

# Case Study



## PROJECT INFORMATION

- Project name:** Kattupalli Port Project
- Consultant:** Larsen & Toubro Limited (L&T)
- Contractor:** Lafarge RMC Plants India Pvt. Ltd.
- Location:** Kattupalli - Chennai, India

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## PROJECT REQUIREMENT

### Task at Hand

Kattupalli Port is considered one of the largest shipyards in Asia, and it demanded exceptional quality concrete for its protective perimeter. This protection was provided in the form of giant blocks of concrete known as Accropodes. This project required a 50% slag product that when paired with an admixture would ensure a higher quality of concrete in terms of fineness, air permeability, activity index and compressive strength.

A compatible Sodium Naphthalene Sulfonate Formaldehyde Condensate (SNF) admixture was chosen to be added to the slag in order to meet the Accropode criteria. SNF was ideal for this situation since it provides higher slump control, one hour of workability retention, compressive and flexural strength gain, good adaptability to various types of cement and it is not corroding to reinforcing bars.

Concrete strength grades ranging from M10 to M45 were designed for various structures within the project. The proposed main Accropodes were designed to be of M30 grade strength. These blocks were cast with particular attention to any bleeding, surface blemishes or compaction issues.

## DCP SOLUTION

There were two main challenges in this project; the Accropodes being cast with highly flowable concrete, and the SNF admixture in question.

Accropodes are single layer concrete armor units that are placed on a seaside bank with the intended purpose of resisting wave action on breakwater. These are unreinforced blocks built with several angled legs.



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## DCP SOLUTION

Based on mock studies and research, DCP provided an excellent tailor-made SNF product **Supaflo Special**. This admixture is a Water-reducing High-range admixture with an emphasis on workability retention properties. With such improvement to workability all issues with segregation, bleeding, placing and compacting were minimized or eliminated.

The extensive criteria for this project were met and Accropodes of desirable finish, durability and ultimate strength were furnished.



### Final Mix Design

<b>Cement</b>	230 kg/m <sup>3</sup> (388 lb/yd <sup>3</sup> )
<b>GGBS</b>	160 kg/m <sup>3</sup> (270 lb/yd <sup>3</sup> )
<b>Free water</b>	165 ltr/m <sup>3</sup> (33.4 gallons/yd <sup>3</sup> )
<b>100% crushed sand</b>	

### Products and Quantities Supplied

<b>Supaflo Special</b>	1000 MT
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quality



full range

