Project:
Penang Second Bridge

Location:
Malaysia

Project completed:
July 2013

Applicator/Contractor:
United Engineers Malaysia
China Harbour Engineering Company

Concrete Producer:
Unipati Concrete Sdn Bhd

Market sector:
Government

Products used & amounts:
MasterBrace® 1441
MasterGlenium® SKY 8705
MasterGlenium® ACE 8589
MasterPozzolith® RT 100
MasterKure® 128
MasterFinish® 222
MasterRheobuild® 1000M
MasterEmaco® S 5400
MasterEmaco® S 322
MasterInject® 1333
MasterEmaco® P 5040

Sales contact:

Bridging New Frontiers in Asia
Asia’s Longest Bridge: The Sultan Abdul Halim Mu’adzam Shah Bridge (also known as Second Penang Bridge)

The background

This RM4.5 billion Second Penang Bridge project which began in 2009 has become South East Asia’s longest bridge upon its opening in March 1, 2014. With a construction timeline of 4.5 years, this 24 km-long bridge project posed multiple challenges on the engineering and timeframe fronts.

A range of construction chemicals from Master Builders Solutions® by BASF have played a crucial role in this project as it has been plagued by delays and was running behind schedule before BASF Malaysia’s involvement.

The challenge

Prior to BASF Malaysia’s involvement, the project was running 3 months behind schedule and it was necessary to speed up the construction process to stay on track.

Apart from having time constrain, sub-structure (below water) construction imposed tremendous challenges such as anti-wash property of concrete. Special requirements were requested due to the unforeseeable construction conditions in the middle of the ocean such as wind and waves.

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Our solution

In order to shorten the construction process, BASF introduced a breakthrough technology – MasterGlenium series admixtures added to the concrete precast. MasterGlenium ACE 8589 (formerly known as Glenium ACE 839) offers high early strength to the concrete that increases productivity within tight production timeframes. This helps to reduce the production time of the concrete from 28 days to only 10 hours, much faster than conventional concrete. As a result, the project was 2 months ahead of schedule.

MasterGlenium SKY 8705 (formerly known as Glenium 105 SureTec) was recommended to China Harbour Engineering Company, the appointed ready-mix supplier to provide assurance that the concrete that was produced onshore maintained the required slump during the transportation to the structure (bridge columns) to be concreted in the sea. Slump retention is critical as it affects the workability.

With many successful major projects such as the Metro bridge in Dubai, MasterBrace 1441S has proven its superior quality of an epoxy glue therefore we strongly recommended our grout to United Engineers Malaysia to bond the individual box girder segment together to form the bridge.

The customer’s benefit

BASF’S team of experts managed to gain the trust of the customers and led to the success of this significant project. Not only was the project being delivered on time, our solutions would ensure high durability of the bridge thus lower the cost of maintenance in the future. This was overall a cost efficient approach, a win-win situation for BASF and our valued customers.

Projects facts at a glance

- RM4.5 billion Second Penang Bridge project initiated by Malaysia government which began in 2009 has become South East Asia’s longest bridge
- Prior to BASF Malaysia’s involvement, the project was running 3 months behind schedule
- MasterGlenium SKY 8589 (formerly known as Glenium ACE 839) offers high early strength to the concrete that increases productivity within tight production timeframes
- The project was being delivered on time and our solutions would ensure high durability of the bridge thus lower the cost of maintenance in the future.

Master Builders Solutions from BASF

The Master Builders Solutions brand expresses BASF’s expertise in providing customized chemical solutions for new construction, maintenance, repair and restoration of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry. At the core of the Master Builders Solutions brand is the combined know-how and experience of a global community of BASF construction experts, who connect with you to solve all of your construction challenges.