

INFORMATION SHEET

LSA AND OSA

Introduction

Hesselberg Erosion Protection has been installing **LSA (Lean Sand Asphalt)** and **OSA (Open Stone Asphalt)** on tidal revetments, reservoirs and embankments as erosion and scour protection across the UK for around 25 years.

What is LSA?

- **LSA is Lean Sand Asphalt** - It is essentially sand coated in bitumen
- It is used as a void filler and stabiliser, generally on revetments and slopes
- It is delivered in tarmac tipper lorries at temperatures of around 150°C
- It is placed whilst hot, with the bucket of an excavator and graded to the required profile. Once placed it will cool and form a solid mass that will not wash out even when exposed to tide
- It is then normally covered with a layer of OSA.

LSA Structure and Properties

- A greatly under filled mixture of sand and bitumen (4% of volume) with or without filler
- Permeability is similar to the original sand
- As workable as sand when hot
- Cools to form bound material resistant to erosion and wash out
- Can be placed above or below water.

LSA Applications

- A 3-D filter layer
- Regulation of uneven surfaces
- Filling small voids and cavities
- Core material for reclamation bunds
- Scour protection
- Easy to store and place so suitable for emergency measures.



What is OSA?

- **OSA is Open Stone Asphalt** - It is essentially 20-32mm stone coated in bitumen
- It is used a permeable armour layer that can absorb wave energy without getting damaged
- It is delivered in tarmac tipper lorries at temperatures of around 150°C
- It is placed whilst hot, with the bucket of an excavator and graded to the required profile, though can be placed with a paver. Once it is placed it will cool and form a solid mass that will not wash out even when exposed to tide.

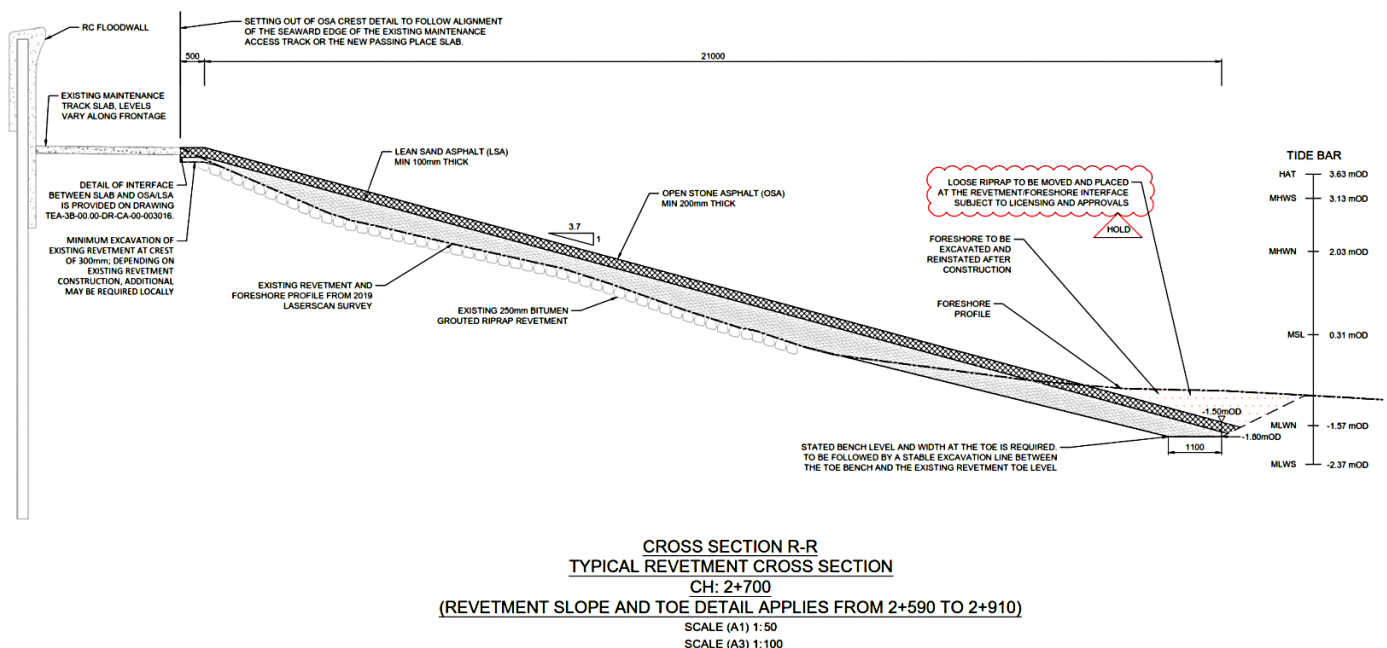
OSA Structure and Properties

- An underfilled, gap-graded mixture of mastic and limestone (other rocks may be substituted where water is acidic or abrasion is likely)
- Permeable
- Strong and porous so it absorbs wave energy without damage
- Can be placed on slopes up to 1:1.5
- Follows all shapes and contours when placed in situ above the waterline
- Can be placed underwater as prefabricated mattresses.

OSA Applications

- Armour layer for river training
- Armour layer for revetments in flood control and coastal protection
- Armour layer for dam upstream faces
- Armour layer for spillways and dam downstream faces
- Scour protection for quays.

Typical Cross Section of LSA/OSA Project Application



LSA and OSA is a fast paced application method of revetment protection. Previous projects have installed circa 32,000t of LSA/OSA in 8 months covering about 1.1km of revetment.