

# Covering and Protecting Airports and Transportation Centers Worldwide with Custom Engineered Architectural Metals

Global Application of Standing Seam Roof and Façade Panels, BEMO-Flex™ and Fall Safety Systems

## CASE STUDY



*Franjo Tuđman Airport, Zagreb (above),  
Phoenix Transit Center (right)*





### Recent Projects

**LaGuardia Intl Airport Concourse B**  
– 105,000 sf (9,760 m<sup>2</sup>)

**LaGuardia Intl Airport Concourse A**  
– 85,000 sf (7,900 m<sup>2</sup>)

**LaGuardia Intl Airport Delta HeadHouse**  
– 135,000 sf (12,080 m<sup>2</sup>)

**Baltimore Washington Intl Airport A5 Airside Expansion**  
– 34,500 sf (3,205 m<sup>2</sup>)

**Ft Lauderdale Intl Airport Delta Concourse Expansion**  
– 38,000 sf (3,530 m<sup>2</sup>)

**Boston Logan Intl Airport Terminal C Expansion**  
– 15,000 sf (1,400 m<sup>2</sup>)

**TIA Sky Center**  
– 35,000 sf (3,250 m<sup>2</sup>)

**Two Sky-Train Terminals at Phoenix Sky Harbor Airport**  
– 70,000 sf (6,500 m<sup>2</sup>)

**NCL Port of Miami Cruise Terminal**  
– 135,000 sf (12,541 m<sup>2</sup>)

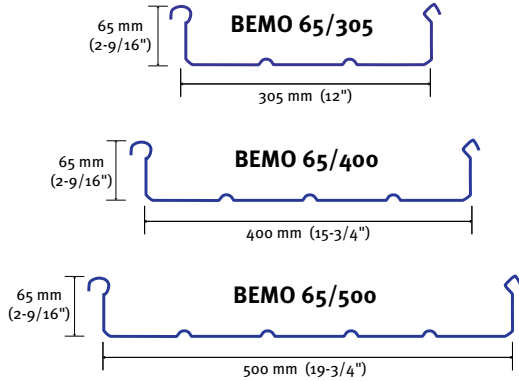


1. Phoenix Sky Harbor Car Rental Center
2. Changi Airport T4
3. Sacramento Intl Airport
4. Baltimore/Washington Intl
5. NCL Miami Cruise Terminal
6. Hamad Intl Airport
7. Saipan Intl Airport





## Freedom of Form and Design Empowers Freedom to Build a Unique Architectural Structure



Metal panel profiles available in 3 standard widths using Stainless Steel, Zinc, Copper, Aluminum, Steel and Titanium. Custom widths are also available.



Convex, concave or even “S” curves can be easily and efficiently accommodated by the Bemo roof system. Bemo roof panels can be curved by means of a specially developed stretch-forming mill that can curve the BEMO panels smoothly to a radius as tight as 10' (3.01 m) or less, depending on the profile and material used.

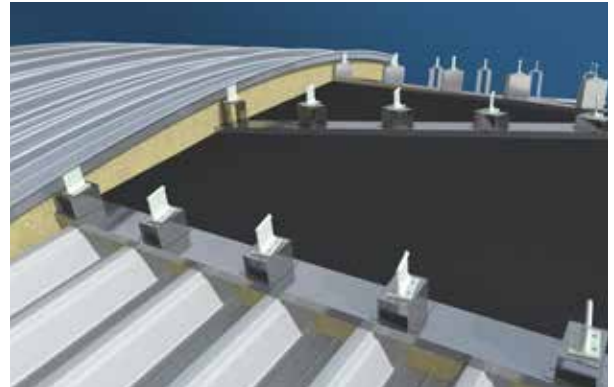
## BEMO-Flex – FREEFORM ARCHITECTURE, PARAMETRIC DESIGN FOR SMOOTH FLOWING GRACEFUL LINES

### BEMO-Flex PROVIDES MULTI-AXIS ATTACHMENT POINTS TO CONTROL HEIGHT, ANGLE AND PITCH

The BEMO-Flex system has the ability to provide multi-axis attachment points controlling height, angle and pitch of each clip attachment point, off of a segmented or “out of plane” deck all while reducing labor costs and increasing construction efficiencies.

### PATENTED BEMO-Flex SUBSTRUCTURE

This allows precise, high-quality and affordable application of complicated roof and wall systems. Developed specifically for BEMO metal roof panels and wall systems, the BEMO-Flex rail modules provide the solution of achieving smooth surface lines.



# Airport Istanbul – Turkey

## Roof System

### Standing Seam Roof Panels

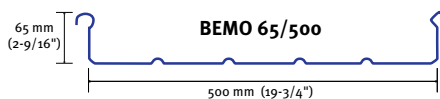
- BEMO SF-N65-500 tapered standing seam panels
- Total surface area: almost 4,520,800 sf (420,000 m<sup>2</sup>)
- Aluminum color
- Hundreds of welded skylights and curbs

### Airport Facts:

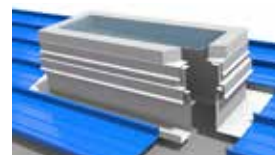
- 114 gates, 40,000 parking spaces and 228 passport control desks
- Interior design is inspired by Turkish and Islamic designs
- Supports up to 120 million passengers per year



### BEMO standing seam roof panels and components:



Straight and Curved Panels



Welded Skylights



BEMO Thermal Halters



# Baltimore Washington International Airport – Baltimore

D/E Connector/Concourse A Extension

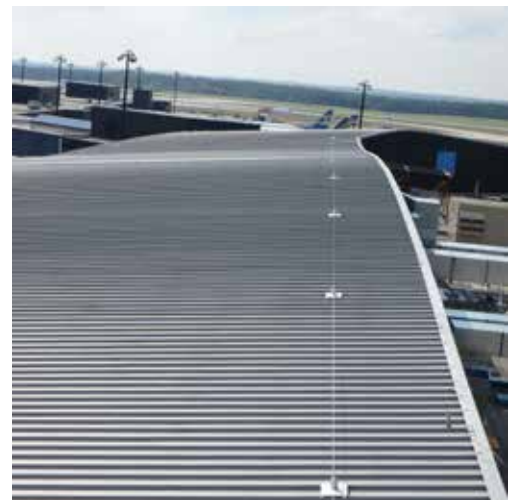
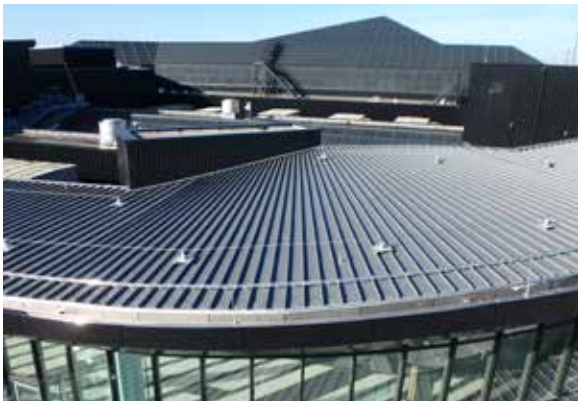
## Roof System

### Standing Seam Roof Panels

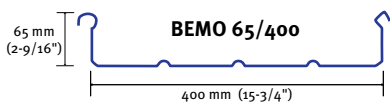
- BEMO 65/400 and 65/457 tapered standing seam panels
- Total surface area: D/E Connector 100,000 sf (9,300 m<sup>2</sup>), Concourse A 34,500 sf (3,205 m<sup>2</sup>)
- D/E Connector, 0.40 anodized aluminum
- Concourse A, 22 ga. steel Galvalume with PVDF coating
- 3M Fall Safety Systems

### Airport Facts:

- Structure size: 2,400,000 sf (222,967 m<sup>2</sup>)
- Five concourses (4 domestic, 1 international)
- 73 boarding gates, two gates for commuter aircraft
- 75,000+ passenger boardings per day
- 2018 marked the 4th straight record year serving 27.1 million passengers per year



### BEMO standing seam roof panels and components:



Straight and Tapered Panels



Walkways and Fall Safety Systems

# Hamad International Airport – Qatar

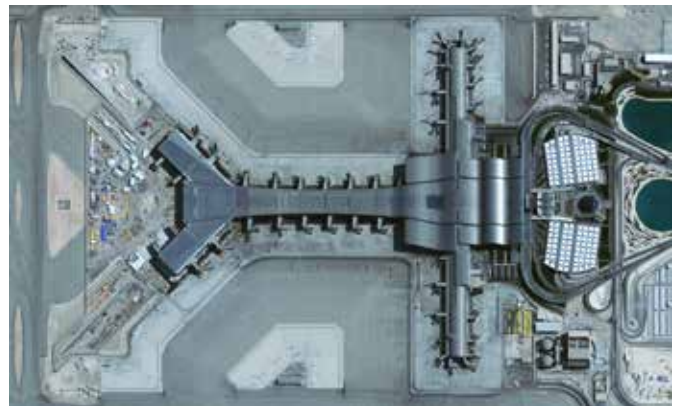
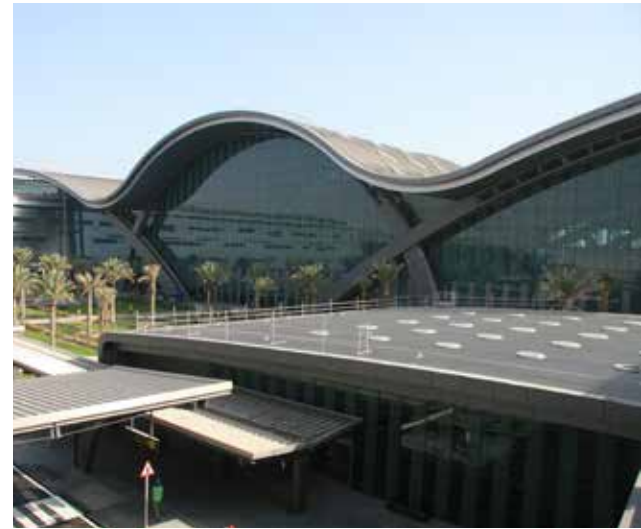
## Roof and Fall Safety System

### Standing Seam Roof Panels

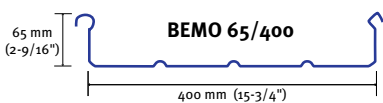
- BEMO 400mm standing seam panels
- Total surface area: 3,300,000 sf (306,580 m<sup>2</sup>) of 22ga. stainless steel
- 17,000 lf (5182 m) of 18ga. stainless steel gutters
- 108,500 sf (10,080 m<sup>2</sup>) of skylight area
- Five separate additions over the 5+ years of construction
- More than 8 million pounds (3,628,739 kg) of stainless steel on the project

### Airport Facts:

- 30 million passengers per year (Phase 1)
- 77 boarding gates
- Largest project of its kind when constructed
- 60% of the land for the airport is reclaimed from the Gulf



### BEMO standing seam roof panels and components:





# Norwegian Cruise Lines Passenger Terminal – Miami

## Roof System

### Standing Seam Roof Panels

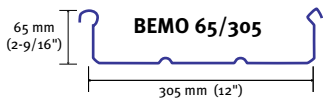
- BEMO 65/305 standing seam panels
- Total surface area: 135,000 sf (12,541 m<sup>2</sup>)
- 350 ft (106.7 m) panel lengths
- Tight curve radii
- .050" PVDF coated aluminum

### Terminal Facts:

- 165,000 sf (15,329 m<sup>2</sup>) structure
- Created to accommodate ships of up to 5,000 passengers
- New technology to support faster embarkation and disembarkation
- Designed by Miami-based architecture firm Bermello Ajamil & Partners
- Inspired by the nautilus with its spiraled, multi-level facade



### BEMO standing seam roof panels and components:



Straight and Curved Panels



BEMO Long-Slide Hook Clips



BEMO Hook Clips

# Passenger Clearance Terminal – Hong Kong

## Roof System

### Standing Seam Roof Panels

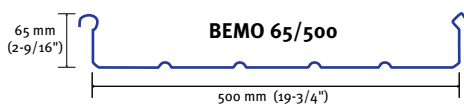
- Aluminum standing seam panels
- Total surface area: 419,793 sf (39,000 m<sup>2</sup>)
- Surface finish, PVDF<sub>3</sub>
- 45 individually assembled roofing segments
- Production of entire roof segments were manufactured in off-site factories

### Terminal Facts:

- The Hong Kong-Zhuhai-Macao Bridge provides connections between Zhuhai, Macao and Hong Kong
- Serves as a transportation hub and provide clearance facilities for goods and passengers
- The project was designed by Aedas in joint venture with Rogers Stirk Harbour + Partners
- The building has an undulating standing seam roof, designed to reflect the surrounding landscape



### BEMO standing seam roof panels and components:





# Sky Harbor Rental Car Center and PHX Sky Train – Phoenix Roof System

## Standing Seam Roof Panels

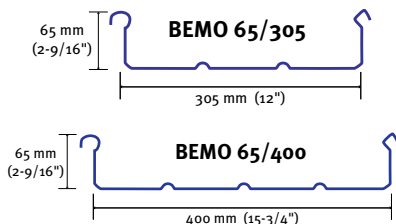
- BEMO 65/305 and BEMO 65/400 standing seam panels
- Total surface area: 419,793 sf (39,000 m<sup>2</sup>)
- Aluminum surface finish, PVDF<sub>3</sub>
- BEMO Akkord Rails for photovoltaic panel attachments

## Facility Facts:

- 16 car rental companies in 2.55 million sf (236,903 m<sup>2</sup>)
- Integrated people mover to terminals and airport parking
- 2.5 miles (4.02 km) of PHX Sky Train track system



## BEMO standing seam roof panels and components:



# Franjo Tudman Airport Zagreb – Croatia

## Roof System

### Standing Seam Roof Panels

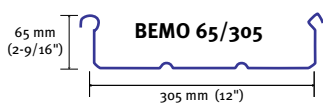
- BEMO Monro aluminum standing seam panels
- Total surface area: 354,132 sf (32,900 m<sup>2</sup>)
- Panels roll-formed onsite
- BEMO-Flex
- Surface finish - stucco

### Airport Facts:

- 3.45 million passengers per year
- 43,688 take-off and landing procedures in 2018
- 30 airlines are currently operating in Zagreb



### BEMO standing seam roof panels and components:





# LaGuardia Airport, Concourse B and Concourse A – New York

## Roof and Fall Safety System

### Standing Seam Roof Panels

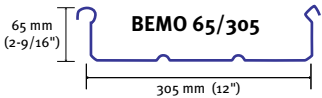
- Concourse B, BEMO 65/305 .050 aluminum standing seam panels
- Total surface area: 105,000 sf (9,760 m<sup>2</sup>)
- Concourse A, BEMO 65/305 .050 aluminum standing seam panels
- Total surface area: 85,000 sf (7,900 m<sup>2</sup>)
- 3M Fall safety systems and walkways
- Surface finish, PVDF<sub>3</sub>

### Terminal Facts:

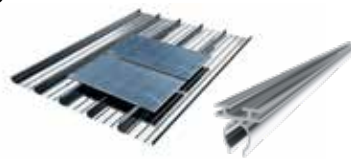
- 2.3+ million passengers/month
- More than 375,000 flight per year
- Part of a \$4 billion project to replace outdated terminals



### BEMO standing seam roof panels and components:



Straight Panels



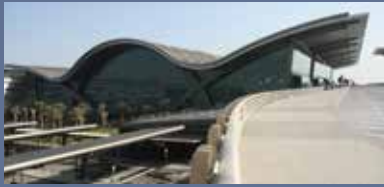
BEMO Akkord Rail with Photovoltaic Panels



BEMO Hook Clips



Walkways and Fall Safety Systems



### **Architectural Integrity**

Featuring the Hamad International Airport with over 3 million sf (300,000 m<sup>2</sup>) of stainless steel.



### **Custom Shapes and Curves**

Smooth curving and tapered panel technologies in natural metals or with high-performance coatings.



### **BEMO Custom Walls and Soffits**

Unique wall panel applications for every design.



### **Environmentally Responsive**

High recycled content metals, low emissivity coatings and on-site manufacturing all provide for a more environmentally responsible system.



### **Economical, Flexible, Weather-tight**

Natural non-coated metal systems offer long term low life-cycle cost roofing solutions.



### **Quality From Start to Finish**

BEMO Mobile Factory Mills, field technical services, engineering assistance.



### **Components and Custom Applications**

High-performance clips, underlayments, detail treatments and fabrications.



### **BEMO Flexibility and Performance**

Factory Mutual, Metro Dade County Approval, UL Listings, ASTM Performance, acoustic applications, fire ratings.



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