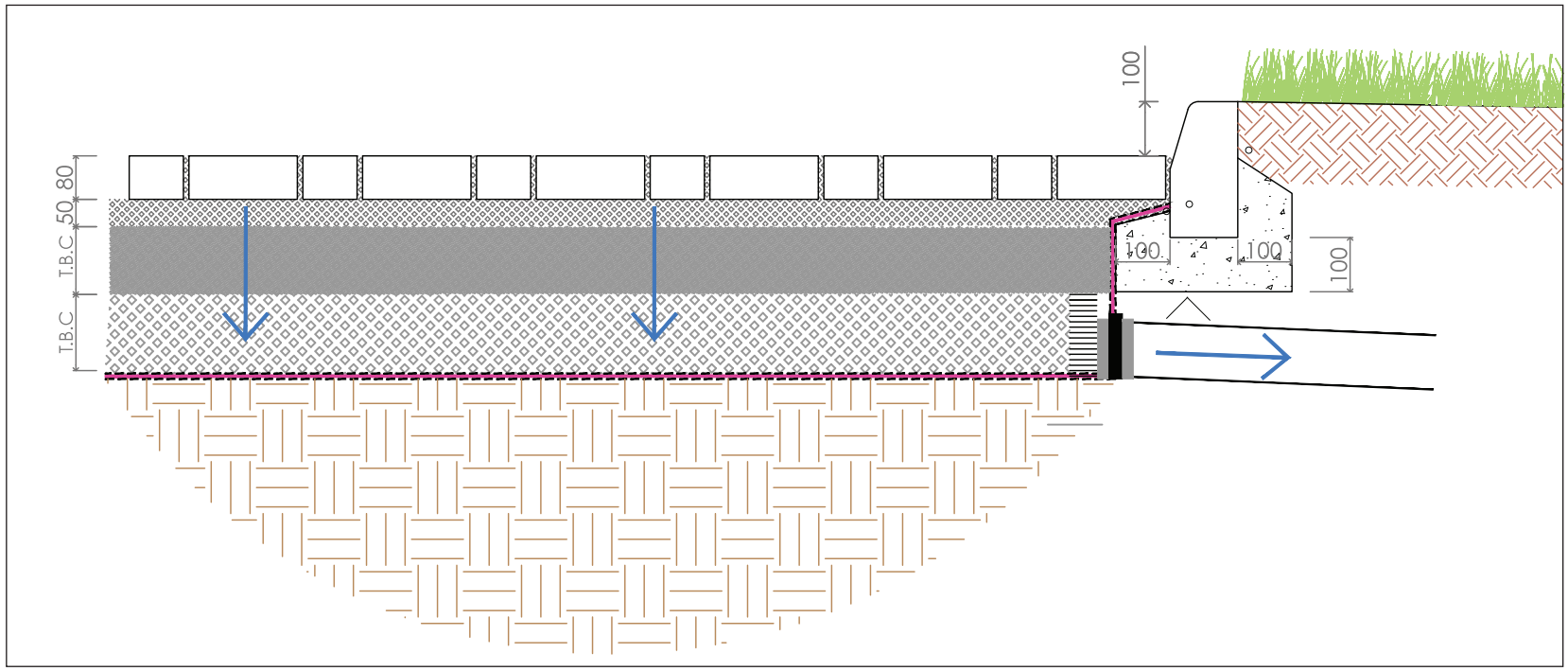
July 2019

Uniclass L534:L217

DETAILING
PERMEABLE PAVING & SUDS
WITH PRECAST CONCRETE PRODUCTS



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Interpave
THE PRECAST CONCRETE PAVING AND KERB ASSOCIATION

INTRODUCTION

‘Sustainable Drainage Systems’ (SuDS) intercept, convey, store and treat surface water by attenuation and filtration with the aim of replicating, as closely as possible, the natural drainage from a site before development. This approach is characterised by low flow rates and water management on or near the surface using multifunctional SuDS techniques.

Precast concrete paving products from Interpave manufacturer members play important roles in SuDS, ranging from complete permeable pavements to standard components helping other SuDS techniques work more effectively. This document brings together a variety of construction details, demonstrating best practice to make SuDS robust and durable over the long-term.

Produced by SuDS designers Robert Bray Associates (sponsored by Interpave and Sheffield City Council), these details have been successfully applied to SuDS projects, demonstrating their effectiveness on the ground. They are intended as generic solutions to assist designers in developing their own project-specific details.

Sheffield City Council

Robert Bray Associates

The detail drawings are arranged in three sections: concrete block permeable paving (CBPP); features for CBPP or SuDS; features with precast concrete products. Further examples are illustrated with photographs here and also in Interpave case studies, available to download via www.paving.org.uk

CONTENTS

CONCRETE BLOCK PERMEABLE PAVING

More than 25 years of use has proven concrete block permeable paving (CBPP) to be a key SuDS technique.

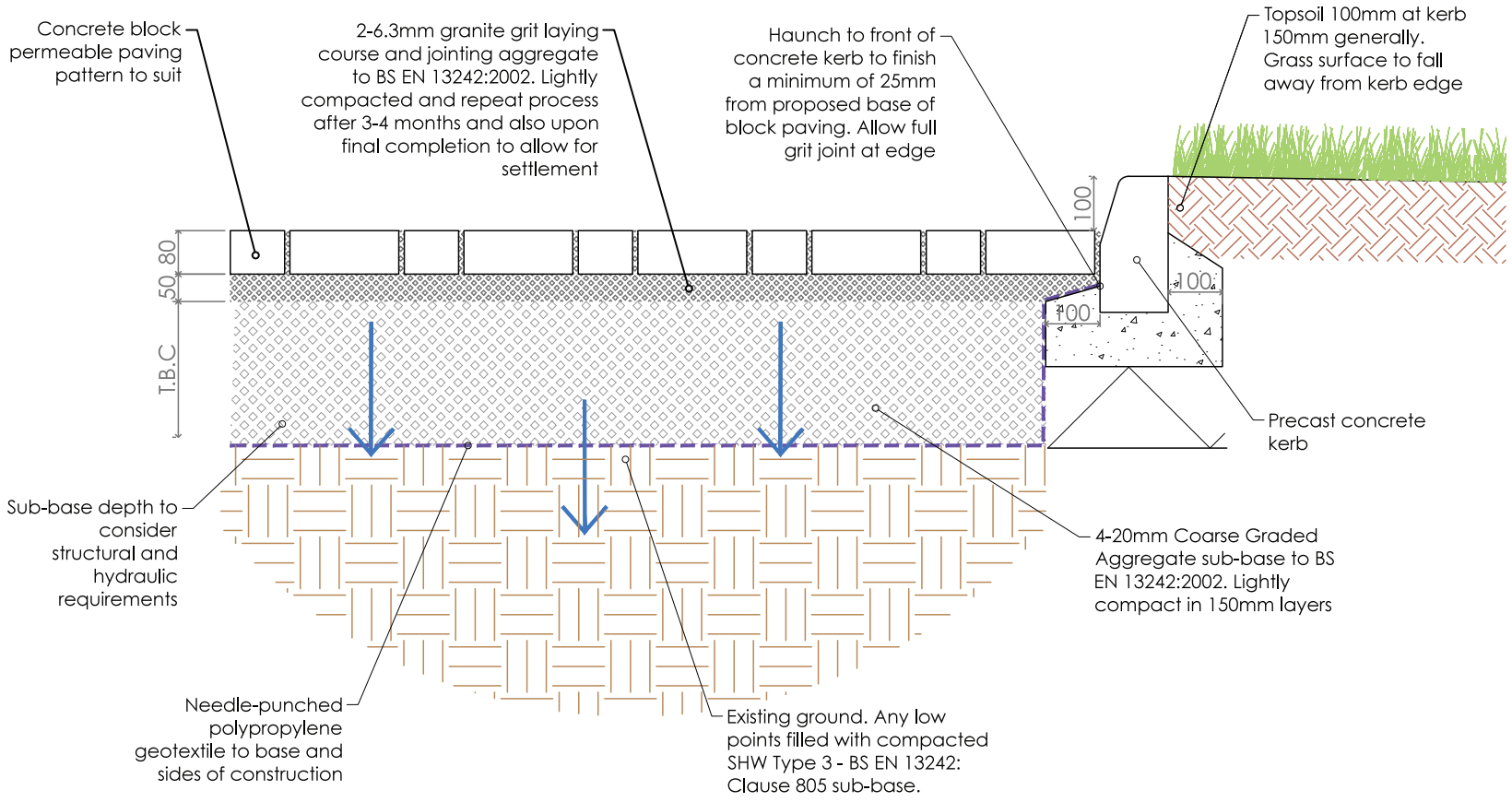
CBPP allows water to pass through the surface – between the paving units and the permeable laying course – into the underlying permeable construction where it is stored and, dependent on the system type, released slowly into the ground, to the next SuDS management stage or to a drainage system. At the same time, many pollutants are substantially removed from the water and treated within the CBPP itself.

For comprehensive information on CBPP, refer to Interpave's 'Design & Construction of Concrete Block Permeable Pavements' and other guidance, available at www.paving.org.uk

This low-level courtyard incorporates concrete flag permeable paving - which can be laid with or without spacers to achieve suitable joint spaces - as well as CBPP.

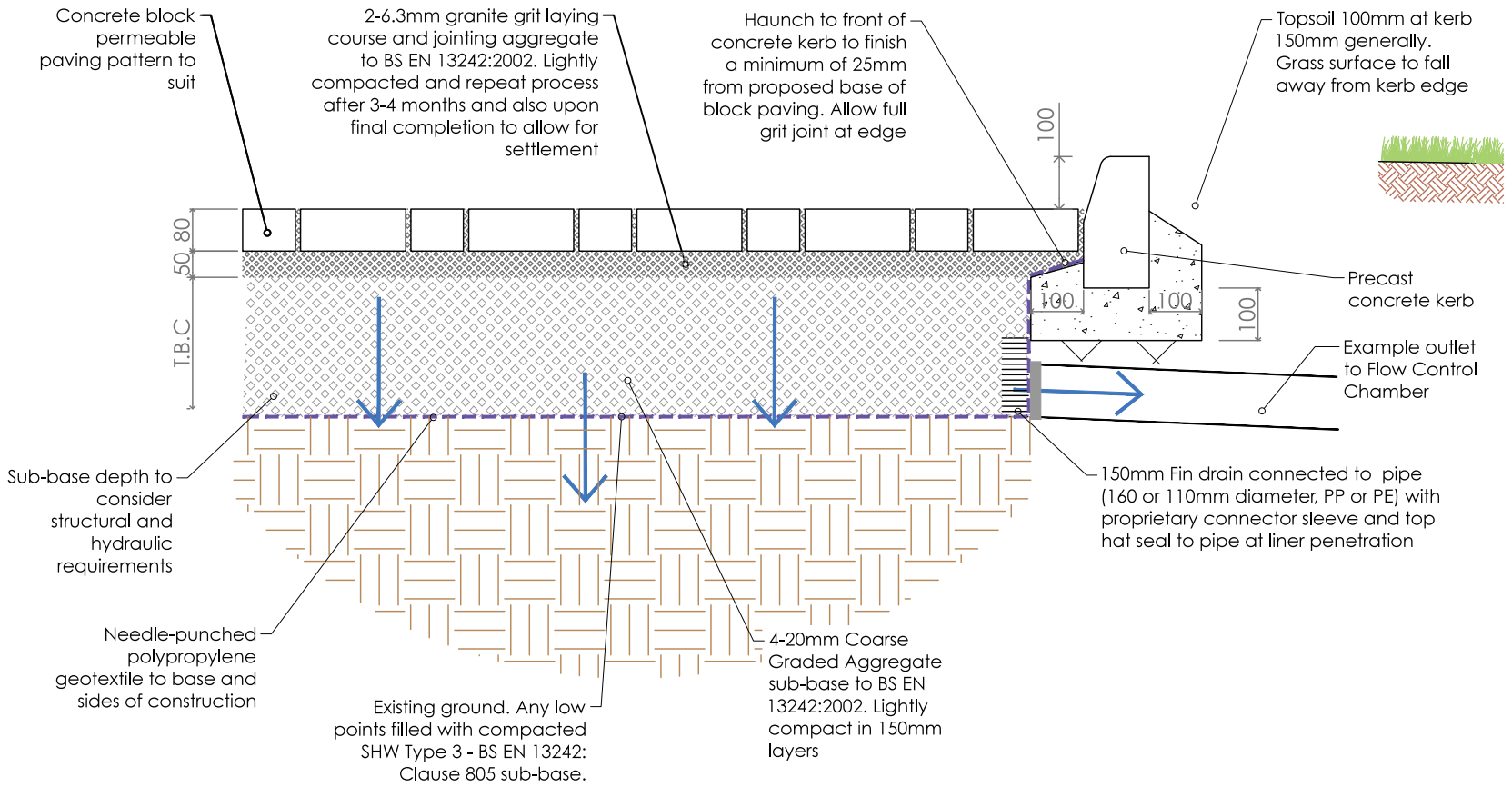
CBPP Details

Detail 1 - Permeable Paving (System A) with Total Infiltration



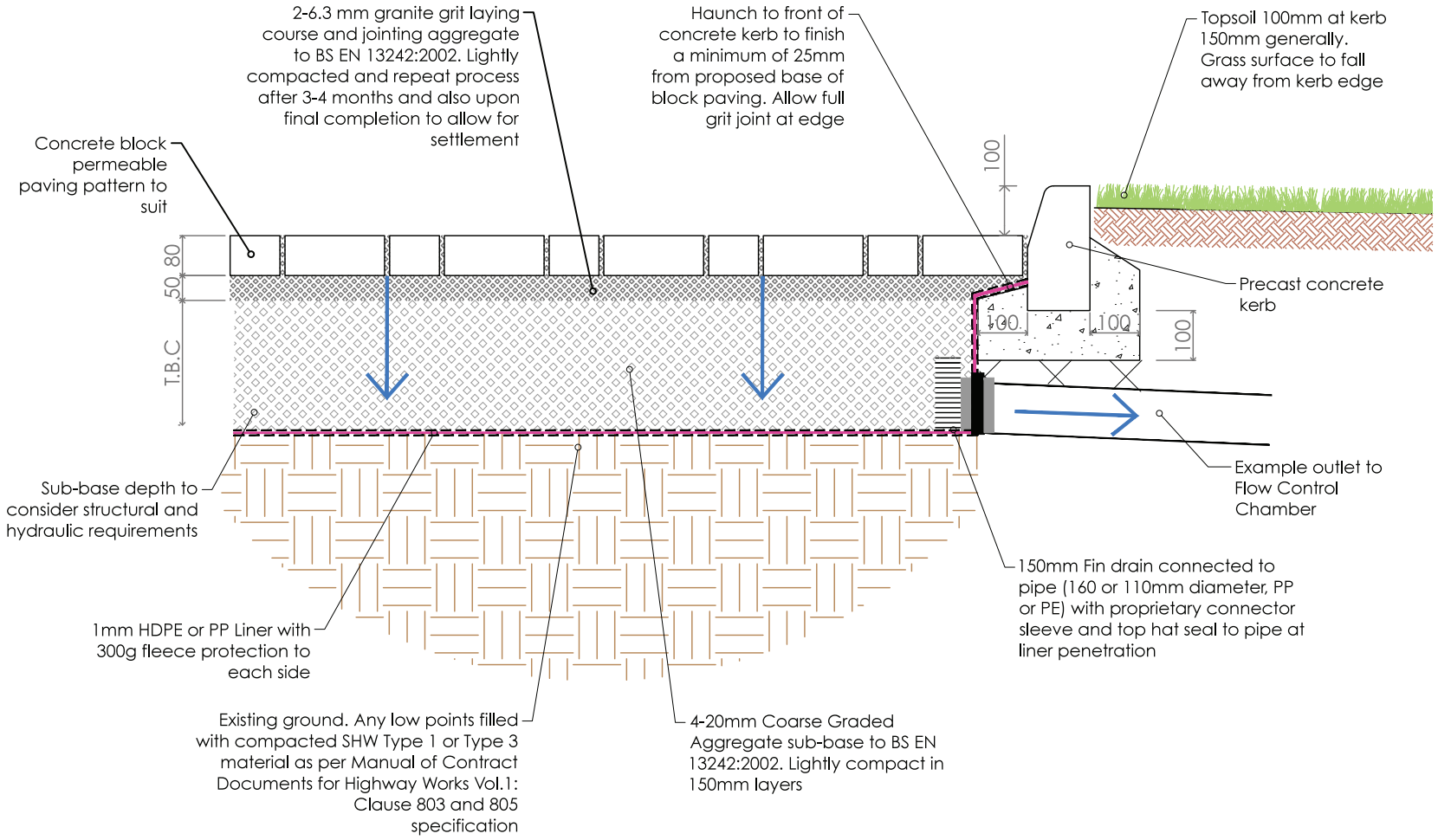
CBPP Details

Detail 2 - Permeable Paving (System B) with Partial Infiltration



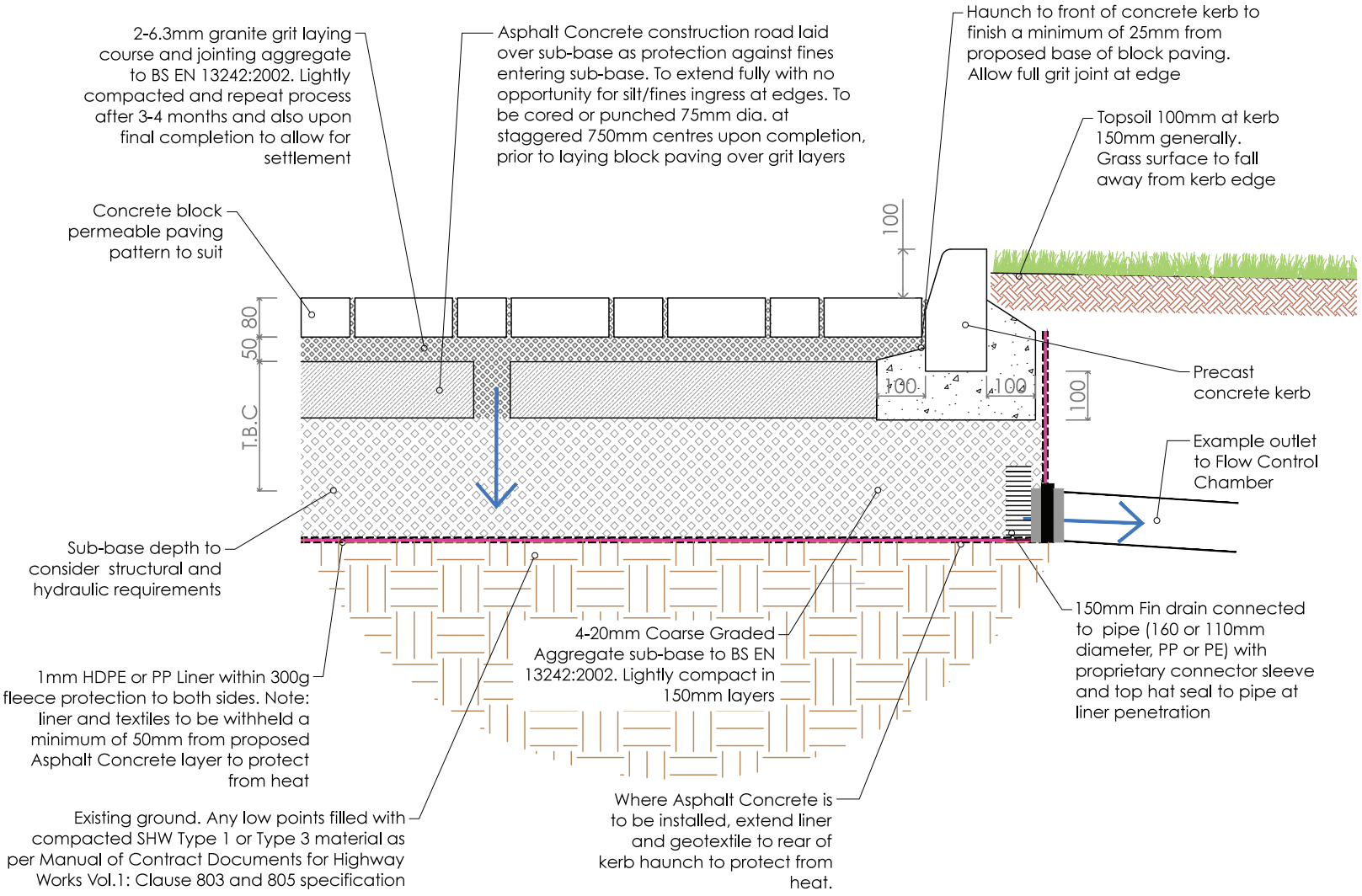
CBPP Details

Detail 3 - Lined Permeable Paving (System C) No Infiltration - with Sealed Outlet to Flow Control



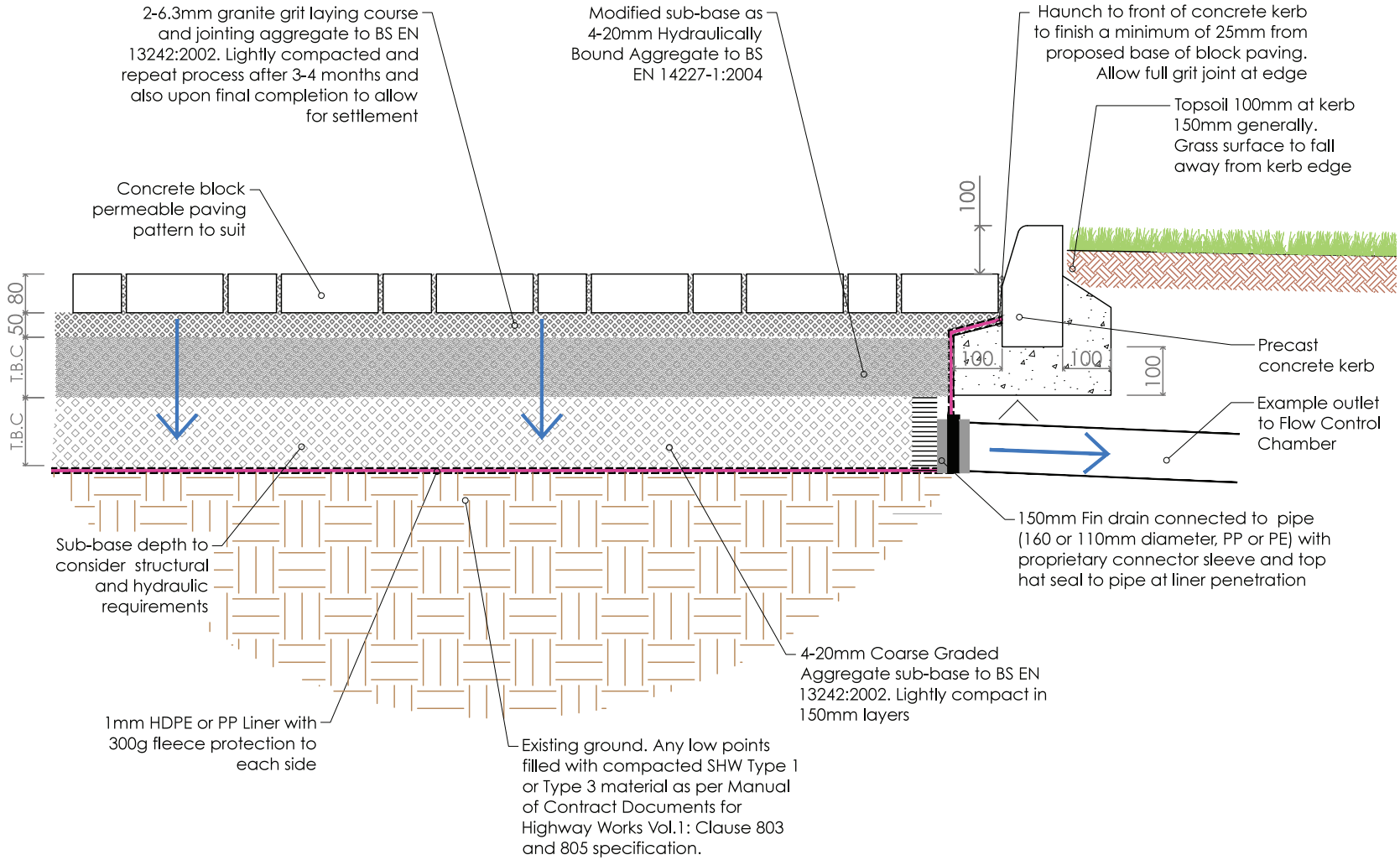
CBPP Details

Detail 4 - Lined Permeable Paving (System C) Incorporating Asphalt Concrete (Construction Road)



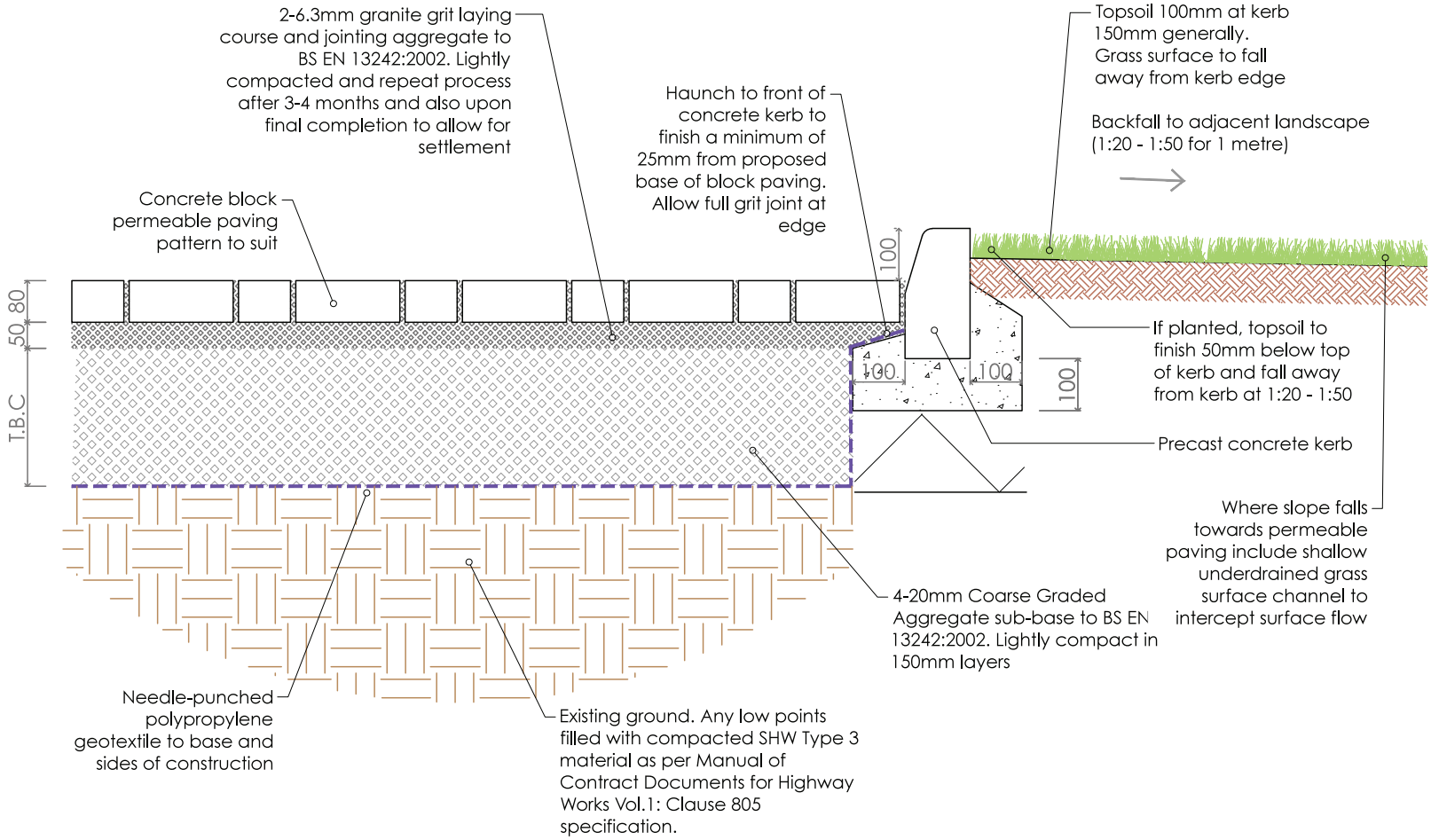
CBPP Details

Detail 5 - Lined Permeable Paving (System C) Incorporating Hydraulically Bound Aggregate



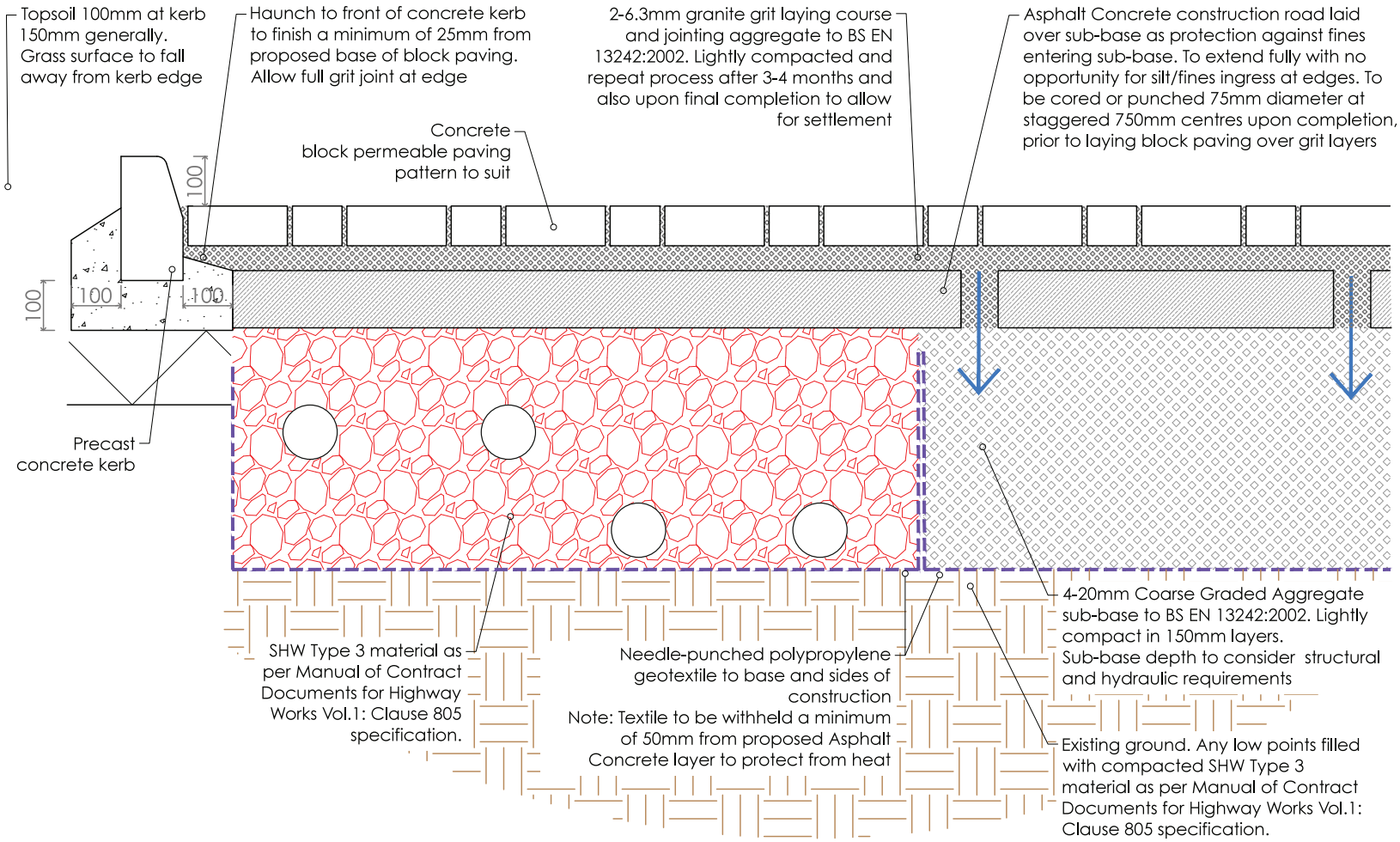
CBPP Details

Detail 6 - Landscape Adjacent to Paved Surface - Shown with System A



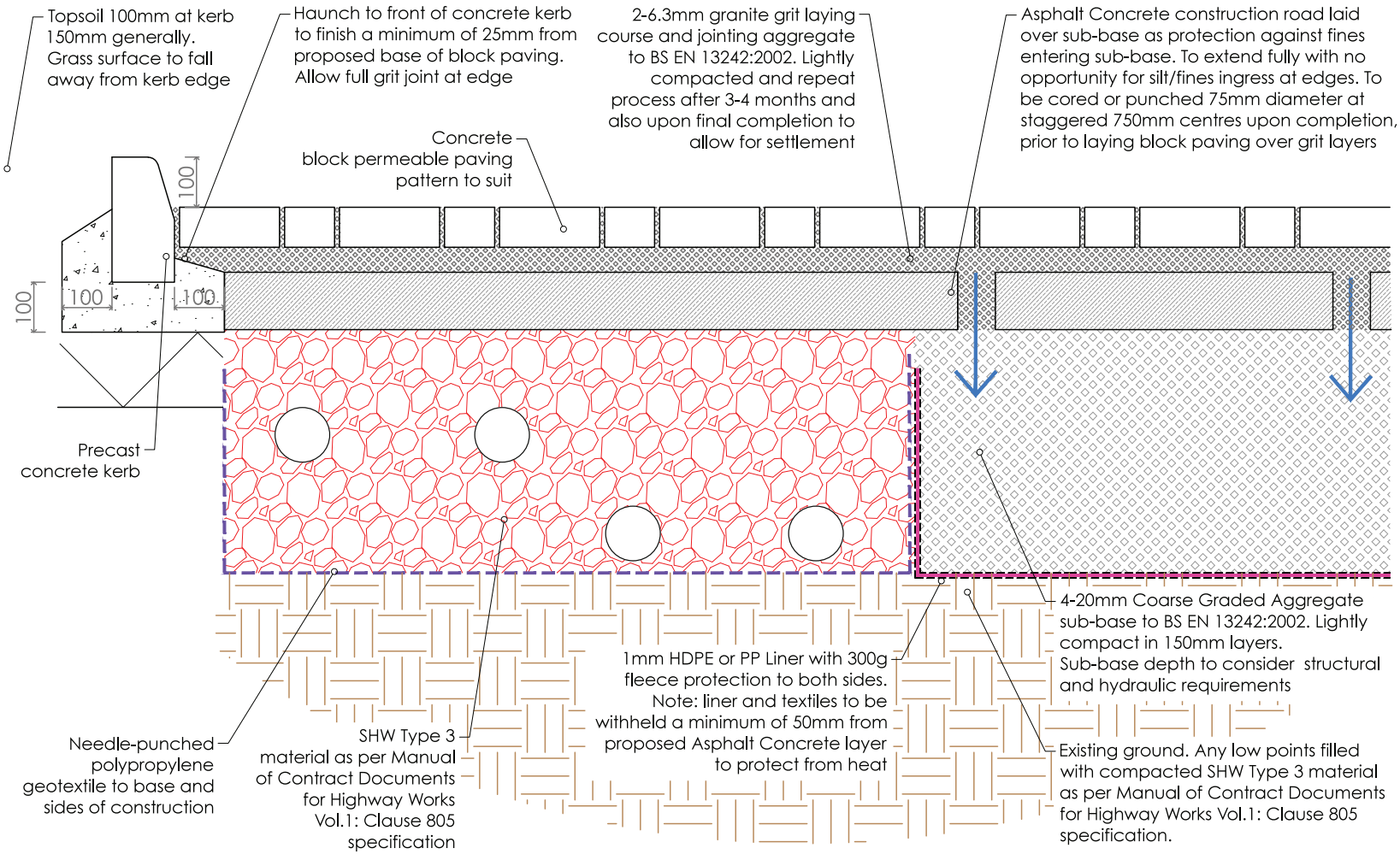
CBPP Details

Detail 7 - Infiltrating Permeable Paving (System A) - Edge Detail Between Infiltrating Permeable Paving and Service Strip, Incorporating Asphalt Concrete



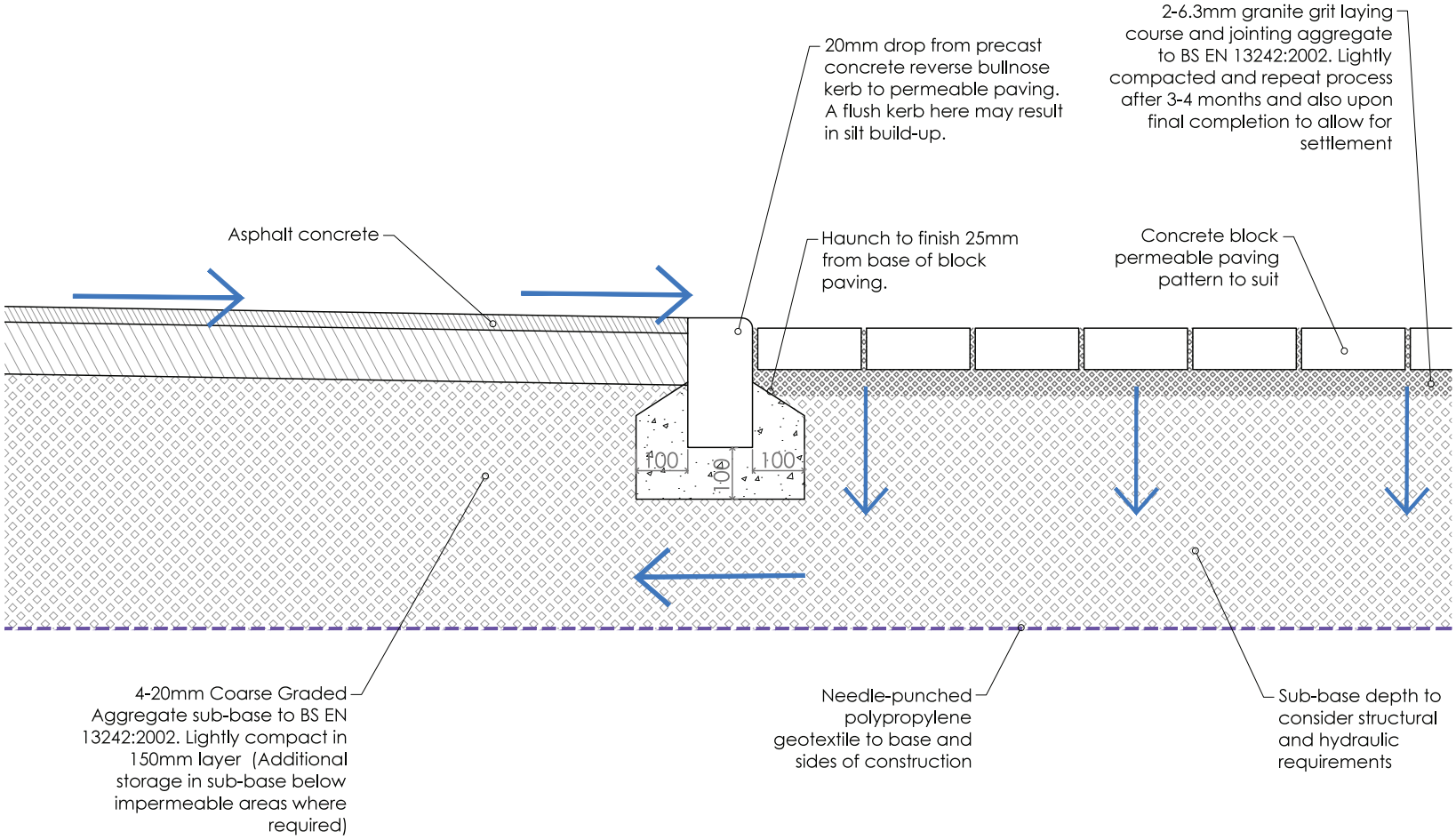
CBPP Details

Detail 8 - Lined Permeable Paving (System C) - Edge Detail Between Lined Permeable Paving and Service Strip, Incorporating Asphalt Concrete



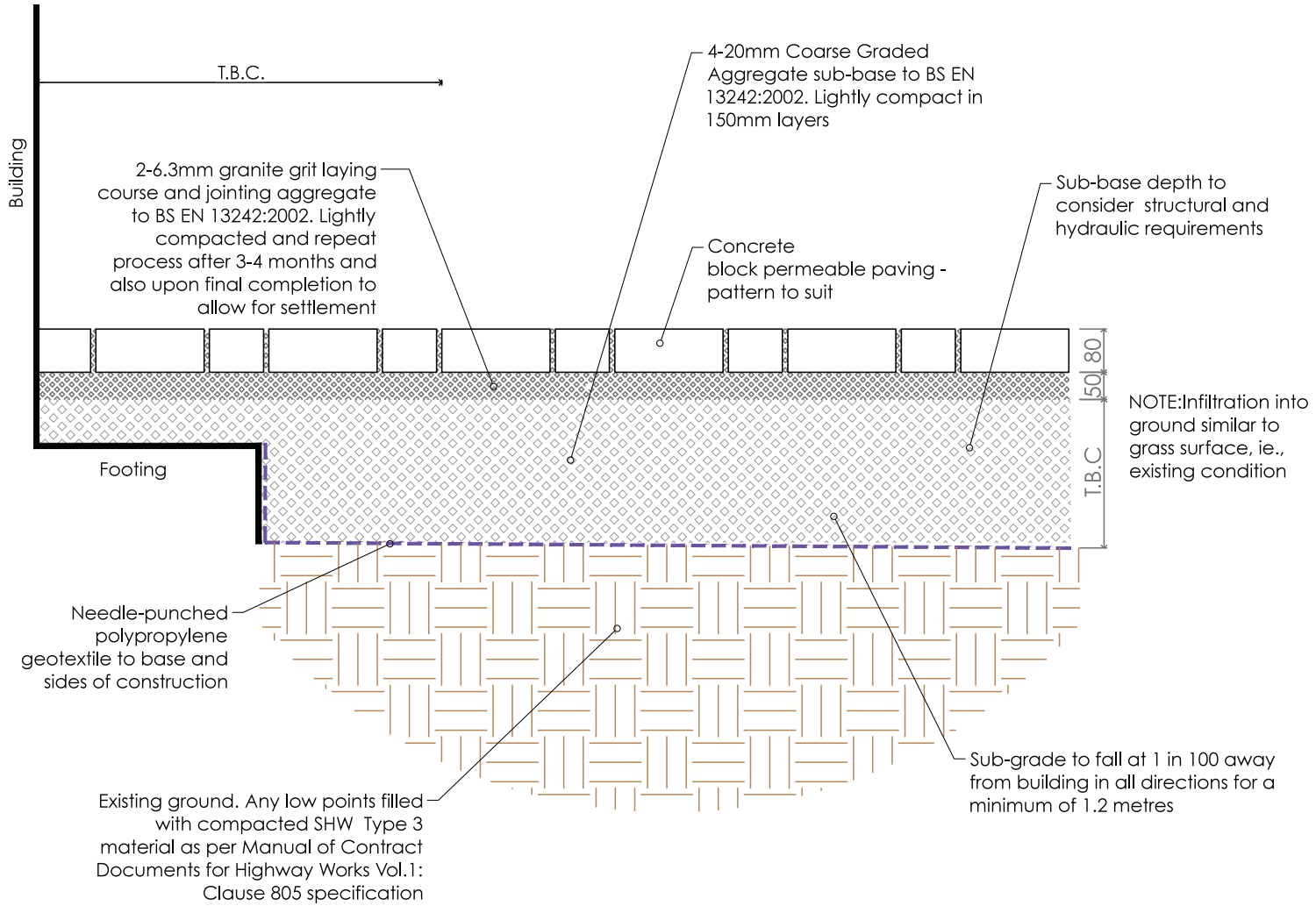
CBPP Details

Detail 9 - Edge Detail Between Impermeable and Permeable Paving



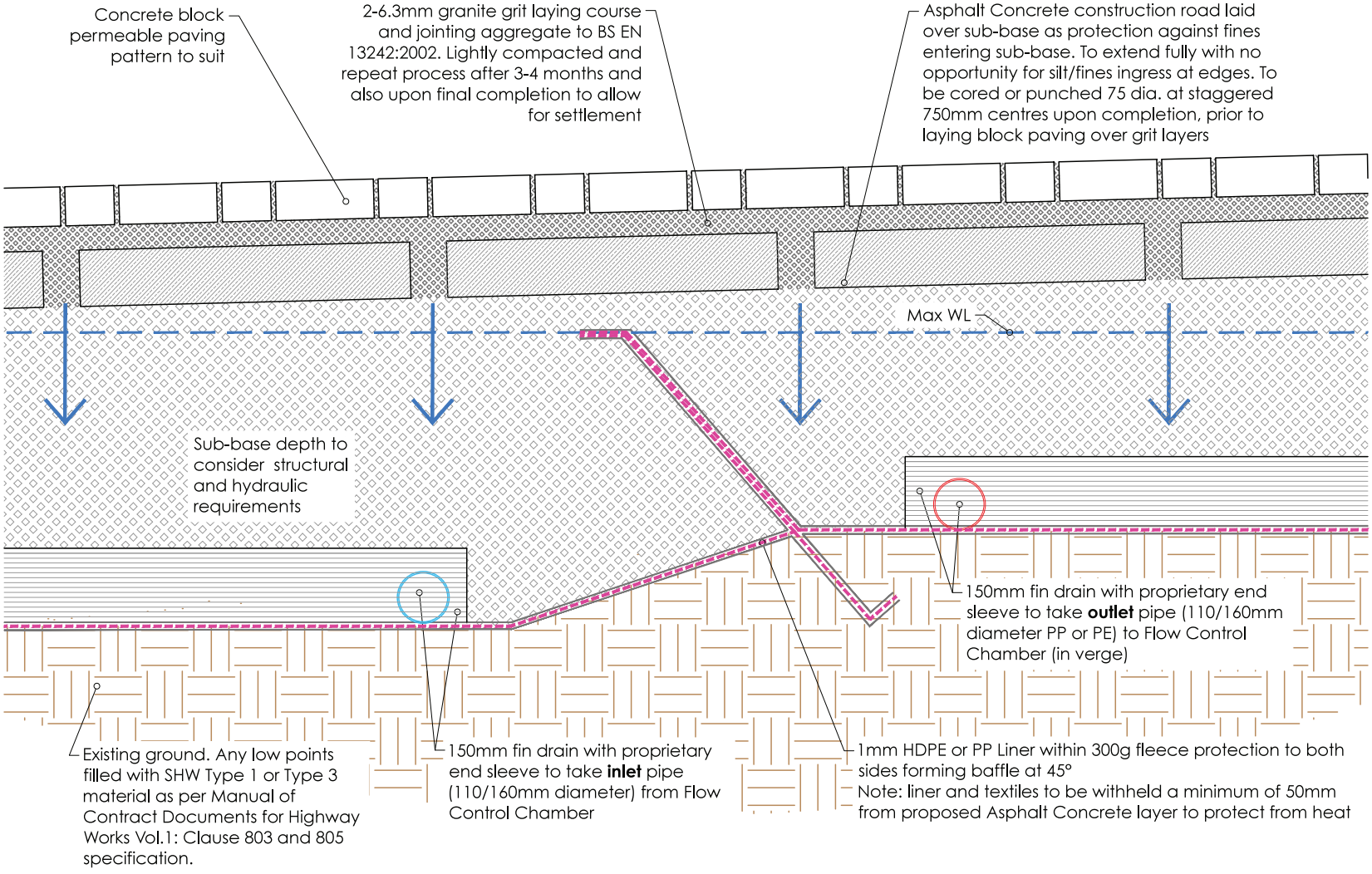
CBPP Details

Detail 10 - Permeable Paving (with no Contributing Surface) Adjacent to Building



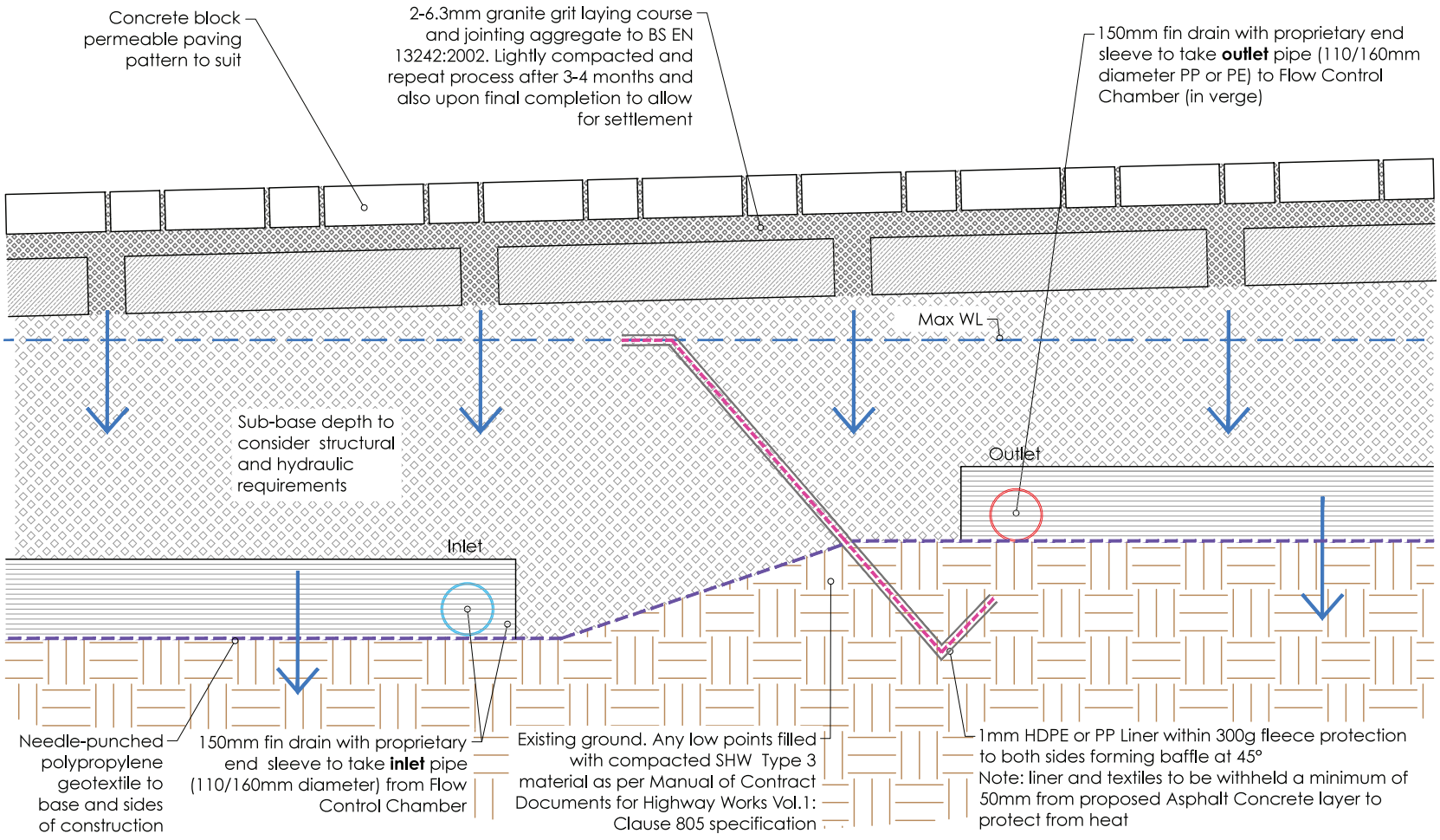
CBPP Details

Detail 11 - Internal Baffles with Controls - Cross-section System C - Non Infiltrating



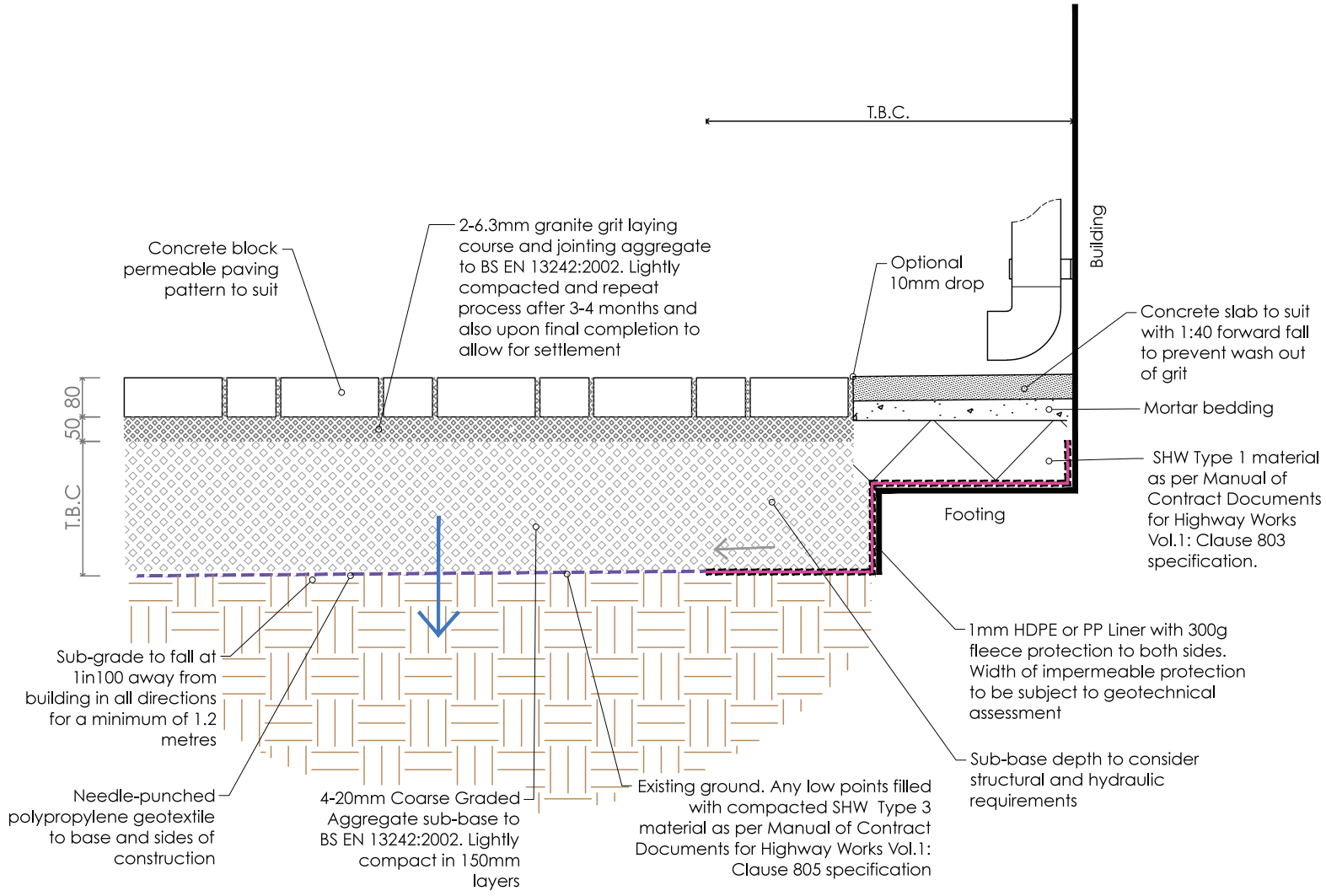
CBPP Details

Detail 12 - Internal Baffles with Controls - Cross-section Type A - Fully Infiltrating



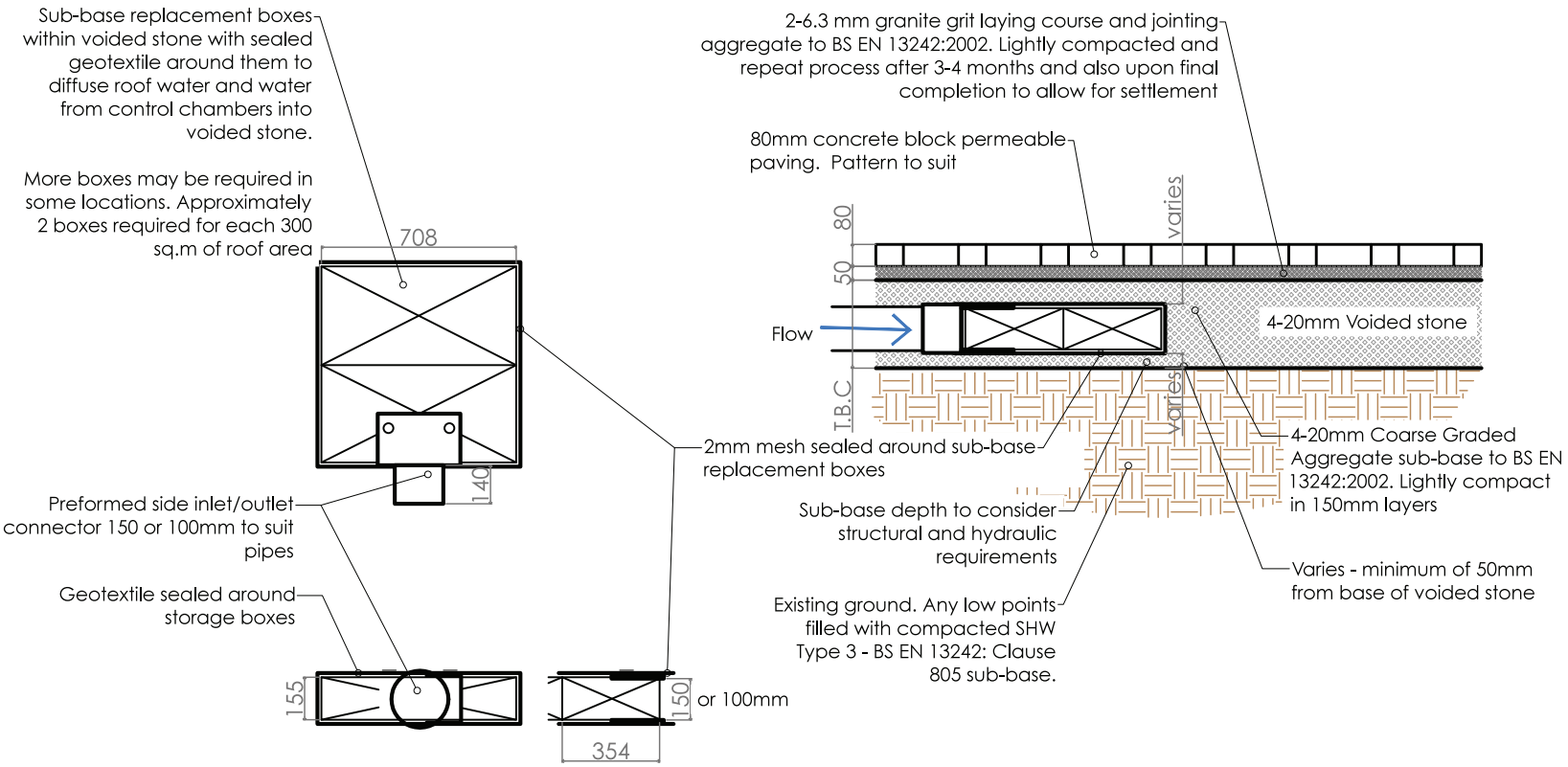
CBPP Details

Detail 13 - Downpipe with Shoe onto Permeable Paving - Type A - Fully Infiltrating



CBPP Details

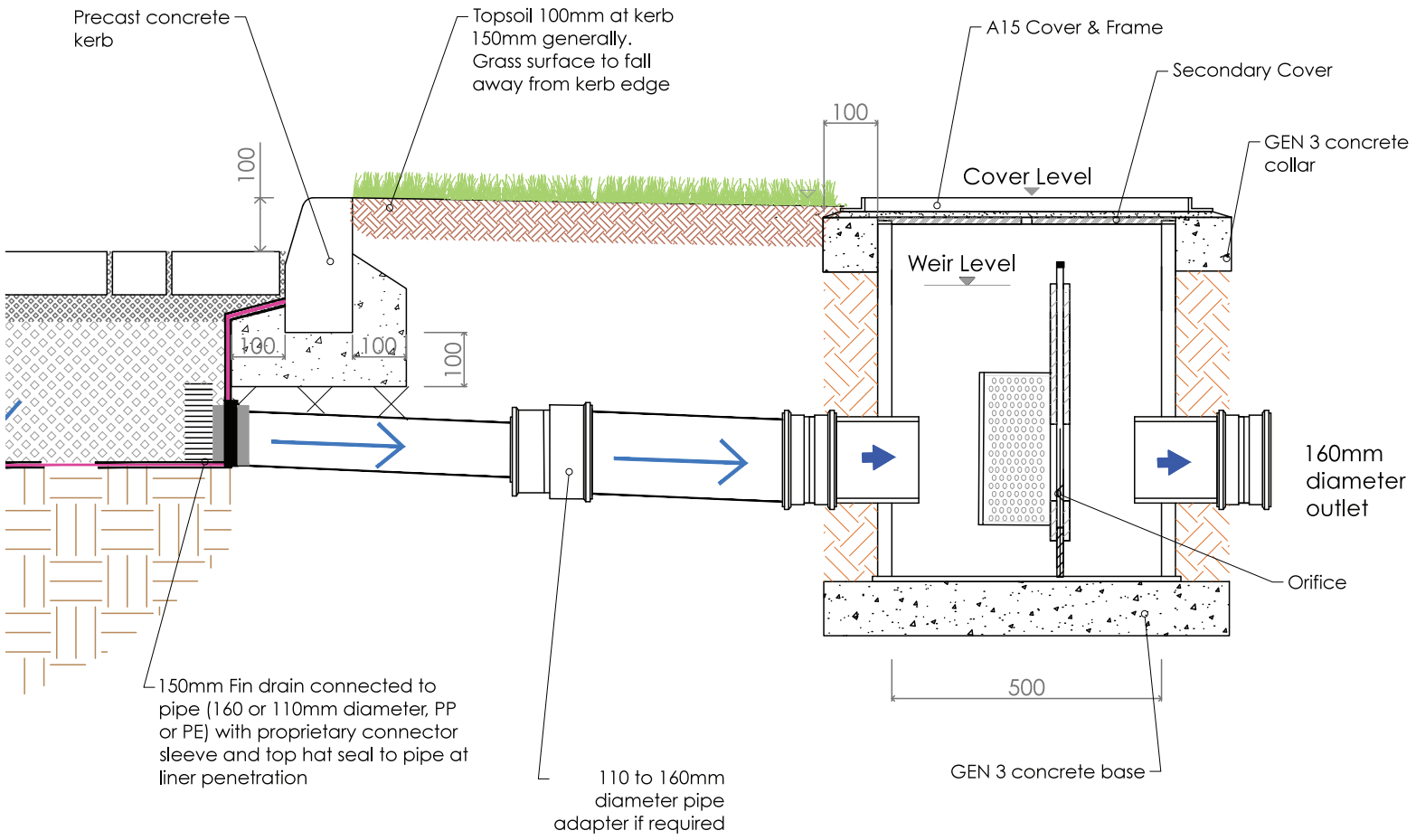
Detail 14 - Diffuser Box with Upstream Silt Trap



NOTE: The boxes are structural and designed to be in the road construction.
Inlet silt trap with needle punched polypropylene geotextile protection around inlet to prevent silt getting into he box

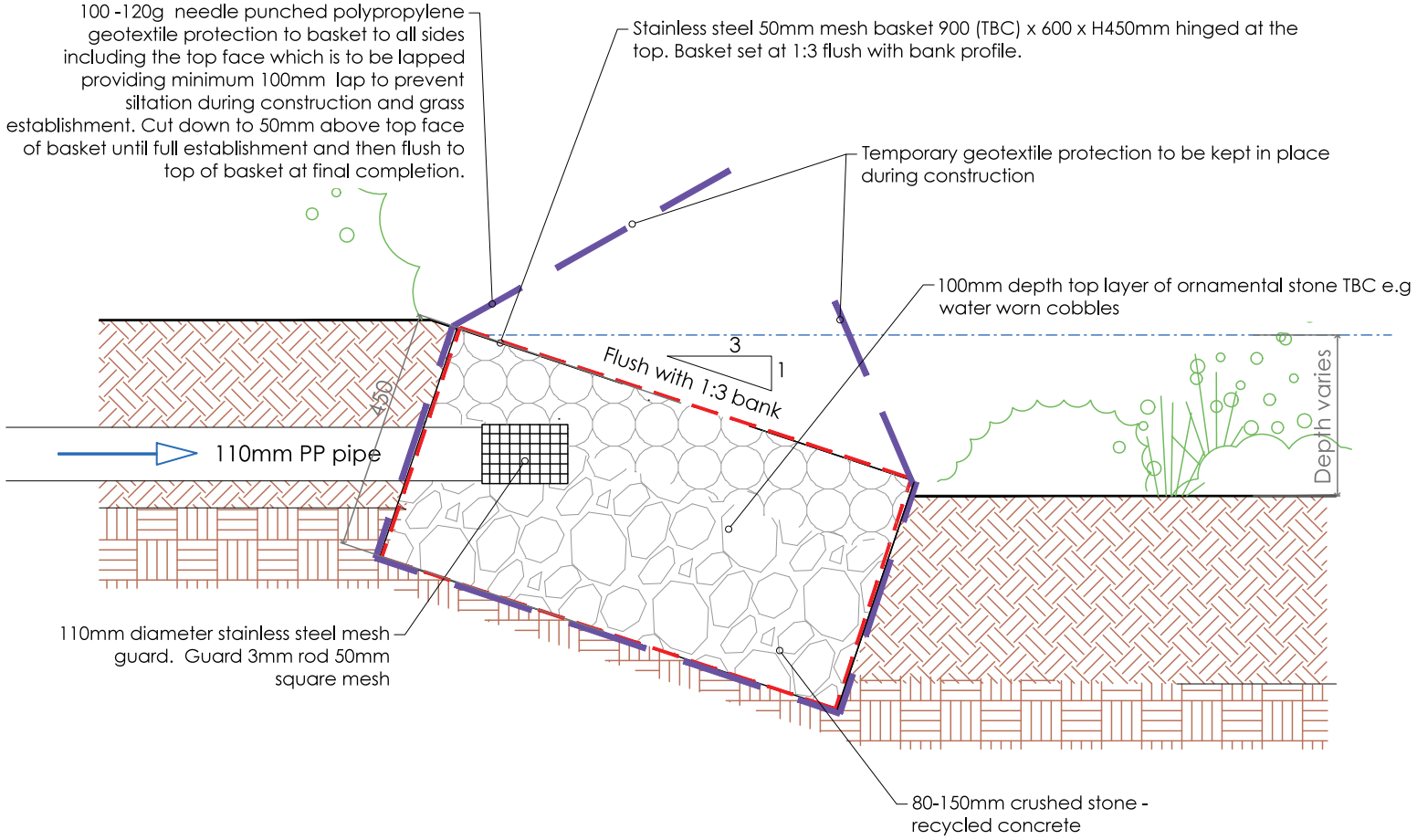
Features for CBPP or SuDS

Detail 15 - Flow control chamber with a protected orifice within a removable plate, suitable for any SuDS technique outlet. For CBPP, flow controls do not need protection from blockages, as the water passing from the CBPP will be free of debris.



Features for CBPP or SuDS

Detail 16 - Stainless Steel Basket Inlet from CBPP or Other SuDS.



SuDS with Precast

Kerb quadrants direct water straight off the impermeable access road into a swale, softened by a concrete flag. Rainwater downpipes from the building roof discharge directly over ribbed concrete flags which channel the water across a footway.

Bullnose kerbs to the road and edgings to the footpath allow runoff to flow gently into a swale without erosion. A simple pedestrian crossing is formed with concrete paving flags.

Here, a standard dropped kerb disperses runoff from impermeable asphalt onto concrete block permeable paving, as well as providing wheelchair access.

SuDS with Precast

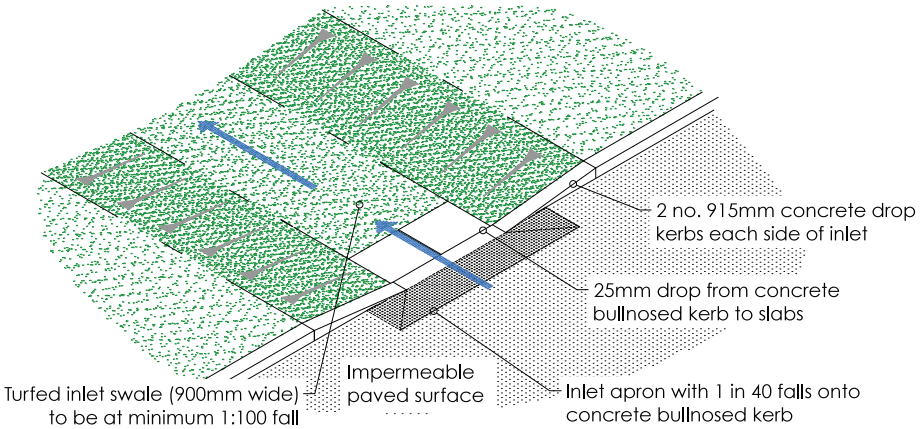
High quality finish, standard precast concrete paving products can be used in interesting ways to form rills and other features to convey water on the surface.

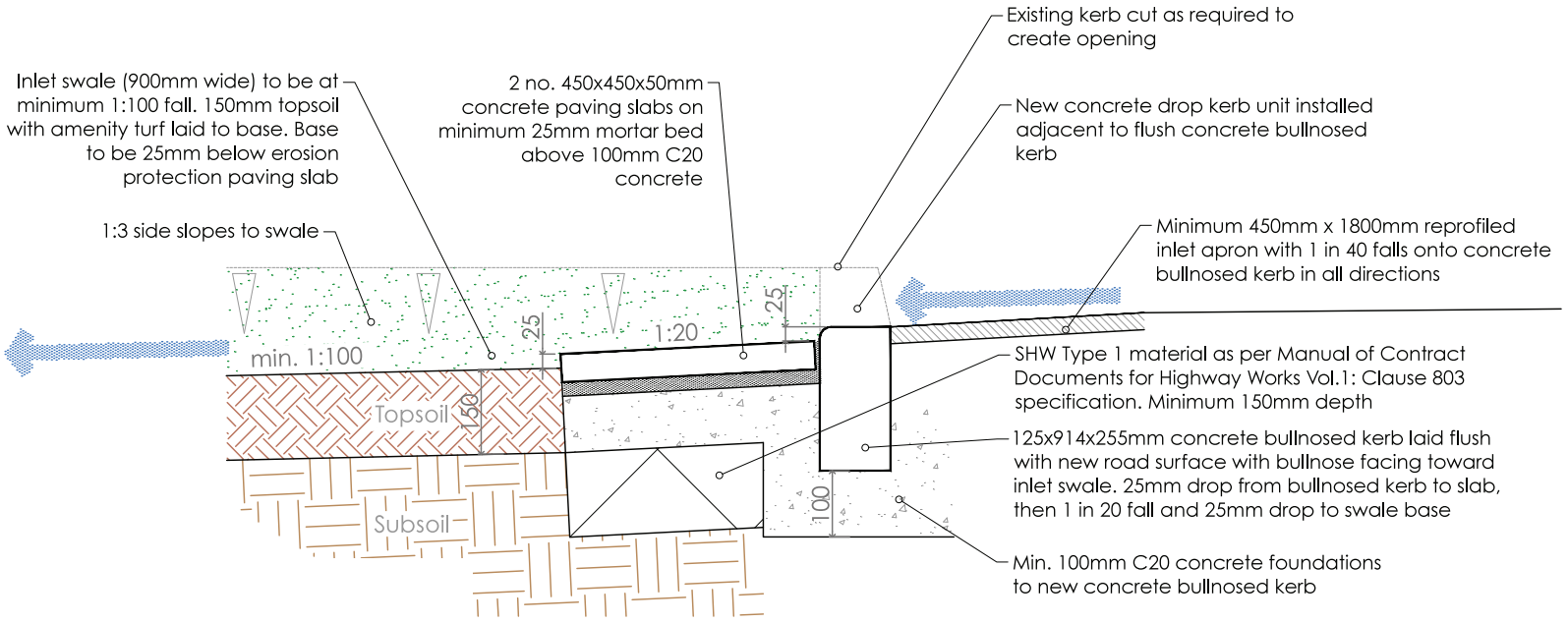
SuDS with Precast

Rainwater runoff from impermeable paving simply enters this roundabout rain-garden/bio-retention basin through gaps between concrete kerbs, where it is diffused on concrete flags with inner kerb baffles preventing erosion.

SuDS with Precast

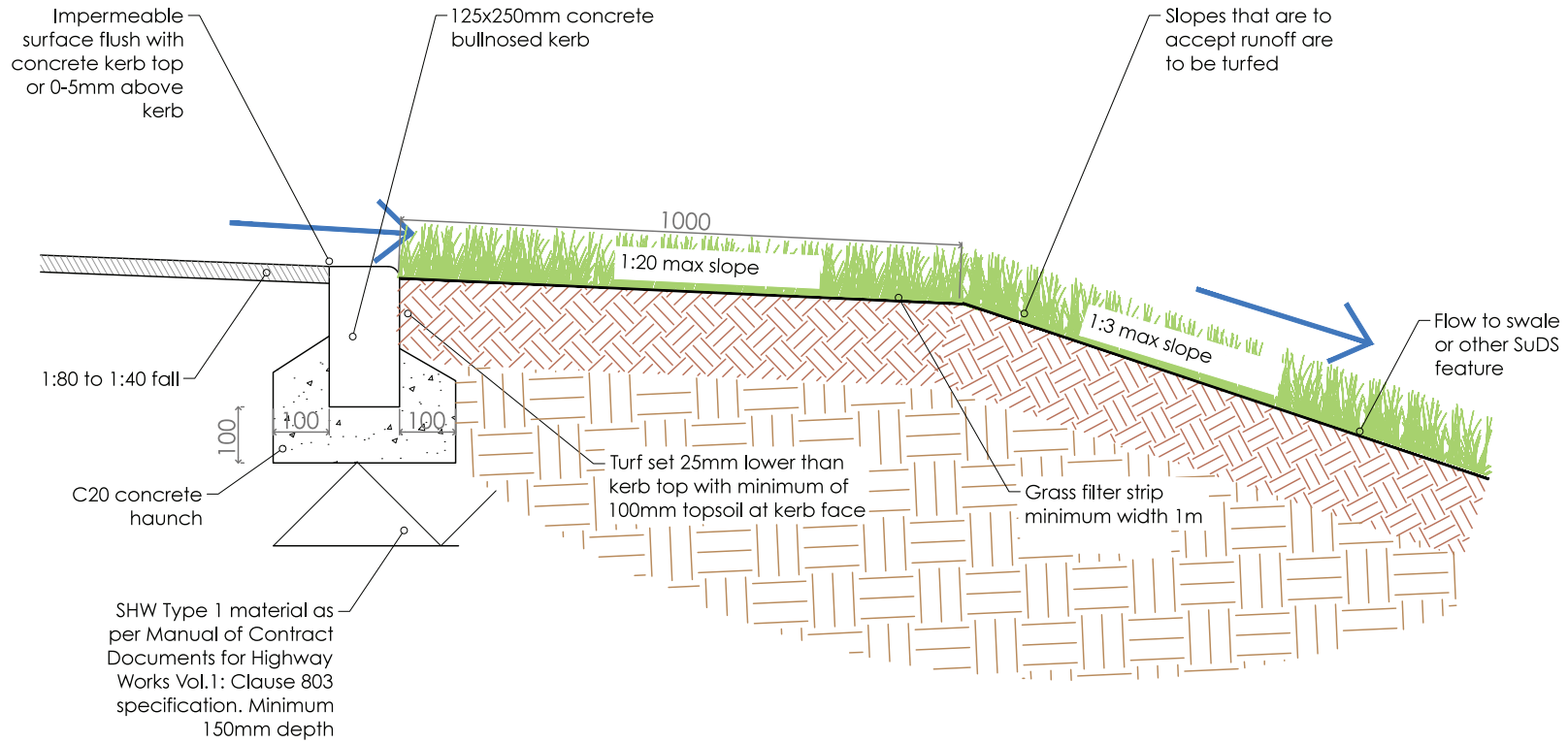
Detail 17 - Concrete Drop Kerb Inlet to Swale





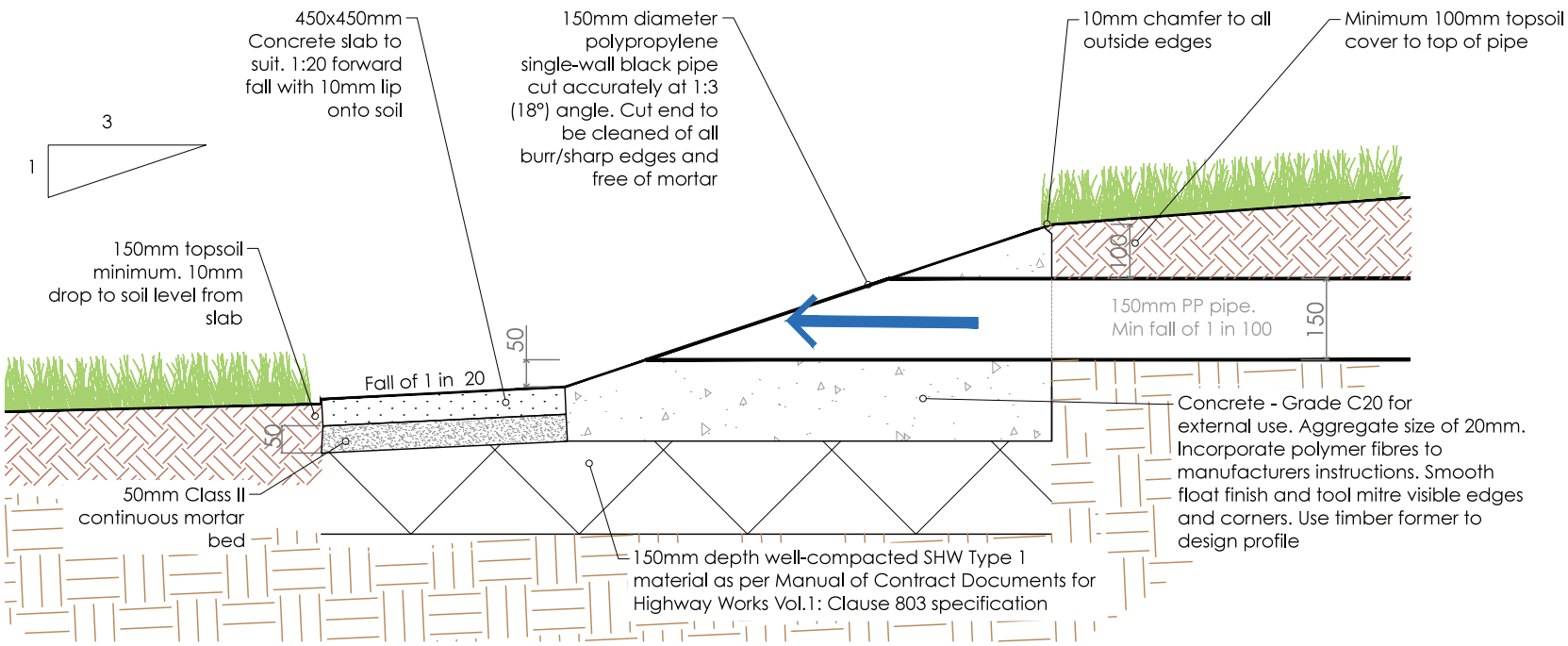
SuDS with Precast

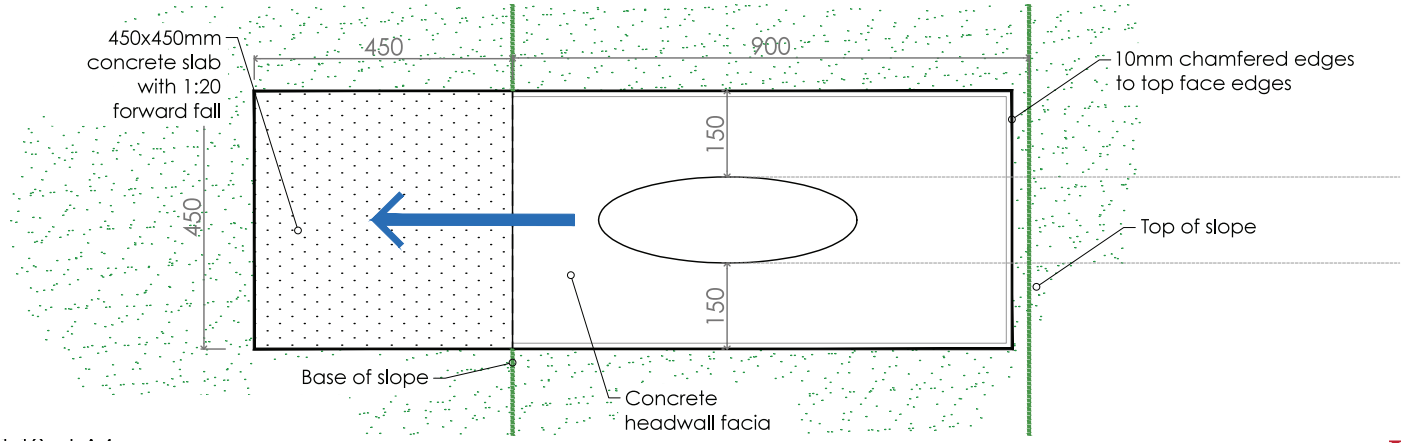
Detail 18 - Filter Strip with Reverse Bullnosed Kerb Edge



SuDS with Precast

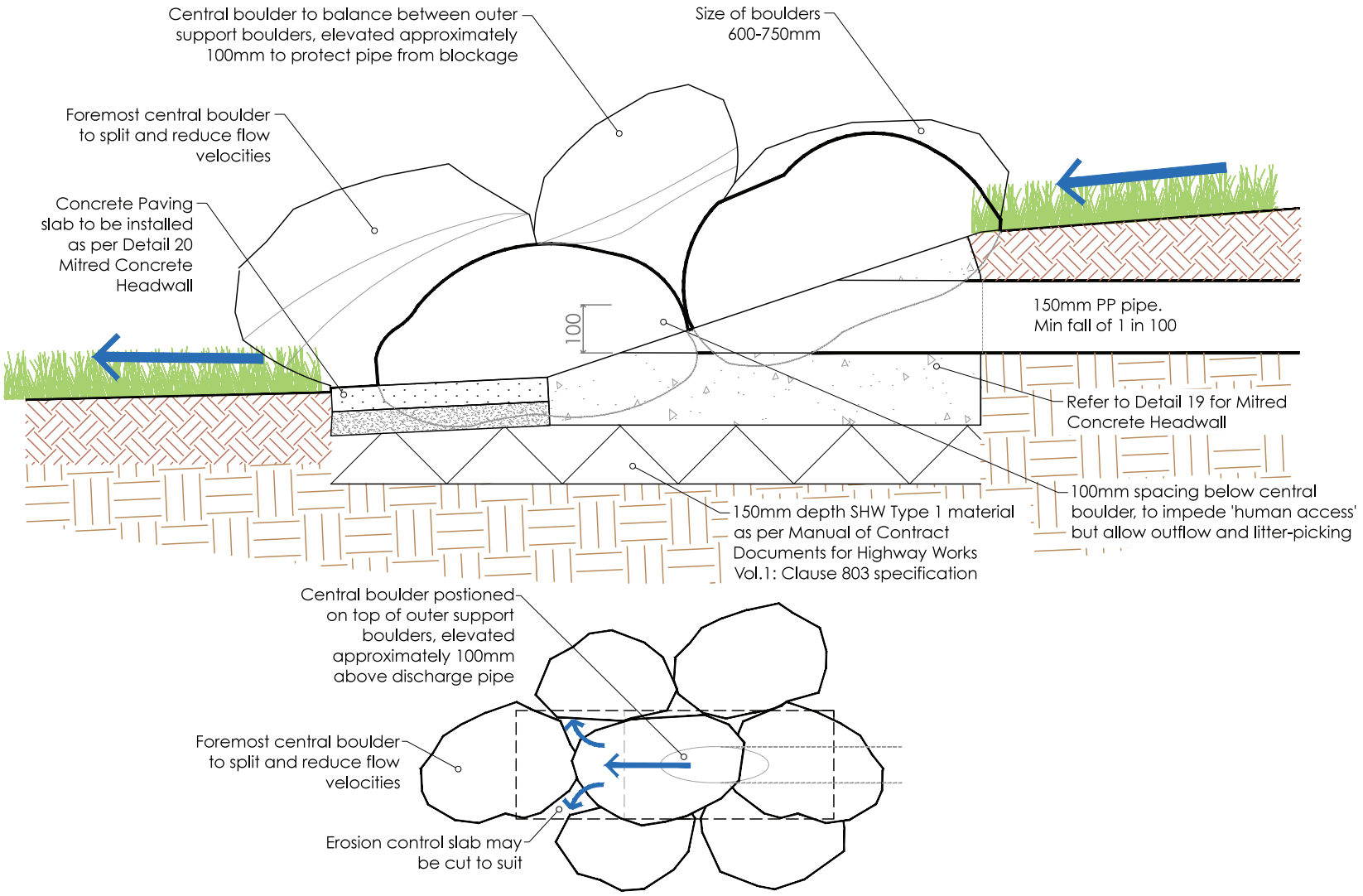
Detail 19 - Mitred Concrete Headwall





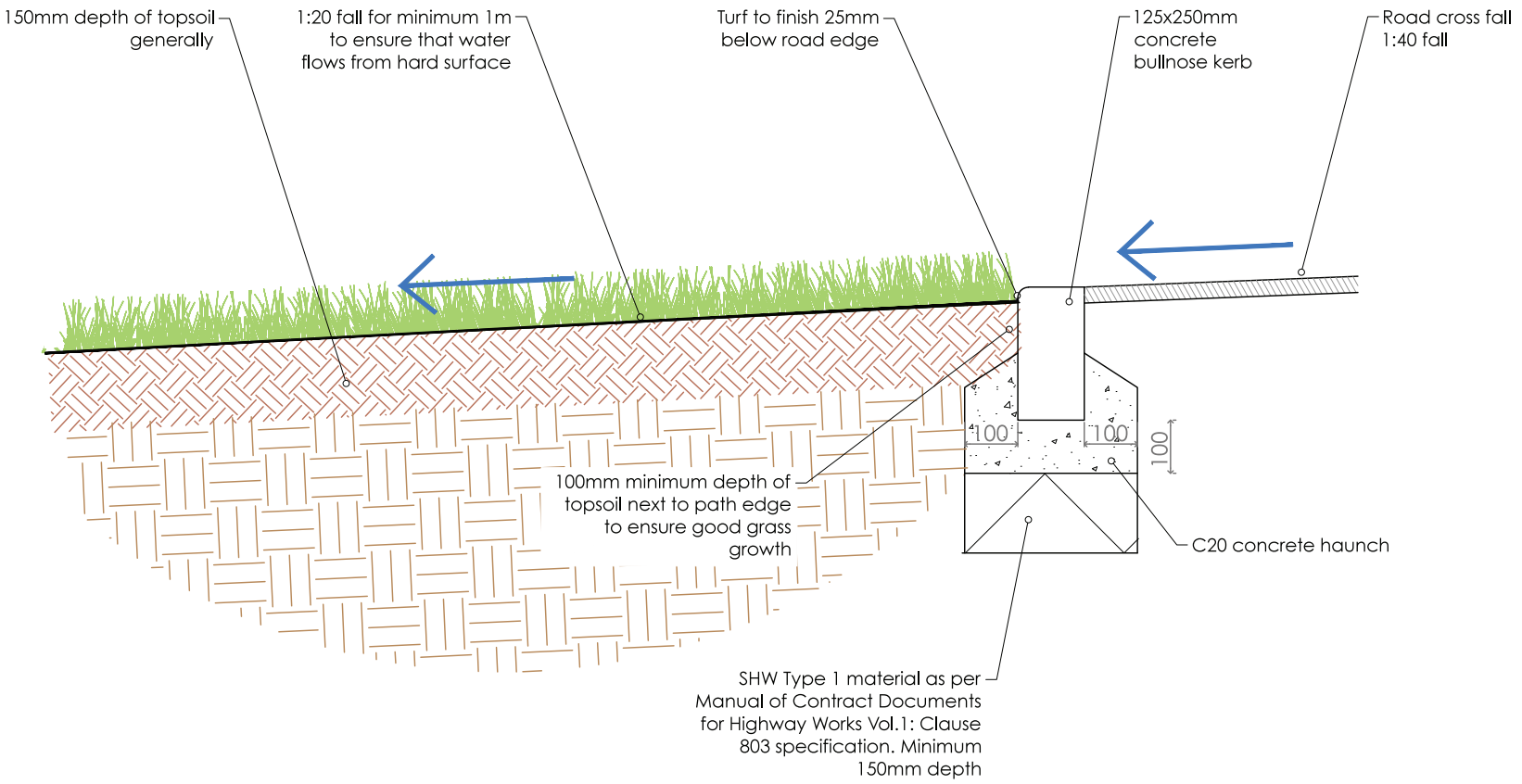
SuDS with Precast

Detail 20 - Mitred Concrete Headwall with Boulder Protection



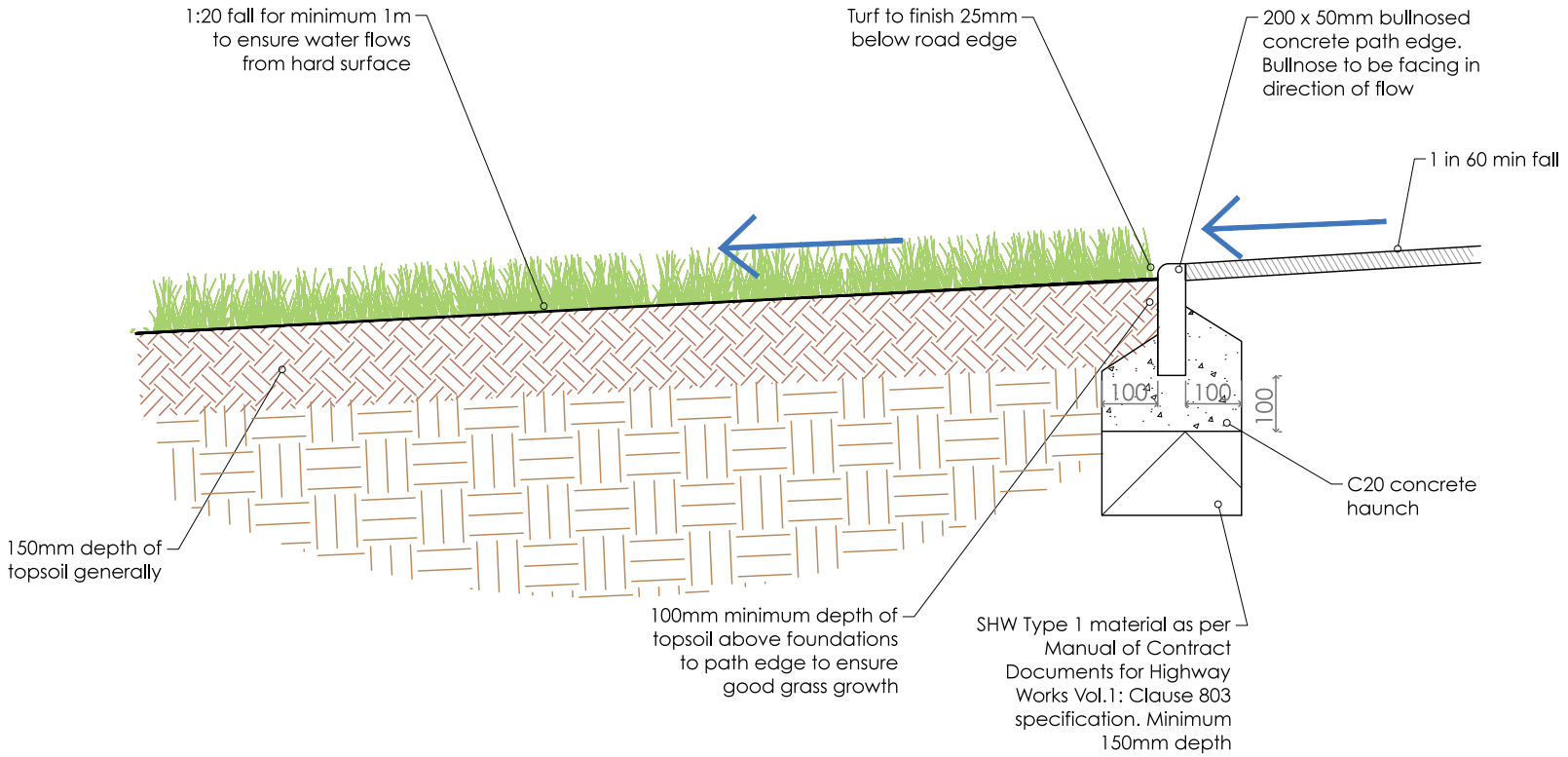
SuDS with Precast

Detail 21 - SuDS Road Edge



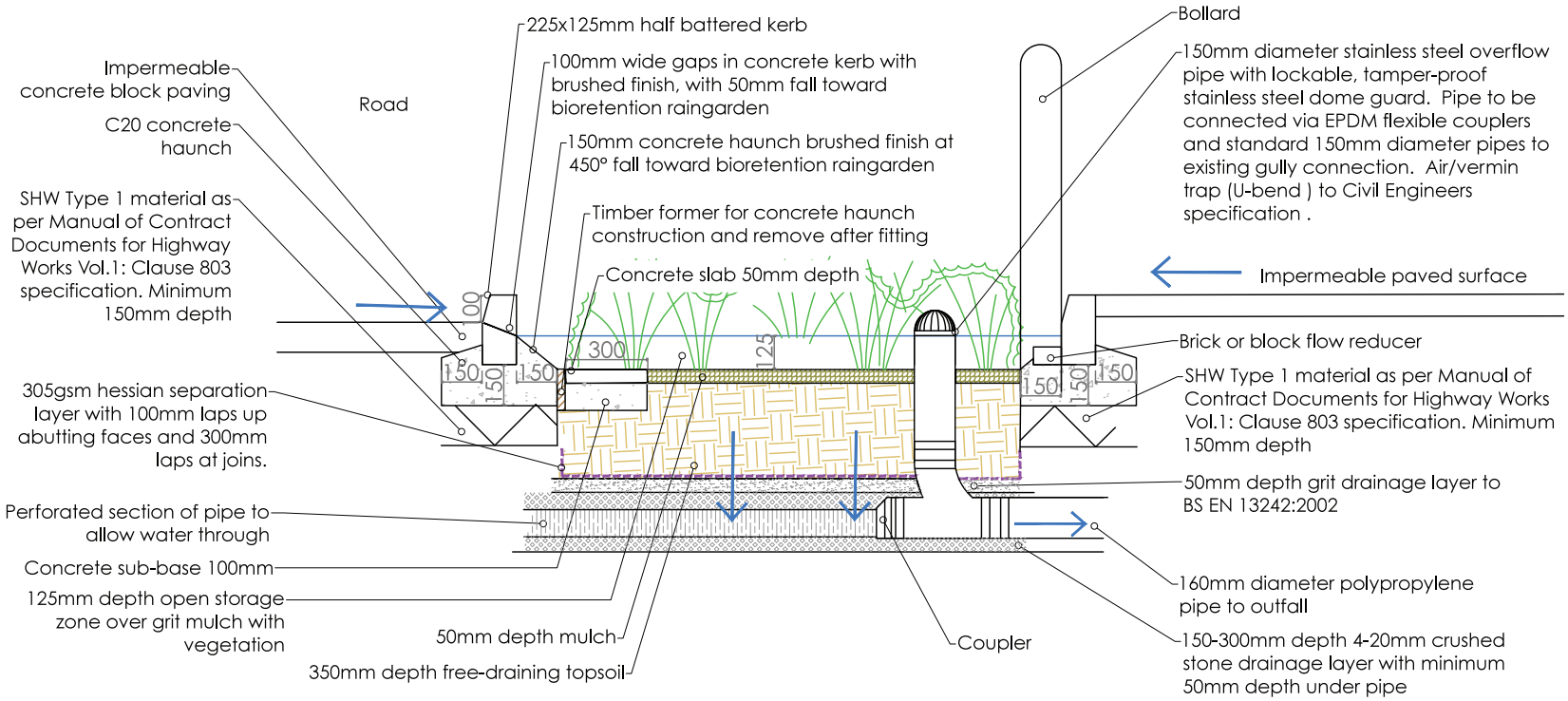
SuDS with Precast

Detail 22 - SuDS Path Edge

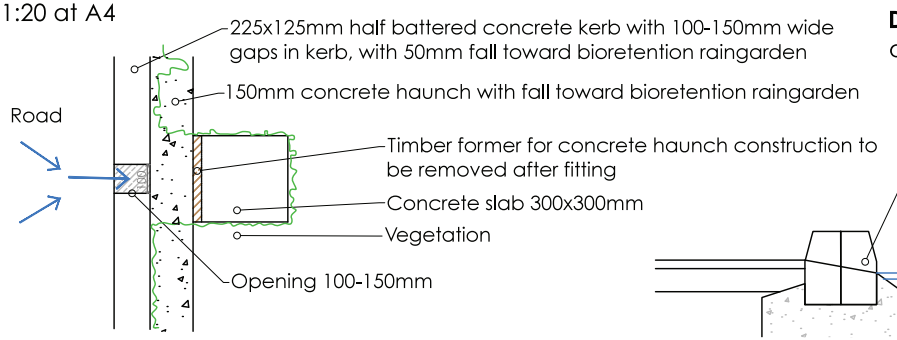


SuDS with Precast

Detail 23 - Bioretention Feature



Detail 23a DETAIL - Opening in kerb and erosion control slab
Scale 1:20 at A4



Detail 23b DETAIL - Option to conceal unfinished back of precast kerb - Scale 1:20 at A4

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