

Project Spotlight

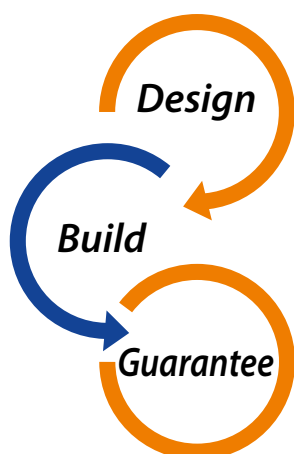


Arabian Sugar, Bahrain

Warehouse-SFRC ground bearing Freeplan® 'jointless' floor slab

The ASC refinery, situated in Bahrain's Industrial Investment Park, will reach full production capacity of around 600,000 tonnes a year in early 2015. Currently producing 900 to 1,000 tonnes a day, this will rise to 1,800 to 2,000 tonnes a day when production ramps up. Bahrain's local consumption is around 50,000 tonnes a year but the factory is focused on exports with the bulk going to Saudi Arabia and Iraq and the rest to Qatar, Kuwait and Jordan.

A new warehouse was constructed for the storage of bulk bags of refined sugar prior to export and the concrete floor slab would be subject to heavy loads with the pallets being stacked several high directly onto the floor slab.



The project followed the Twintec Design-Build-Guarantee concept with total responsibility being taken for the concrete floor slab package.

Design: Taking into account the heavy loading requirements of 150kN/m², Twintec designed a 250mm steel fibre reinforced 'jointless' floor slab. This compared favourably against the 350mm thick slab, with top and bottom rebar, originally proposed for the project.

Build: The floor was constructed by Twintec's highly skilled and experienced workforce using laserscreed technology for large flood pour, large bay 'jointless' panels with armoured construction joints.

Guarantee: Twintec in-house designs are covered by Professional Indemnity Insurance and a 5 year warranty is provided.

Twintec 'jointless' floor slabs offer fast track construction compared to a traditional mesh reinforced saw cut slab, with steel fibres being mixed into the concrete on site using specially designed fibre integration machines operated by experienced Twintec staff. Working closely with main contractor Alliance Projects SPC, Twintec took just 4 days to complete the floor slab compared to 5-6 weeks programmed with the original design.

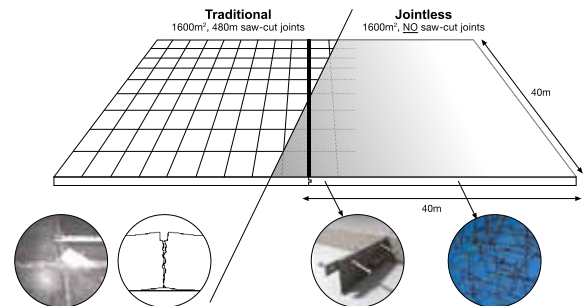
Project Data

End user:	Arabian Sugar Company
Total Area:	6,500m ²
Pour Days:	4
Slab Depth:	250mm
Fibre Type:	AFT08/55
Fibre Dosage:	30kg/m ³
Completion Date:	March 2013
Application Type:	'Jointless' SFRC ground bearing floor slab

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The construction of a 'jointless' SFRC floor slab should be undertaken by a specialist contractor who is able to demonstrate the necessary skills and experience to design and build a floor slab to meet clients' individual requirements.



Production Critical Success Factors

- Concrete mix design specified according to locally available materials.
- Integration of steel fibres on site by experienced operators with a high speed fibre integration machine to ensure homogenous mixing of the fibres into the concrete.
- Well organised programme of works, experienced site management and skilled and motivated workforce.
- Quality assurance plan that starts during pre-pouring phase and continues during and post slab pour.

Twintec Quality Assurance Plan

Twintec's attention to detail from the project conception to delivery is a matter of pride for the Twintec Group skilled staff that design and build in excess of 6 million m² of industrial flooring worldwide each year.

"Twintec's value engineered design solution, speed of production and quality of finish was a key contributing factor to the success of the project. We look forward to working again with them in the future."

Amit Jaiswal, General Manager



Alliance Projects s.p.c.

The Quality Assurance Plan (QAP) procedures cover all aspects of the production process:

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|--------------------------|--|
| Pre Pouring: | Concrete composition and grading
Final regulating layer level check
Armoured construction joint level check
Plant and equipment regular maintenance routines
Column isolation and perimeter wall detailing |
| During Slab Pour: | Concrete testing (slumps, cubes, temperature etc..)
Fibre dispersion
Joint and concrete level checks |
| Post Slab Pour: | Visual slab inspections
Flatness survey
Abrasion resistance tests |

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