Georgia-Pacific

DensDeck®
Roof Board

CASE STUDY

DENSDECK® ROOF BOARDS HELPS SPEED UP INSTALLATION OF THE WORLDS LARGEST STAINLESS STEEL STANDING SEAM ROOF AT HAMAD INTERNATIONAL AIRPORT

Source: www.hok.com

ROOF BOARDS ENHANCE THE FIRE & ACOUSTIC PERFORMANCE OF THE WORLD'S LARGEST STAINLESS STEEL STANDING SEAM ROOF

Hamad International Airport in Qatar's Doha, formerly known as New Doha International Airport, features DensDeck® Prime Roof Boards as a part of the world's largest insulated stainless steel standing seam roof; as quoted by International Molybdenum Association (IMOA). The roof assembly spans more than 217,000 m^2. The striking design by HOK San Francisco was voted the world's best airport in the 2021 Skytrax World Airport Awards.

PROJECT NAME	HAMAD INTERNATIONAL AIRPORT, DOHA, QATAR
CLIENT	QATAR CIVIL AVIATION AUTHORITY
CONTRACTOR	BECHTEL
SPECIFIER	HOK, SAN FRANCISCO

Hamad International Airport is also one of the region's most luxurious and comfortable commercial buildings. The performance benefits of the roof cover board were further maximised in the central concourse expansion that is underway and due to be delivered in 2022. The design by Meinhardt and Dar Group draws on the original benefits of the DensDeck® Prime Roof Board and utilises an additional layer of the DensDeck® Roof Board. This is to help provide high levels of acoustic comfort and to achieve the non-combustibility performance requirements.

Design Stainless Steel Project Doha (DSP) carried out the roof installation for the central concourse expansion and Project Director Peter Williams explains the reasons behind the initial specification of DensDeck® Prime Roof Board "Our primary reason for utilising Georgia-Pacific's cover board was to comply with the performance specification requirements, obtain the weather tight stage earlier, and expedite the final installation of the standing seam roof covering."

ROOF BOARDS EXPEDITE ROOF WEATHER TIGHTNESS & HELP WITH THE INSTALLATION EFFICIENCY OF THE STANDING SEAM ROOF ASSEMBLY

The roof of the phase one passenger terminal was designed as a homage to Doha's heritage and resembles ocean waves and sand dunes. Behind the dramatic silhouette is a roof assembly that includes a steel deck, rock wool insulation, and the stainless steel standing seam roof covering. 15.9 mm DensDeck® Prime Roof Boards are installed in the cover board position over the rock wool insulation layer. The cover boards provide a walkable substrate that also protects the insulation layer from compression during the subsequent installation of the stainless steel roof covering.

'Wild air' was a requirement for the project. The moisture resistant gypsum core cover boards in conjunction with a vapour control layer membrane helped seal the building sooner by expediting the roof weather tightness. Peter explains:

> *"Without the cover board, and the vapour control layer membrane that weatherproofed the roof, we would not have been able to achieve the 'Wild Air' date set for the project. The standing seam top sheet would have been required, and this is one of the most time consuming elements of the roof assembly. Furthermore, the cover board provided a walkable substrate to carry out the standing seam installation, unhindered by compressible insulation and the obstacle of roof zed supports"*

The fibreglass mat facer on top of the gypsum cover board does away with the need to prime the surface before installing the self-adhered vapour control layer membrane. This helped cut down on the installation time and ensured the homogenous spread of the adhesive for high quality adhesion. Georgia-Pacific LLC, the DensDeck® Prime Roof Board manufacturer, delivered bespoke length cover boards to accelerate the weatherproofing further and help with installation efficiency.

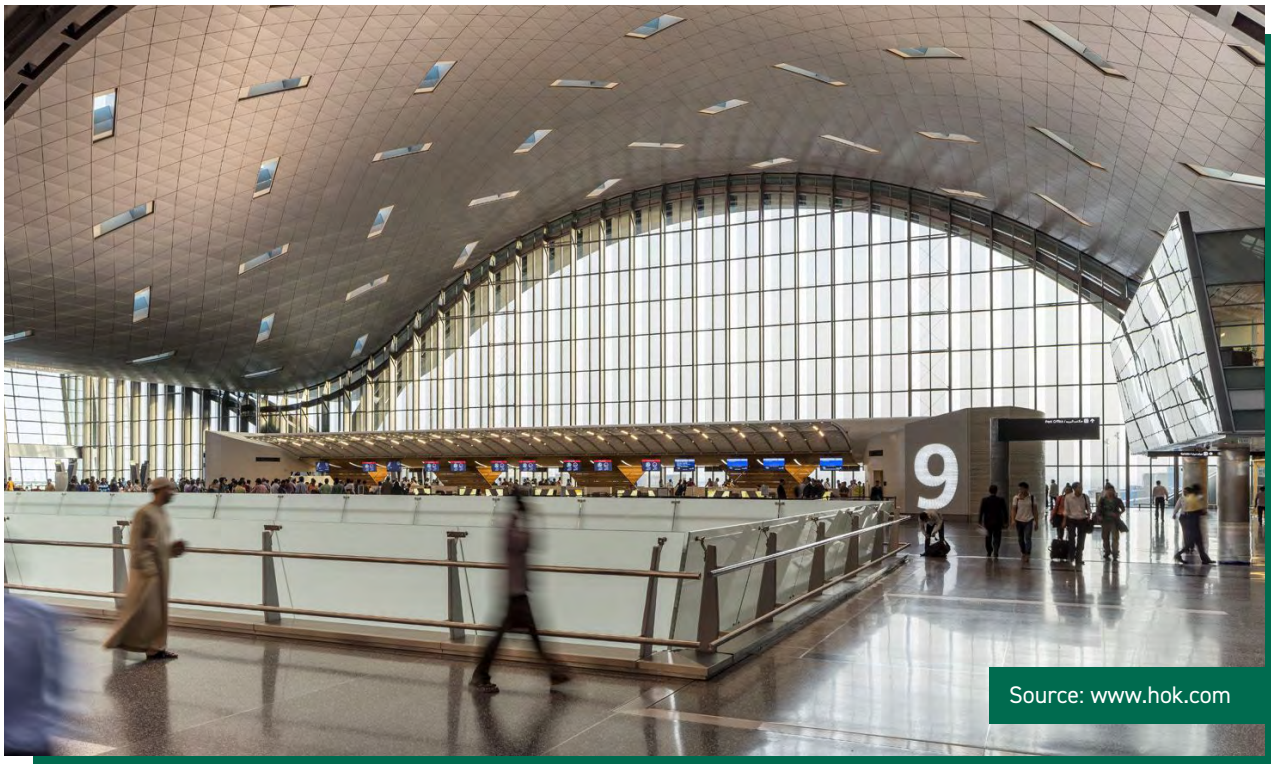
DensDeck® Prime Roof Boards were specified again for the subsequent phased expansion. The current Central Concourse expansion builds on the efficiency enhancements the cover boards offered in previous stages. An additional layer of gypsum core cover board was specified to help achieve specified acoustic and fire performance requirements for the new 40,000 m^2 roof.

DENSDECK® PRIME ROOF BOARDS FOR CENTRAL COURSE EXPANSION TO HELP MEET SPECIFIED ACOUSTIC AND FIRE PERFORMANCE REQUIREMENTS

To meet the enhanced acoustic performance requirement, and the fire performance standards of the Central Course Expansion, the specification of the cover board has altered from the single 15.9 mm layer of board used previously to two layers of 12.7 mm DensDeck® Prime Roof Board is once again selected as the top layer, in conjunction with the Resisto vapour control layer membrane to offer the installation benefits already experienced during the previous phases.

The fire performance of the DensDeck® Roof Board was another reason for the specification, and they became integral to meeting the fire performance requirements. Both gypsum and fibreglass used to manufacture DensDeck® Roof Board is classified as A1 in accordance with with EN 13501-1 and non-combustible as described and tested in accordance with ASTM E136. The high fire resistance of gypsum is due to 21% of its total mass being chemically bonded water. In the case of fire, the resulting heat will release the chemically bonded water as a vapour and slow the fire spread.

The roof assembly was successfully tested by BRE in the UK to confirm the specified fire rating incorporating the cover boards, and to demonstrate compliance with BS 476 and BS EN 13501-1.



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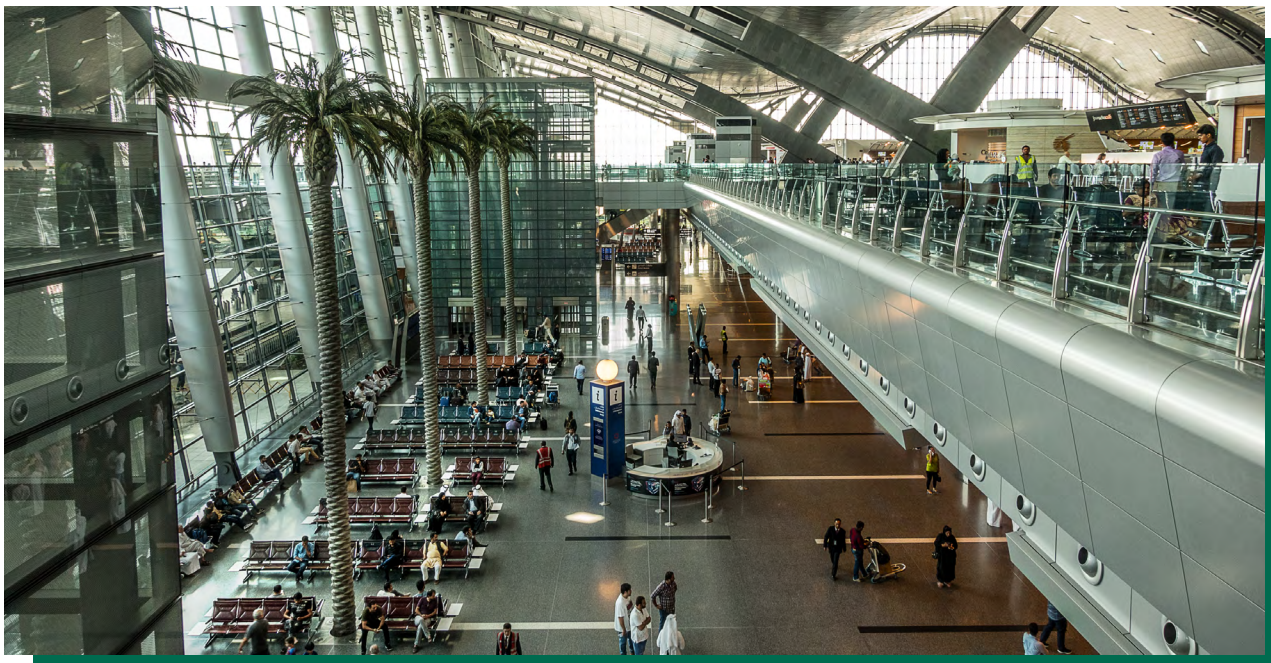
SELECTING DENSDECK® PRIME ROOF BOARD OVER GYPSUM CORE AND CEMENTITIOUS COVER BOARD

Moisture resistance, lightweight, and ease of installation are some of the additional reasons for fibreglass mat faced gypsum core cover board specification. Peter explains, "Unlike standard gypsum boards that become unusable after sustained exposure to rain during installation, DensDeck® Prime Roof Board has significantly greater moisture resistance and therefore, reduces cost due less wastage and time spent in replacement".

Peter explains that DensDeck® Roof Boards also have advantages over equivalent cementitious cover boards that are often specified. These advantages include reduced weight to aid manual handling/installation, ease of cutting whereas cementitious boards are heavier than comparable gypsum cover boards, and far more difficult to cut on site. Peter concludes;

> *"There are very few direct equivalents to the DensDeck® Prime Roof Board on the market. These cover boards have been installed on large international infrastructure projects, and their performance benefits are tested and proven.".*



Contact us for more information on DensDeck® Roof Boards and DensDeck® Prime Roof Boards. We are happy to discuss how our range of roof and cover boards can help achieve specific performance requirements and speed up the installation of your low slope commercial roof system.

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