PROPUMP ENGINEERING LTD
THE FOAMED CONCRETE SPECIALISTS

Regents Street Flyover, Leeds Yorkshire

Typical Strength Requirement:	**2 N/mm² – 3 N/mm²**
Density Requirement:	**900 kg/m³ - 750kg/m³ (oven dried)**
Volume Requirment	**1400m³**

Scope of Works :

Propump Engineering were requested to plan a method and propose a suitable mix design to fill a void left by encasing a now defunct bridge span, the span was encased with concrete walls and a new dual carriage road was being placed on top, as such the main client wanted the void to be filled.

Background:

Reinforced concrete structures contractor, CIDON GROUP were awarded the Concrete works package for the Regent Street Flyover Bridge refurbishment, in Leeds city centre. This involves building a new, enhanced structure to carry the A64(M). As part of these works, new supporting piers and abutment walls were poured in high quality concrete. Consequently, this involved replacing the section of bridge deck and constructing new obtaining walls to close off the old redundant spans.

A mass infill material that could be pumped and placed up-to 5 metres from ground level was required. as a result, of the works there were two redundant spans, each void equalled about 1,400 cubic metres.

The site at regent street, Leeds was congested and there was very little room for plant and equipment as the city ring road was still running through the middle of site. Therefore, a requirement for a compact package that could produce and pump material was required

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Material Specification

CIDON approached Propump engineering with the requirement for a 2 Newton aerated, foam concrete. However, they required an oven dried density of 750kg/m3. As a result, Propump Engineering leveraged their huge back catalogue of mixes and results to propose a foam concrete that would work for the application of filling the large void on regent street, Leeds.

The proposed foam concrete mix for Cidon in Leeds, Yorkshire, was a foam concrete “P950” with a target “plastic” density of 900kg/m3. Previous testing and oven drying trials had proven that this mix at this density as placed would oven dry to sub 750KG/m3. And produce a 28 day strength of at least 3 Newton. That’s right, foamed concrete with a 3 Newton strength and a dried density of 700kg/m3.

Foam Concrete Deliveries to site

Propump mobilised with their in-line foam concrete production system to be on-site for 2 weeks. Our operatives placed approximately 150 – 230 cubic meters per day to achieve an average 800mm daily lift.

Producing 200 cubic metres of foam concrete required only 15 deliveries of 6 cubic metres. Each delivery was processed into 13.6 cubic metres of foam concrete, using the in-line processing method. Therefore, the overall number of onsite deliveries were reduced, whilst simultaneously speeding up the rate of material production.

Our bespoke inline production method, and quality control, ensured that the 1400 cubic metre void was filled to within a 2% tolerance. Thats actual material placed versus theoretical volume.

This outstanding metric would have been impossible to achieve using any other production and placement method.

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Benefits

- Pumpable
- Reduced labour / manpower to place
- light weight
- self consolidating
- no vibration required
- insulating
- easily machinable / re-excavatable