

Design Assessment Checklists for Permeable/Porous Pavement

Objectives

This checklist can be used by the organisation approving the drainage scheme (drainage approving body) to help assess submissions for drainage approval.

This checklist is aimed at providing a consistent assessment process and ensuring that designs meet the key design requirements set out in the SuDS Manual (CIRIA C697). The design guidance in the Manual provides details that support the implementation of this checklist so that designs and compliance assessment can be delivered effectively. **Appropriate page references are provided in the checklist.**

This checklist should form part of a suite of documents required for a submission for drainage approval, including (but not limited to):

- A Scheme Design Assessment;
- Detailed Infiltration Assessment (where infiltration components are proposed);
- A Scheme Health and Safety Risk Assessment (if required);
- A Scheme Construction Method Statement;
- A Scheme Maintenance Plan.

It can be used as a checklist by organisations responsible for the approval and adoption of SuDS to support their assessment of schemes, or it can be used as part of the required submissions from the developer. It can also help designers ensure that they have provided all relevant information to the drainage approving body in their submissions for approval.

The checklist allows simple designs to be assessed against the “Deemed to comply” requirements in Table 1. Deemed to comply requirements (DtCR) are a set of standard design principles that avoid the need for complicated design calculations, modelling or other justification. The requirements are taken from the SuDS Manual. If the design varies from the Deemed to comply requirements, the variations should be explained and justified at the appropriate points in the checklist with a reference to supporting evidence.

The checklist can be used for a single pavements or groups of pavements with the same characteristics.

Table 1 Deemed to Comply Requirements: Permeable/Porous Pavements

| Parameter | Deemed to comply requirements |
|--------------------------------------|---|
| Depth of sub-base | Designed in accordance with BS7533-13 or TRL Report PPR 482 |
| Sub-base specification | Meets requirements of BS7533-13 |
| Longitudinal slope on surface | Slope < 1 in 20 |
| Laying course (for block paving) | Meets requirements of BS 7533-13 |
| Surface layer permeability | > 5000mm/h |
| Flow control | Provided to meet hydraulic control requirements of design |
| Maximum water depth for design event | Top of sub-base |

Table 2 Design Assessment Checklist: Permeable/Porous Pavement

| GENERAL INFORMATION | | | |
|---------------------------------------|--|----------------------------|--|
| Site ID | | | |
| Asset ID(s) | | | |
| Pavement Location(s) and co-ordinates | | Drawing Reference(s) | |
| Date of assessment | | Specification Reference(s) | |
| Primary function of pavement | Attenuation / Infiltration / Water Quality | | |

| Check | DtCR | Summary details (See Note) | Acceptable (Y/N) | Comments/ Remedial actions |
|---|------|-------------------------------|---------------------|-------------------------------|
| SURFACING (SuDS Manual Ref.) | | | | |
| Type of surfacing (block paving, porous asphalt or plastic reinforced gravel/grass) | | | | |
| Confirm surfacing is suitable for the location and will withstand likely forces (e.g. turning forces from HGVs). | | | | |
| Confirm all shallow services are located within service corridors beneath impermeable surface, as far as possible | | | | |
| Permeability of surface layer | ✓ | | | |
| Specified joint infill or grid infill | | | | |
| Specified binder for porous asphalt (to ensure maximum adhesion to aggregate) | | | | |
| Specified filler for porous asphalt (to ensure maximum adhesion to aggregate) | | | | |
| DIMENSIONS (SuDS Manual Ref.) | | | | |
| Length (m) | | | | |
| Width (m) | | | | |
| Depth of capping layer (m) | | | | |
| Depth of sub-base (m) | ✓ | | | |
| Depth of laying course or regulating layer (m) | ✓ | | | |
| Maximum longitudinal or cross gradient (1 in ?) | ✓ | | | |

| Check | DtCR | Summary details (See Note) | Acceptable (Y/N) | Comments/ Remedial actions |
|--|------|-------------------------------|---------------------|-------------------------------|
| Distance between check dams in sub-base (if provided) (m) | | | | |
| INFLOWS (SuDS Manual Ref.) | | | | |
| Provide a description of the contributing catchment land use (i.e. overlying surface only or additional inflows) and its size (m ²). | | | | |
| Where the pavement accepts point source inflows, does the design include suitable energy diffusers? | | | | |
| OUTFALL ARRANGEMENTS (SuDS Manual Ref.) | | | | |
| Is the pavement designed to allow infiltration into the subgrade? If yes, attach Infiltration Assessment. | | | | |
| Provide details of any flow control systems, overflow arrangements and limiting discharge rate from pavement. | ✓ | | | |
| Is a geomembrane required to prevent infiltration or protect foundations? If yes, give reason. | | | | |
| Depth to maximum likely groundwater level (m) | | | | |
| ATTENUATION (SuDS Manual Ref.) | | | | |
| Confirm voids ratio of sub-base material. | | | | |
| Demonstrate collection pipework is of sufficient capacity? | | | | |
| Demonstrate that if the sub-base is used to convey water, the flow capacity will be sufficient? | | | | |
| Provide calculations for maximum water depth and return period for the design event. | ✓ | | | |
| Check dams required because of sloping subgrade? If yes, provide details. | | | | |
| STRUCTURAL PAVEMENT DESIGN (SuDS Manual Ref.) | | | | |

| Check | DtCR | Summary details (See Note) | Acceptable (Y/N) | Comments/ Remedial actions |
|---|------|-------------------------------|---------------------|-------------------------------|
| CBR* used in design and confirm it is appropriate to the soils below the site when wetted. | | | | |
| Assumed traffic loads used in design. | | | | |
| Design method used for structural design and provide calculations | | | | |
| LANDSCAPE (SuDS Manual Ref.) | | | | |
| Is the proposed planting adjacent to the pavement appropriate to the location? | | | | |
| Is pavement protected from silt wash off from adjacent planting areas? | | | | |
| CRITICAL MATERIALS/ PRODUCT SPECIFICATIONS | | | | |
| Geomembrane | | | | |
| Geotextile (non-woven) | | | | |
| Geogrids | | | | |
| Blocks/asphalt/plastic grids | | | | |
| Block jointing or grid infill material | | | | |
| Laying course | ✓ | | | |
| Base course (Note: where this is to be used as a temporary running course during construction, demonstrate that the puncture frequency is sufficient to support the design hydraulic performance of the system) | ✓ | | | |
| Sub-base | ✓ | | | |
| Capping layer | | | | |
| Topsoil | | | | |
| Other (including proprietary systems) | | | | |
| CONSTRUCTABILITY (SuDS Manual Ref.) | | | | |
| Are there any identifiable construction risks? If yes, state and confirm acceptable risk management measures are proposed. (Note key requirement to | | | | |



| Check | DtCR | Summary details (See Note) | Acceptable (Y/N) | Comments/ Remedial actions |
|--|------|---|-------------------------|-------------------------------|
| protect permeable surface during construction.) | | | | |
| MAINTAINABILITY (SuDS Manual Ref.) | | | | |
| Confirm that access for maintenance is acceptable and summarise details. | | | | |
| Are there specific features that are likely to pose maintenance difficulties? If yes, identify mitigation measures required. | | | | |
| PAVEMENT DESIGN ACCEPTABILITY (SuDS Manual Ref.) | | Summary details including any changes required | Acceptable (Y/N) | Date changes made |
| Acceptable: Minor changes required: Major changes required / re-design: | | | | |

Note: Input range if applied to > 1 pavement. If there is a DtCR (as indicated) confirm whether or not this is met and provide details of any variations.

*CBR = California Bearing Ratio. This is a penetration test for evaluation of the mechanical strength of subgrades and basecourses.