

CASE STUDY

LYMINSTER BYPASS

West Sussex

Soil Mixing Success For Lyminster Bypass In West Sussex

Deep Soil Mixing Ltd has successfully completed its project for client Jackson Civil Engineering, to contain and improve the contaminated soil and ensure the safe construction of Lyminster Bypass.

Part of a road building scheme, delivered on behalf of West Sussex County Council, the construction involved the northern 1.1km section of a bypass of the A284 Lyminster Road to go round Lyminster village. The new road links to the existing A284 at approximately 600 metres south of the A27 at Crossbush to provide access to Littlehampton and Bognor Regis.



Soil mixed cell edge

Working closely with Jackson's, Deep Soil Mixing Ltd was able to create mass soil mixed cells that contained all the waste contaminants within the material, both resolving the issue of site contamination and strengthening the soil to enable the construction of the road.

The Solution

The site soil for the new bypass was extremely contaminated. This was due to housing a former plant nursery which left tonnes of rope, netting, plastic, glass, metal, and other waste contaminants.

Deep Soil Mixing Ltd created mass soil mixed cells that contained all the waste materials within the mix, to stop any risk of contamination and to strengthen the properties of the soil.

The solution was the most cost-effective, as the alternative was estimated to cost considerably more to remove the contaminated land and replace it with good quality soil. Furthermore, this deep soil mixing option was more environmentally friendly too.

Mass soil mixing on-site meant the existing soil did not need to be removed from site and replaced, saving time and money, and keeping the carbon footprint of the project to an absolute minimum. Soil mixing also improves health and safety on site with less vehicle movements compared to an excavate and cart away solution.



Soil Mixing in progress

DEEP SOIL MIXING LTD

SOIL MIXING SUCCESS FOR LYMINSTER BYPASS IN WEST SUSSEX

Instead, mass soil mixed cells were created from existing chalk sub-strata up to the required levels for the formation of the road.

The Project

Designed to reduce traffic congestion through Wick and Lyminster and linked to the provision of 1,260 new homes and 700 new jobs, the bypass should improve the safety and accessibility for the A284 and surrounding roads and contribute to the redevelopment in the Littlehampton and Bognor Regis areas.

The new bypass links to the existing A284 just south of the A27 at Crossbush, the northern section is 1.1km long crossing 2 watercourses with a viaduct and a culvert. The road is 7.3 metres wide, single carriageway with a verge on one side and a footway/cycleway on the other. An existing bridleway will be maintained with a Pegasus crossing to ensure the safety of pedestrians, cyclists and equestrians.

As part of the building scheme in West Sussex, a new viaduct has been built over Black Ditch to ensure there is no increased flood risk to the area and as part of the proposals, The Environment Agency approved the soil mixing proposals.

Quality Assurance

Deep Soil Mixing Ltd provides quality assurance with each and every project undertaken – as the recently completed mass mixing of the site ground for the Lyminster Bypass demonstrates.

Quality is guaranteed as a result of the technology, method and ongoing monitoring that takes place as standard.

All details relevant to the soil mixing undertaken is logged and regularly monitored using our mass soil mixing installation method and our field- and laboratory-based test results. Important information such as mixing tool type, binder specifics, mixing depth, mixing pressure, flow rate and mixing head rotation, are closely and regularly checked to ensure the right binder consistency is used and that all the requirements of the build design are met.

Throughout the project, checks are made on the stability, containment of contaminated land, and strength of the mixed soils using core drilling at the relevant soil sections and depths to get the samples – these are then tested at the laboratory to make sure the required soil consistency has been achieved site-wide.



Soil Mixing Plant

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Andrew Hodson Jackson's Contracts Manager commented:

"Deep Soil Mixing Ltd were able to mobilise and carry out the works to the north and south of this site and met the required standards for the project. By changing the solution from the original cut and fill method we were able to deliver the works in a more efficient way which included locking in the site contaminants and reducing the amount of material that had to go to landfill."

ADVANTAGES OF SOIL MIXING

- Reduces construction programme and therefore cost
- Improves sustainability - No need to excavate and cart away so reducing landfill
- Reduced Vibration: Soil Mixing induces very low vibrations, which reduces the potential impact to nearby utilities. The equipment does not exert any lateral pressure when mixing we can work as close as 200mm from the building/foundations
- Wide range of soils can be treated compared to other solutions
- Soil can be used as construction material
- No need to bring costly and bulky materials on site
- Environmental – Reduction of Carbon Footprint
- Effective on different soils, including soft soils, flood plains, contaminated land, peat, silts and alluvium etc.
- Increases bearing pressure, controls settlement and reduces permeability
- Reduces vehicle movement and improves safety
- Increased soil stability, strength and quality
- Multiple uses of strengthened soil, including construction of roads, support for embankments and bridges and foundations, and to replace piling methods if needed

FIND OUT MORE

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