

## Grace for Arts and Education



## International Project Solutions

“What sculpture is to a block of marble, education is to the soul.”

— Joseph Addison



1 Masdar Institute of Science & Technology | Abu Dhabi, UAE

2 EPCOT Theme Park | Orlando, FL

3 Wuxi Museum | Wuxi, China

4 Experience Music Project | Seattle, WA

5 Ibero Camargo Museum | Porto Alegre, Brazil

6 Museo Soumaya | Mexico City, Mexico

7 Khalsa Heritage Complex | Punjab, India

8 Qatar National Convention Centre | Doha, Qatar

9 Guggenheim Museum | Bilbao, Spain

10 MAXXI | Rome, Italy

11 ArtScience Museum, Marina Bay Sands | Singapore

12 Sydney Opera House | Sydney, Australia

Grace products have been used on arts and educational structures around the world for almost half a century

## Grace for Sports and Stadiums

## International Project Solutions

“Talent wins games, but teamwork and intelligence win championships.”

-Michael Jordan, Basketball Legend



- 1 Wembley Stadium | London, UK
- 2 Changsha Stadium | Changsha, China
- 3 Yankee Stadium | Bronx, NY
- 4 Soldier Field | Chicago, IL
- 5 Cowboys Stadium | Arlington, TX
- 6 Arsenal Stadium | London, UK
- 7 Aspire Dome | Doha, Qatar
- 8 Citizens Bank Park | Philadelphia, PA
- 9 Olympic Stadium | London, UK
- 10 Singapore Indoor Stadium | Singapore
- 11 CitiField | Queens, NY
- 12 Nationals Park | Washington DC

Grace products have been used on sports and stadiums around the world for more than a quarter century

GRACE

# Grace for Airports

# International Project Solutions

“ Spirit of place! It is for this we travel. ”



- 1 Washington Dulles Airport (DCA) | Chantilly, VA
- 2 Dubai Airport (DXB) | Dubai, UAE
- 3 Heathrow Airport (LHR) | London, UK
- 4 Hong Kong Int'l Airport (HKG) | Hong Kong, China
- 5 Changi Airport (SIN) | Singapore
- 6 Charles De Gaulle Airport (CDG) | Paris, France
- 7 Wu/Shaoling Airport (WUX) | Wuxi, China
- 8 Denver Airport (DEN) | Denver, USA
- 9 Honolulu Airport (HNL) | Honolulu, HI
- 10 John F. Kennedy Airport (JFK) | New York, NY
- 11 Los Angeles Airport (LAX) | Los Angeles, CA
- 12 San Francisco Airport (SFO) | San Francisco, CA

Grace products have been used on airports around the world for more than a quarter century



# Application Areas



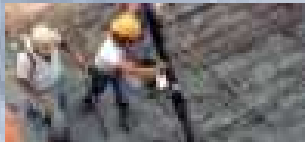
**Substructure**

**Elevated Decks, Green Roofs**



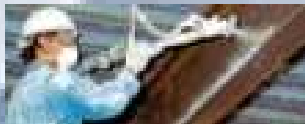
**Engineered Facade**

**Sloped Roof**



**Structural Concrete**

**Architectural Concrete**



**Structural Steel Fire Protection**

Grace Brands are Globally Recognized



## Grace technical experts can assist throughout your project delivery process

- Recommend the optimal building envelope solution for your project location.
- Work internationally with the project team throughout the entire design and construction process.
- Provide jobsite expertise and support.
- Facilitate global projects in all major construction segments.

Grace supplies products to more than 120 countries worldwide, through its plants and facilities in more than 40 countries, supported by a team of almost 6,000 people.

# International Project Solutions

PROFILE | **Morocco Mall** | Casablanca, Morocco

Grace Construction Products



**“The largest mall in North Africa, it is a unique and amazing architecturally designed structure, further enhanced by the Grace products that help protect it.”**

— François Challier, Field Market Development, Grace Construction Products

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**Owner:** Aksal & Nesk Investment (Kingdom of Saudi Arabia)

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**Designer:** OGER International (France) & Arup (Italy)

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**General Contractor:** Société General des Travaux Marocains (Morocco)

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**Chartered Building Surveyor:** SOCOTEC Maroc (Morocco)

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## The Project

Situated less than 20 meters (approximately 66 feet) from the Atlantic Ocean, the 200,000 m<sup>2</sup> (over 2 million ft<sup>2</sup>) Morocco Mall, soon to be the largest shopping center in North Africa, is built on a formerly undeveloped area on the southern side of Casablanca.

## The Challenge

The project is situated on an extension of the main Casablanca waterfront promenade and prone to the effects of seawater. Therefore, the designer and the owner needed waterproofing products that would protect the massive concrete slab and the foundation walls from water penetration, as well as from the salt and sulfates in the ground environment. These naturally occurring compounds can quickly deteriorate the concrete and shorten the lifespan of the mall structure.

## Grace Product Solutions Used

**Preprufe® 300R Pre-Applied Waterproofing System**

**Bituthene® 3000 Waterproofing System**

**Bituthene® Liquid Membrane**

**Adcor® 500S Waterstops**

**Serviseal® 195 Waterstops**

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# International Project Solutions

PROFILE | **MGM CityCenter** | Las Vegas, Nevada, USA

Grace Construction Products



*One of the largest sustainable developments in the world, the MGM CityCenter covers 68 acres along the Las Vegas strip. It's protected with fireproofing, roofing underlayment and air barrier technologies from Grace Construction Products.*

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**Clients:** MGM CityCenter, The Cosmopolitan of Las Vegas

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**Architects:** The CityCenter projects are a collaboration of more than eight of the world's foremost architectural firms

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**Fireproofing:** Clayton Coatings Inc. d/b/a Clayton National

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## The Project

The largest privately funded construction project in the history of the United States, the MGM CityCenter is a vast urban community comprised of a mix of retail and public space right in the heart of the Las Vegas strip. CityCenter combines a 4,004-room, 61-story resort & casino with approximately 500,000 square feet of retail and entertainment space, 2,400 residences and two world-class hotels. CityCenter is also the largest green building project in North America with six Gold LEED certifications and constructed with fireproofing and waterproofing materials from Grace Construction Products.

## Grace Product Solutions Used

**Monokote® MK-6® Z-146® and Z-106® Fireproofing**

**Grace Ultra Roofing Underlayment**

**Perm-A-Barrier® Wall Membrane HT Air and Vapor Barrier**

# International Project Solutions

PROFILE | **Museum of Islamic Art** | Doha, Qatar

**Grace Construction Products**



**“...The first step in a monumental effort by Qatar to transform itself into the arts and education hub of the Middle East.”**

— *The Architect's Journal, UK, 05.02.2009*

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**Client:** Qatar Petroleum (Qatar)

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**Architect:** I.M. Pei (U.S.A.)

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**Contractors:** SixConstruct (Belgium) and Baytur (Turkey)

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**Structural Engineer:** Leslie R. Robertson Associates (USA)

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## The Project

Poised at the end of the corniche in the harbor of Doha, Qatar, the Museum of Islamic Art rises majestically from the waters of the Arabian Gulf. Designed by renowned architect I. M. Pei, the Museum's striking exterior conceals one of the finest collections of Islamic Art in the world.

The Museum found its primary inspiration in the Mosque of Ahmed Ibn Tulun in Cairo and was built through the combined efforts of several firms around the globe. The design reflects a modern interpretation of Islamic architecture and mirrors Qatar's vision as a bridge between past and present, East and West.

## The Challenge

The climate and corrosive salt environment of the Persian Gulf created a number of project challenges. Constructed on reclaimed land, the Museum's foundation rests below the water table, subjecting foundations to highly aggressive chloride and sulfate conditions which can quickly deteriorate the concrete and significantly reduce the life of the structure.

## Grace Product Solutions Used

- Preprufe® 300 R and Bituthene® 8000 HC waterproofing systems
- Bituthene® Liquid Membrane
- Servipak® protection boards



# International Project Solutions

PROFILE

**Waterproofing Seoul Subway**

Seoul, S. Korea

Grace Construction Products



**“The greatest concern was to ensure positive/ blind side waterproofing application for this continuous wall system,”**

— Kim Jae Hyuk of Chung Suk Engineering

**Client:** Seoul Subway Corporation

**Architect/Specifier:** Chung Suk Engineering

**Contractors:** Hyundai Engineering & Construction Co., Ltd.

**Waterproofing Applicator:** Joong Ang Gong Sa

## The Project – Seoul Subway Line 9

Seoul, the capital city of South Korea and home to some 11 million inhabitants, is a large city by any measure. To cater to the transport needs of its mushrooming population, the Seoul subway network is being extended and a new line, Line 9, is also being added. Construction of the Seoul Subway Line 9 started in 2003, and links Gimpo airport in western Seoul to Gangnam business district in southern Seoul. Section 1 is 25.5km long, with 25 stations including 13 transfer stations, and is expected to open in 2009.

## Challenges – Waterproofing A Continuous Wall System

A major transfer point of Line 9 Section 1 is Dongsan Station, which allows commuters to transfer to Line 2. An underground station, it sits underneath a roadway in the old city centre of Seoul. The confined tunnel construction space due to its location within the business district presented challenges for waterproofing design.

## Grace Product Solutions Used

- Preprufe® 300 R and Bituthene® 3000 waterproofing systems
- Servipak® 3