

GCP Designs Custom Solution for ION Orchard Shopping Mall

Unique construction mixture designed specifically for commercial building



Project

ION Orchard

GCP Solutions

ADVA® concrete admixtures, MONOKOTE® fireproofing, DARATARD® set controller

Project Profile

Designing an impressive shopping mall

ION Orchard, a 218-meter tall, 56-story retail and residential development, is set to redefine luxury lifestyle and high-end retail experiences in Singapore. This award-winning shopping mall houses more than 400 shops and restaurants, an art gallery, a residential tower topped with an observation deck, and the largest sheltered public event space in the region.

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 will strengthen Singapore's allure as a global retail design destination and cultural center.

"ION Orchard will strengthen Singapore's allure as a global retail design destination and cultural center."

Building within the city

The ION Orchard shopping mall 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 the quality of work needed for the foundation, which included up to four basement levels. Therefore, a diaphragm wall of at least 70 meters was required all around the site for casting of the base structure. To ensure proper placement and address any issues with vibration or compacting, this deep retaining structure required the concrete mix be workable for 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 the construction schedule, the application of fireproofing needed to be carried out around the clock.

"Speed was of the essence for the retail design, without compromising the quality of work needed for the foundation, which included up to four basement levels."

Achieving maximum strength and workability

To meet the exacting slump retention requirement of eight hours for the retail design, GCP 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, provided excellent slump retention and water reduction.

GCP also supplied Daratard[®], a specially developed set controller for mixes requiring very good slump retention. This approach produced concrete that would withstand delays in setting time and yielded high strengths with superior workability and pumpability, without exhibiting any segregation due to high initial slump. It was perfect for the shopping mall.

Question on spec? Consult our Design Advantage team

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, GCP supplied MONOKOTE[®] MK-6[®]/HY[®] and Z-106/HY fireproofing for the project, based on its proven track record for in-place performance and fast and efficient application, even for very large projects. Using patented injection technology, MONOKOTE[®] achieved a pumping rate of more than 100 bags in eight hours, enabling the contractor to meet the construction schedule.

Blue360SM Product Performance Advantage.

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

"This approach produced concrete that would withstand delays in setting time and yielded high strengths."

Project briefcase

**DARATARD[®] HC**

Visit page

Add

© HC" addthis:url="https://gcpat.com/sites/gcpat.com/files/pdf/current/resource/1486__daratard_hc_en.pdf" class="action action--share sharethis addthis_button_more" href="#">Share

ADVA[®] high-range water reducers

Visit page

Add

© high-range water reducers" addthis:url="https://gcpat.com/en/solutions/products/adva-high-range-water-reducers" class="action action--share sharethis addthis_button_more" href="#">Share

MONOKOTE[®] MK-6 HY

Visit page

Add

© MK-6 HY"

addthis:url="https://gcpat.com/sites/gcpat.com/files/pdf/current/resource/5546__monokote_mk_6_hy_en.pdf" class="action action--share sharethis addthis_button_more" href="#">Share

MONOKOTE[®] Z-106/HY[®]

Visit page

Add

© Z-106/HY[®] "

addthis:url="https://gcpat.com/sites/gcpat.com/files/pdf/current/resource/4966__monokote_z_106hy_en.pdf" class="action action--share sharethis addthis_button_more" href="#">Share



gcpat.com | North America Customer Service: 1 877-4AD-MIX1 (1 877-423-6491)

This document is only current as of the last updated date stated below and is valid only for use in the United States. It is important that you always refer to the currently available information at the URL below to provide the most current product information at the time of use. Additional literature such as Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations and other relevant documents are also available on www.gcpat.com. Information found on other websites must not be relied upon, as they may not be up-to-date or applicable to the conditions in your location and we do not accept any responsibility for their content. If there are any conflicts or if you need more information, please contact GCP Customer Service.

Last Updated: 2021-07-05

gcpat.com/about/project-profiles/gcp-designs-custom-solution-ion-orchard-shopping-mall