USG BORAL
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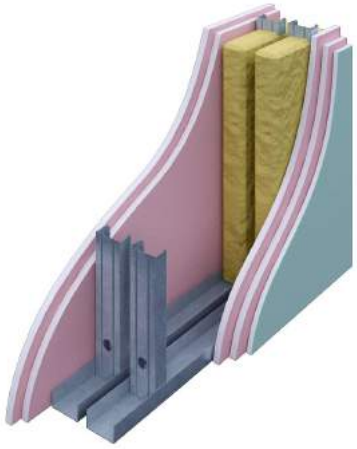
Case Study – City of Dreams

USG BORAL SOLVES CHALLENGES FOR MACAU'S CITY OF DREAMS

Macau's spectacular hotel, entertainment and shopping complex presented an array of diverse construction challenges.

Project	City of Dreams hotel, entertainment and shopping complex
Location	Macau, China
Architect	Leigh & Orange
Builder	Leighton – China State JV
Year	2008
Products	USG Boral and Rondo wall and ceiling systems including technical plasterboards and compounds

With three 5-star hotels, theatre, shopping, casino and entertainment complex, this large and ambitious development project had a short construction period of just two years. Striking design features demanding complex construction solutions – so USG Boral and Rondo's engineering team worked closely with the builder and contractors to innovate the high-performing wall and ceiling systems required.



USG Boral Twin Stud System

Showcasing a World-Famous Aquatic Theatre

The City of Dreams hosts a major attraction for visitors to Macau: the 2,000-seat water show theatre which showcases the imaginative works of Franco Dragone and his team. Again, acoustics were important in designing suitable wall and ceiling systems. USG Boral specified a twin-stud wall with two layers of Firestop™ over two layers of 50mm glasswool insulation with an air gap, held by Rondo tracks and studs. Inside the theatre, a layer of moisture-resistant USG Boral plasterboard was added to protect the wall from pool vapour.

Rondo Quiet Stud (RQST) System STC 56

Maximising Accommodation Spaces by Minimising Acoustic Walls

Both fire resistance and acoustics are essential for luxury 5-star hotels' rooms while creating more floor area increases the sense of space. USG Boral engineers specified QuietWall™, certified and tested to STC 56 and 90-minute fire rating with the footprint of each acoustic partition measured in just 150mm.

By comparison, a similar-performing traditional solution would call for double-sized studs and higher density board, typically exceeding 200mm of floorspace.

Creating a High-End Shopping Experience

The 'retail street' in the City of Dreams was designed with arresting curved white walls and striking lighting effects to house some of the world's premium brands. To achieve this unique ambience, USG Boral custom-designed the walls with a highly engineered metal framing that caters for glass-reinforced gypsum (GRG), casts from USG Boral's top-grade industrial Alpha plaster. Hanging ceiling panels accommodate the hidden lighting that highlights shoppers' journeys along the flowing corridors.

Making a Grand First Impression

The Dream-like Sensation was conceived as an immersive 10-minute visual extravaganza combining high-definition video and a variety of sensory effects. The design called for soaring walls up to 11.8 metres high, arched under a giant dome – presenting some unique design challenges.

High performance acoustics were essential to isolate the spectacular sound effects from adjacent function rooms such as the gaming room and restaurants – so USG Boral and Rondo engineers created a wall system tested and certified to R_W 74. Secured by an innovative acoustic brace, it contained two 100mm layers of glasswool insulation around an air gap. Naturally, as a large public area, fire resistance was also a critical consideration, so the sides of the walls were each covered with three layers of USG Boral Firestop™ plasterboard.

Another high-impact space is the entrance of the casino designed with a huge ellipse ceiling 20 metres high and 20 by 25 metres wide, calling for special structural work. Towering podiums leading to the shops and theatre have 12-metre curved walls including outsized studs to hold plasterboard to the steel frames: USG Boral Firestop™ in public areas and Firestop + Wetstop™ adjacent to restaurant kitchens. This meant that they were completed by a single contractor with no additional scope of work for other trades and without structural steel or welding required.

Metal framing for semi-exterior ceiling to cater for typhoons

The foyers of each of the three hotels also posed different design challenges – with some walls specified to bear 70kg/m^2 marble or stone facing over two-hour fire rated drywall construction. Out on the street, the semi-exterior ceiling of the immense 120-metre porte-cochère was specially designed to withstand cyclonic winds experienced in the South China Sea.

PRODUCT INFORMATION

See www.usgboral.com/hotelsystems
for the most up-to-date product information.

SALES & TECHNICAL INQUIRIES

HOTLINE (WA/CALL) : 021 - 797 7777

There are many variables that can influence construction projects, which affect whether a particular construction technique is appropriate. Before proceeding with any project, we recommend you obtain professional advice to ascertain the appropriate construction techniques to suit the particular circumstances of your project. We recommend you use qualified tradespersons to install this system.

The technical information contained in this manual was correct at the time of printing. Building systems, details and product availability are, however, subject to change. To ensure the information you are using is current, USG Boral recommends you review the latest building information available on the USG Boral website.

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