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Project Spotlight

Caterpillar Distribution Centre,
Dubai, United Arab Emirates

Distribution Centre-SFRC ground bearing Freeplan® ' jointless' floor slab

The distribution centre is an important part of Caterpillar's overall plan to enhance the global Cat Parts distribution network and get parts to dealers and customers faster and will also contribute to Caterpillar's sustainable development goals by reducing airfreight for parts ordered in the region.

Twintec design and construct 6 million m^2 per year worldwide following their unique Design-Build-Guarantee formula. The design for this project was carried out in close collaboration with GSE and the consultants GEO to optimise the slab thickness and provide the most efficient joint layout to meet the client's requirements.

Internal Floor Slab

The slab is ground bearing with individual leg loads from pallet racking of up to 85kN and a UDL of 60kN/m^2 and the Twintec design solution was for a 200m thick slab reinforced with 30kg/m^3 of AFT 08/55 undulated steel fibres.

The successful production of a 'jointless' floor slab is dependent on a number of factors. These include an experienced, skilled and well supervised workforce, large volumes of quality concrete delivered consistently and a controlled environment to work in.

• Twintec directly employ their workforce who travel worldwide delivering high quality large panel 'jointless' floor slabs and this project was no exception with an average of 2,250m^2 produced each day, the highest achieved by a specialist flooring contractor in the UAE to date.

• Mills Bowley Concrete Products worked closely with the Twintec technical team to produce and deliver over 8,100m^3 of concrete, delivered at night to take into account the daytime temperatures and ensure continuous delivery due to heavy traffic flow in the JAFZA area.

• The onsite project team ensured Twintec were able to pour in a controlled environment with the roof and walls to all elevations completed, together with temporary sheeting to all door and window openings.

Project Data

Main Contractor:	GSE
Consultant Engineer:	GEO
Fibre Type:	AFT 08/55
Internal Slab Area:	40,500m^2
External Slab Area:	2,200m^2
Slab Depth:	200mm
Completion Date:	Mar 2012

Ref: PS-118

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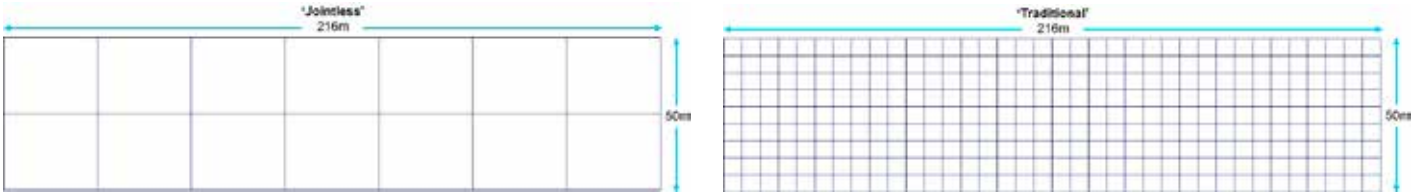
External Floor Slab

Steel fibre reinforced concrete (SFRC) 'jointless' designs are ideally suited to the construction of both ground bearing and suspended on piles external yards, offering many benefits over a traditionally constructed slab. Twintec designed and built a 200mm 'jointless' slab using Dramix 65/60 fibres over an area of 2,100m^2 with a pan finish in two days.

An external SFRC 'jointless' slab is designed to eliminate the need for sawn induced and formed longitudinal joints. Eliminating the sawn induced contraction joints has significant benefits in terms of reduced construction programme and ongoing joint maintenance, improved smoothness of trafficking, toughness and durability.

	Expansion joints (lm)	Longitudinal joints (lm)	Contraction joints (lm)	Transverse/ saw cut joints	Total (lm)
Traditional Slab	150	1728	400	800	3078
'Jointless' Slab	466	0	0	0	466

(Based on 10,800m^2 (50m x 216m) external yard)



Example of Freeplan XT® SFRC 'jointless floor slabs

"Our project had many constraints; time, quality and budget of course. Given the very tight schedule and the size of the slab, very few companies were able to deliver, without compromising the quality and staying within the budget. That is where Twintec fitted in."

GEO

Contact the Twintec Middle East business team for further information:

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