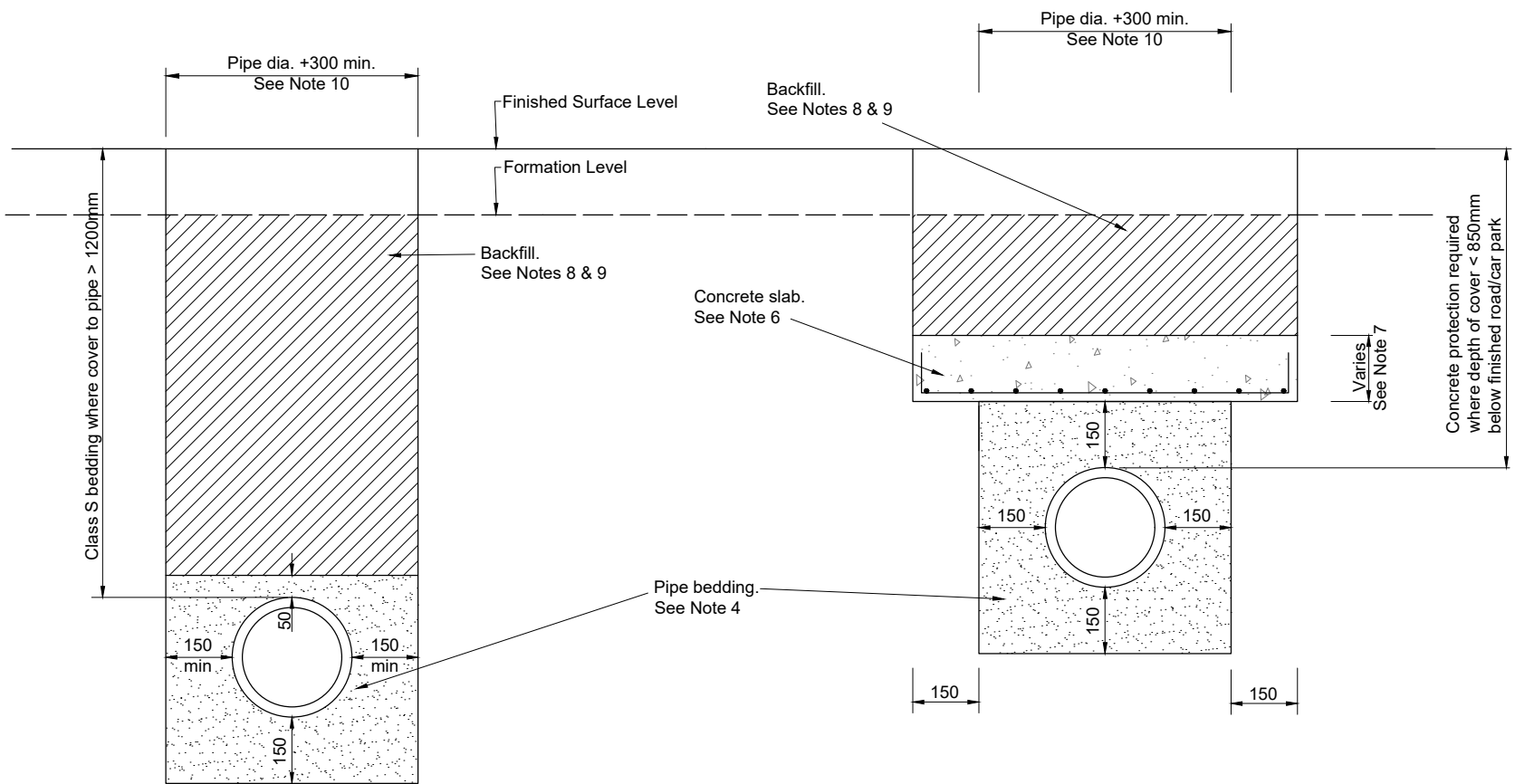


- Notes**  
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- All dimensions are in millimeters unless otherwise stated.
  - The specification referred to in this drawing is the *Specification for Highway Works (SHW)* published by T.S.O. (The Stationary Office).
  - This drawing shows a Type S bedding detail. For other pipe and bedding combinations, refer to *Design Manual for Roads and Bridges, CD 533: Determination of pipe and bedding combinations for drainage works*.
  - Granular bedding for pipes shall consist of aggregates from natural sources complying with BS EN 13242 in accordance to SHW CI 503.3 (i).
    - Pipes over 100mm to 150mm nominal diameter: 14mm to 6.3mm graded aggregate or 0/10 nominal single-size aggregate.
    - Pipes over 150mm to 300mm nominal diameter: 14mm to 2mm graded aggregate or 0/20 nominal single-size aggregate.
  - Pipes with a diameter greater than 900mm subject to Technical Approval.
  - Concrete protection slab: Grade ST4 to SHW CI 2602 with A393 steel fabric reinforcement mesh. Alternatively, concrete with reinforcement fibres can be used, subject to the Engineer's approval.
  - The concrete protection slab should be designed to handle the forces applied to it from the backfill material and imposed surface loads. All concrete protection slabs designs to comply with BS 9295:2020 *Guide to the structural design of buried pipes*.
  - Backfill material SHW Class 1B material for verges and footpaths deposited in layers not exceeding 150mm thick and compacted in accordance to SHW CI 612 using power rammers or vibrating plate compactors unless other compacting equipment is required or agreed.
  - Under carriageway pavements the selected fill and backfill up to formation level shall consist of Type 1 sub-base material to SHW CI 803, compacted in accordance with SHW CI 612, Table 6/4, method 6.
  - Minimum trench width to allow for appropriate mechanical compaction.
  - Consult Highland Council Structures Team where pipes are on or near road structures (e.g. bridges, retaining walls).



**TRENCH DETAIL**

**CONCRETE PROTECTION**

**ACCEPTABLE PIPE TYPES**

PIPE MATERIAL	STANDARD
Vitrified Clay	BS EN 295-1
Precast Concrete	BS 5911-1 BS 5911-5 (pre-stressed non pressure pipes and fittings) BS EN 1916
Thermoplastic Structural Twin Wall	BS 4660 (size 110mm & 160mm diameter) BS EN ISO 1452-1 BS EN 1401-1 BS EN 1852-1 BS EN 12666-1 BS EN 13476-1 BS EN 13476-2 BS EN 13476-3

Revision Details	Drawn by	Checked by	Checked Date	Surf x



Project: Standard details. Series 0500:  
 Drainage and service ducts

Title: Surface water drains. Trench details

Scale (at A4): Not to scale

Drawn	JC	Date	11/2023
Checked	GHK	Date	11/2023

Drawing No.	SD/0500/01	Rev.	1
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