

ECOPlanet ENDURE



# FP MCCANN LOW CARBON CONCRETE

CASE STUDY



AGGREGATE  
INDUSTRIES

LAFARGE

# ECOPlanet ENDURE

## LOW CARBON CONCRETE MIX DESIGN



### THE BRIEF

Precast concrete manufacturer FP McCann set a challenge for Lafarge to improve the carbon content of their below ground concrete products. While the client had previously been using a CEM II B-V cement in their mix design, they were keen to work with us to explore alternatives. The primary motivation was to reduce the environmental impacts in production, as part of the firm's overarching sustainability strategy.

The new mix design was to be used for steel reinforced culverts and tunnels employed in underground construction, therefore the chosen concrete mix had to be both sulfate and chloride ingress resistant.

### THE SOLUTION

With 30% less carbon than the lowest carbon footprint CEM I currently available in the UK, our ECOPlanet CEM III/A blend brings together the perfect combination of eco credentials and exceptional performance.

With low alkali levels plus a high sulfate resistance, this versatile cement is suitable for a wide range of applications, and is particularly ideal for below ground works.

Offering optimal strength and durability, ECOPlanet Endure gives all the benefits of a sulfate resistant product, with enhanced longevity through its proven protection against chloride ingress, cracking, corrosion and weathering. Its moderate heat of hydration also reduces thermally-induced concrete stress.

Technical experts from both businesses worked together to review and refine mix design options, overseeing a reduction in selected additives and a cement composition change to a CEM III/A formulation. Shortlisted blends were then tested in the Lafarge cement laboratory, before undergoing final product trials at FP McCann manufacturing facilities.

As part of the quality assurance process, the new concrete mix was cured and tested to ensure a lifting strength after 24 hours. This was followed by late strength tests to achieve the necessary ultimate strength performance.

  
The new blend has now been trialled successfully at the client's Cadeby manufacturing facility, and the new concrete is now in production, being used across the sulfate resistant below ground precast product ranges.

**"WHILE THE EXISTING CONCRETE BLEND WAS FIT FOR PURPOSE, WE SAW AN OPPORTUNITY TO VALUE ENGINEER THE MIX DESIGN TO SAVE FP MCCANN BOTH COSTS AND CARBON, HELPING TO DELIVER A NEW CONCRETE BLEND THAT WAS ENVIRONMENTALLY BENEFICIAL YET IMPROVES OVERALL PERFORMANCE."**

John Shrimpton, Technical Manager at Lafarge

**"THE DESIGN COLLABORATION BETWEEN LAFARGE AND FP MCCANN HAS REALISED SIGNIFICANT IMPROVEMENTS FOR OUR BELOW GROUND PRECAST PRODUCT RANGE. THE LAFARGE TECHNICAL TEAM REALLY ADDED VALUE ON THIS PROJECT, WORKING WITH US THROUGH THE DESIGN AND TRIAL PHASES OF THE NEW MIX DEVELOPMENT. ULTIMATELY THIS HAS HELPED US TO ACHIEVE MAJOR CARBON SAVINGS, WHILE EXCEEDING ALL QUALITY AND PERFORMANCE REQUIREMENTS. WE COULDN'T HAVE ASKED FOR A BETTER RESULT."**

Paul McCann, Managing Director at FP McCann



**30% CARBON REDUCTION**



**NEW MIX DESIGN DEVELOPED**



**ACHIEVED STRENGTH SPECIFICATION**

