure that site preparation relating to permeable paving around trees is carried out in accordance with this Master Specification Part and the arborist report.
- b) All unsuitable material including plants and debris must be removed and disposed of by the Contractor in accordance with PC-ENV2 "Environmental Protection Requirements".

4.2 Establishment of tree protection zone (TPZ)

- a) The Contractor must ensure that the arborist report defines a TPZ around each tree to be retained, in accordance with AS 4970 Protection of trees on development sites.
- b) The TPZ required by section 4.2a) must include both the below and above ground parts of the tree.

4.3 Excavation responsibilities

The Contractor must ensure that the arborist:

- a) undertakes a Site assessment; and
- b) recommends preferred methods of root excavation for the permeable paving Works in the arborist report.

4.4 Excavation method

- a) The Contractor must ensure that all Works and Temporary Works within a TPZ are carried out in accordance with the arborist report and supervised by an arborist who is qualified in accordance with the requirements of section 1d) and who is otherwise:
 - i) experienced in excavation within TPZ's; and
 - ii) trained in non-destructive excavation techniques.
- b) The volume of soil to be removed must be determined by the arborist and set out in the arborist report, and will be dependent on:
 - i) the site conditions; and
 - ii) root characteristics of existing trees.
- c) The Contractor must:
 - i) ensure that moist hessian is used to shade exposed tree roots from the sun; and
 - ii) ensure that the moisture level of the hessian complies with the requirements of the arborist report and is maintained at all times and checked frequently to prevent tree roots drying.
- d) When tree roots are exposed to the sun for more than 24 hours, or such shorter period of time specified in the arborist report, the Contractor must ensure that the tree roots are packed in moist sawdust.

- e) The Contractor must ensure that methods used to excavate are in accordance with the arborist report and do not damage tree roots.

5 Tree root care

- a) The Contractor must ensure that, prior to pruning any tree roots, the arborist:
 - i) assesses:
 - A. the tree health (including, where the roots require pruning or are damaged, the significance of the root to the tree's health);
 - B. growth habit of the tree; and
 - C. structure and stability of the tree;
 - ii) determines the percentage of roots to be removed within the TPZ and the treatment of tree roots; and
 - iii) includes all relevant details and determinations in the arborist report.
- b) The Contractor must ensure that tree root pruning is undertaken in accordance with:
 - i) the arborist report;
 - ii) the requirements of AS 4373 Pruning of amenity trees; and
 - iii) the requirements of AS 4970 Protection of trees on development sites.

6 Structural soils

The Contractor must refer to the Design Drawings or Design Report for the structural soil locations.

6.1 Structural soil

- a) The arborist report must include the volume of structural soils to be used based on the following:
 - i) the estimated mature tree sizes and each individual site characteristics; and
 - ii) structural soil volume per tree must be approximately 6 m³ per 9 m² of estimated mature tree canopy projection.
- b) The Contractor must carry out an analysis of the structural soil so that soil can be altered to meet the arborists requirements with the resulting analysis report provided as part of the Construction Documentation, in accordance with the following:
 - i) analysis must include:
 - A. pH;
 - B. electrical conductivity;
 - C. organic matter;
 - D. major and trace elements; and
 - E. exchangeable cations;
 - ii) the testing required by section 6.1b)i) must be conducted by NATA accredited laboratory; and
 - iii) test results must be included in the analysis report.
- c) The arborist report must include recommendations for the fertilising and soil amendment program for the structural soil.

6.2 Site preparation

For site preparation of permeable paving over tree root systems, the Contractor must:

- a) confirm that the subgrade is at the level and compacted as required for the permeable paving Works;
- b) ensure that subgrade elevations slope parallel to the finished grade or toward the subsurface drain lines as shown on the Design Drawings;
- c) ensure that the excavation for the permeable paving is cleared of all construction debris, trash, rubble and any foreign material;
- d) ensure that, in the event that fuels, oils, concrete washout silts or other material harmful to plants have been spilled into the subgrade material, the soil is treated sufficiently to remove the harmful material;
- e) ensure that any over excavation is:
 - i) filled with fill which complies with the Contract Documents; and
 - ii) compacted to the required subgrade compaction;
- f) not proceed with the installation of the structural soil material until all walls, kerb footings and utility work in the area have been installed;
- g) for site elements dependent on structural soil for foundation support, postpone installation until immediately after the installation of structural soil; and
- h) install any subsurface drain lines required and ensure they are operational prior to installation of structural soil material.

6.3 Installation of structural soil material

- a) The Contractor must comply with the following requirements regarding structural soils for tree roots:
 - i) structural soil must be:
 - A. placed directly over the exposed tree root system in increments of 150 mm deep;
 - B. compacted to the requirements of RD-PV-C5 "Construction of Minor Pavements"; and
 - C. covered with a layer of Class A woven geofabric geotextile, with a minimum of 600 mm overlap on all fabric seams;
 - ii) a 25 mm deep bedding sand layer must be installed above the geotextile and prepared for the permeable paving surface to be installed above; and
 - iii) the structural soil must be placed to the finished levels.
 - b) The Contractor must ensure that an arborist supervises all backfill and compaction of the structural soils.
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