expanded polystyrene

Insulation that exceeds expectation

Civil Engineering

Aquatic Centre

CONTENTS

Our Accreditations

S and B Fill

The development and use of expanded polystyrene [EPS] in civil engineering is evolving dramatically and is now seen as a viable alternative to traditional fill materials in the construction of road and rail embankments, abutments and backfill, that can cause unacceptable horizontal or vertical stresses in the underlying soil or against the structure.

Using S and B fill expanded polystyrene offers a reliable cost effective lightweight material solution to these problems thus reducing the probability of unacceptable lateral forces and further settlement coupled with the simplification of construction methods.

EPS has a proven track record as a fill material and has been used in the construction of embankments since the 1970s offering the benefits of removing the need to employ specialised foundations, long surcharge periods and reduce settlement problems after construction.

To meet these challenges S and B EPS Ltd manufacture lightweight structural void forming blocks and profile cut shapes, specifically designed for civil engineering applications that are available in a wide range of sizes and densities, with a high strength-to-weight ratio enabling them to withstand mechanical loads encountered.

Advantages

- S and B fill is a lightweight and easy to handle material with a high compressive strength and around a 1% weight ratio to traditional fill materials.
- Its closed-cell structure inhibits water absorption and it is unaffected by the normal range of climatic conditions.
- S and B fill is available in a wide range of densities offering bespoke solutions for individual projects
- S and B Fill is both CFC [chlorofluorocarbons] and HCFC [hydrochlorofluorocarbons] free with none of these ozone depleting components being emitted whilst it is the manufacturing process or in situ.
- S and B Fill is easily cut and can be shaped to the clients individual requirements using the latest CNC cutting technology.

Grades

S and B fill is manufactured in the grades shown in the specification data at the back of this guide and is normally supplied as F grade material, but can also be offered in E grade that contains a fire retardant additive, with both types conforming to BSEN 14933:2007.

Dimensions

S and B Fill standard blocks are 2440 x 1220 x 640mm [nominal size] with other sizes being available to alleviate the need for cutting on site [details on request].

Applications

S and B Fill is suitable for use assisting in areas of unstable ground, weak or compressible soil, areas adjacent to existing embankments, bridge construction and areas with difficult and restricted access.

HA & HB Loadings [BS 5400 Part 2]

The first standard for vehicle loads for roads and bridges was introduced in 1922 with further amendments in 1923 and 1937, with the introduction of HA loadings in 1945 and HB loadings in 1954 respectively, with the concept of notional lanes for the application of the HA and HB loadings being retained and expanded to cover up to six traffic lanes.

Full HA loading was to be applied to two notional lanes with one third HA applied to the rest.

The application of HB loadings changed slightly from the BS 153 requirements, in that the HB vehicle was no longer assumed to have sole occupancy of a lane, but HA loading could also be applied to the lane within 25m from the front of the HB vehicle and 25m behind the vehicle.

Calculations for HA and HB loadings as defined in BS 5400 Part 2 should be carried out to ensure that the correct grade of S and B fill is used in order that it complies within the design compressive strength of the material.

Installation

Details of the correct procedures in the laying, cutting, protection and capping layer of S and B fill are available and where appropriate, a design and drawing layout of an individual project will be supplied.

All civil engineering materials are supplied with a certificate of conformity to standard BSEN 14933:2007.

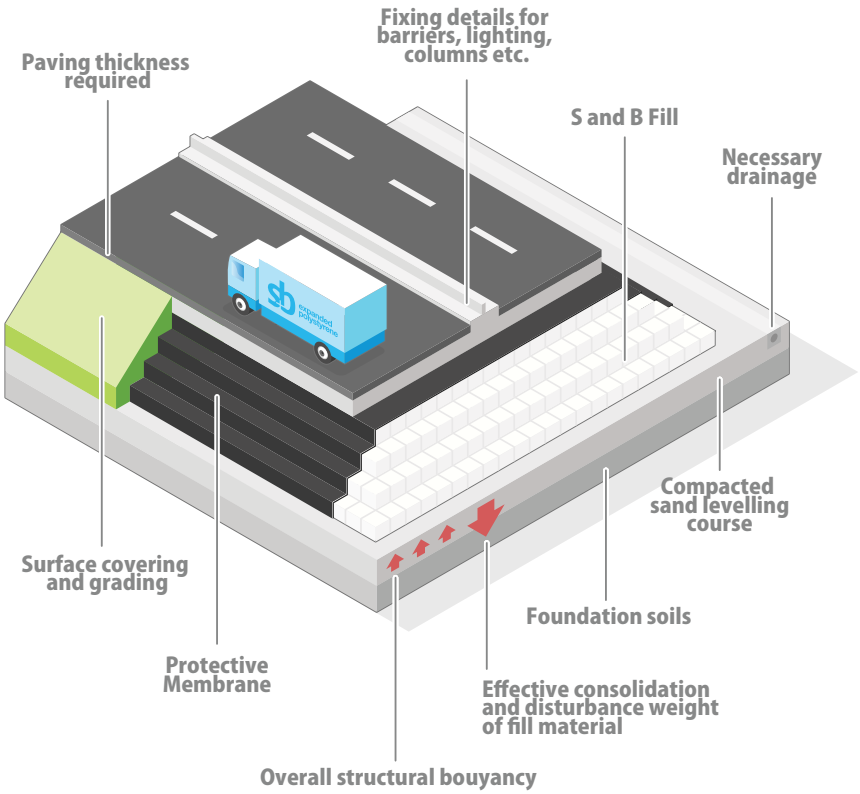
Brockholes Visitors Centre

Road & Rail Embankments

With its high strength-to-weight ratio and ability to withstand mechanical loads, S and B fill can assist in reducing the pressure on soils when taking into account the high unacceptable loadings that can be present, whilst offering a proven economical alternative to piled construction.

S and B fill offers a cost effective lightweight solution that takes away the problem of unacceptable stresses encountered when using traditional fill materials and reduces the probability of settlement.

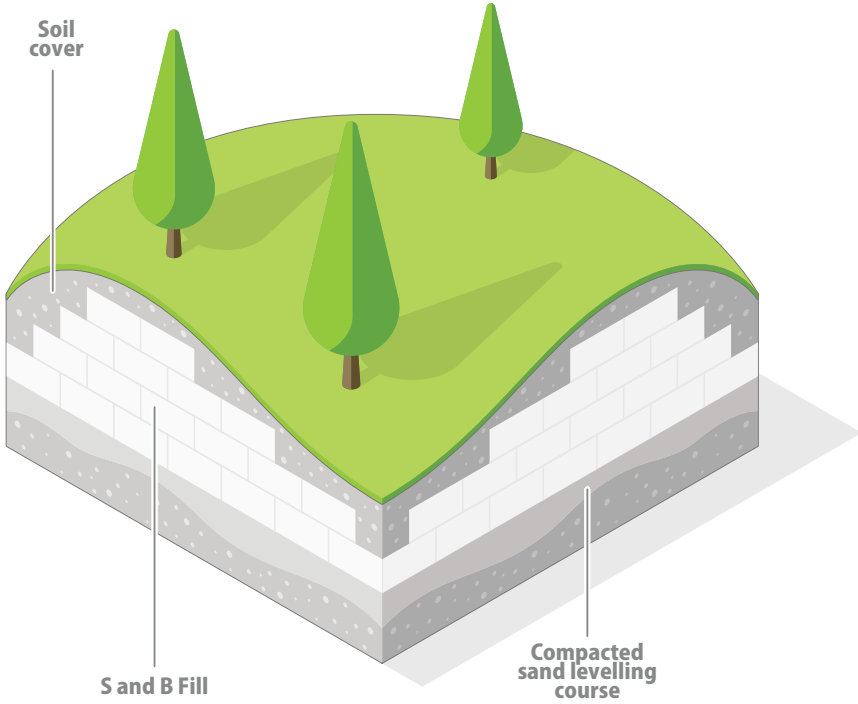
Traditional fill materials can be liable to unacceptable settlement when used on railway embankments.
S and B Fill with its high strength-to-weight ratio offers a cost effective solution to loads encountered in railway construction.



Noise Bunds / Landscaping

S and B fill offers a fast cost effective method of building noise bunds to eliminate sound transfer by means of erecting a barrier between road traffic noise and housing, whilst offering the advantage of a 1% weight ratio to that of traditional materials.

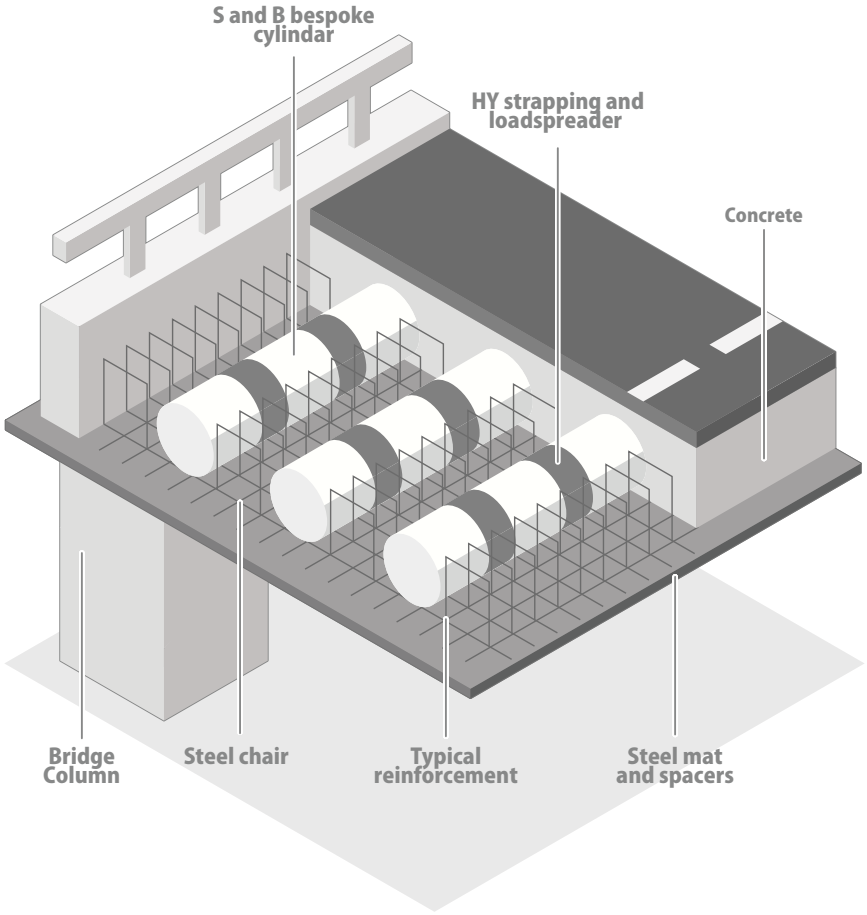
S and B fill when used in landscaping, with its high strength-to-weight ratio, can elevate the pressures on underlying structures and services in both soft and hard landscaping.



Cylindrical Void Fillers

S and B fill, with its versatility, can be cut into many bespoke shapes including cylinders that are a major feature of voided concrete structures such as elevated motorways and bridges.

It is widely used to produce sloping ramps in the construction of car parks, for flotation and barriers in marinas raised floors, sloping auditoriums, shuttering, pile locators, pile in-fills, curved or circular walls etc.



Lightweight Structural Voidformers

S and B Specification Data

S and B Grade	Fill 13	Fill 21	Fill 45	Fill 70	Fill 90	Fill 100	Fill 120
To BS EN 14933:2007							
Compressive strength at 1% compression [kPa]	10	21	45	70	90	100	120
Compressive strength at 10 % compression [kPa]	50	70	100	150	200	250	300
Cross breaking strength/ bending strength [kPa]	75	115	150	200	250	350	450
Sheer strength [kPa] in correlation to bending strength	35	55	75	100	125	170	225
Nominal density [kg/m^3]	13	15	20	25	30	35	40
Other Physical properties							
Compressive Modulus [Mpa]	1.0	2.0	4.5	7.0	9.0	10.0	12.0
Compressive Modulus [kN/m^3] at 1% compression	1,000	2,000	4,500	7,000	9,000	10,000	12,000
Thermal conductivity value [W/mk]	0.0430	0.038	0.0360	0.0350	0.0340	0.0330	0.0330
Max depth of concrete [mm]	415	830	1,875	2,915	3,750	4,165	5,000

To discover more about the benefits of S and B Civil Engineering, call today on 0191 250 0818, or go to www.sandbeps.com.

FIND US

At S and B EPS Ltd we take real pride in finding solutions to problems, so whatever your expanded polystyrene needs, you can call on us to deliver

S and B EPS Limited
Dudley, Cramlington,
Tyne & Wear, UK
NE23 7PY

Email: company@sandbeps.com

Tel: 0191 250 0818
Fax: 0191 250 0548

Or follow us on Facebook: sandbeps/facebook
and Twitter:@sandbepslimited