

# GCP Designs Solution Specifically for ION Orchard Shopping Centre

A unique construction mixture was designed specifically for the completion of the commercial building.

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Project

Ion Orchard

GCP Solutions

ADVA® concrete admixtures, MONOKOTE® fireproofing

## Project

ION Orchard, a 218-metre tall, 56-storey retail-com-luxury residential development, is set to redefine luxury lifestyle and high-end retail experience in Singapore. This award-winning shopping centre houses more than 400 retail and food and beverage establishments, an art gallery, a residential tower topped with an observation deck and the largest sheltered public event space on Orchard Road.

It is strategically located above the Orchard Mass Rapid Transit Station and will benefit from underground connectivity to other nearby commercial buildings. With its magnetic presence and unrivaled location at the heart of one of the world's premier shopping districts, ION Orchard can only strengthen Singapore's allure as a global retail design destination and cultural centre.



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*"Concrete delivered to the ION Orchard shopping mall site has been found to have excellent slump retention, meeting requirements for the pour."*

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ION Orchard shopping centre required substantial underground digging right in the heart of the city, within a very tight construction schedule. Speed was of the essence for the retail design, without compromising quality of work needed for the foundation, up to four basement levels. Therefore, a diaphragm wall of at least 70 metres was required all around the site for casting of the base structure. This deep retaining structure required the concrete mix to be workable up to eight hours.

Similarly, application speed was an important consideration when selecting the fireproofing material for the commercial building structure's steel columns and beams. To meet construction schedule, fireproofing application was carried out round the clock.

To meet the exacting slump retention requirement of eight hours for the retail design, we worked with the concrete producer to develop a mix using a combination of superplasticizing and special set control admixtures for extended slump retention.

The high range water-reducing admixture, a product within the ADVA® family, provides excellent slump retention and water reduction.

Another product used is within the DARATARD® range and is a specially developed set controller for mixes requiring very good slump retention. Together, they produce concrete where delay in setting time is required to ensure sufficient placement, vibration or compaction, at the same time yielding high strengths with superior workability and pumpability, without exhibiting any segregation due to high initial slump. It was perfect for the shopping centre.

## The Results

The final concrete mix was developed in close collaboration with the customers and underwent lab and field trials to ensure its stability for a commercial building.

In addition, MONOKOTE<sup>®</sup>MK-6<sup>®</sup>/HY<sup>®</sup> and Z-106/HY fireproofing were also chosen for this project. MONOKOTE<sup>®</sup> fireproofing has a proven track record for in-place performance, and fast and efficient application even for very large projects. It is able to achieve a pumping rate of more than 100 bags in eight hours. MONOKOTE<sup>®</sup>, delivered using our patented injection technology, provides the benefits of fast set and improved yield, enabling the contractor to meet construction schedule.

Blue360<sup>SM</sup> Product Performance Advantage.

*Because every project, large or small, deserves the best level of protection.*