



PROJECTS BOOK

Introduction

In the past 2 decades, Palram helped materialize hundreds of architectural challenges around the globe. Aside from bridging between the architect's vision and our manufacturing expertise, Palram provides assistance that is often crucial to the project's success. This assistance may improve the build, daylight design, installation and overall result of each project.

The following pages tell our story.

About Palram

Palram is a leading multinational manufacturer of thermoplastic sheets, mainly from polycarbonate, PVC and acrylic. The products are used in a wide variety of applications and projects around the world, including building and construction, architectural projects, advertising and printing, agriculture, fabrication and DIY. Palram's global presence and advanced technological abilities allow us to provide our customers with competitive products, while maintaining a high level of service. Palram delivers excellence to a global marketplace, backed by professional support and service on a local and regional level. Palram is proud of its unique corporate culture that makes us agile, creative and committed to all our customers.

Project Support

In the last two decades, the Palram Project Support Center has helped specify, adapt, support and facilitate architectural challenges around the globe. Among the Center's team members are civil engineers, designers, technical supporters, plastics engineers and others. The team offers a bundle of professional services based on accumulated experience in medium and large scale projects, a part of which are displayed here.

Services for Architects

Planning Stage

- Quick matching of product specification per project
- Adapting plans while preserving the architect's vision
- Creating specific planning details for architects
- Professional consultation on planning meetings
- Expert advisory on materials and engineering
- Creating conceptual designs for given structures

Implementation Stage

- Creating specific installation guidelines per project
- On-site support at important execution stages
- Background construction engineering supervision
- Conducting special seminars upon request

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Freedom In Design





“Setting
New standards
in polycarbonate panel corrugation
and stadia roofing design”

Aviva Stadium

Location: Dublin, Ireland

Architects: HOK Sport (Populous)

Year of Completion: 2010

Roofing Product: SUNTUF® Corrugated Polycarbonate Panel

Roofing Specifications: LDR Profile 3mm, Bluish Clear & Matte

*For SUNTUF product information see page 174

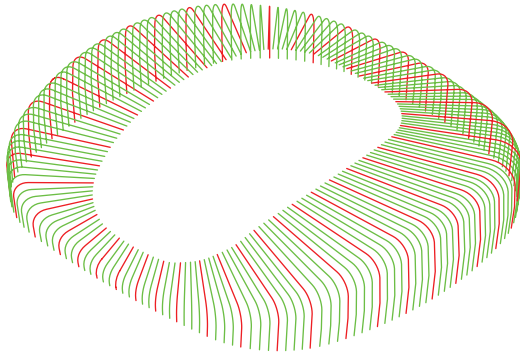








The “Aviva” stadium stands on the ruins of the former Lansdowne Road Stadium and serves as the new home for residents Irish rugby union team and the Republic of Ireland national football team. Palram provided an “out of the box” innovative solution that stretched the boundaries of roofing design and its own production capabilities.

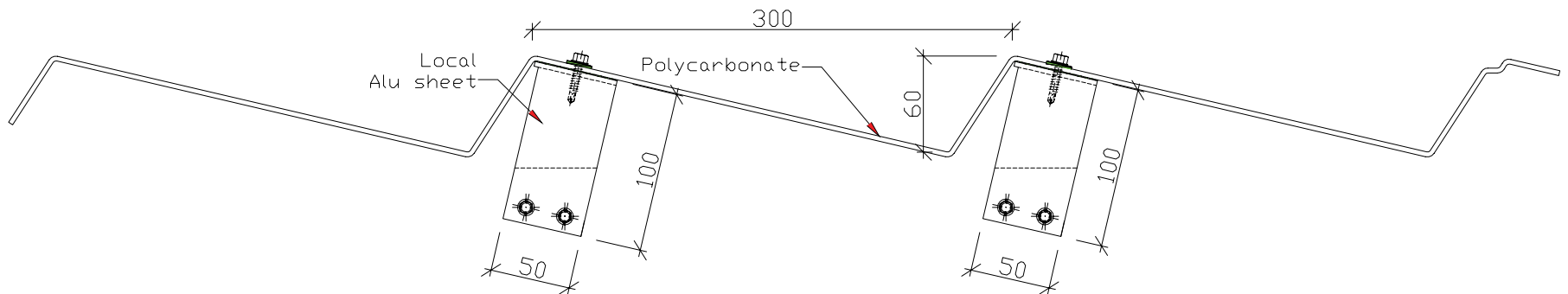


Cover Area: 20,000_{sqm}

- > Palram's solution reduced the thickness from the original 8mm Solid sheet roof design to 3mm corrugated.
- > The corrugated roofing panels were designed to match the facade/walls shape.
- > Each roofing panel was individually cut and marked according to its location on the roof.

Seat Capacity: 51,700

Light Transmission: 86% (Clear) and 84% (Matte)



A Revolutionary Concept

Installation of the panels with the corrugation along the roof perimeter direction relied on the stadium unique wavy design and enabled reduction of the panel thickness by 62%, which proved to be efficient and yet fulfilled the architect's vision. Production of the corrugated SUNTUF sheets in an unprecedented 3mm thickness was a manufacturing breakthrough on its own.



Aviva Stadium. Dublin. Timeline Progress





Athens Olympic Stadium

Centerpiece of the Athens 2004 Olympic Games

Location: Athens, Greece (2004 Olympic Village)

Architect: Santiago Calatrava

Year of Completion: 2004

Roofing Product: PALSUN® 12mm Solar Olympic
Flat Solid Polycarbonate Panels (24,000 sqm)

*For PALSUN product information see page 159



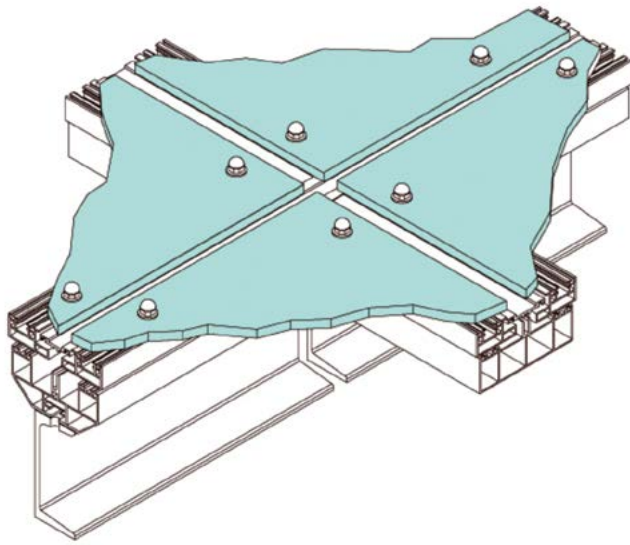


"OAKA" Stadium

Each Olympics have their own architectural symbol; for the Athens 2004 games it was the Athens Olympic Stadium.

The venue was originally built for the 1982 European Championships in Athletics, and was extensively renovated to serve as the main stadium for the 2004 games. Its new roof was designed by the renowned Santiago Calatrava and consisted of two gigantic overhung wings.

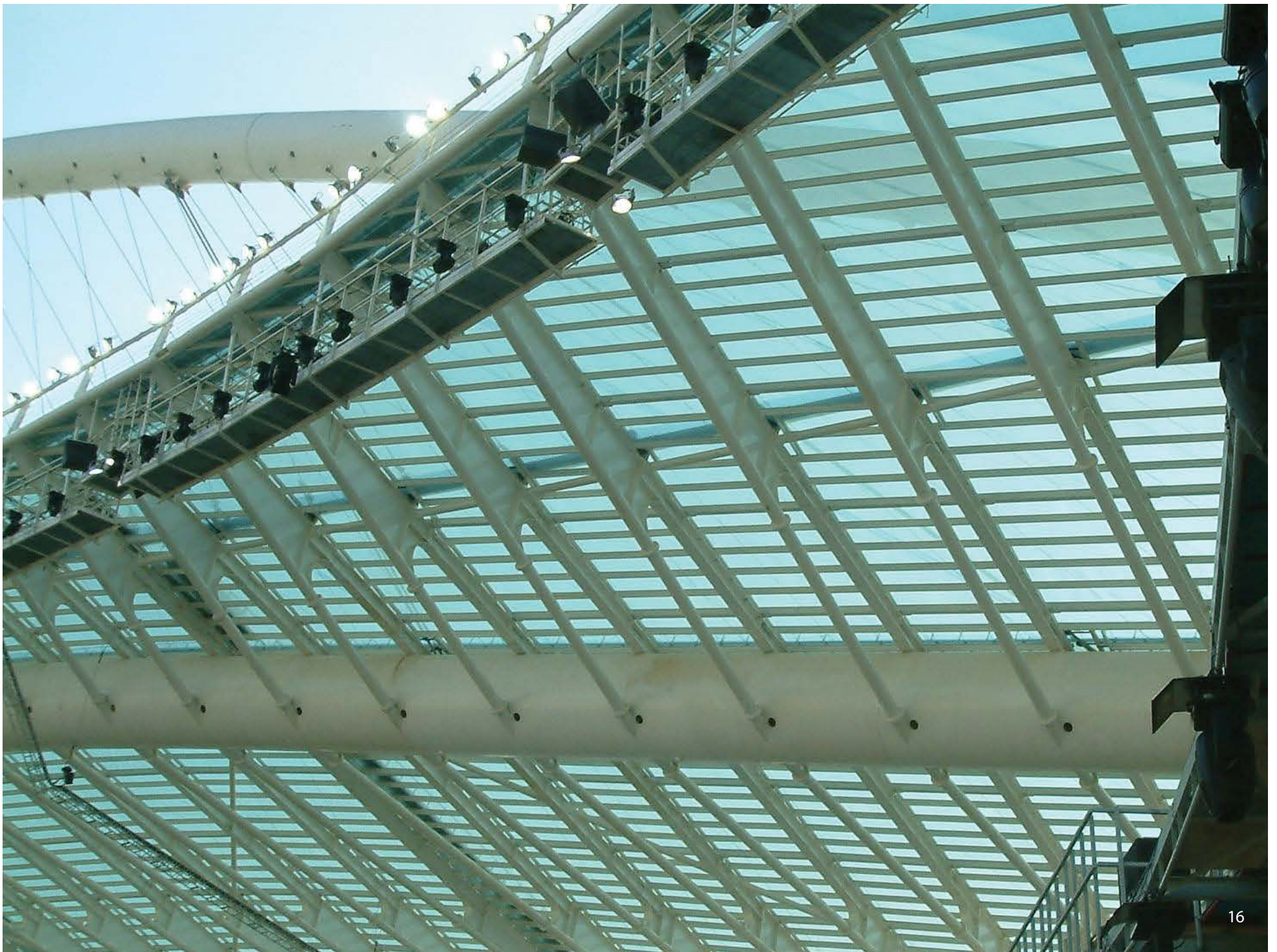




A Floating System

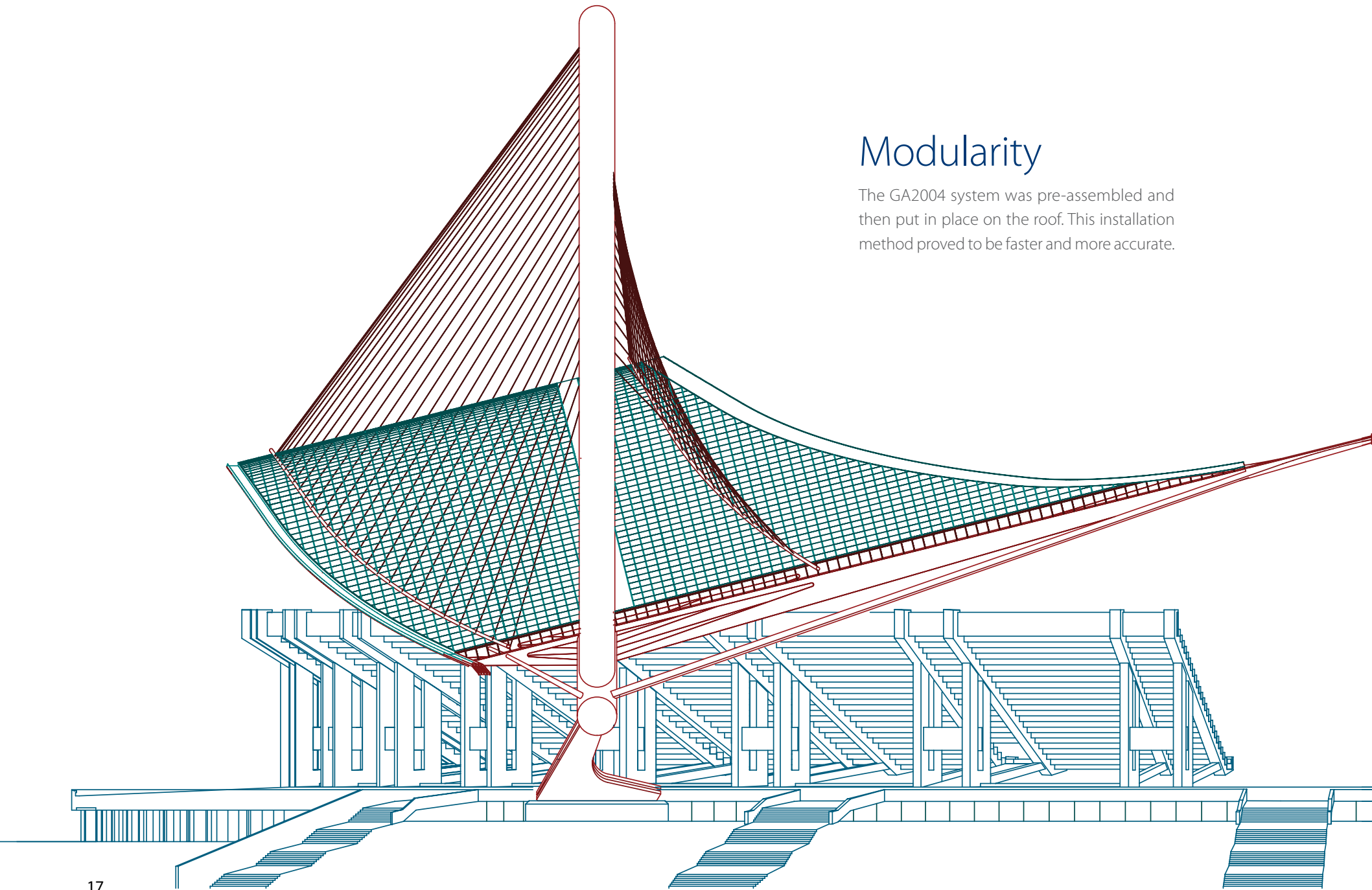
The stadium roof was specified with GA2004 pre-assembled glazing system, which was fitted with PALSUN polycarbonate panels with tailor-made color, solar transmission properties and abrasion-resistance. The system's unique design allowed 0° slope and offered built-in drainage, room for expansion and many other benefits.





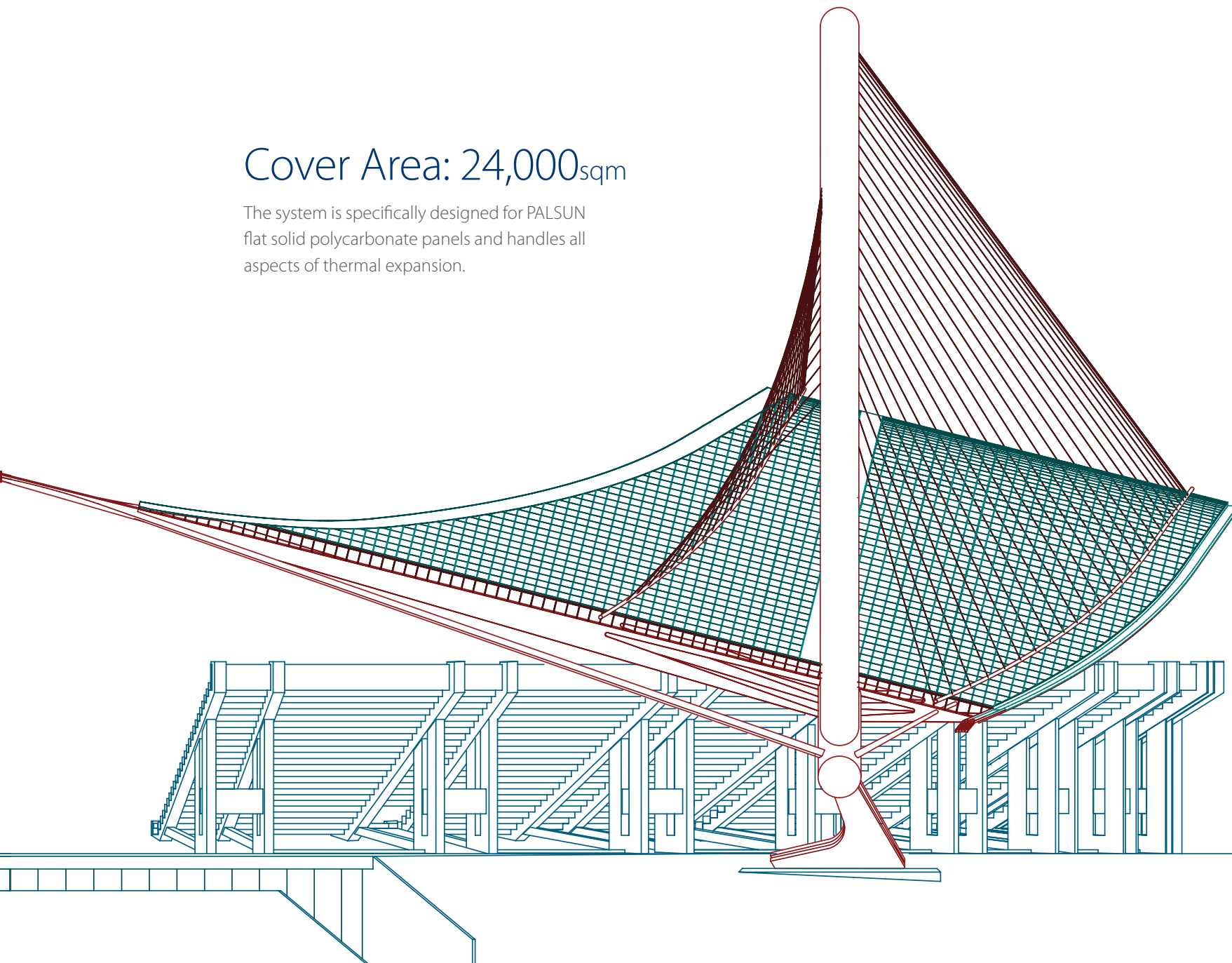
Modularity

The GA2004 system was pre-assembled and then put in place on the roof. This installation method proved to be faster and more accurate.



Cover Area: 24,000sqm

The system is specifically designed for PALSUN flat solid polycarbonate panels and handles all aspects of thermal expansion.







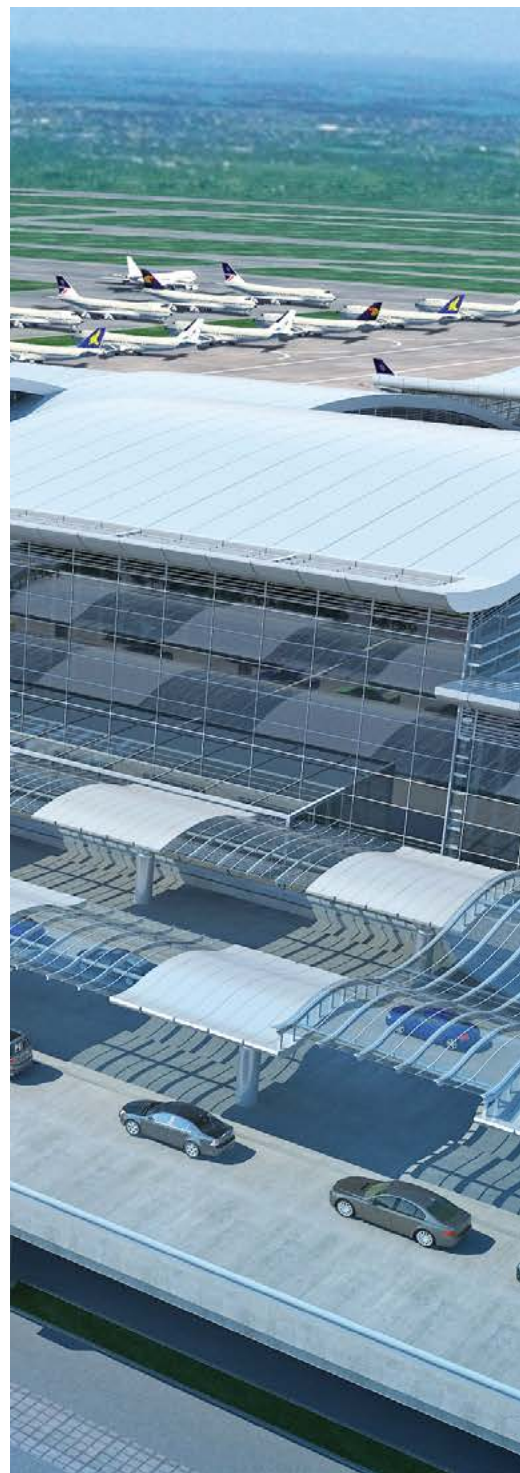
The efficient built-in drainage of the GA2004 system takes advantage of the rains to creates a self-cleaning process for the roof's surface.

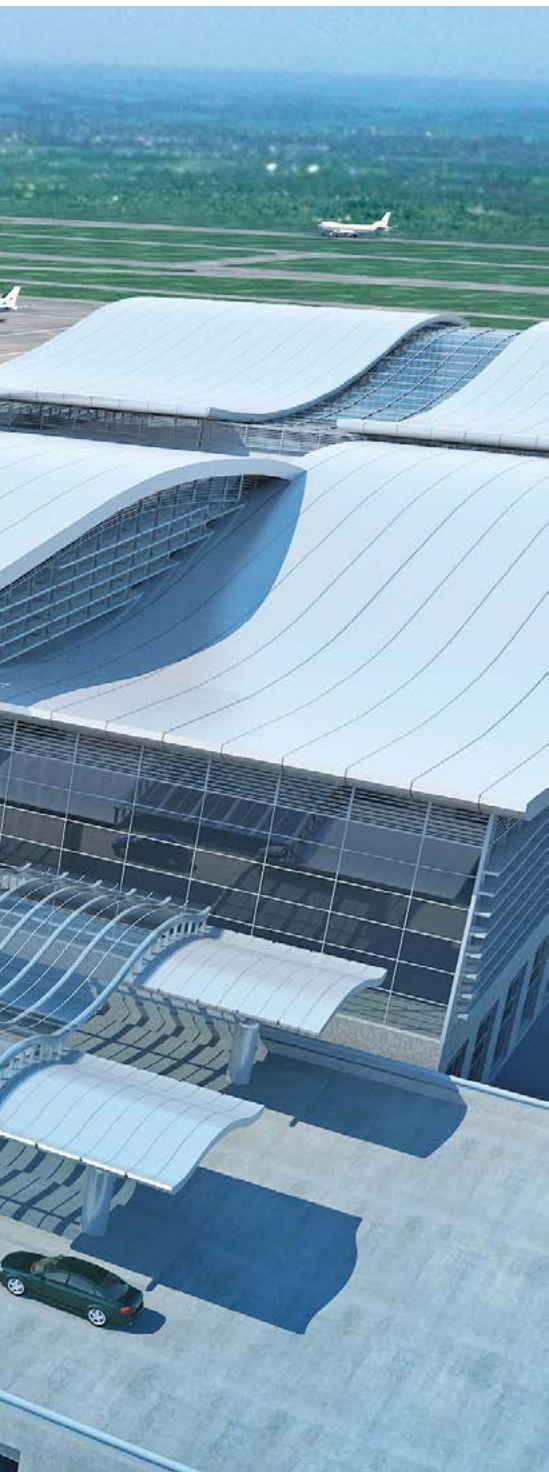


Upon its completion

At the time of completion, the Athens Olympic stadium had the world's largest polycarbonate roof.







Hangzhou Airport

A smart design that provided seamless, leak-free canopy glazing

Location: Hangzhou (Zhenjiang Province), China

Architect: Zhejiang Institute of Architectural Design (ZIAD)

Year of Completion: 2010

Roofing Product: SUNGLAZE™ Solid Polycarbonate Architectural System (1,500 sqm)

Roofing Specification: Type 4/800, Solar Olympic

*For SUNGLAZE product information see page 139

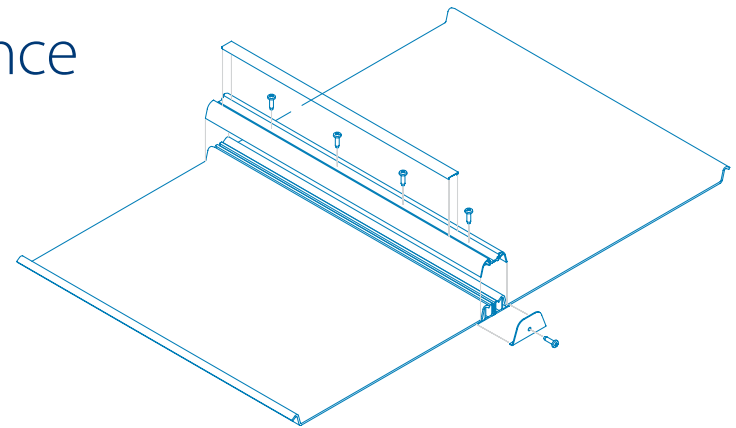


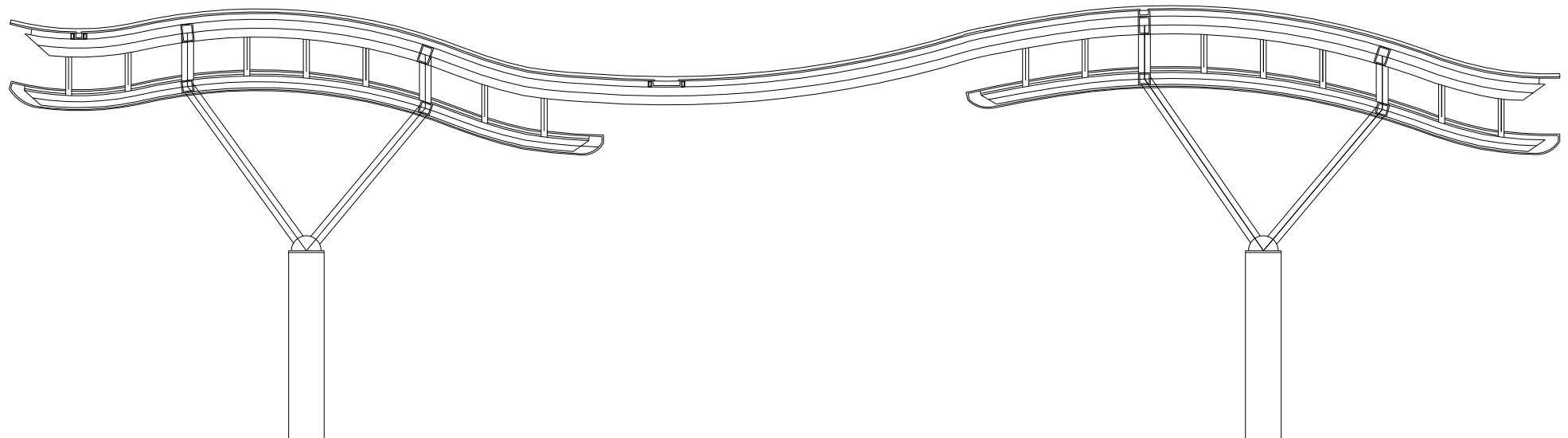
Smart Design With Leak-Proof Performance

The city of Hangzhou is home to one of the busiest airports in China. The airport was expanded in 2010 and received new entrance canopies, which were fitted with the SUNGLAZE system.

Although glass was originally specified for the canopies, Palram conceived an effective solution based on the solid polycarbonate panel system.

The system's proprietary panels and aluminum profiles guarantee leak-proof performance. Adaptation to the airport canopies required additional planning challenges, which were met by Palram's Project Support team.





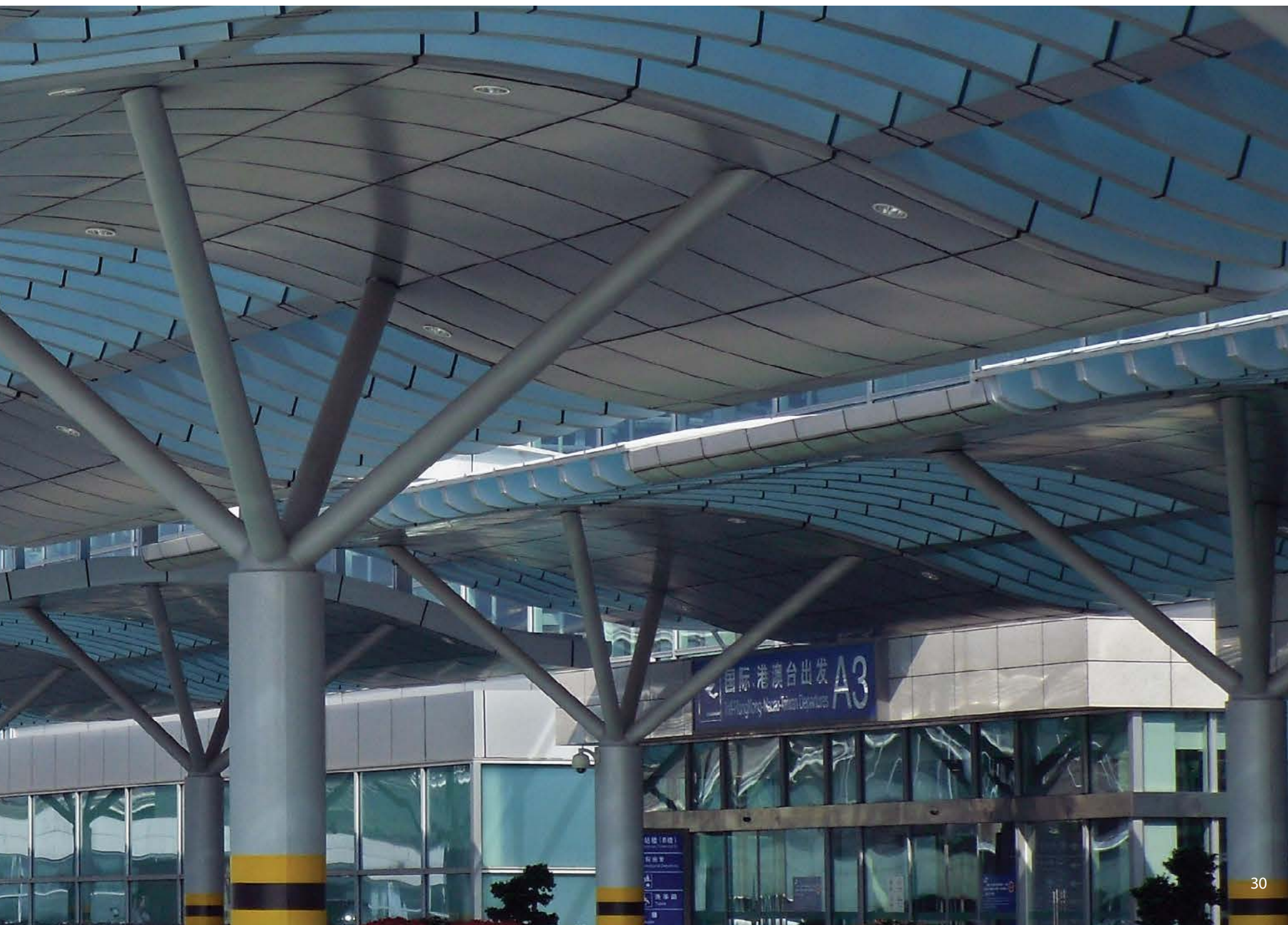
Light Transmission: 20% SUNGLAZE™ Cover Area: 1,500sqm

The system's aluminum profiles were rolled according to the roof radius and emphasize the structure's wavy design, while the panels were easily cold-bent into the installed profiles.













Huizhou Stadium

Clear, cold-curved and lightweight skylights

Location: Huizhou (Anhui Province), China

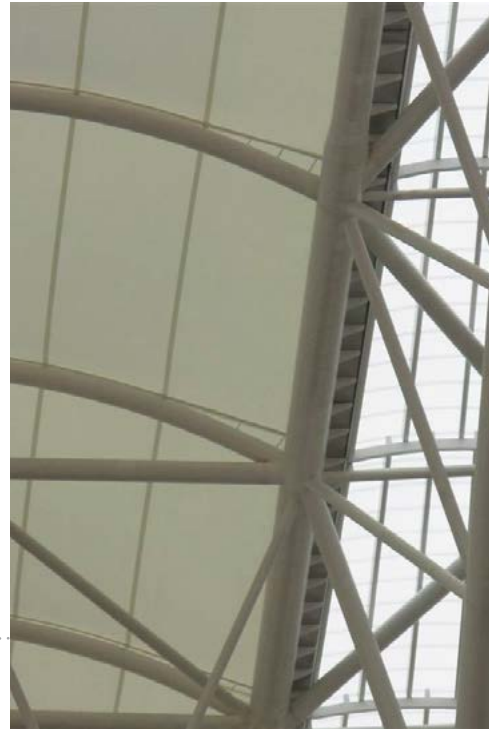
Architect: China Construction Design International (CCDI)

Year of Completion: 2010

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System (6,700 sqm)

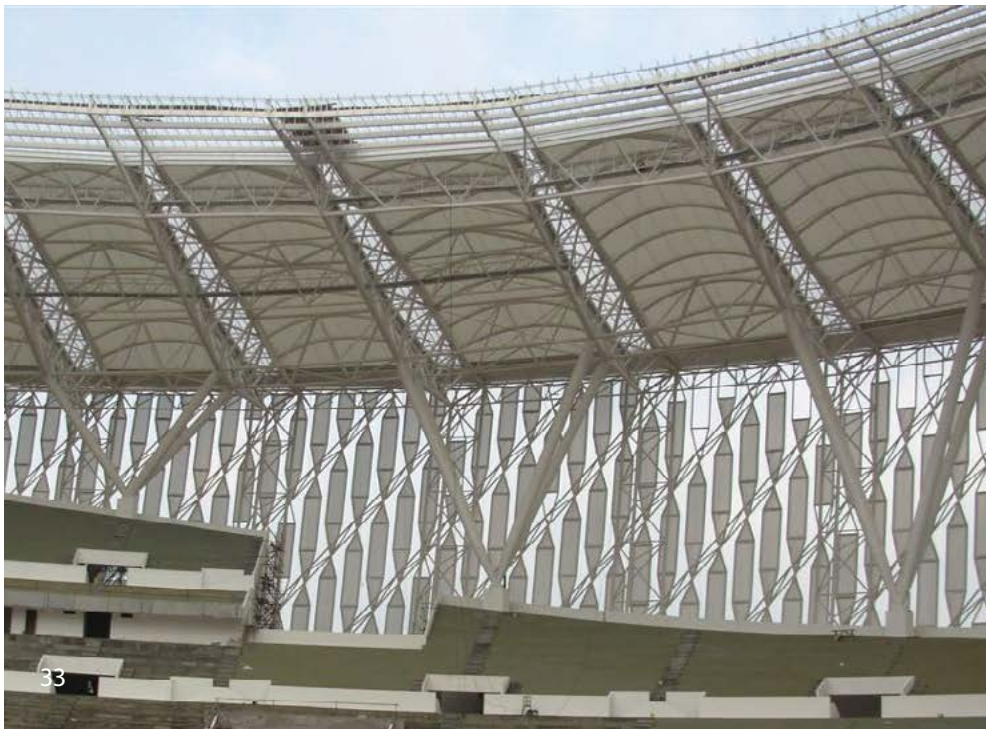
Roofing Specification: 10mm, Clear

*For SUNPAL product information see page 144



Lightweight Skylights

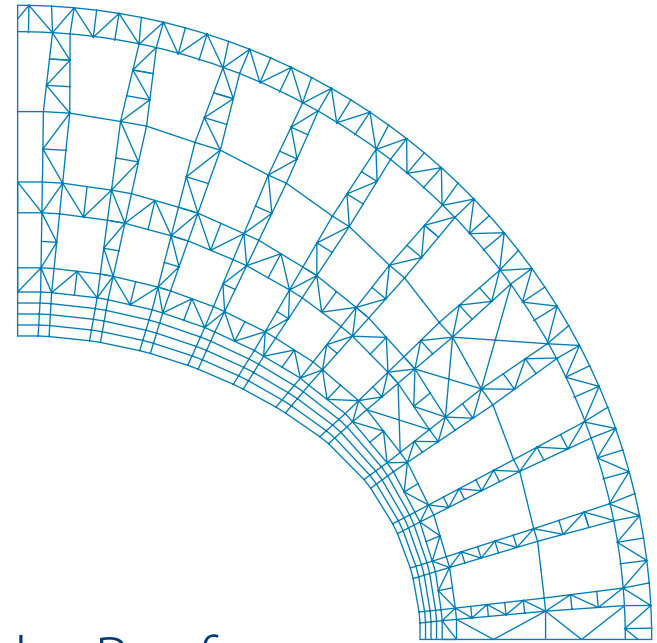
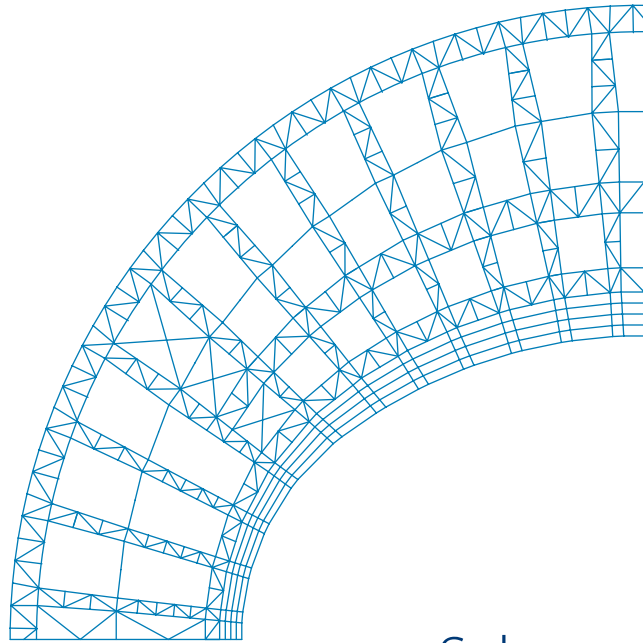
Huizhou Central Stadium can host up to 60,000 spectators and is a part of a sports complex that hosted the 13th Guangdong sport games. The stadium roof was fitted with clear 10mm SUNPAL skylights, which admit plenty of natural daylight into the crowd area.



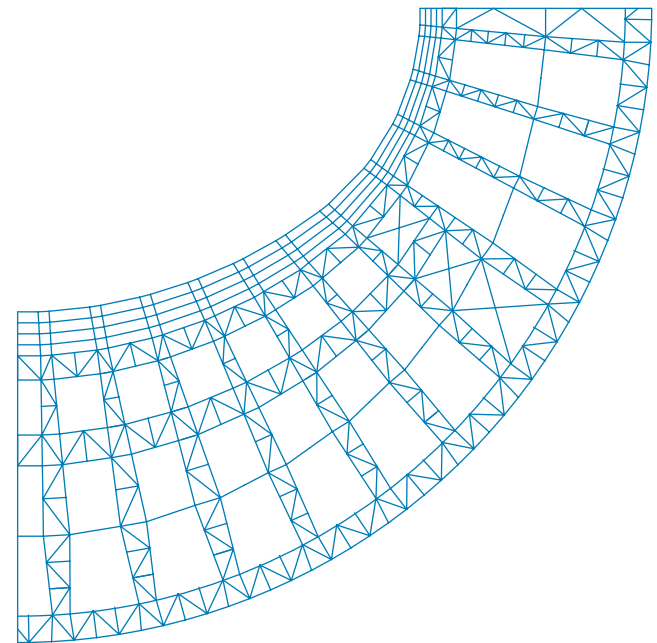
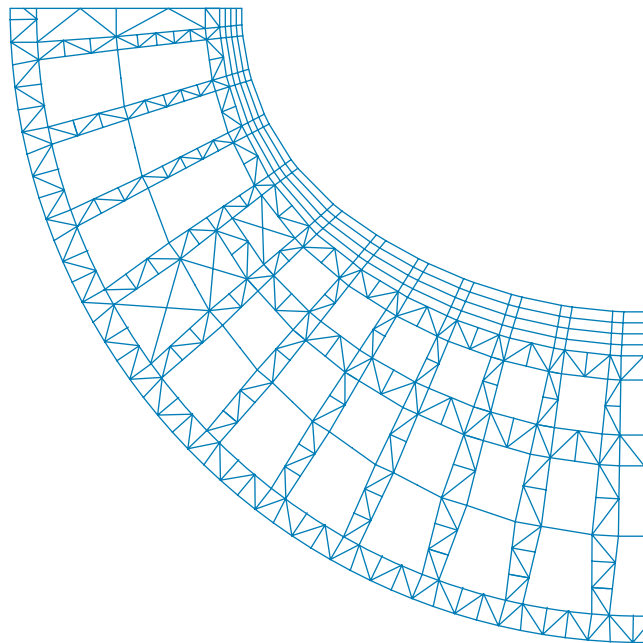








Schematic Layout of the Roof







Shenzhen Stadium

A complete solution consisting of tailor made roofing product and installation system

Location: Shenzhen (Guangdong Province), China

Architect: GMP, Germany

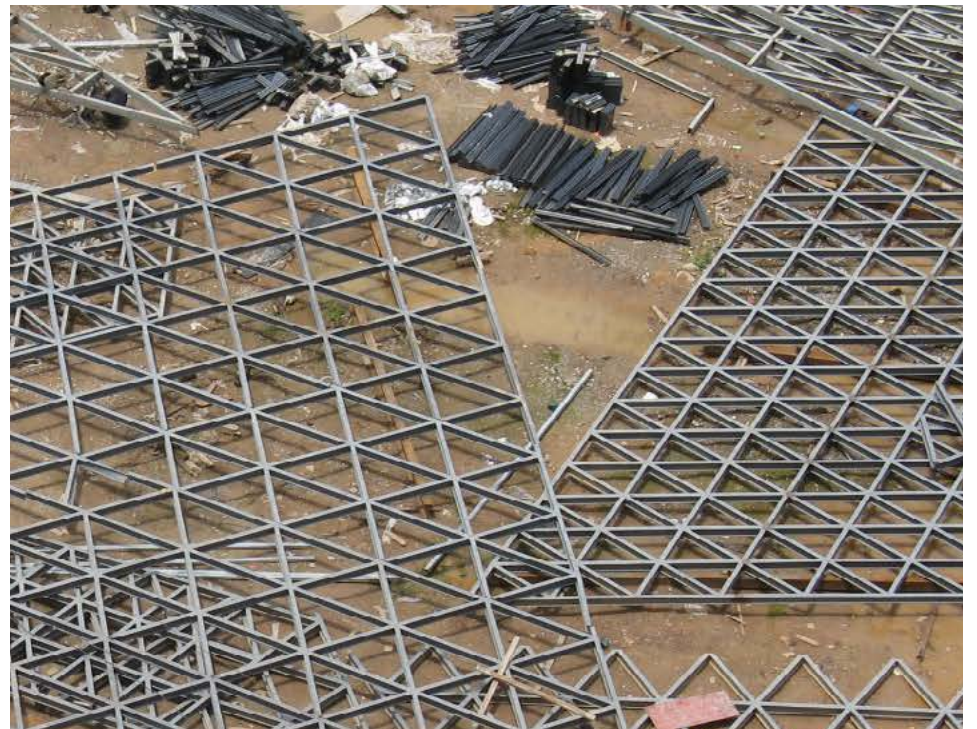
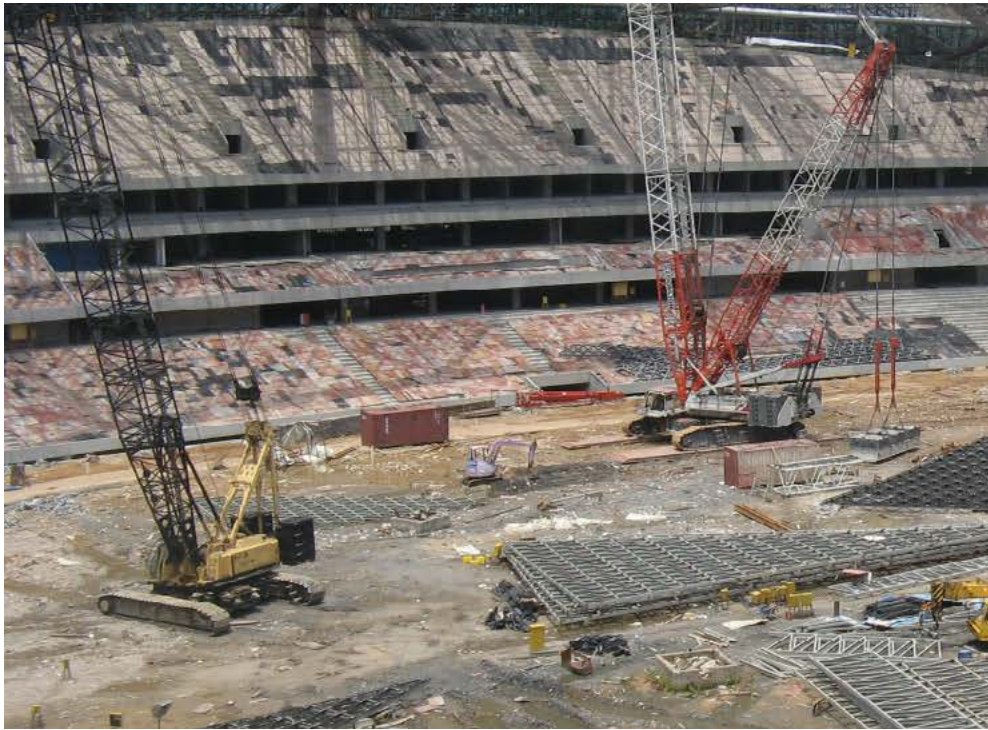
Year of Completion: 2010

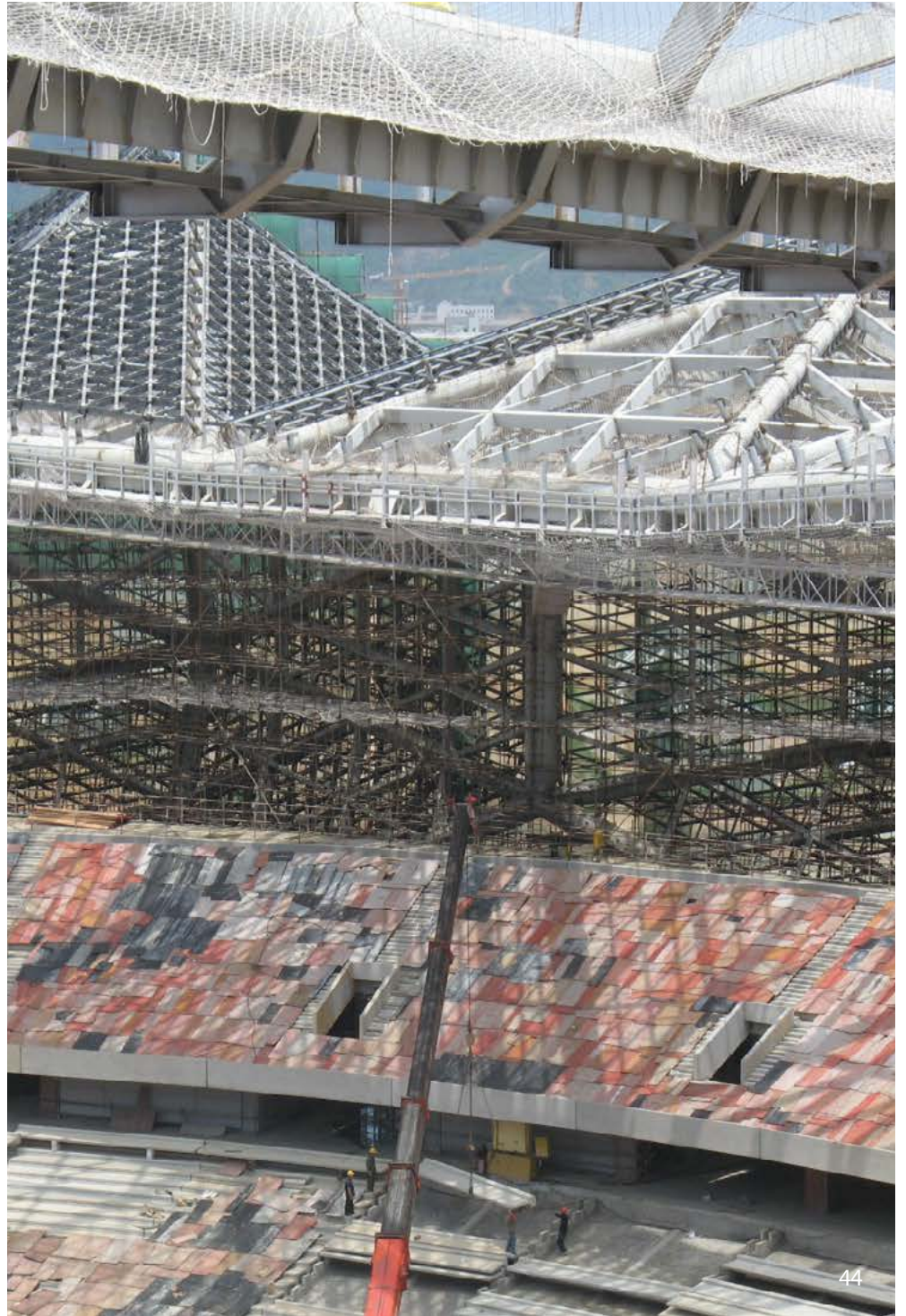
Roofing Product: PALSUN® Flat Solid Polycarbonate Panel (45,000 sqm)

Roofing Specification: 8, 10 & 12mm, Uni-Green (SolarSmart™)

*For PALSUN product information see page 159







Ambitious Roof Design

Palram was involved in the design and installation of the main stadium roof from their early stages, which included consultation on various design meetings across the globe and characterization of the panel properties.

>>>

Upon its completion, the Shenzhen Central Stadium had the largest polycarbonate roof in the world.



Light Transmission: 55%

The roofing material was required to have 0.5 shading coefficient and 55% light transmission, which cannot be met using standard colors. Palram applied its SolarSmart™ heat blocking technology to tailor a new color with a glass-like appearance and the desired solar transmission properties.

Cover Area: 45,000_{sqm}

The stadium's unique design required a custom installation system, which was developed by the architects at GMP, Palram and the local design company for the project.

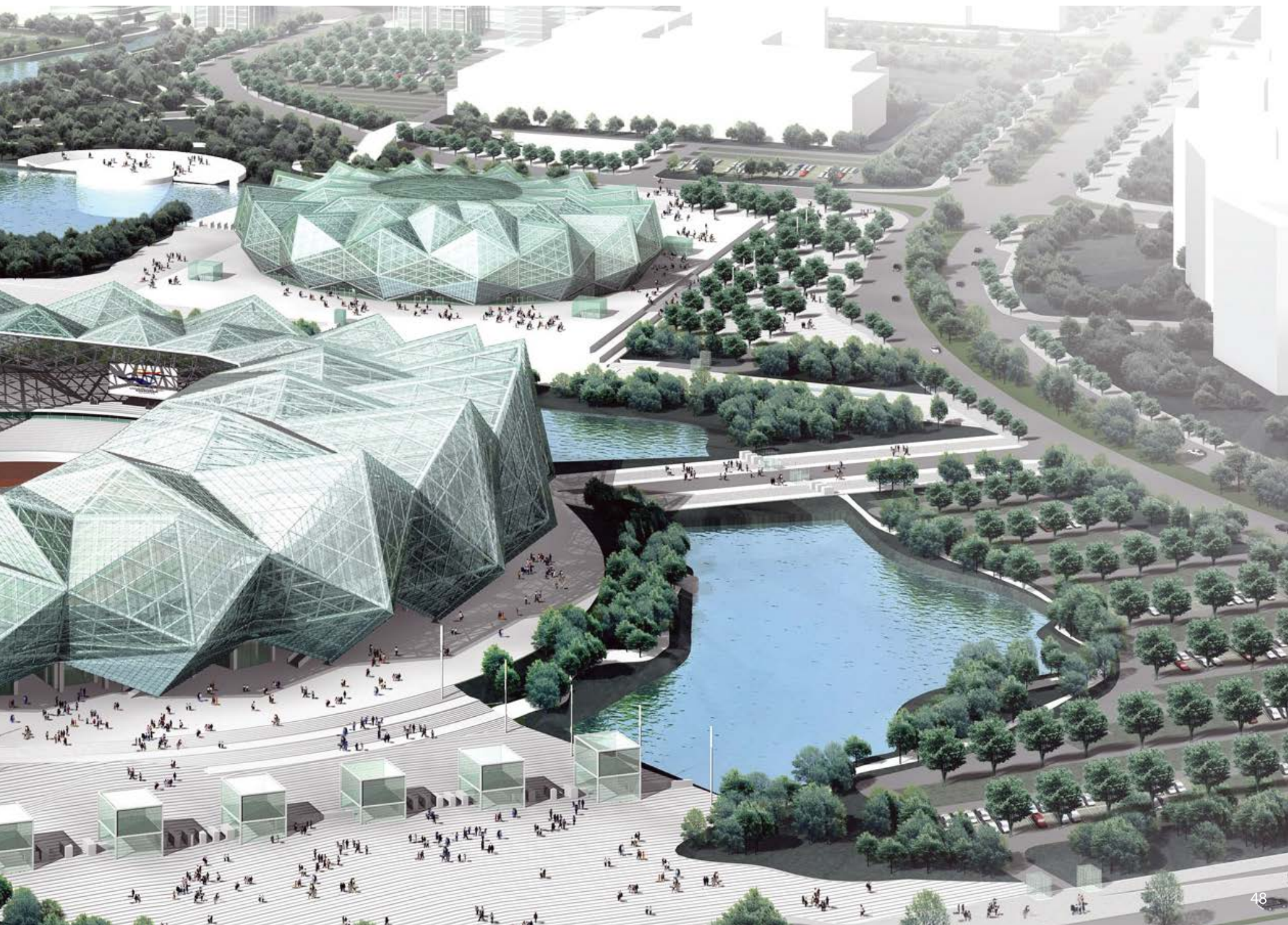


2011 Universiade Games

On August 2011 The city of Shenzhen hosted the World University Games (or Universiade). The games' relative proximity to the Beijing Olympics energized the organizers to make the event stand out.

The result was a huge landscaped park with all the features of a traditional Chinese garden.













El Coq Arena Stadium

A standard industrial roofing product used for an efficient, practical solution

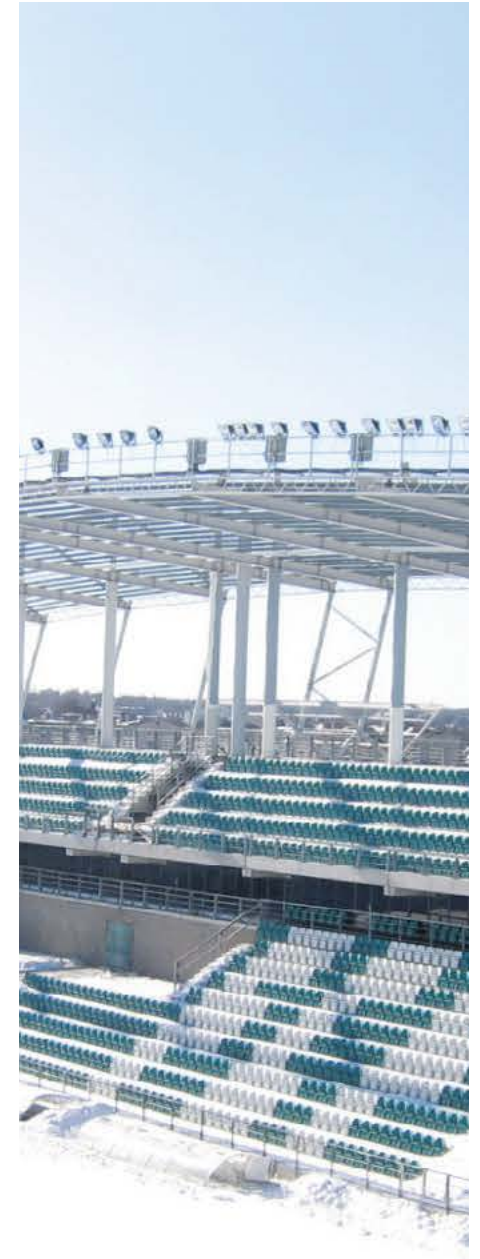
Location: Tallinn, Estonia

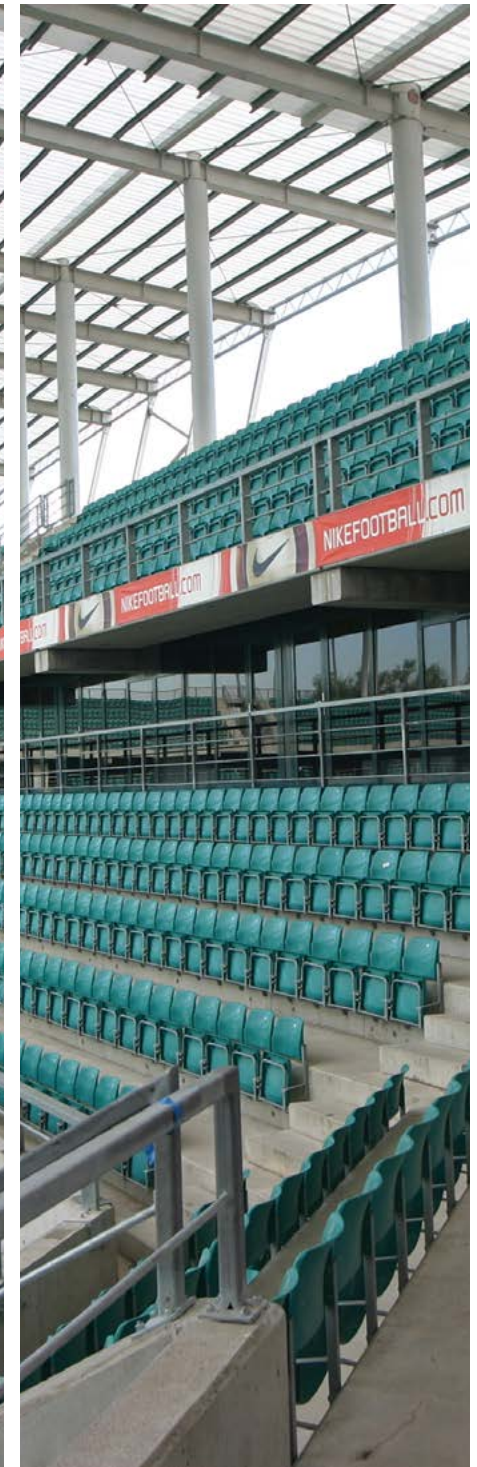
Year of Completion: 2005

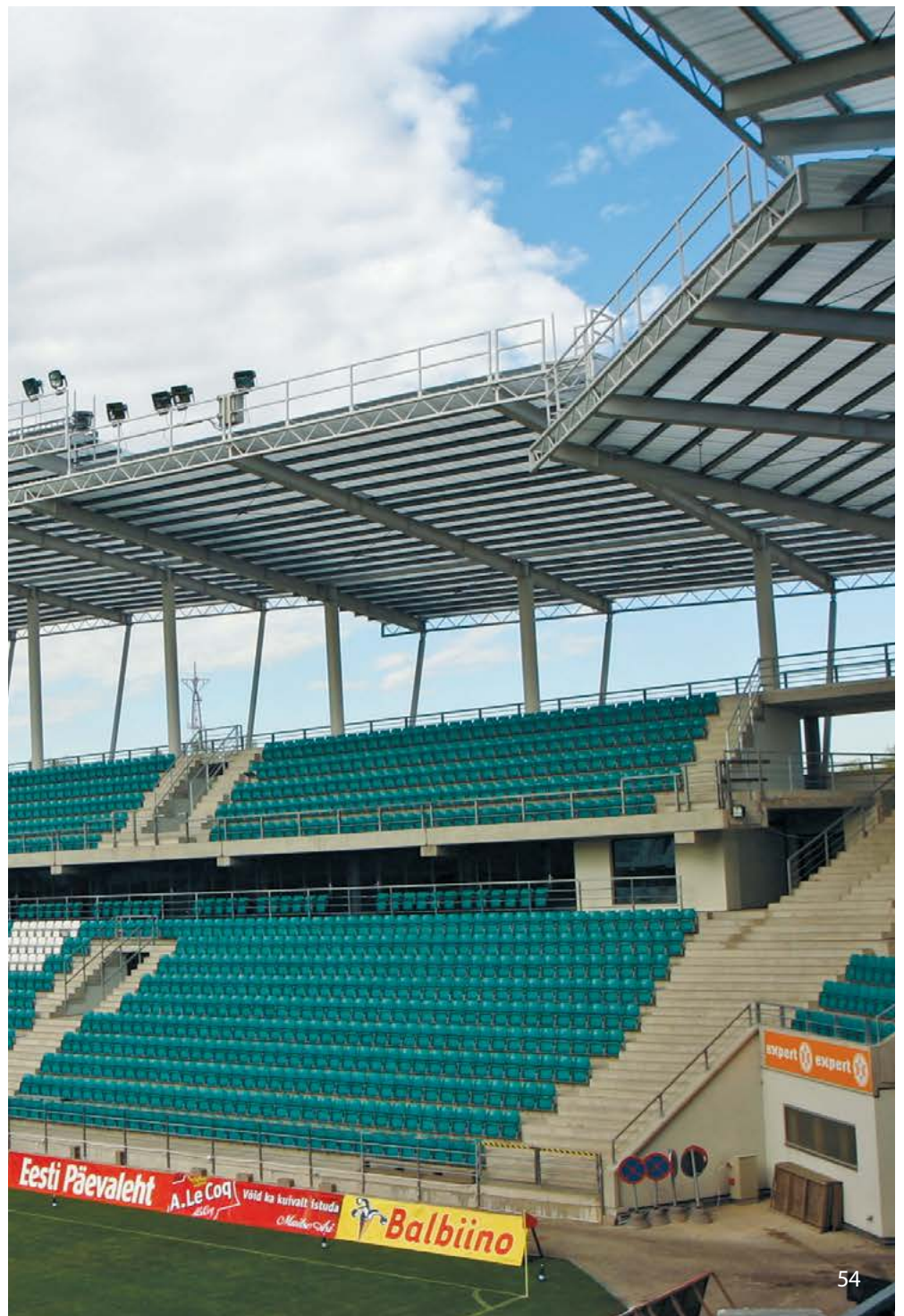
Roofing: SUNTUF® Corrugated Polycarbonate Panel (10,000 sqm)

Roofing Specification: Industrial 0100 Profile 1mm, white Opal

*For SUNTUF product information see page 174









Nanchang International Sports Centre Stadium

Innovative skylight design using a heat-blocking roofing product

Location: Nanchang (Jiangxi Province), China

Year of Completion: 2011

Roofing Product: PALSUN® Flat Solid Polycarbonate Panel (12,500 sqm)

Roofing Specification: 8mm, Solar Olympic

*For PALSUN product information see page 159





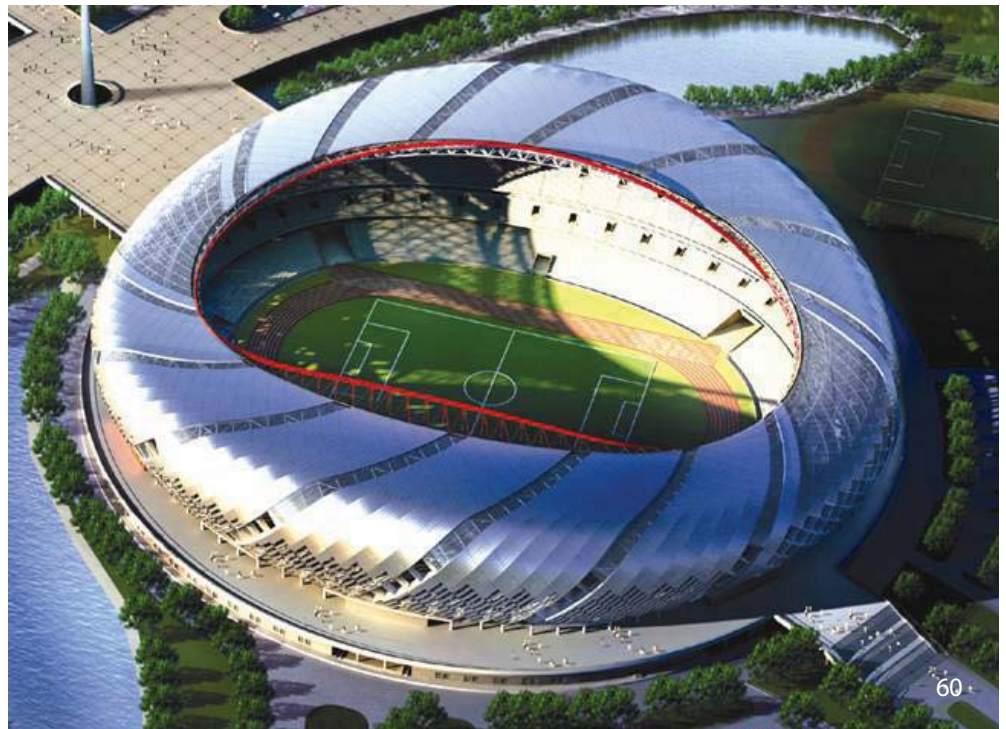




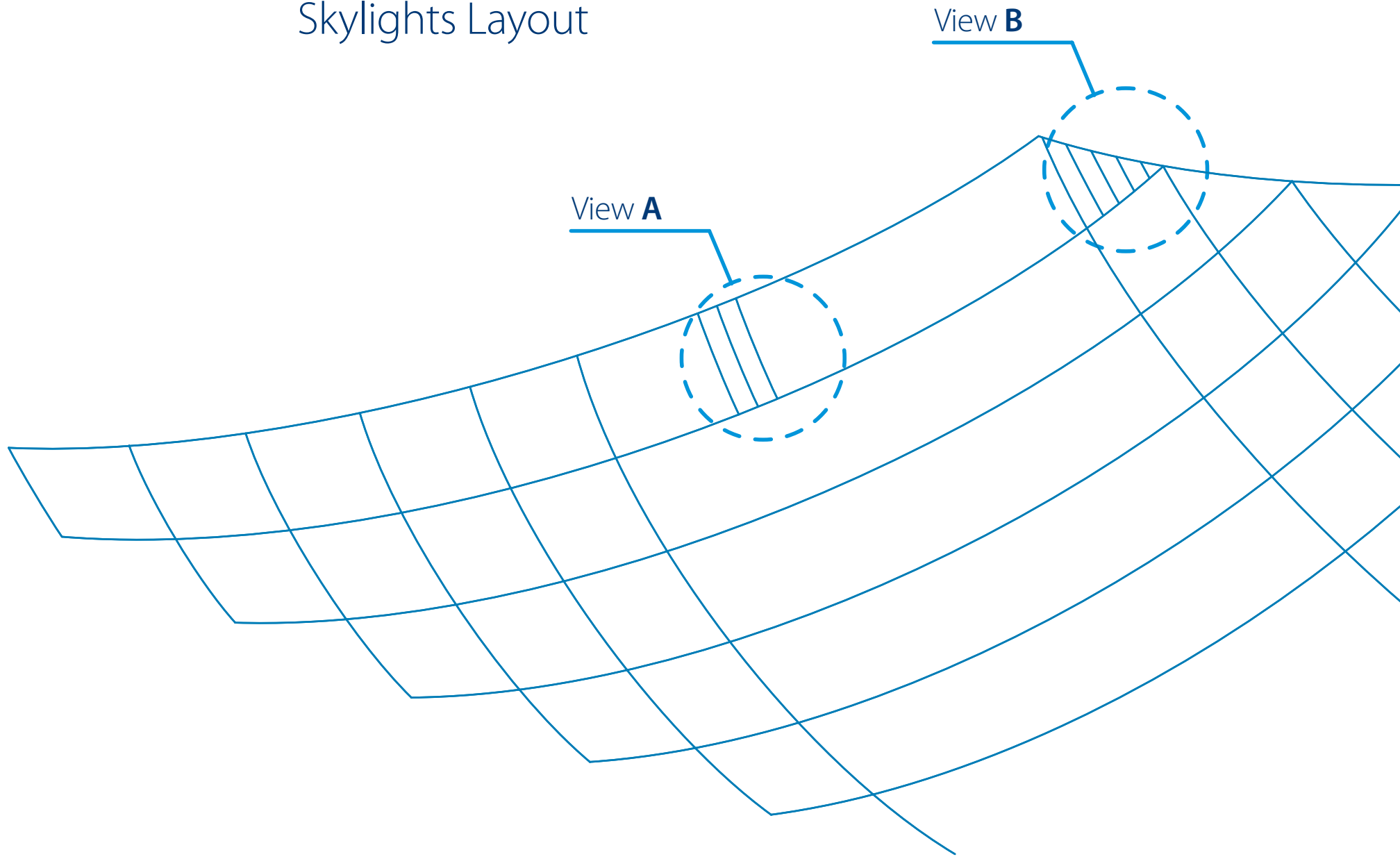


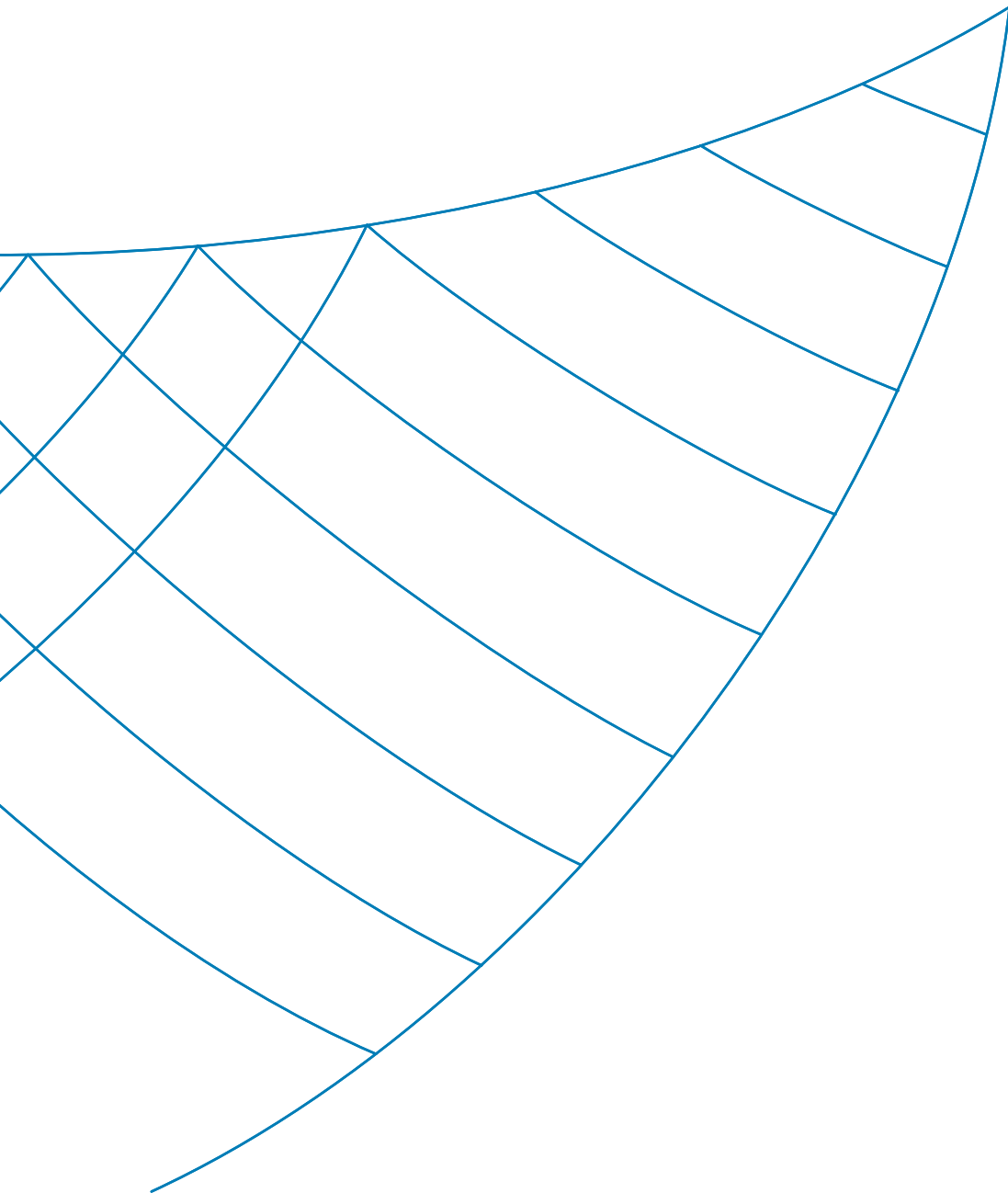
Skylights Area: 12,500_{sqm}

Nanchang International Sports Center Stadium, which was built to host China's 7th National Intercity Games, can accommodate up to 60,000 spectators. The stadium roof was fitted with PALSUN Solar Olympic panels and GA2004 pre-assembled glazing system, both of which were also used in the Athens "OAKA" Olympic Stadium. The Solar Olympic tint blocks a portion of the Infra-Red radiation to create a natural cool and more pleasant lighting for the crowd. The built-in drainage of the GA2004 system allows true self-cleaning and 0° slope.

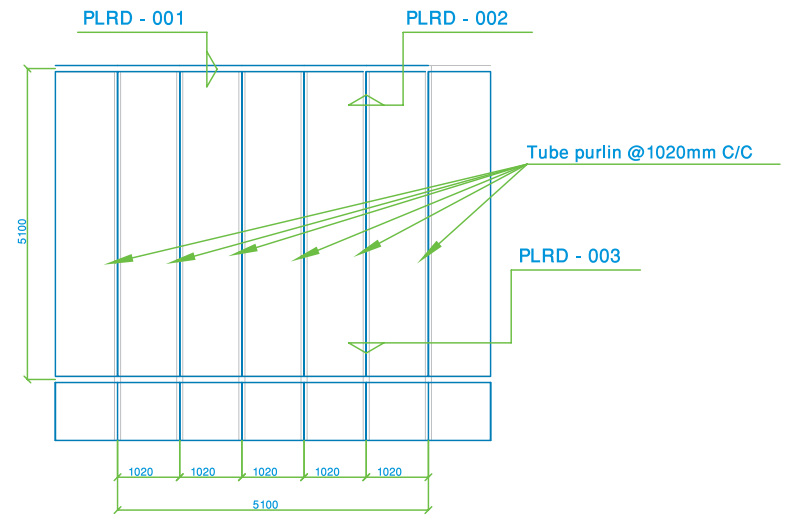


Skylights Layout

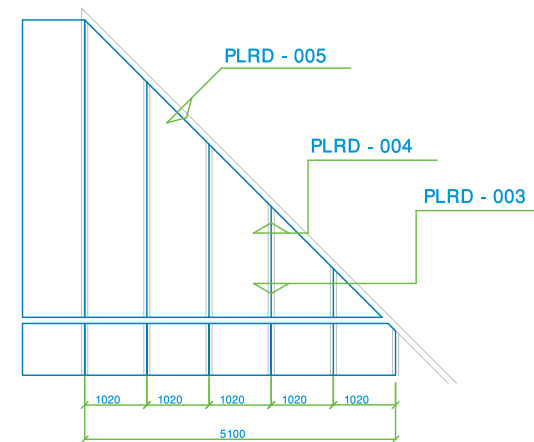




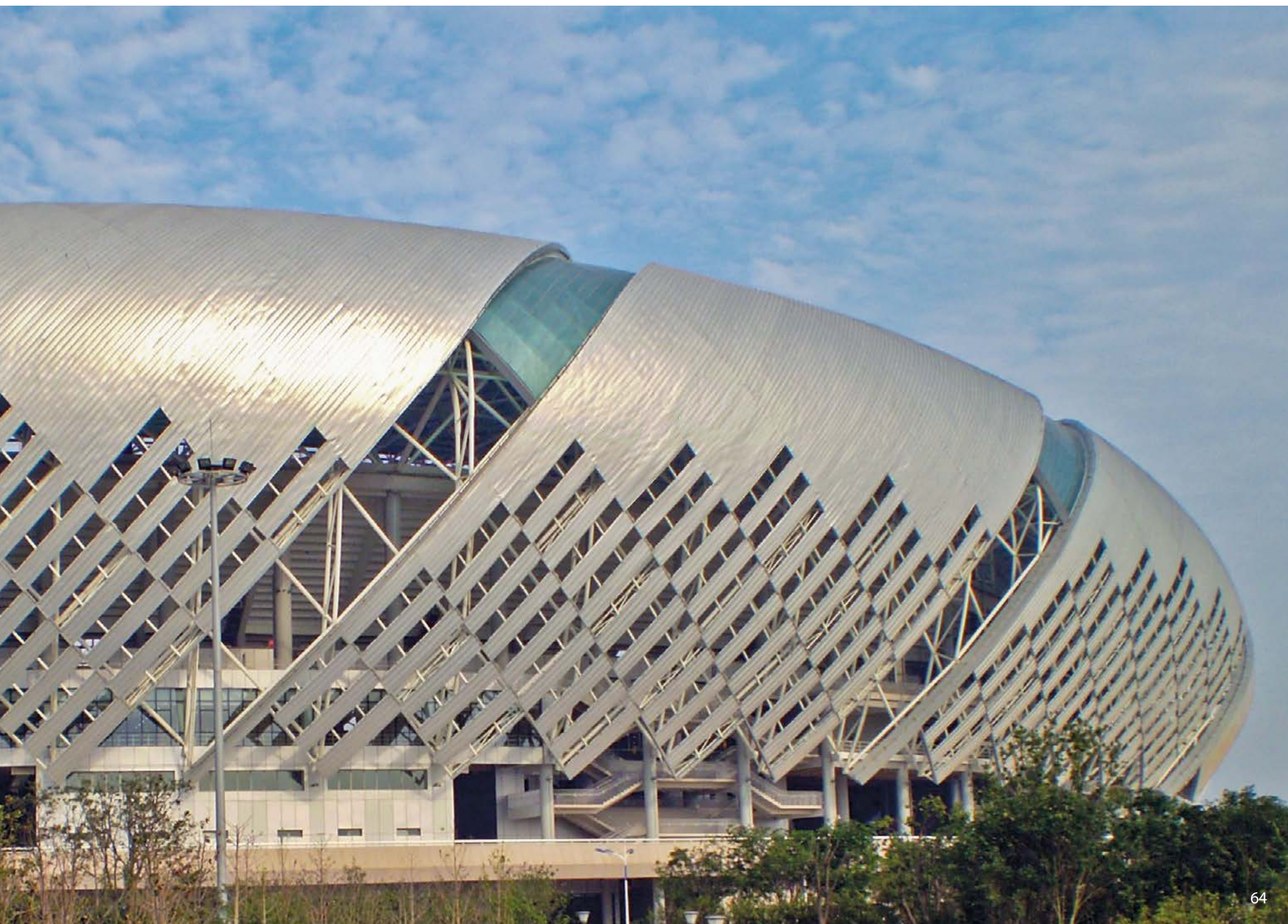
View **A**



View **B**







Qingdao Train Station

A gigantic roof that provides soft natural lighting and protection from UV radiation

Location: Qingdao (Shandong province), China

Architect: Shandong Province Design Institute

Year of Completion: 2008

Roofing Product: PALSUN® Flat Solid Polycarbonate Panel (40,000 sqm)

Roofing Specification: 8mm, White diffuser

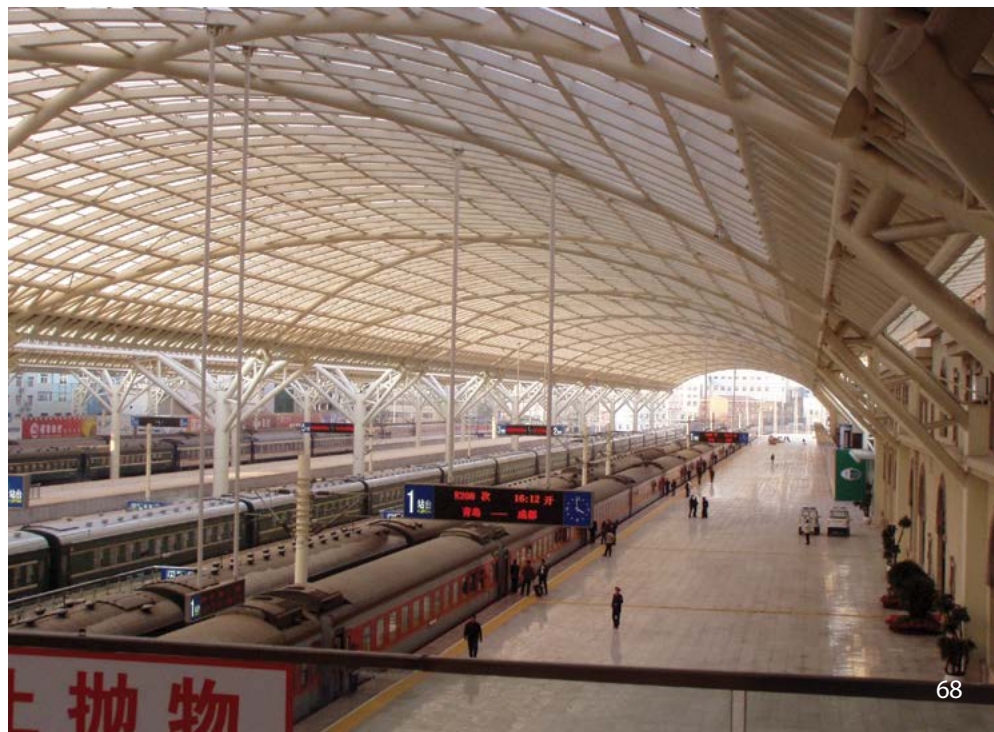
*For PALSUN product information see page 159

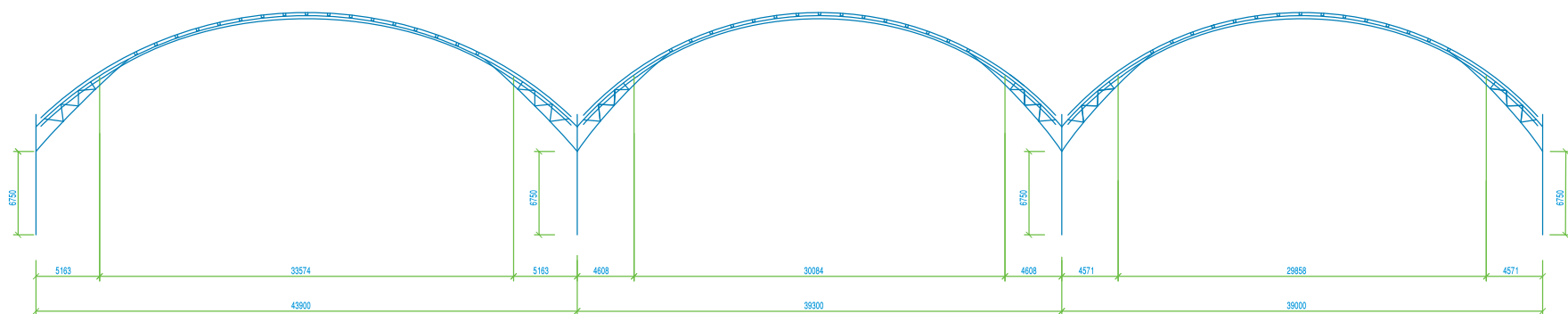




The Qingdao Railway Station has undergone an extensive renovation in 2008 in order to accommodate 40,000 passengers per day, after the city was chosen to Beijing 2008 Olympics Regatta (boating) competitions.

Typical of Qingdao architecture, the station is a fine example of German architectural style incorporated into a Chinese-designed building. The station's enormous 40,000 sqm platform roof is considered one of the largest of its kind. PALSUN white-diffuser solid polycarbonate panels diffuse natural daylight and create a pleasant atmosphere for the visitors.







Royal Bafokeng Stadium

A canopy for the VIP gallery

Location: Phokeng, South Africa

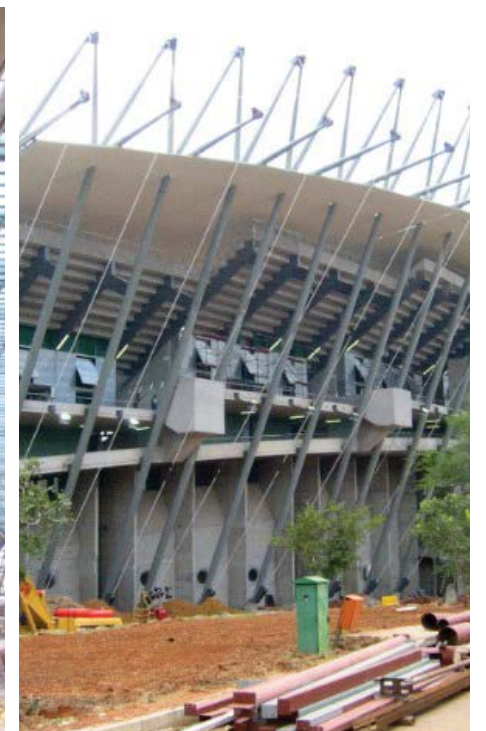
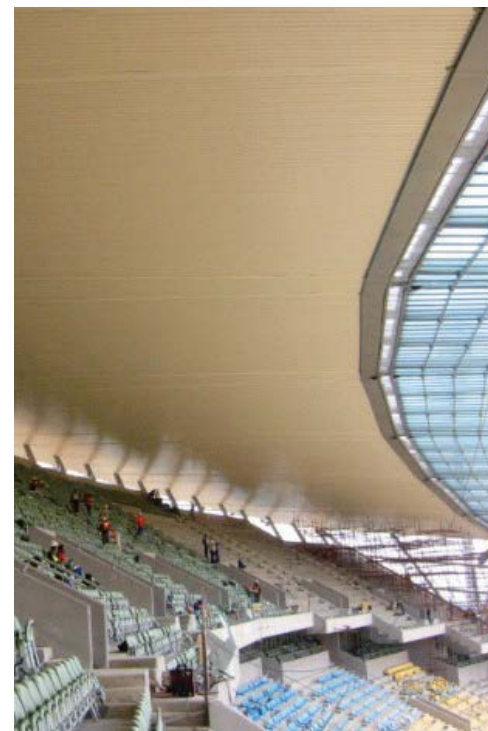
Year of Completion: 2010

Roofing: PALSUN® Flat Solid Polycarbonate Panel (3,000 sqm)

Roofing Specification: 8mm, Solar Olympic

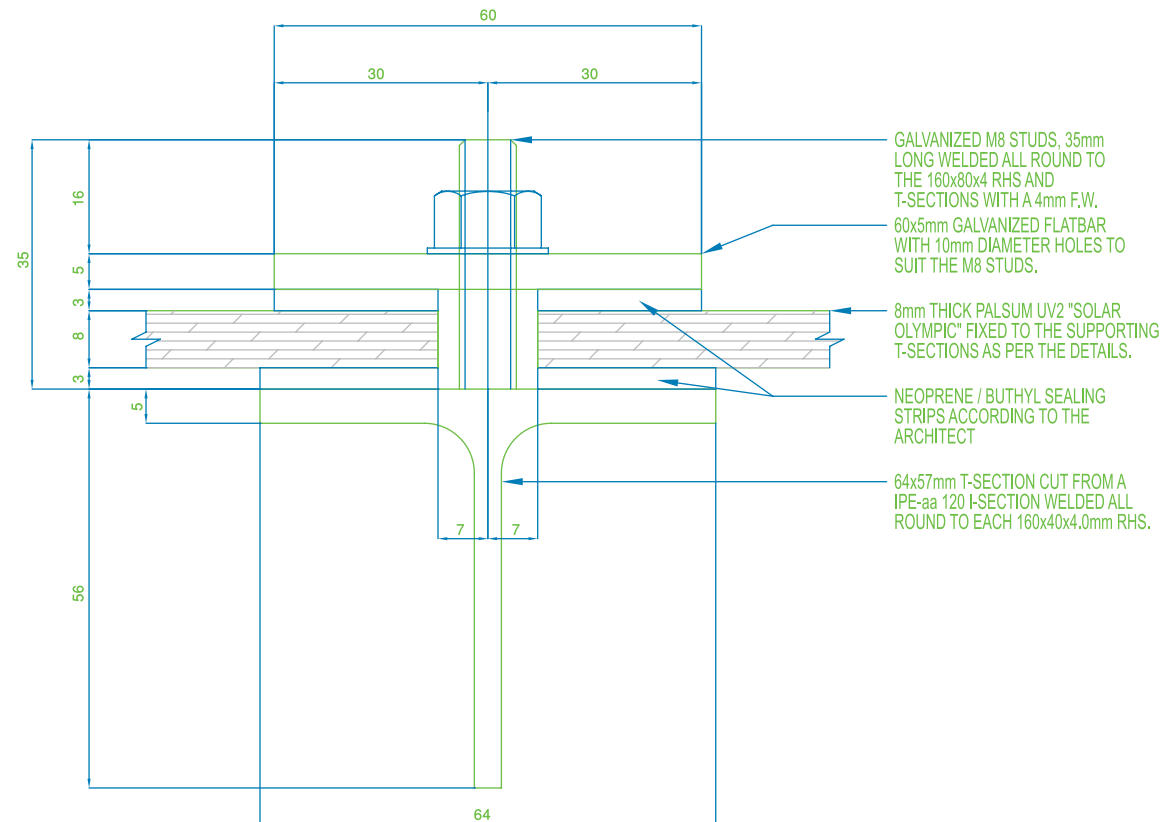
*For PALSUN product information see page 159







Typical PALSUN® Solar Olympic Fixing Detail





Zhanxi Soundproof Tunnel

PALSUN® flat solid polycarbonate panels admit natural daylight into the tunnel, while separating between inner traffic noise and the animals of the Beijing Zoo that dwell under it.

Location: Beijing (Xicheng District), China

Year of Completion: 2008

Roofing: PALSUN® Flat Solid Polycarbonate Panel (3,800 sqm)

Roofing Specification: 6mm, Solar Olympic

*For PALSUN product information see page 159





Quiet, Naturally Illuminated

Zhanxi Road Soundproof Tunnel connects the Second Ring Road to the Third Ring Road on the north-west side of Beijing, cutting through the Beijing Zoo from north to south. To reduce noise pollution and avoid disturbing the animals, the beautiful road was built both elevated and soundproof. Clear PALSUN® skylights were fitted into the tunnel to reduce energy consumption and admit natural daylight.

- Built on a highway bridge that spans the Beijing Zoo.
- Tunnel length: 1.7 km (1.1 Miles).
- The highway was fitted with special semi-oval barriers on its top end.
- The skylights are made of double skin 6mm PALSUN panels with 40mm air gaps between.
- Zoo visitors report that no noise is emitted from the tunnel.



Sports Complex at the Technion Institute of Technology

Admitting natural, softly diffused light into four pools at a sports complex,
while providing a ravishing design

Location: Haifa, Israel

Year of Completion: 2011

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System (5,000 sqm)

Roofing Specification: 18mm, Diffuser Plus

*For SUNPAL product information see page 144







Diffuser Plus

The complex 3 pools and restaurant were fitted with 5,000 sqm of 18mm Diffuser Plus SUNPAL panels. This special tint offers double light diffusion (diffusing both reflected and transmitted light) and creates a blinding-free recreational area. The panels' soft appearance contrasts the dark, striking wooden structure.





Olympic Sports Centre Stadium

The stadium, originally constructed for the 1990 Asian Games, was renovated for the 2008 Summer Olympics and received two new canopies to shade its audience stands.

Location: Beijing, China

Architect: Beijing Institute of Architectural Design (BIAD)

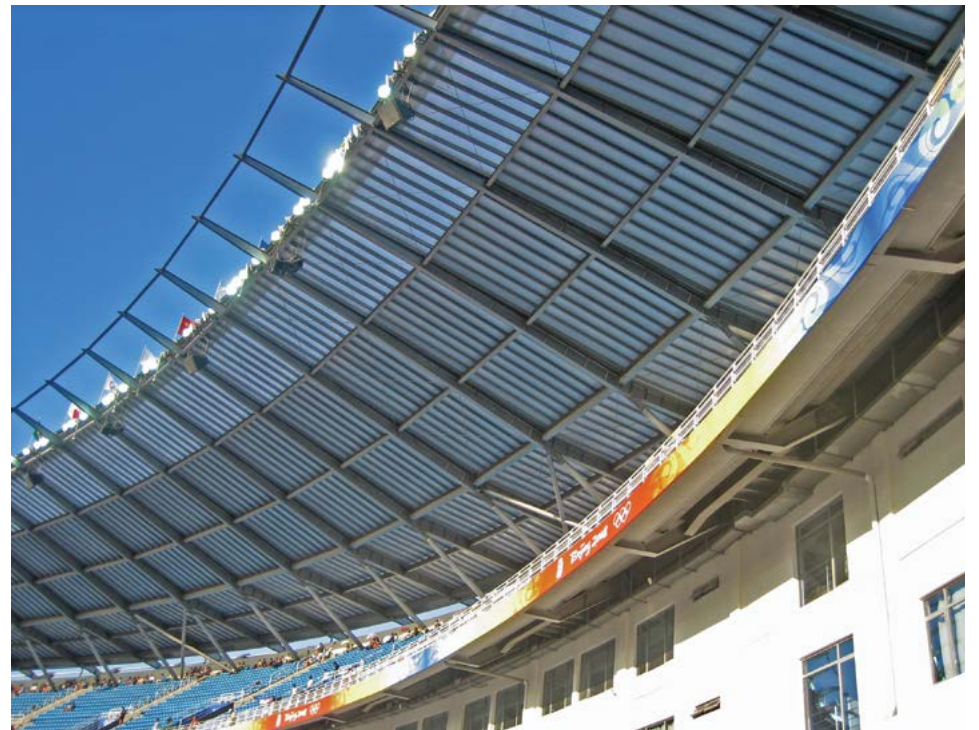
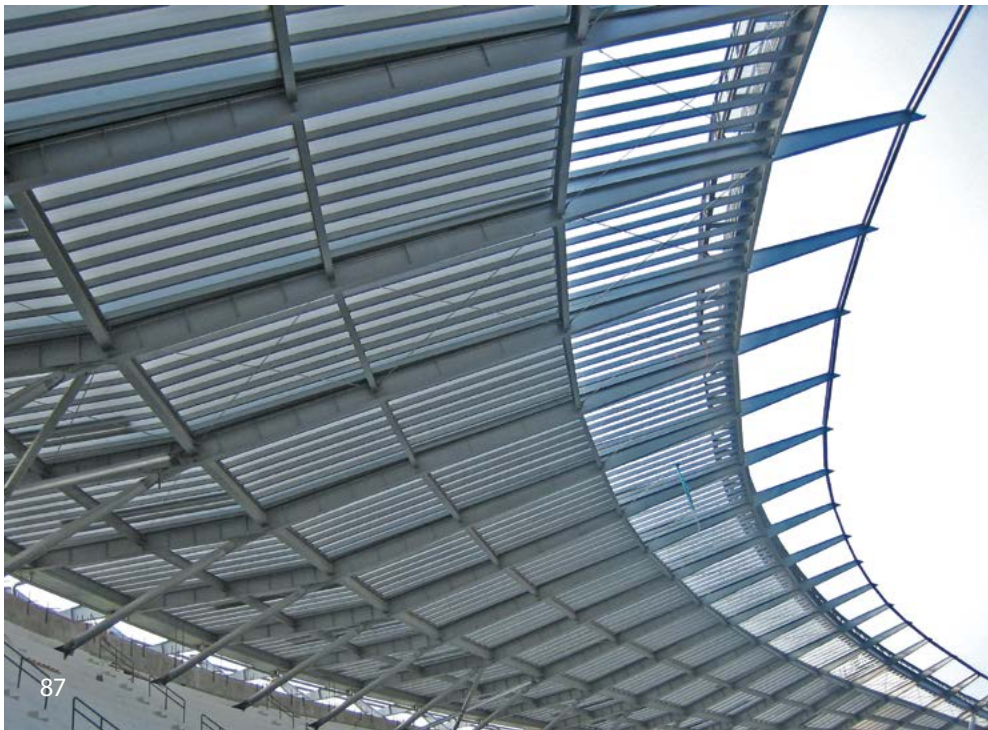
Year of Completion: 2008

Roofing Product: SUNLITE® Multiwall Polycarbonate Panel (12,000 sqm)

Roofing Specification: X-Lite 16mm, Solar Control

*For SUNLITE product information see page 169







Beijing Airport Terminal 3

The dragon-shaped terminal was built in preparation for the Beijing 2008 Olympics. The triangle skylights, which represent the dragon scales, were fitted with clear SUNLITE panels.

Location: Beijing, China

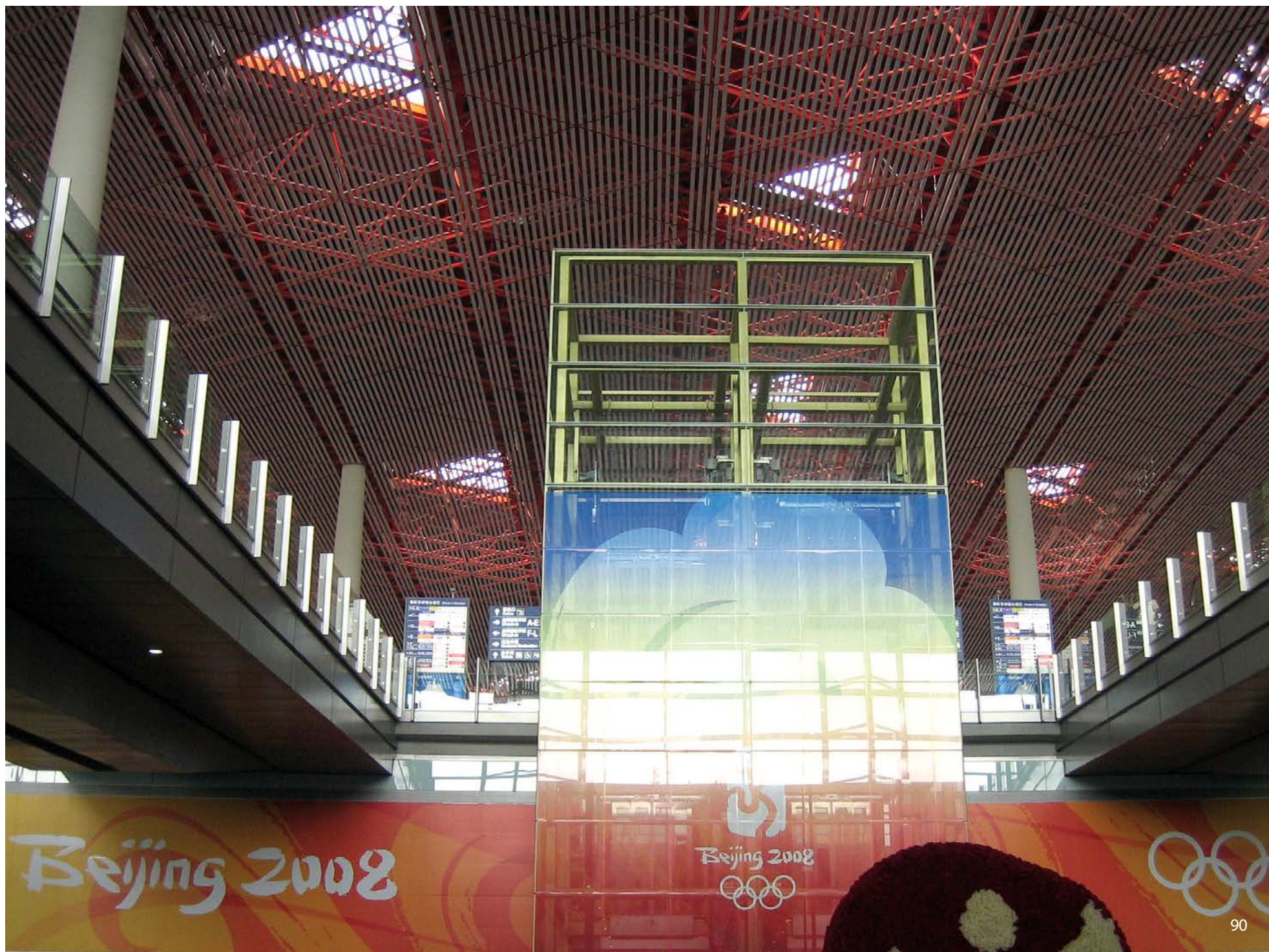
Architect: Foster + Partners

Year of Completion: 2008

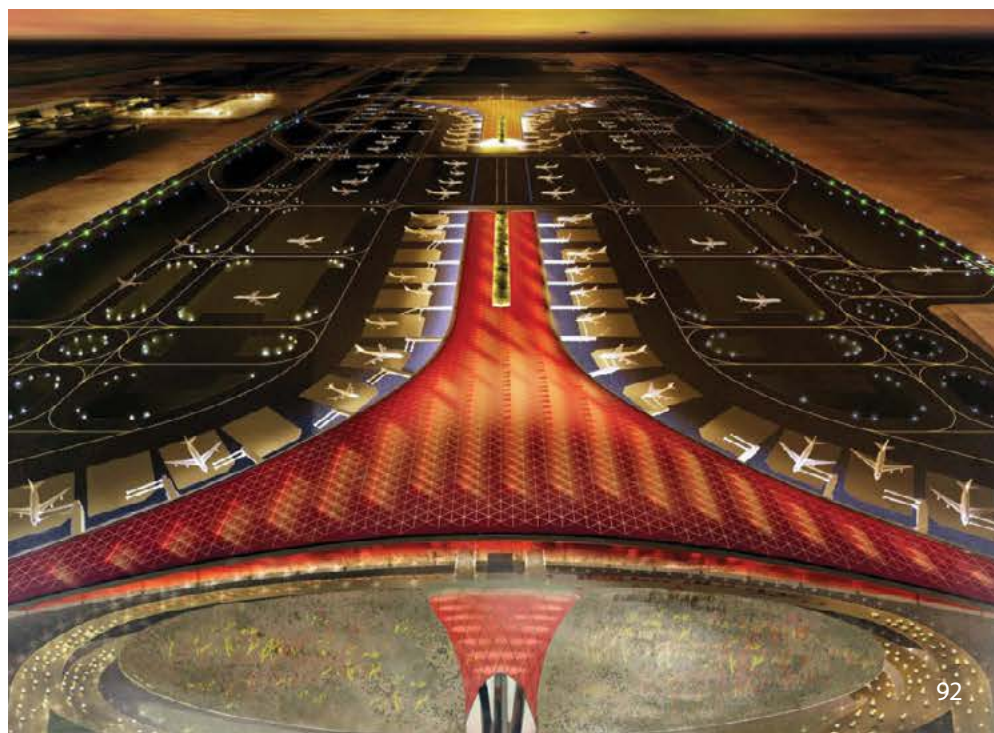
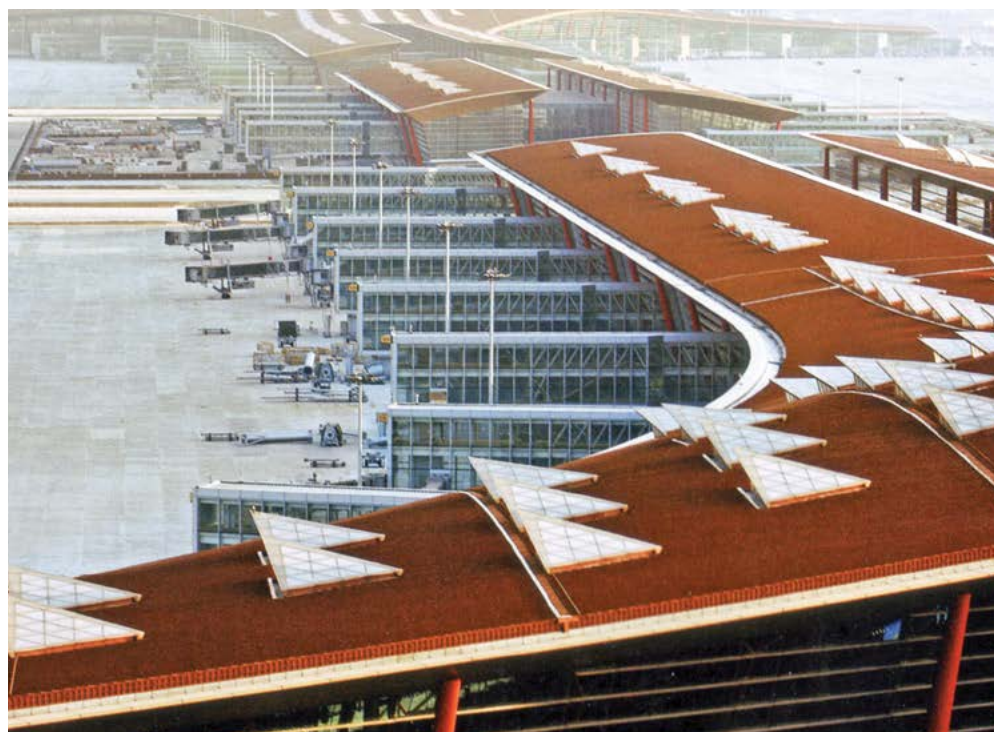
Roofing Product: SUNLITE® Multiwall Polycarbonate Panel (45,000 sqm)

Roofing Specification: X-Lite 25mm, Clear

*For SUNLITE product information see page 169







Hangzhou Bay Bridge

Allowing a clear view while protecting from extreme weather conditions

Location: Hangzhou (Zhejiang Province), China

Architect: Tongji University Design Institute (Shanghai)

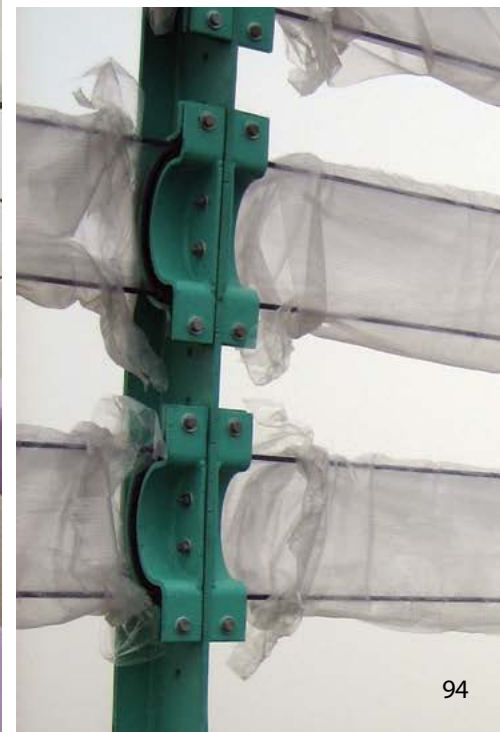
Year of Completion: 2008

Windshield Product: PALSUN® Flat Solid Polycarbonate Panel (6,500 sqm)

Windshield Specification: 8mm, Clear

*For PALSUN product information see page 159





Eastlink Toll Road

Adding color and architectural design to the road and landscape while minimizing noise pollution for the surroundings

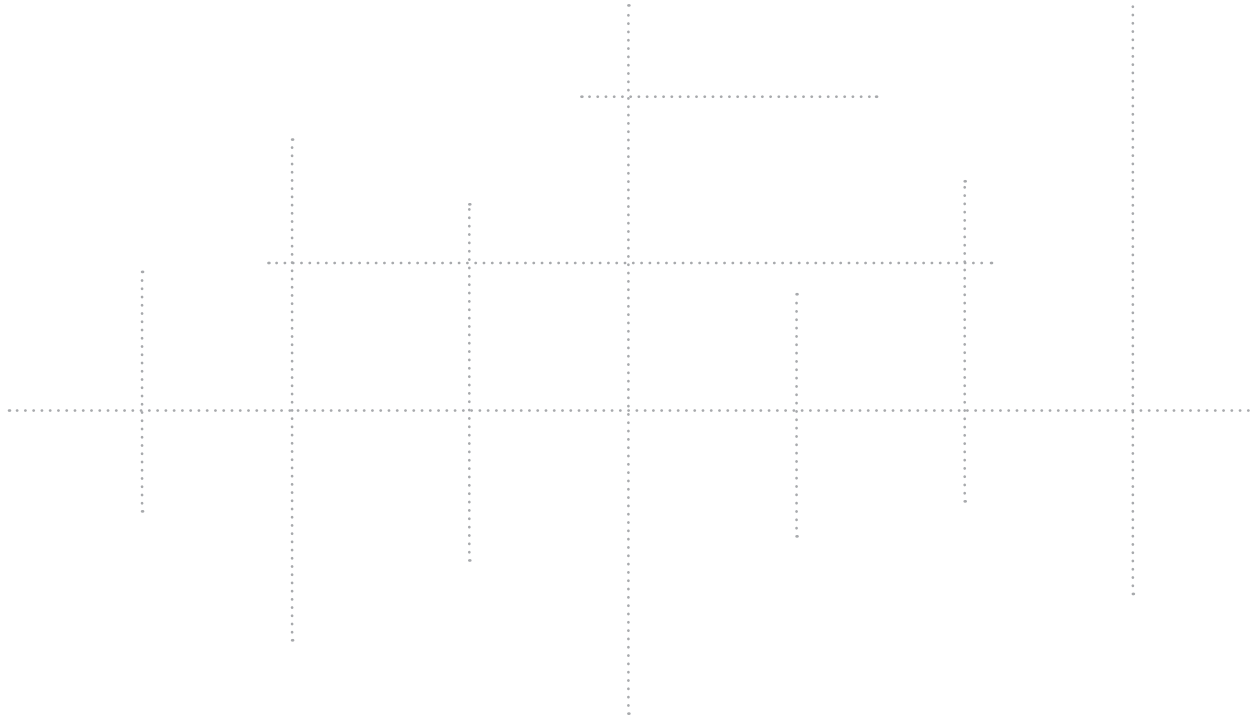
Location: Melbourne, Australia

Architect: Thiess John Holland

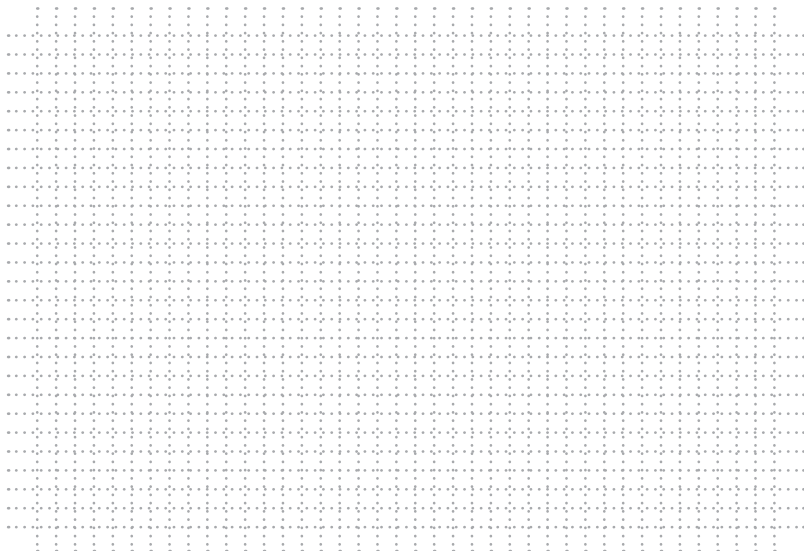
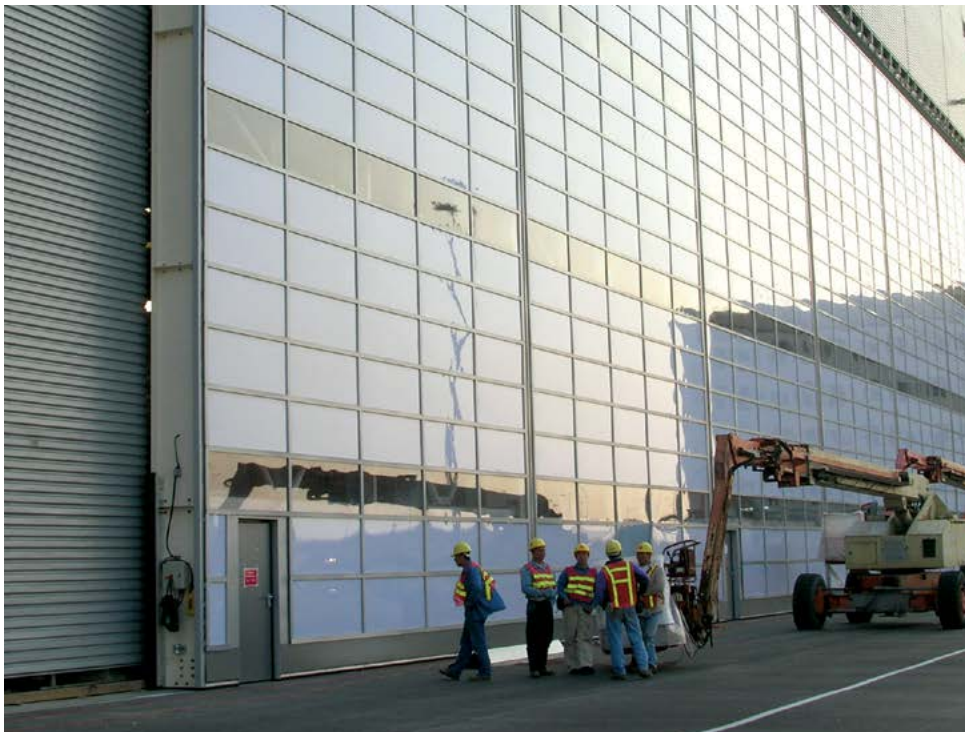
Year of Completion: 2007

Glazing Product: PALGLAS® Extruded Flat Acrylic Panel (30,000 sqm)

Glazing Specification: 8mm, Clear







HAECO Hangars II & III

Hong Kong International Airport

Allowing partial natural lighting while concealing the inner space

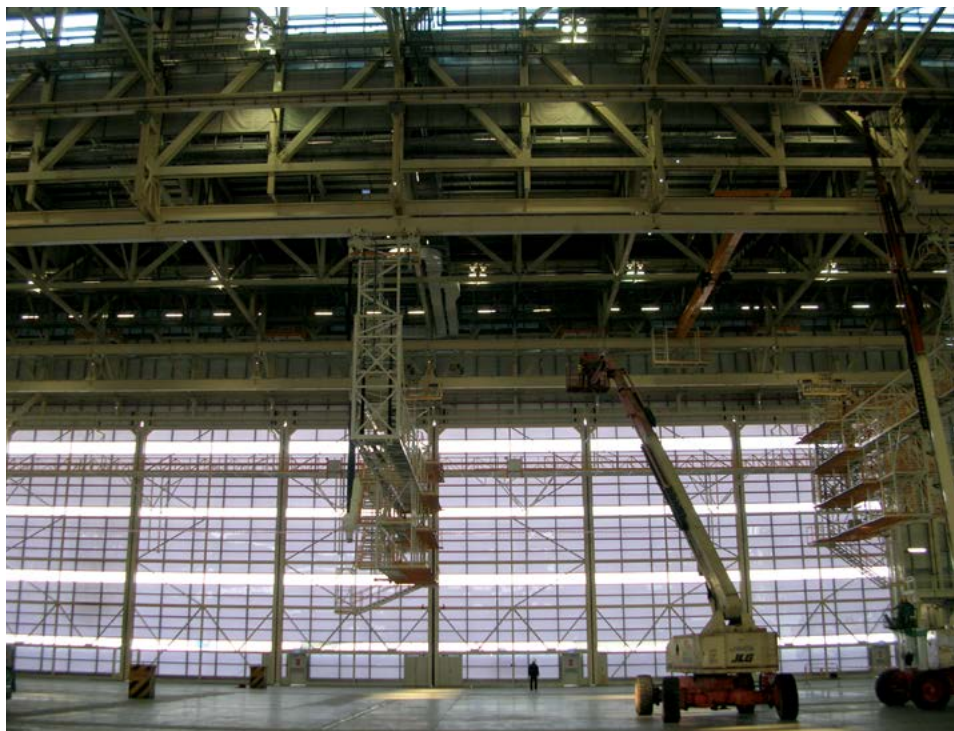
Location: Hong Kong, China

Year of Completion: 2007 (Hangar II) & 2009 (Hangar III)

Glazing Product: PALSUN® Flat Solid Polycarbonate panel

Glazing Specification: 12.7mm, Clear and White Opal

*For PALSUN product information see page 159





Plaza del Toro

Clear and lightweight retractable roof

Location: Vitoria, Spain

Year of Completion: 2007

Glazing Product: PALSUN® Flat Solid Polycarbonate panel

Glazing Specification: 10mm, Clear

*For PALSUN product information see page 159





Qingdao Airport

Clear skylights with high thermal insulation and light transmission

Location: Qingdao (Shandong Province), China

Year of Completion: 2008

Skylight Product: SUNLITE® Multiwall Polycarbonate Panel (2,300 sqm)

Skylight Specification: X-Lite 25mm, Clear

*For SUNLITE product information see page 169



Guangzhou Nansha Gym

Providing plenty of natural daylight for the audience and the sporting event

Location: Guangzhou (Guangdong Province), China

Year of Completion: 2010

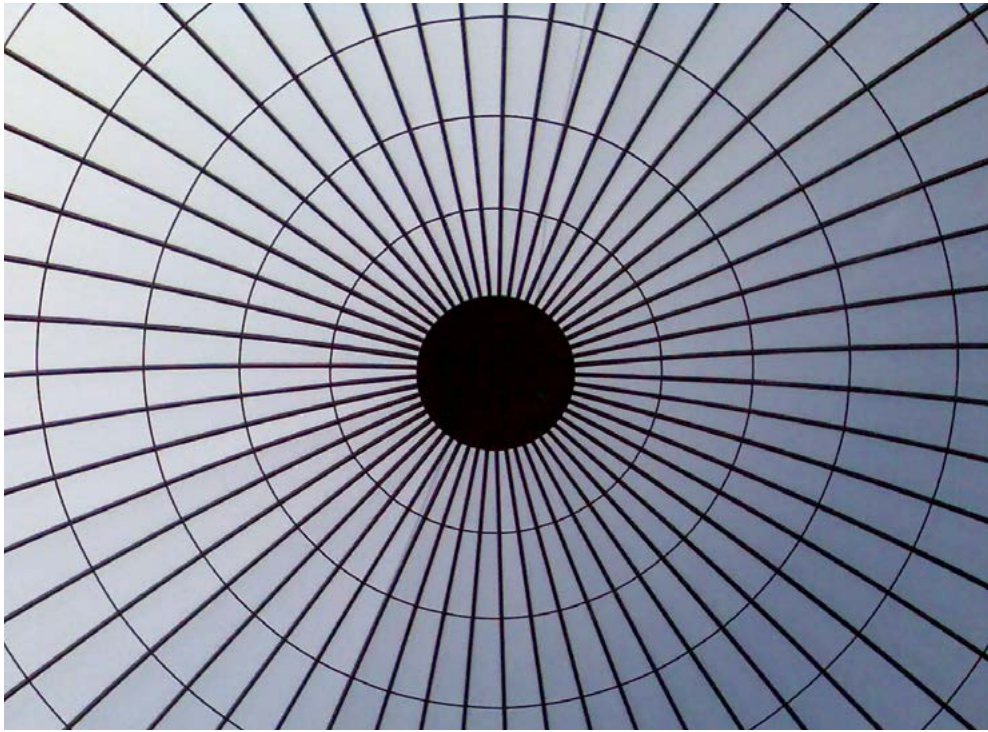
Skylight Product: SUNPAL® Multiwall Polycarbonate Architectural System (1,500sqm)

Glazing Specification: 18mm, Solar Control

*For SUNPAL product information see page 144









“My Mall” Shopping Center

The mall's huge skylight was fitted with SUNLITE CL SolarSmart panels. The skylight constitutes a large part of the roof area and admits plenty of natural daylight, yet it reduces heat buildup as well as air conditioning costs.

Location: Limassol, Cyprus

Year of Completion: 2009

Skylight Product: SUNLITE® Multiwall Polycarbonate Panel (5,000 sqm)

Glazing Specification: SUNLITE 32mm X-Lite CL (Cool Light)

*For SUNLITE product information see page 169.

"Unicentro de Occidente" Shopping Center

Clear and cold-bent skylights that block 99.9% of the ultraviolet radiation and provide plenty of natural daylight for the interiors

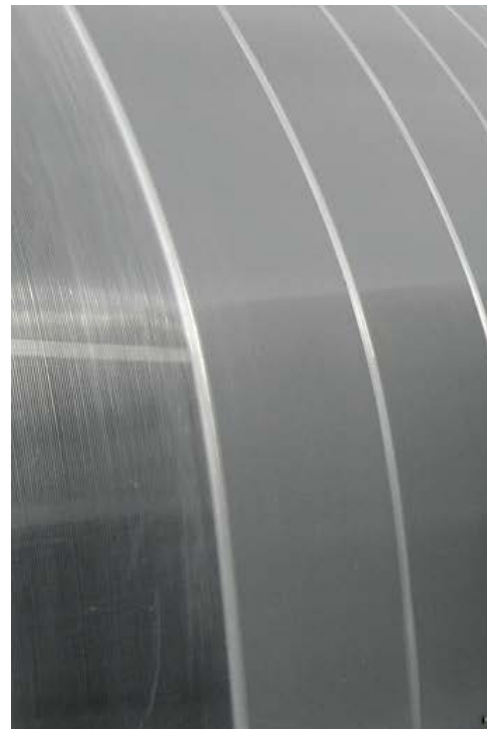
Location: Bogotá, Colombia

Year of Completion: 2004

Skylight Product: SUNLITE® Multiwall Polycarbonate Panel

Skylight Specification: 16mm, Clear

*For SUNLITE product information see page 169







AK Reserve

Out of plane rooflights combined with a metal roof

Location: Perth, Western Australia

Year of Completion: 2009

Skylight Product: SUNPAL® Multiwall Polycarbonate Architectural System

Skylight Specification: 10mm, White Opal

*For SUNPAL product information see page 144





Ipswich Post Office

Location: Ipswich, Queensland, Australia

Year of Completion: 2009

Roofing Product: SUNPAL® Multiwall
Polycarbonate Architectural System

Roofing Specification: 10mm, Green

*For SUNPAL product information
see page 144



Centrio Empresarial Arrecife

Location: Bogotá, Colombia

Year of Completion: 2011

Roofing Product: SUNPAL® Multiwall
Polycarbonate Architectural System (1,000 sqm)

Roofing Specification: 10mm, Clear

*For SUNPAL product information
see page 144





Private Residence

Location: Australia
Year of Completion: 2010
Curtain Wall Product: SUNPAL® Multiwall
 Polycarbonate Architectural System
Curtain Wall Specification: 10mm, White Opal

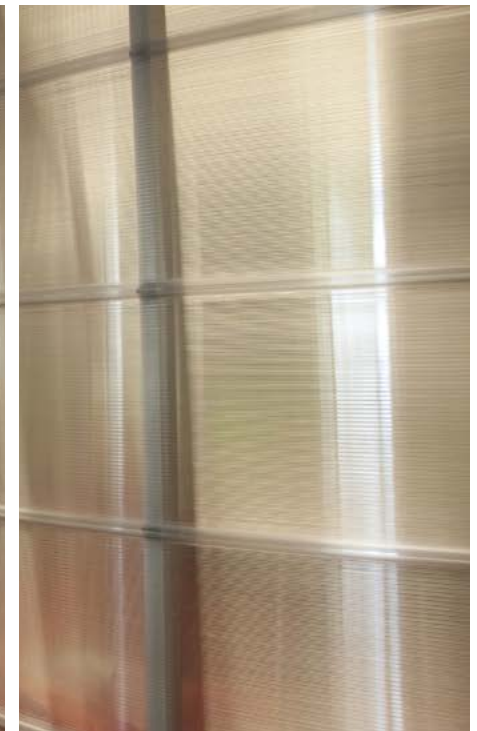
*For SUNPAL product information see page 144



Griffith University

Location: Gold Coast, Queensland, Australia
 Partition Product: SUNPAL® Multiwall Polycarbonate Architectural System
 Partition Specification: 8mm, Clear

*For SUNPAL product information see page 144



Harbor Warehouse

Location: Ukraine

Year of Completion: 2005

Roofing Product: PALRUF® Corrugated PVC Panel

Rooflight Product: SUNTUF® Corrugated Polycarbonate Panel

*For SUNTUF product information
see page 174



Huzot Hamifraz Shopping Mall

Location: Haifa, Israel

Year of Completion: 2005

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System (3,700 sqm)

Roofing Specification: 10mm, Solar Control

*For SUNPAL product information
see page 144



Hung Mui Kuk Footbridge

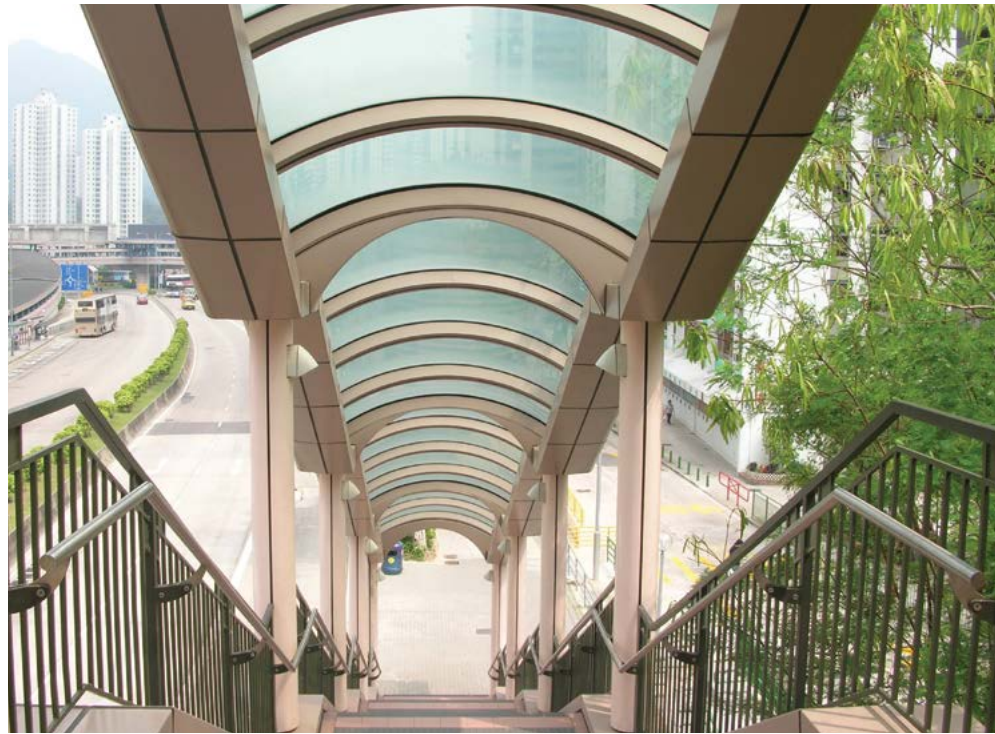
Location: Hong Kong, China

Year of Completion: 2006

Roofing Product: PALSUN® Flat Solid Polycarbonate Panel

Roofing Specification: 6mm, Transparent Green

*For PALSUN product information
see page 159





James Boag Brewery

Location: Tasmania, Australia

Year of Completion: 2010

Curtain Wall Product: SUNPAL® Multiwall Polycarbonate Architectural System

Curtain Wall Specification: 10mm, Clear

*For SUNPAL product information see page 144





Kelmscott Train Station

Location: Kelmscott, Western Australia
Year of Completion: 2009
Sidelight Product: SUNPAL® Multiwall Polycarbonate Architectural System
Sidelight Specification: 10mm, Clear

*For SUNPAL product information see page 144





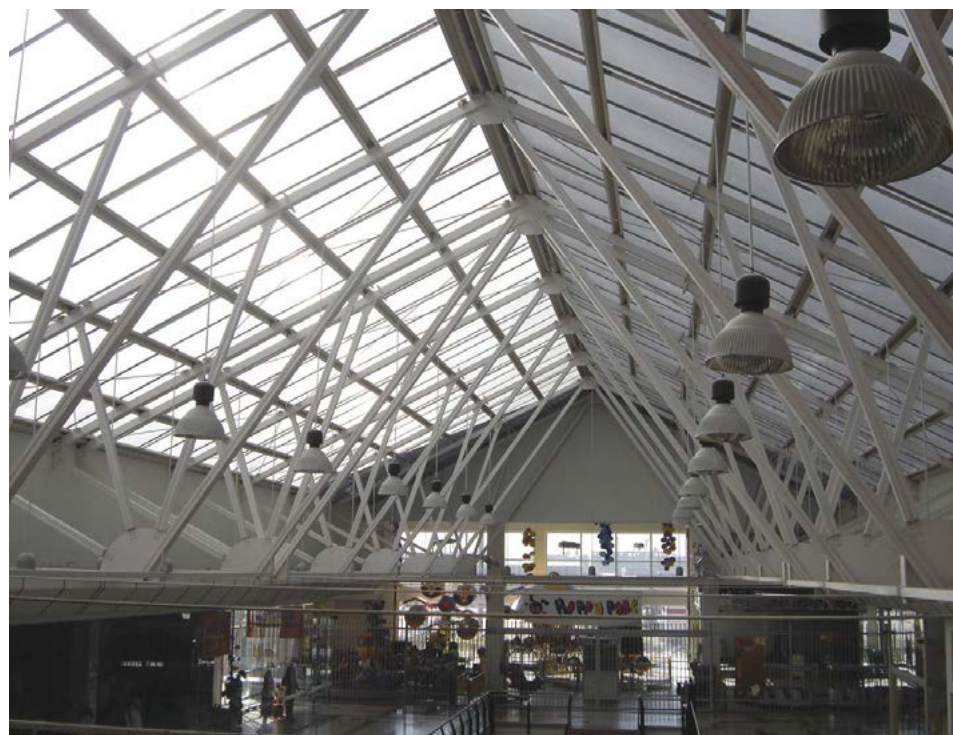
Tintal Plaza Commercial Center

Location: Bogotá, Colombia

Skylight Product: SUNLITE® Multiwall Polycarbonate Panel

Skylight Specification: 16mm, Solar Control

*For SUNLITE product information see page 169





KCRC West Rail

Location: Hong Kong, China

Year of Completion: 2005

Roofing Product: PALSUN® Flat
Solid Polycarbonate Panel

Roofing Specification: 6mm, Sun Green

*For PALSUN product information
see page 159







Commercial Warehouse

Location: USA

Sidelight Product: SUNTUF® Corrugated Polycarbonate Panel

*For SUNTUF product information see page 174



Puente Peatonal Bus Station

Location: Bogotá, Colombia

Year of Completion: 2006

Roofing Product: PALSUN® Flat solid Polycarbonate Panel

Roofing Specification: 6mm, Clear

*For PALSUN product information see page 159



Pedestrian Bridge

Location: Athens, Greece

Year of Completion: 2004

Roofing Product: PALSUN® Flat solid Polycarbonate Panel

Roofing Specification: 12mm, Solar Olympic

*For PALSUN product information see page 159



Middle School Sports Court

Location: Taipei, Taiwan

Year of Completion: 2010

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System

Roofing Specification: 10mm, Clear

*For SUNPAL product information see page 144

Man Lai Court Bridge

Location: Hong Kong, China

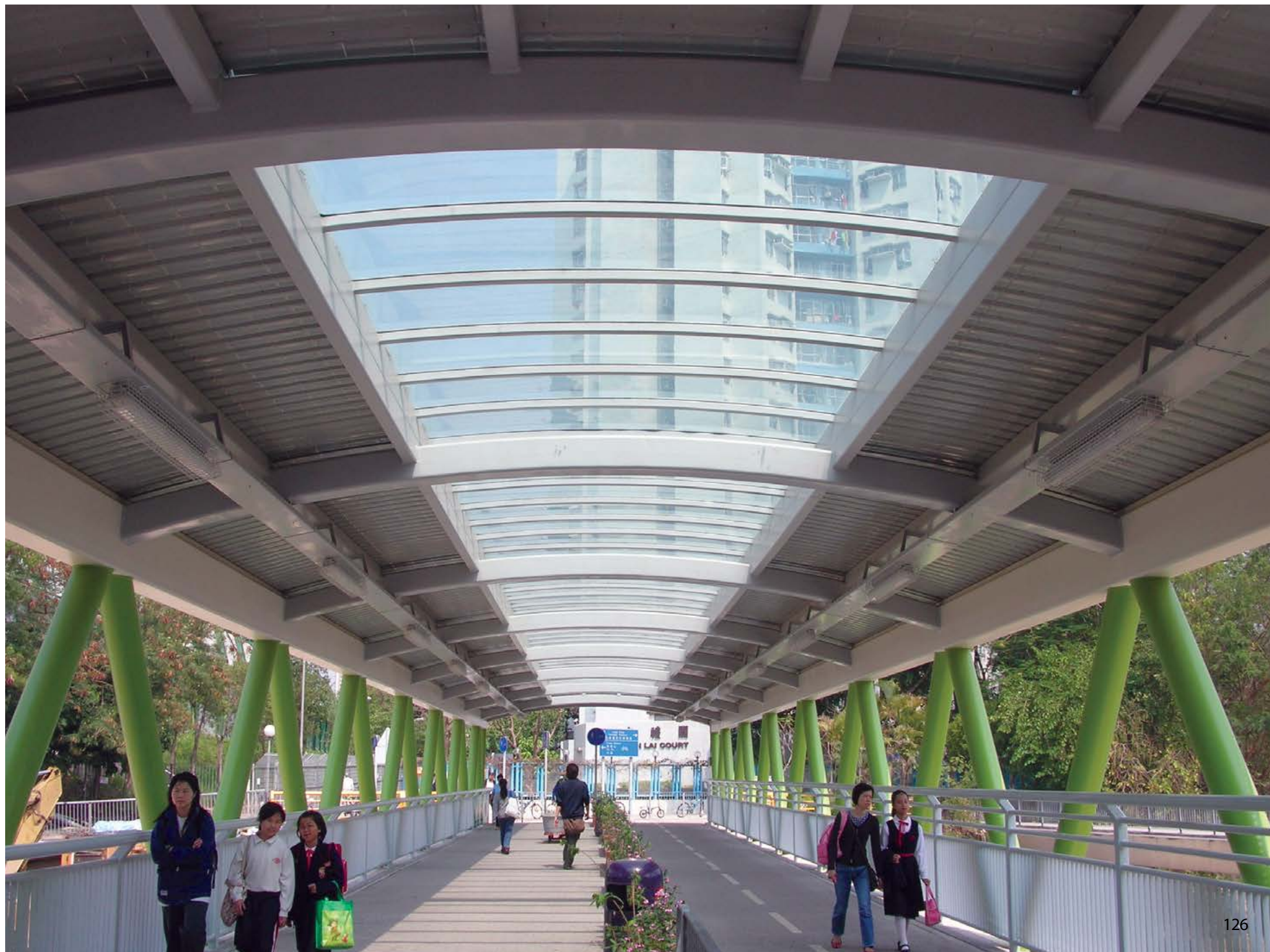
Year of Completion: 2006

Roofing Product: PALSUN® Flat solid Polycarbonate Panel

Roofing Specification: 8mm, Clear

*For PALSUN product information see page 159





YingTung Olympic Natatorium (Indoor Pool)

Location: Beijing, China

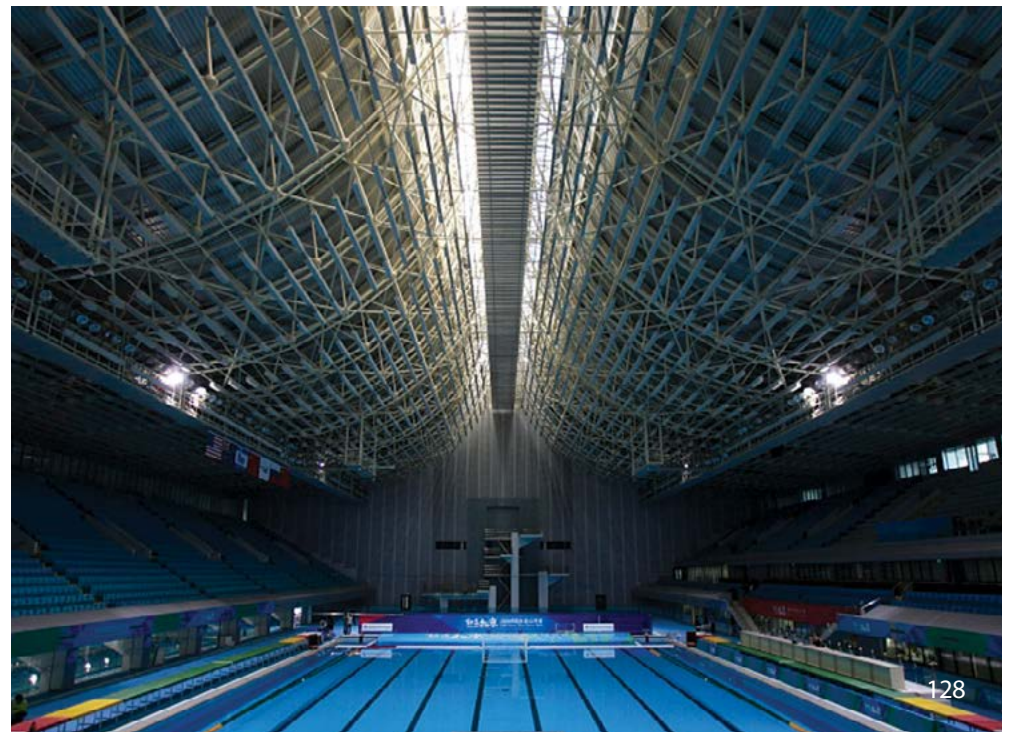
Year of Completion: 2008

Skylight Product: SUNLITE® Multiwall Polycarbonate Panel

Skylight Specification: 10mm, White Opal & Clear

*For SUNLITE product information see page 169







Residential Pergola

Location: Israel

Roofing Product: SUNGLAZE™ Solid Polycarbonate Architectural System

Roofing Specification: 3mm, Solar Control

*For SUNGLAZE product information see page 139



Residential Pergola

Location: Mawson Lakes, South Australia

Roofing Product: SUNTUF® Corrugated Polycarbonate Panel

Roofing Specification: 0.8mm, Clear

*For SUNTUF product information see page 174



Residential Pergola

Location: Brisbane, Queensland, Australia

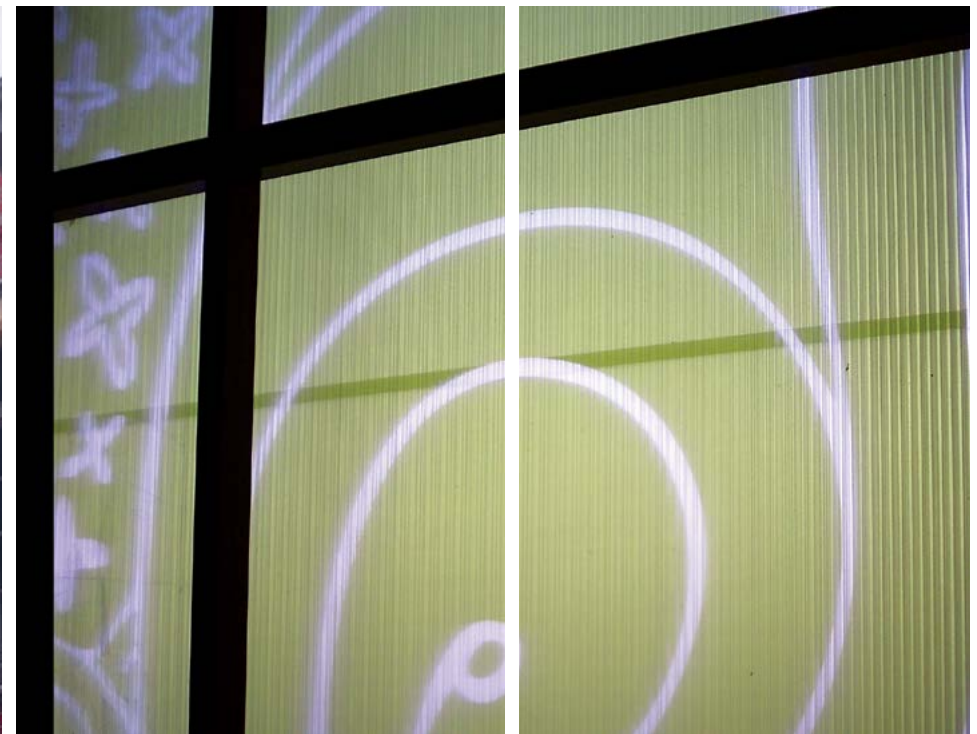
Year of Completion: 2010

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System

Roofing Specification: 10mm, Solar Control

*For SUNPAL product information see page 144





Yarraville Community Center

Location: Yarraville, Victoria, Australia

Year of Completion: 2009

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System

Roofing Specification: 18mm, white Ice Laminated

*For SUNPAL product information see page 144



St. Kilda Sea Baths

Location: Melbourne, Victoria, Australia

Year of Completion: 2009

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System

Roofing Specification: 10mm, Solar Control

*For SUNPAL product information see page 144

St. Marks Kindergarten

Location: Sydney, NSW, Australia

Year of Completion: 2009

Roofing Product: SUNPAL® Multiwall Polycarbonate Architectural System

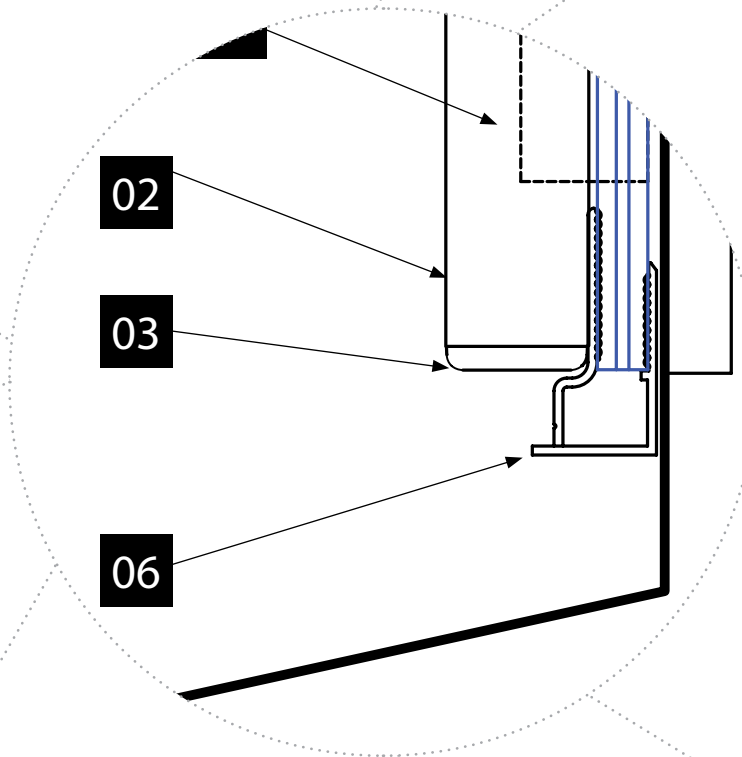
Roofing Specification: 10mm, Solar Control

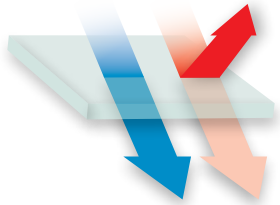
*For SUNPAL product information see page 144





Product Information





SolarSmart™ Technology

Introduction

SolarSmart technology defies standard transmission of solar energy in transparent sheets and allows more versatile color and solar transmission specification per project. Unlike regular tints, SolarSmart sheets and panels admit more natural daylight while reflecting outwards Infrared radiation that creates heat. This characteristic breaks the traditional link between shading coefficient and light transmission, allowing a different perspective on the specification of natural light in architectural design.

Promoting Energetic Efficiency and Well Being

SolarSmart tints allow better use of natural lighting without sacrificing the interiors. More natural light results in a healthier and more productive ambience. Energy saving is also promoted through reduction of both illumination and air conditioning requirements.

Technology Groups

The SolarSmart family offers 3 different product groups that differ with technology (see below). Each group is characterized with different characteristics and appearance, as illustrated in the following pages.

Breeze

Smart

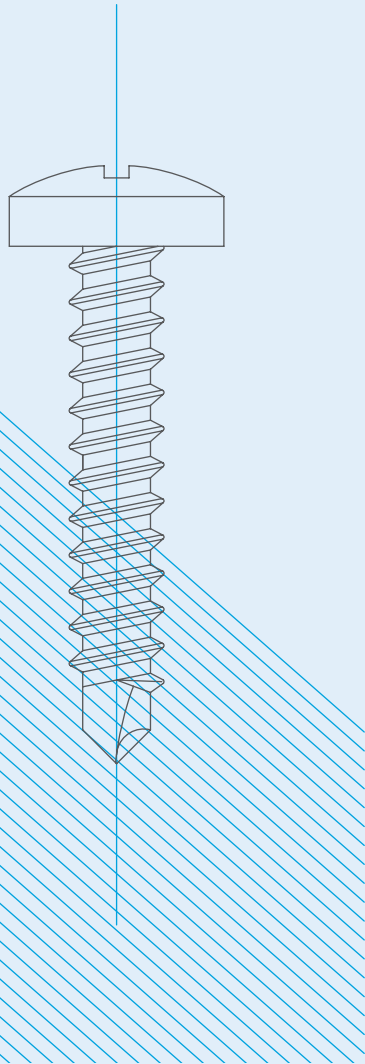
Solar Control

Color Specification

SolarSmart™ tints can be applied to any Palram transparent polycarbonate sheet or panel system: SUNPAL, SUNGLAZE, SUNTUF, PALSUN, SUNLITE and PALGARD. The tints can be blended with any color to tailor the desired appearance and solar properties.

SUNGLAZE™

Solid Polycarbonate
Architectural System



Introduction

SUNGLAZE is an architectural system that offers smart design, elegant appearance, versatility, low maintenance and sustainable performance to various architectural challenges. SUNGLAZE incorporates proprietary standing-seam profiling and glazing that enable wide spans and high loading capacity. It can be specified in various lengths to match different structures, including flat and curved designs.

SUNGLAZE is easy to fasten; the panels are simply joined by an aluminum profile set that is enclosed at the ends by End-closures. Screws lock the system and fix it to the structure without any penetration through the panels. The Cap-plug completes the assembly, covering the screw head and provides a smooth appearance from above.

Main Benefits

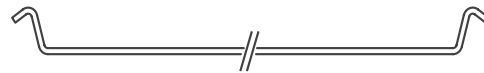
- Glass-like clear appearance
- Standing seam leak-proof performance
- Free thermal expansion
- Caulking and silicone free
- Withstanding high loads
- Easy, fast and safe installation
- Minimal maintenance

Applications

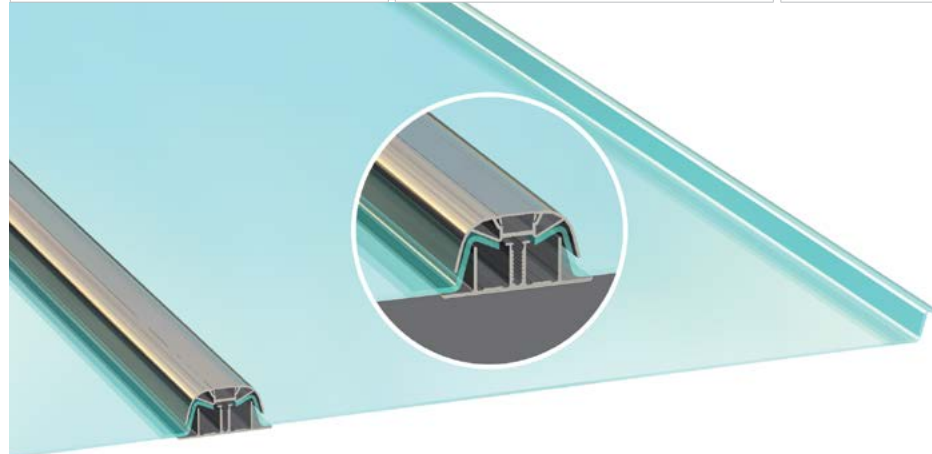
- Architectural projects
- Commercial and retail
- Sports venues roofing
- Covered walkways
- Open markets
- Service stations
- Entrances
- Pool covers

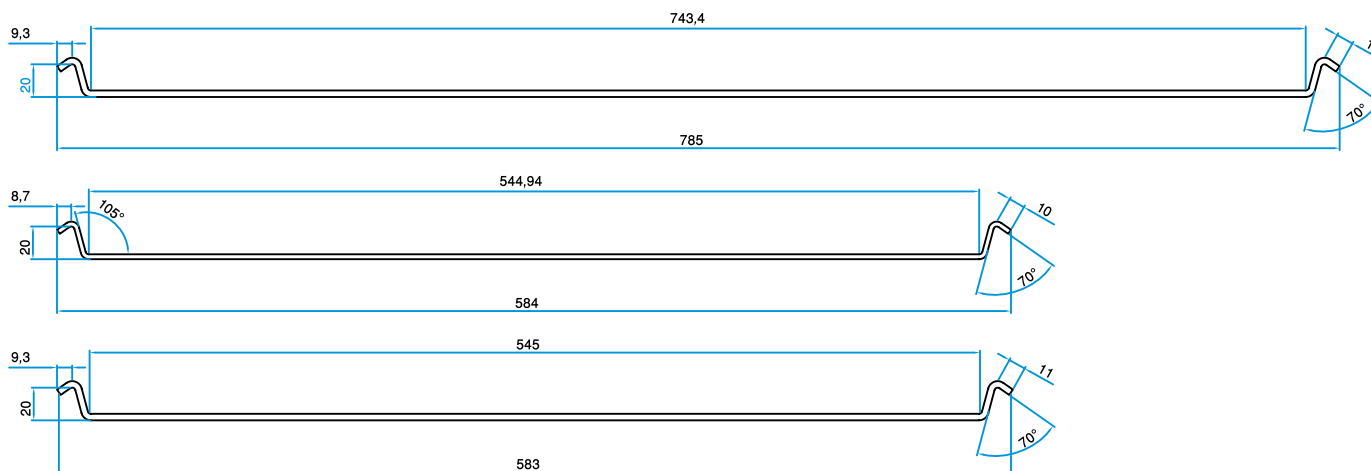
Panel Types

SUNGLAZE solid polycarbonate panels are offered in 3mm and 4mm thickness. Panel width is determined by the system width, 600mm or 800mm. Maximum panel length is 11.9m (typical stock length). Standard SUNGLAZE panels include UV protection on one side (UV protection on both sides is optional for special orders).














SUNGLAZE™ 3/600	SUNGLAZE™ 4/600	SUNGLAZE™ 4/800
Width: 584mm (600mm system) Height: 20mm Weight: 3.79 Kg/m ² , (2.20 Kg/m) Min. cold bending radius: 4m System weight: 6.14 Kg/m	Width: 585mm (600mm system) Height: 21mm Weight: 5.05 Kg/m ² , (2.94 Kg/m) Min. cold bending radius: 4m System weight: 7.40 Kg/m	Width: 785mm (800mm system) Height: 21mm Weight: 4.98 Kg/m ² , (3.90 Kg/m) Min. cold bending radius: 4m System weight: 6.73 Kg/m





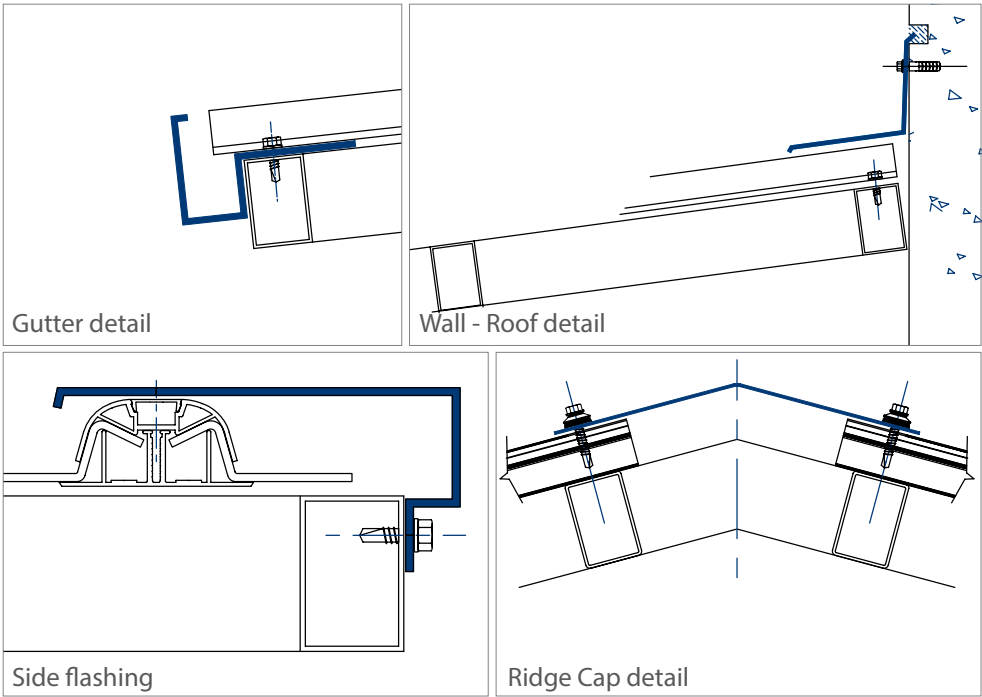
Colors

		% Light Transmission ASTM D-1003	%Haze ASTM D-1003	Solar Heat Gain (SHGC) ASTM E-424-71	Shading Coefficient ASTM E-424-71
Clear		90	<1	0.87	1.00
Bronze		20	<1	0.45	0.52
		35	<1	0.56	0.64
Solar Grey		50	<1	0.65	0.75
		20	<1	0.44	0.51
		35	<1	0.56	0.64
White Opal		50	<1	0.65	0.75
White Diffuser		28	100	0.30	0.35
Solar Ice		80	100	0.87	1.00
Solar Control		20	100	0.39	0.45
Solar Olympic		20	67	0.37	0.42
		20	50	0.41	0.47
		35	35	0.52	0.60
Smart Green		50	20	0.63	0.73
Smart Blue		70	26	0.60	0.69
Bluish Breeze		50	26	0.57	0.65
		70	1	0.55	0.63



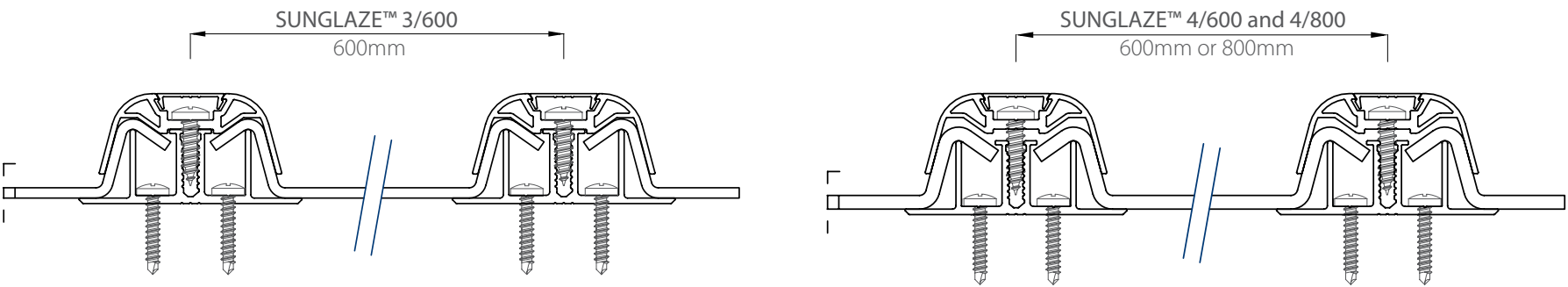
Assembly Details

Please note: All drawings are available as CAD files from www.palram.com.



Thickness	Acoustic Insulation DIN 52210-75 RW (db)
4mm	23
3mm	24

Assembled System Width



Typical Physical Properties

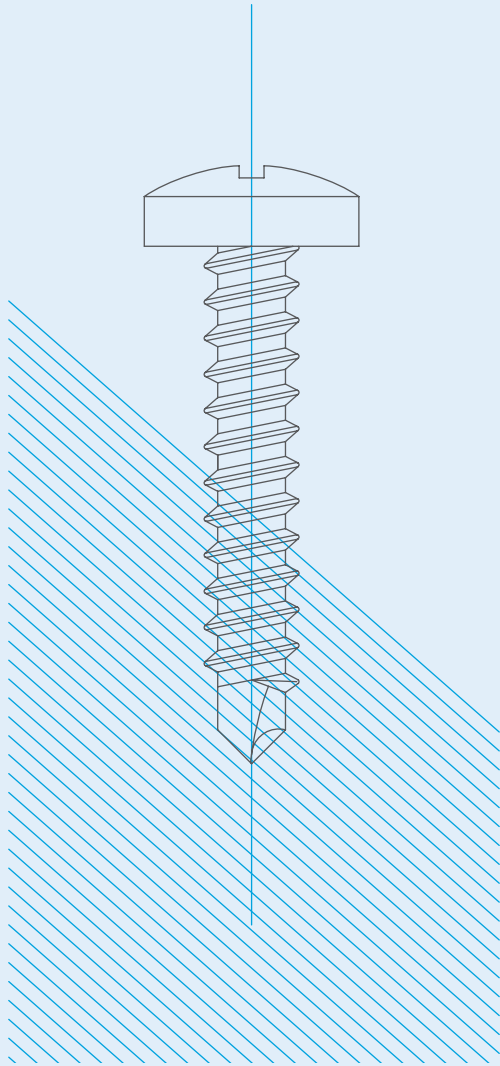
Property	Method**	Conditions	Units	Value
Mechanical				
Density	D-792		g/cm ³	1.2
Tensile modulus of elasticity	D-638	1 mm/min	Mpa	2,300
Flexural strength	D-790	1 mm/min	Mpa	93
Flexural modulus	D-790	1.3 mm/min	Mpa	2,600
Notched impact strength Izod	D-256	23°C	J/m	800
Impact falling dart	ISO 6603/1d	3mm	J	158
Impact - fall through	E-695		m/kg	336
Charpy Impact after Xenon Arc Exposure (D-6110)	D-2565-08	3000 hrs	% Loss of Impact Strength	<10
Thermal				
HDT (Heat Deflection Temperature)	D-648	Load: 1.82Mpa	°C	135
Vicat softening temperature	D-1525	Load: 1 kg	°C	150
Service temperature - Short term			°C	-50 to 120
Service temperature - Long term			°C	-50 to 100
Coefficient of linear thermal expansion	D-696		cm/cm °C	6.5 x 10 ⁻⁵
Thermal conductivity	C-177		W/m °K	0.21
Specific heat capacity	C-351		kJ/kg °K	1.3
Weathering				
Color change	D-2244	60 months	ΔE	<3
Yellowing index	E-313	60 months	Δ Yellowness Index	<10
Light transmission	D-1003	10 years	%	<6
Leakage / Structural				
Water leakage	E-283	20 psf		None
Air leakage	E-331		cfm/ft ²	0.05
Uniform load	E-330		psf	+140 / -45

*Properties in the table relate to the polycarbonate glazing panels in the SUNGLAZE system.

**ASTM method except where noted otherwise.

SUNPAL®

Multiwall Polycarbonate
Architectural System



Introduction

SUNPAL is an advanced multiwall polycarbonate panel system that combines proven design, light transmission, thermal insulation and strength. It offers a lightweight, leak-proof design that withstands very high loads and accommodates expansion and contraction.

The system's distinct advantages make it ideal for long-term application on many types of projects. As with any true architectural glazing system, SUNPAL is appropriate for a variety of roofing and cladding designs, flat or curved.

SUNPAL is a self-fastening system, based on multiwall panels, and is available in a range of thicknesses.

The panels join together by polycarbonate or aluminum joiners, which are sealed at the ends by End-Caps. T-Fasteners fix the entire system to the structure, allowing the panels to be clamped in place, without any point fastener penetration through the panels.

Ventilated Sealing Tape seals the panel lower end, to prevent dirt from entering the flutes, while also providing sufficient drainage.

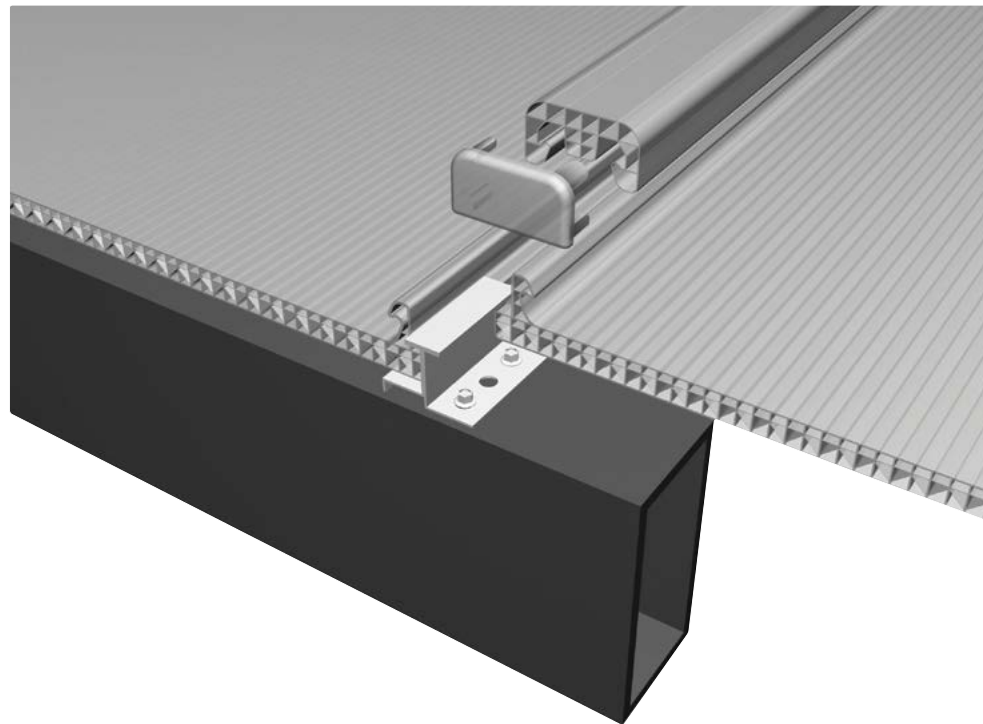
U-Profiles (polycarbonate or aluminum) or F-Profiles (aluminum) seal the upper ends of the panels. Aluminum F-Profiles finish off side edges of the plane, creating a fully framed installation.

Main Benefits

- Withstands very high loads
- Accommodates expansion & contraction
- Simple & fast installation
- Leak-proof
- High thermal insulation
- Ideal for curved designs
- Double sided UV protection
- SolarSmart™ cool light colors

Applications

- Architectural roofing & glazing
- Commercial and retail roofing
- Sport facilities - translucent roofing
- Covered walkways, awnings & entrances
- Open markets - light roofing
- Service stations - translucent roofing
- Parking structure covering
- Swimming pool covers

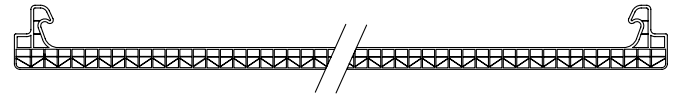


Panel Types

SUNPAL panels are of multiwall structure, available by thicknesses of 8mm, 10mm, 18mm and 20mm. Standard SUNPAL panels have UV protection on both sides (specific order can be produced with UV protection on one side only). Maximum panel length is 11.99 (typical stock length).

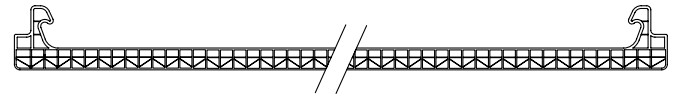
SUNPAL® 8/600 Lite

Width: 600mm
Height: 23.5mm
Height with PC-Joiner: 33mm
Weight: 1.11 Kg/m, 1.83 Kg/m²
Min. cold bending radius: 2.0m



SUNPAL® 8/600

Width: 600mm
Height: 23.5mm
Height with PC-Joiner: 33mm
Weight: 1.24 Kg/m, 2.00 Kg/m²
Min. cold bending radius: 2.0m



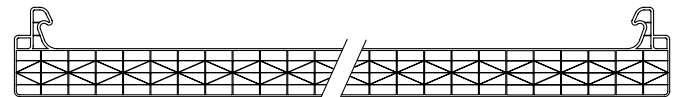
SUNPAL® 10/600

Width: 600mm
Height: 25.5mm
Height with PC-Joiner: 35mm
Weight: 1.56 Kg/m, 2.60 Kg/m²
Min. cold bending radius: 2.4m



SUNPAL® 18/1000

Width: 1000mm
Height: 33.5mm
Height with PC-Joiner: 41mm
Weight: 3.11 Kg/m, 3.11 Kg/m²
Min. cold bending radius: 3.0m






















SUNPAL® 20/1000

Width: 1000mm
Height: 35.5mm
Height with PC-Joiner: 43mm
Weight: 3.19 Kg/m, 3.19 Kg/m²
Min. cold bending radius: 3.0m



Colors

		SUNPAL® 8/600, 10/600			SUNPAL® 18/1000, 20/1000			
		%LT	SHGC	SC	%LT	SHGC	SC	
Solar Smart [™] Selective Solar Control Technology	Clear		65	0.63	0.72	50	0.54	0.62
	Bronze		25	0.40	0.46	20	0.35	0.39
	White Opal		26	0.37	0.43	20	0.30	0.34
	White Ice		50	0.56	0.64	40	0.48	0.55
	Green		50	0.56	0.64	38	0.46	0.53
	Blue		50	0.60	0.69	36	0.50	0.57
	Red		20	0.52	0.60	15	0.44	0.50
	Solar Ice		20	0.28	0.32	15	0.23	0.26
	Solar Grey		30	0.45	0.52	30	0.44	0.51
	Solar Control		20	0.30	0.34	15	0.25	0.29
	Bluish Breeze		34	0.32	0.38	34	0.33	0.38
	Clear		64	0.63	0.72	49	0.54	0.61
	Bronze		25	0.42	0.44	20	0.37	0.43
	White Opal		26	0.40	0.45	20	0.33	0.38
Diffuser Plus	Green		40	0.48	0.54	25	0.38	0.44
	Blue		40	0.51	0.59	25	0.41	0.48
	Red		20	0.47	0.55	15	0.39	0.45
	Solar Ice		20	0.35	0.41	15	0.30	0.35
	Solar Grey		30	0.42	0.49	30	0.41	0.48

LT (Light Transmission): The percentage of incident visible light that passes through an object. SHGC (Solar Heat Gain Coefficient): The percentage of incident solar radiation transmitted by an object, which includes the direct solar transmission and the part of the solar absorption radiated inward. SC (Shading Coefficient): The amount of the sun's heat transmitted through a given window compared with that of a standard 1/8-inch-thick single pane of glass under the same conditions.

Flammability

SUNPAL flammability classification appears in the attached table, based on a test performed by certified independent laboratories. The quoted certificate represents the flammability performance of the entire system.

Method	Classification*
EN 13501	B, s1, d0

*Depends on panel thickness.

Thermal Insulation

Type	U-Value [Watts /m ² .°C]	R-Value [m ² .°C / Watt]
SUNPAL Lite 8 mm	2.45	0.41
SUNPAL 8 mm	2.45	0.41
SUNPAL 10 mm	2.10	0.47
SUNPAL 18/20 mm	1.50	0.67

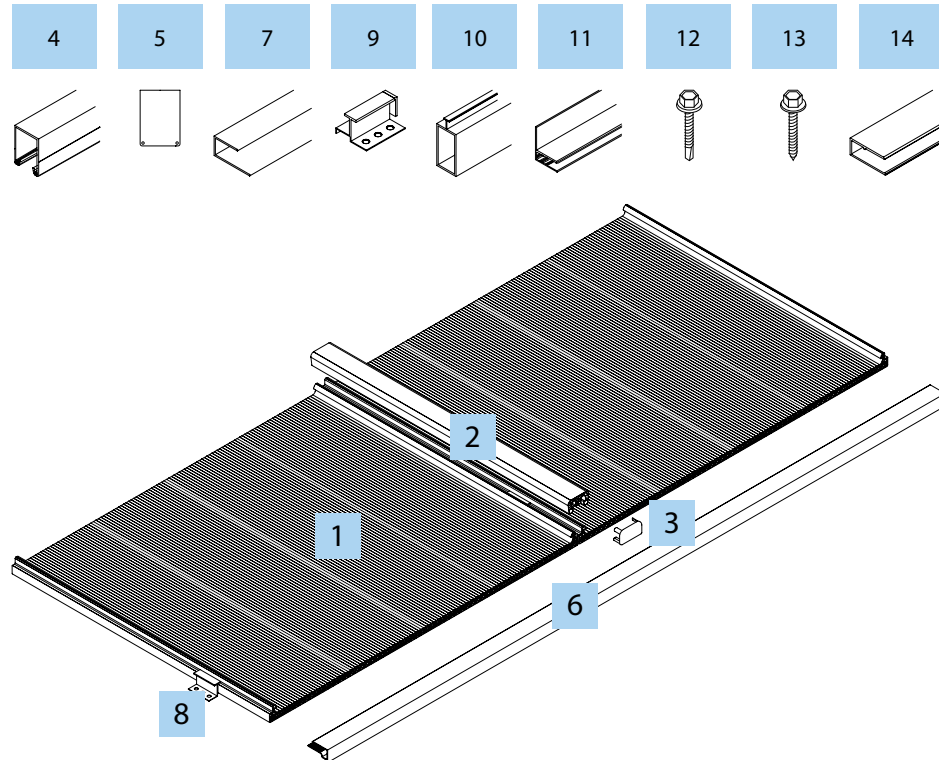
Typical Physical Properties

Property	Method*	Conditions	Units	Value
Density	D-792		g/cm ³	1.2
Heat deflection temperature (HDT)	D-648	Load: 1.82 MP	°C	130
Service Temperature - Short term			°C	-50 to +120
Service Temperature - Long term			°C	-50 to +100
Coefficient of linear thermal expansion	D-696		cm/cm °C	6.5 x 10 ⁻⁵
Tensile strength at yield	D-638	10 mm/min	MPa	62
Elongation at break	D-638	10 mm/min	%	>80
Impact falling dart	ISO 6603/1		J	40-400
Practical Thermal expansion/contraction rate			mm/m	3
Coefficient of linear thermal expansion	D-696		cm/cm °C	6.5 x 10 ⁻⁵

*ASTM method except where noted otherwise

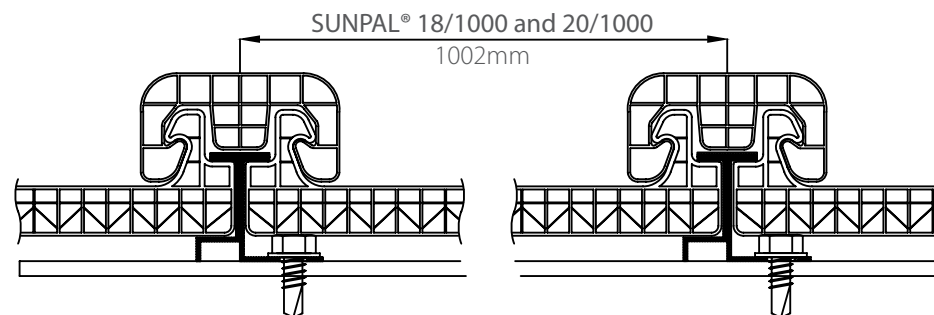
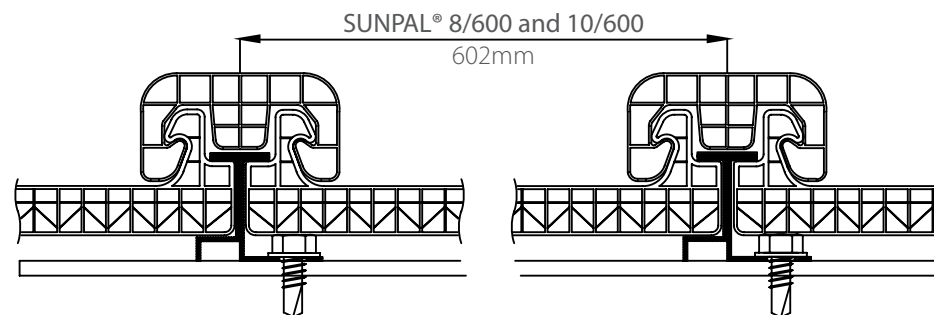
Assembly Details

#	Legend
01	Panel
02	PC Joiner
03	End-Cap for PC Joiner
04	Aluminum Joiner 'C'
05	End-Cap for Aluminum Joiner 'C'
06	Aluminum Sealing Strip
07	PC U-Profile
08	T-Fastener
09	T-Stopper
10	Aluminum Span-Bar
11	Aluminum F-Profile
12	Metal Screw
13	Wood Screw
14	Aluminum U-Profile



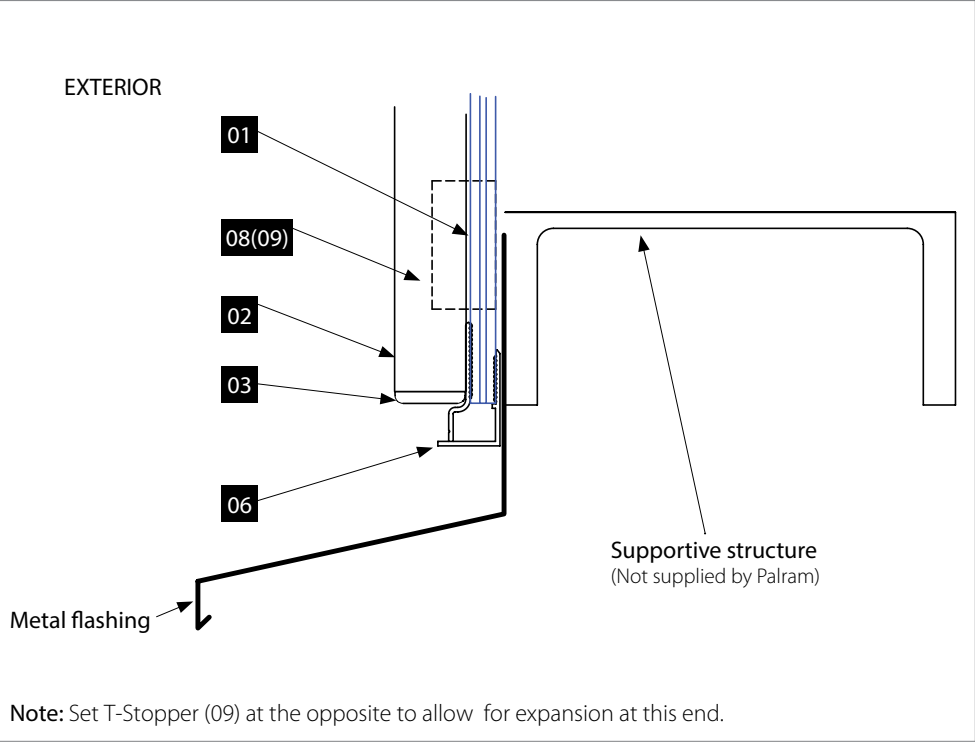
Installation Data

Assembled System Width

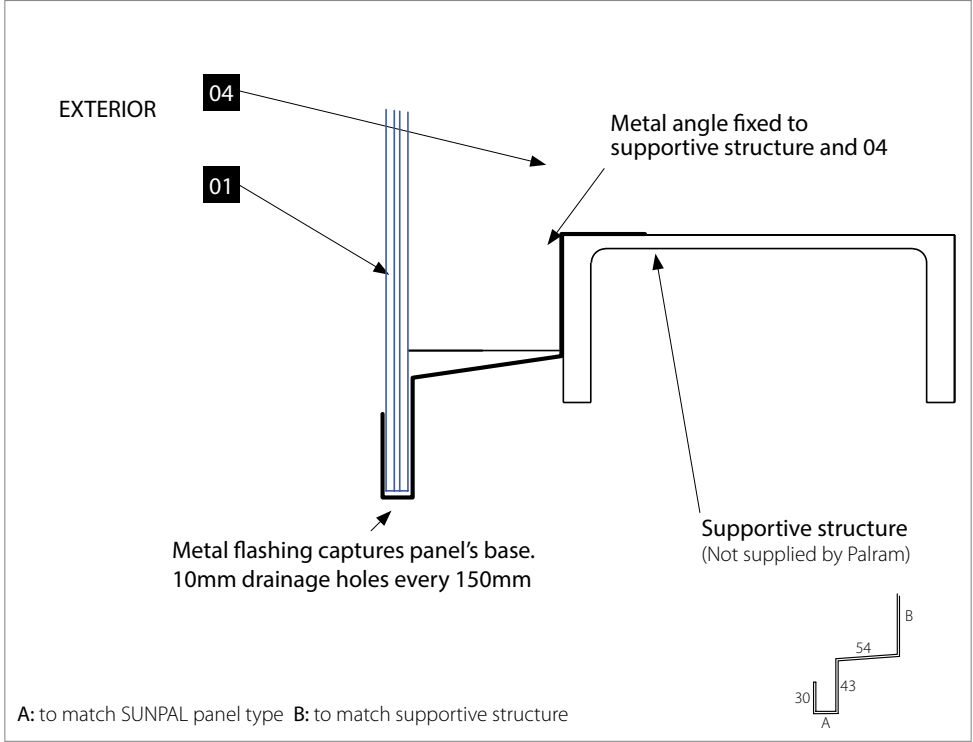


Typical Installation Cladding Details

Cladding Detail 1: Cladding Base



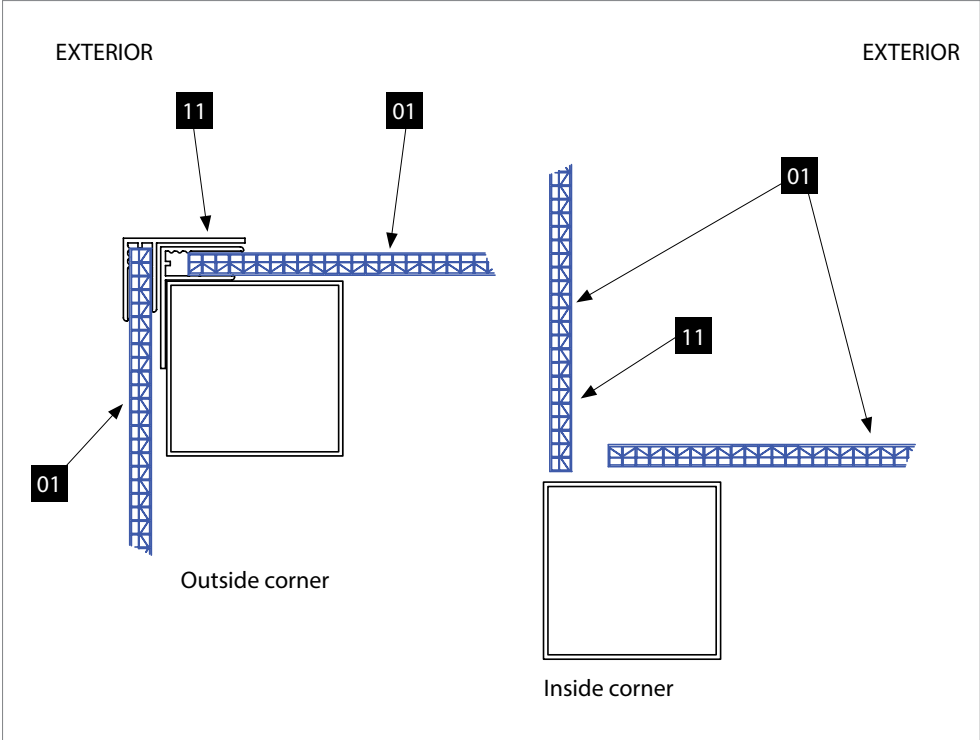
Cladding Detail 2: Cladding Base - Hidden Seams



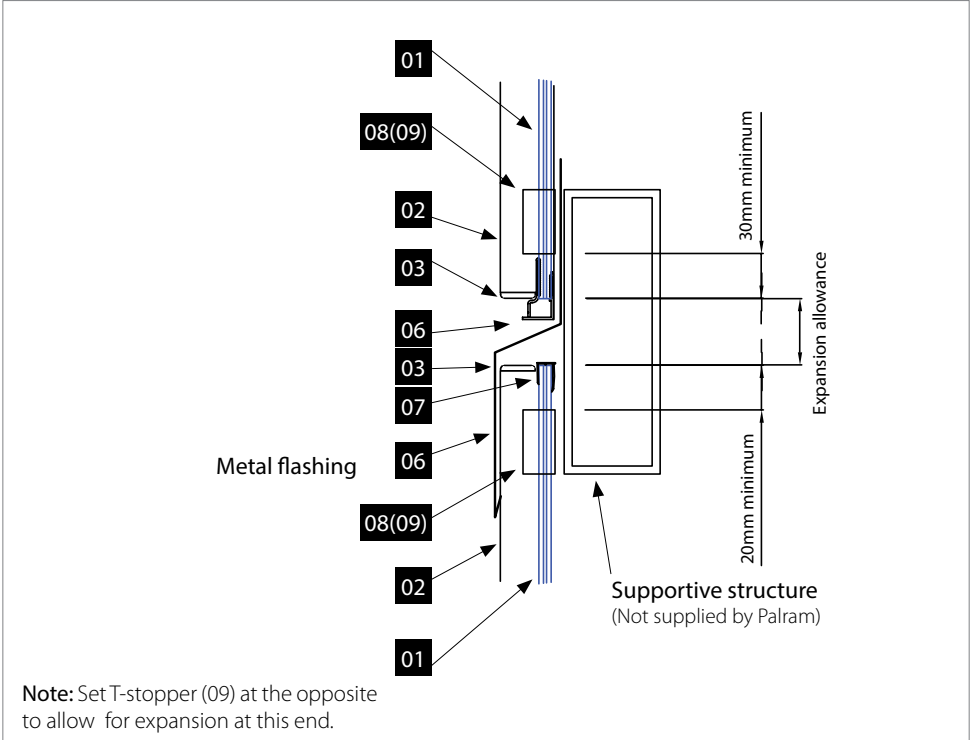
01	Panel	08	T- Fastener
02	PC Joiner	09	T- Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

Please note:
All drawings are available as CAD files from www.palram.com.

Cladding Detail 3: Corner Details



Cladding Detail 4: Panels Cladding Joint



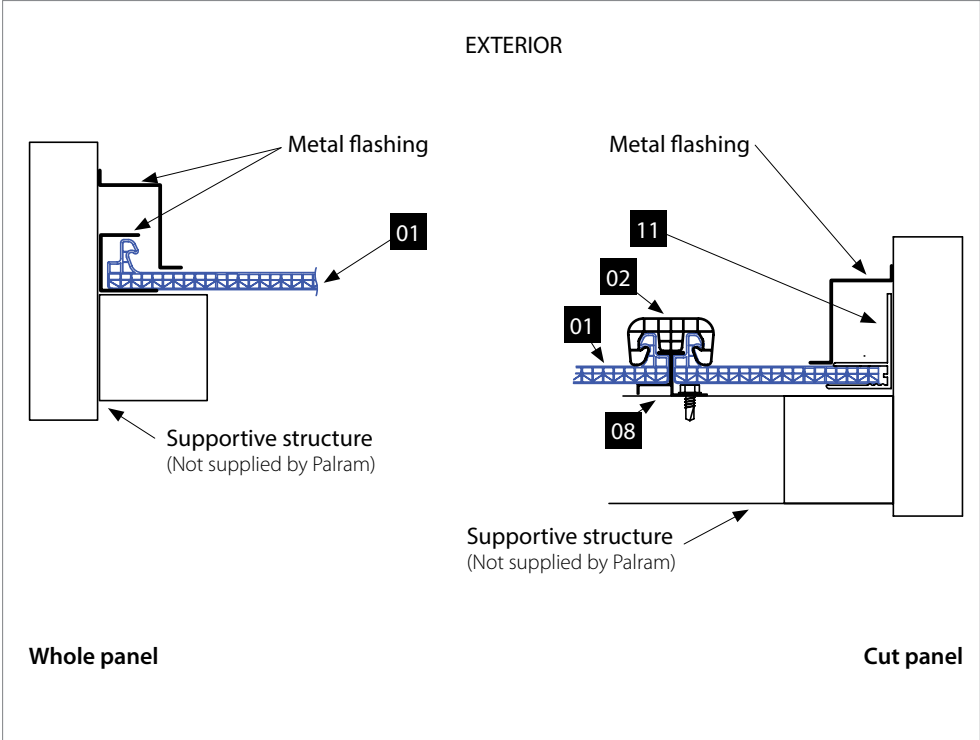
Note: Set T-stopper (09) at the opposite to allow for expansion at this end.

01	Panel	08	T- Fastener
02	PC Joiner	09	T- Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

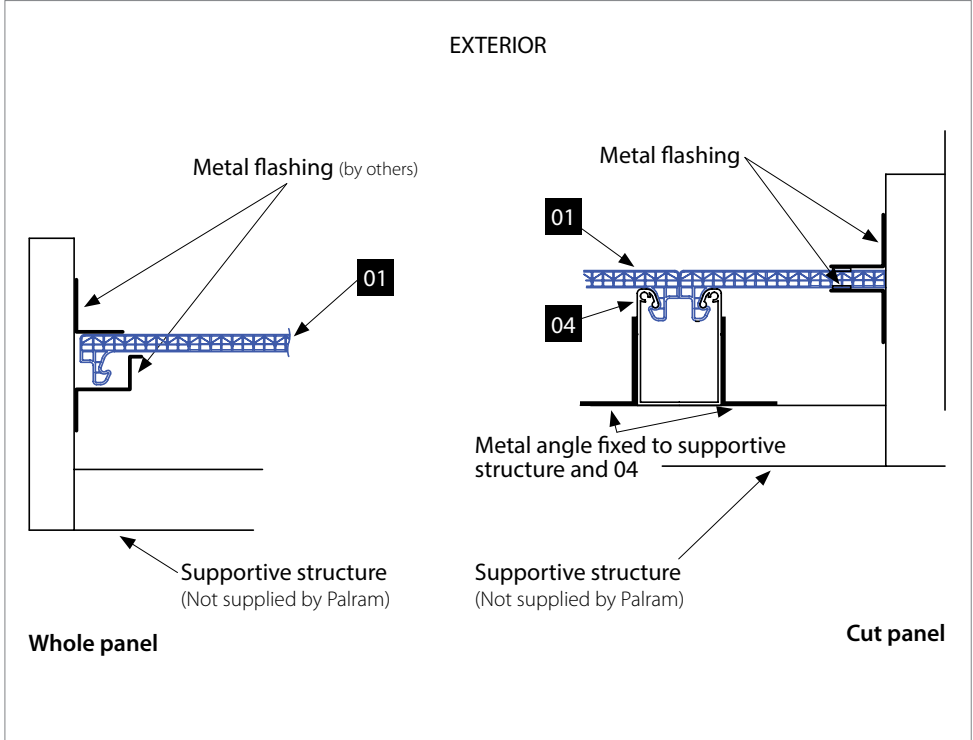
Please note:

All drawings are available as CAD files from www.palram.com.

Cladding Detail 5: Parallel Apron Flashings



Cladding Detail 6: Parallel Apron Flashings - Hidden Seams

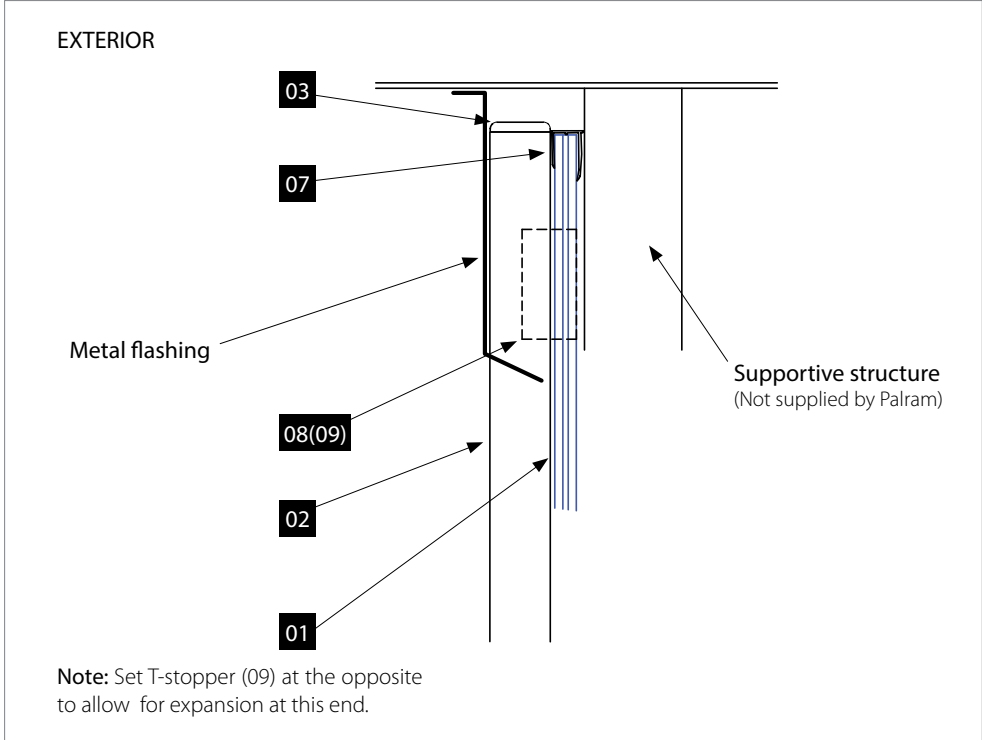


01	Panel	08	T- Fastener
02	PC Joiner	09	T- Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

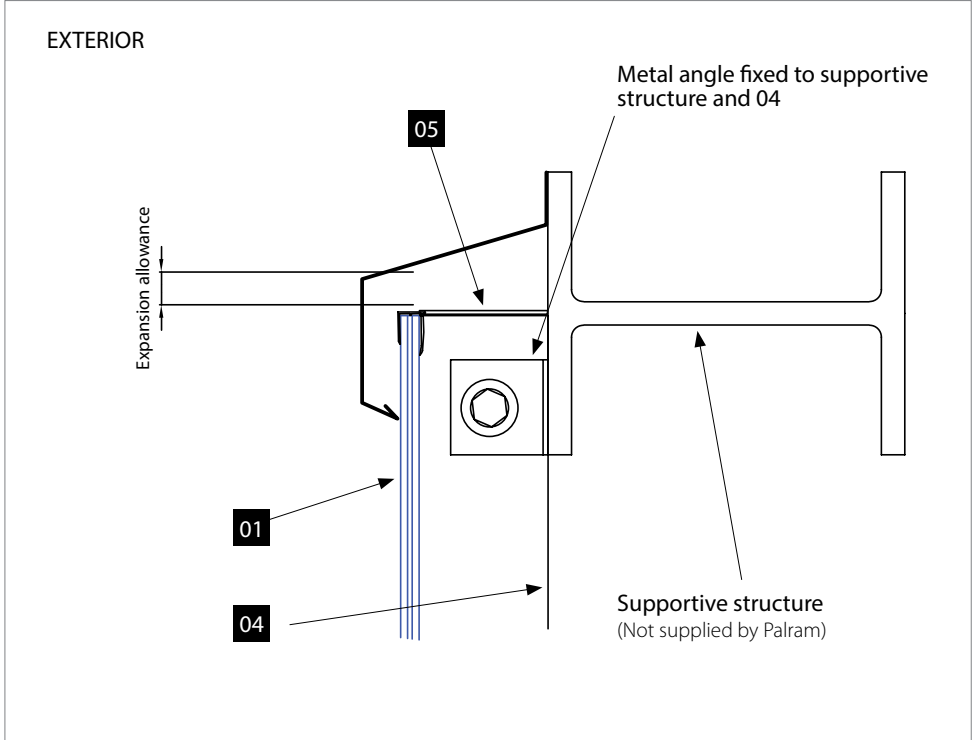
Please note:

All drawings are available as CAD files from www.palram.com.

Cladding Detail 7: Cladding Top Flashings



Cladding Detail 8: Cladding Top Flashing - Hidden Seams



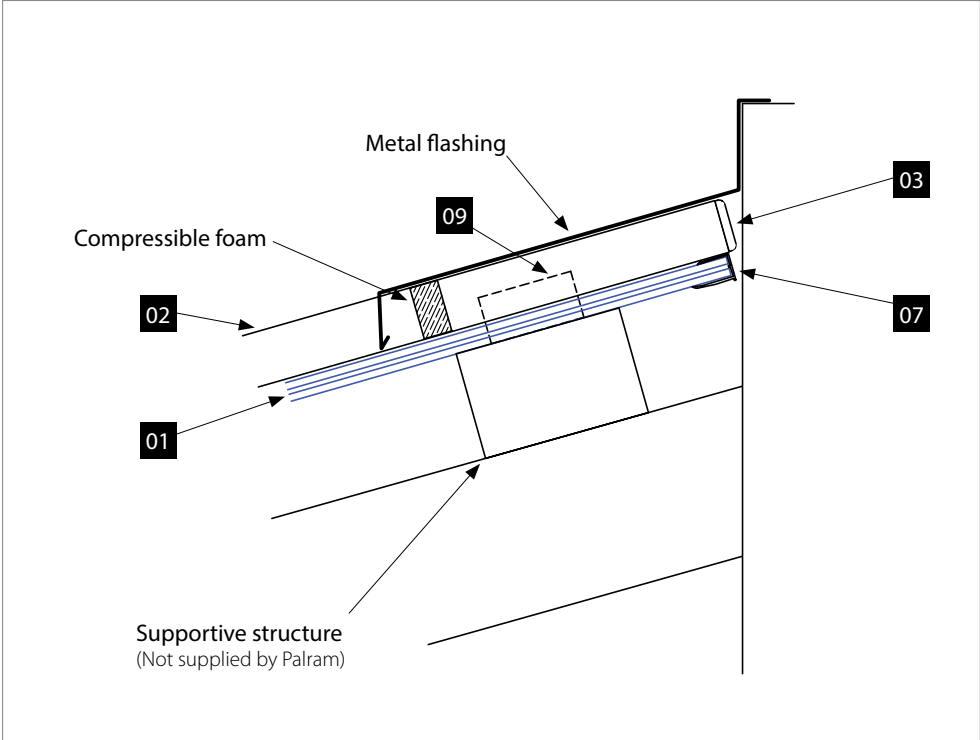
01	Panel	08	T- Fastener
02	PC Joiner	09	T- Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

Please note:

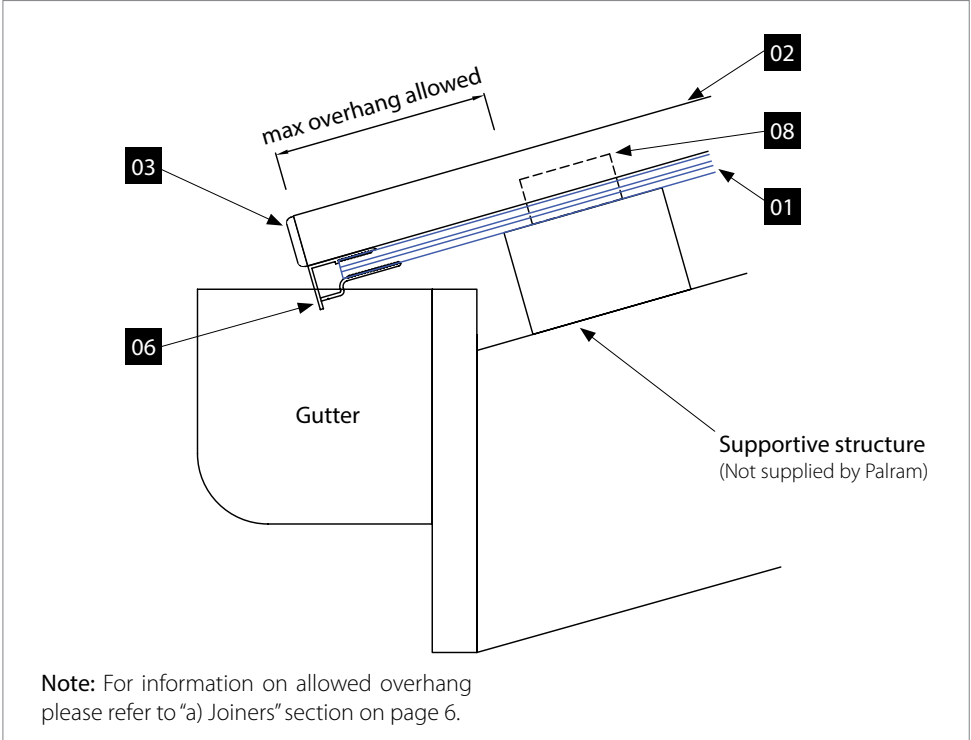
All drawings are available as CAD files from www.palram.com.

Typical Installation Roofing Details

Roofing Detail 1: Apron Flashing



Roofing Detail 2: Eave

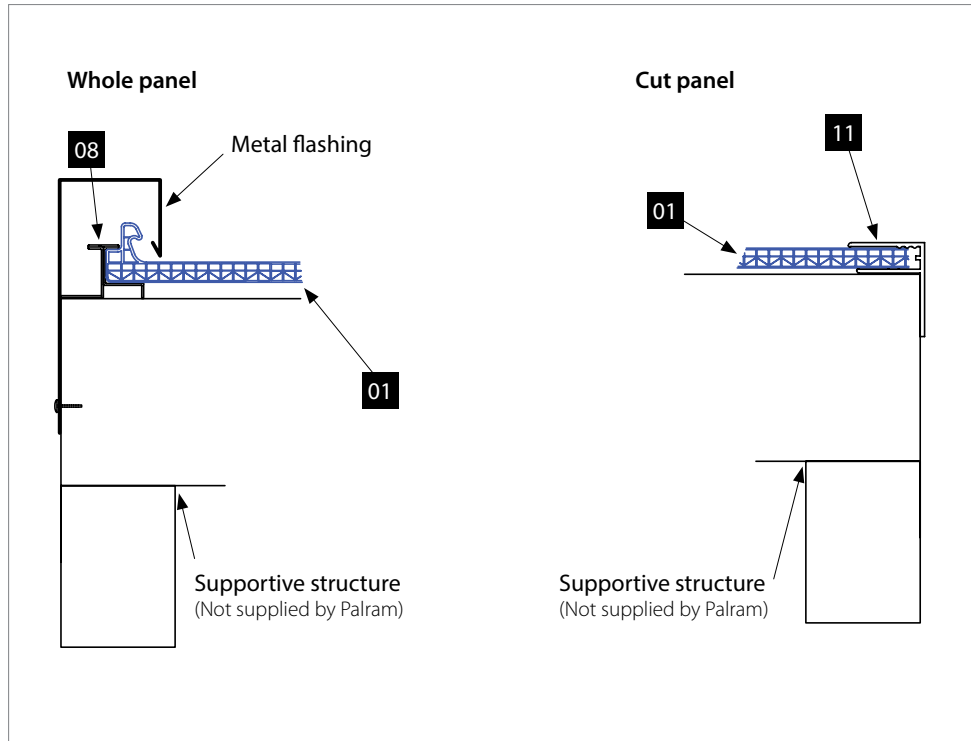


01	Panel	08	T-Fastener
02	PC Joiner	09	T-Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

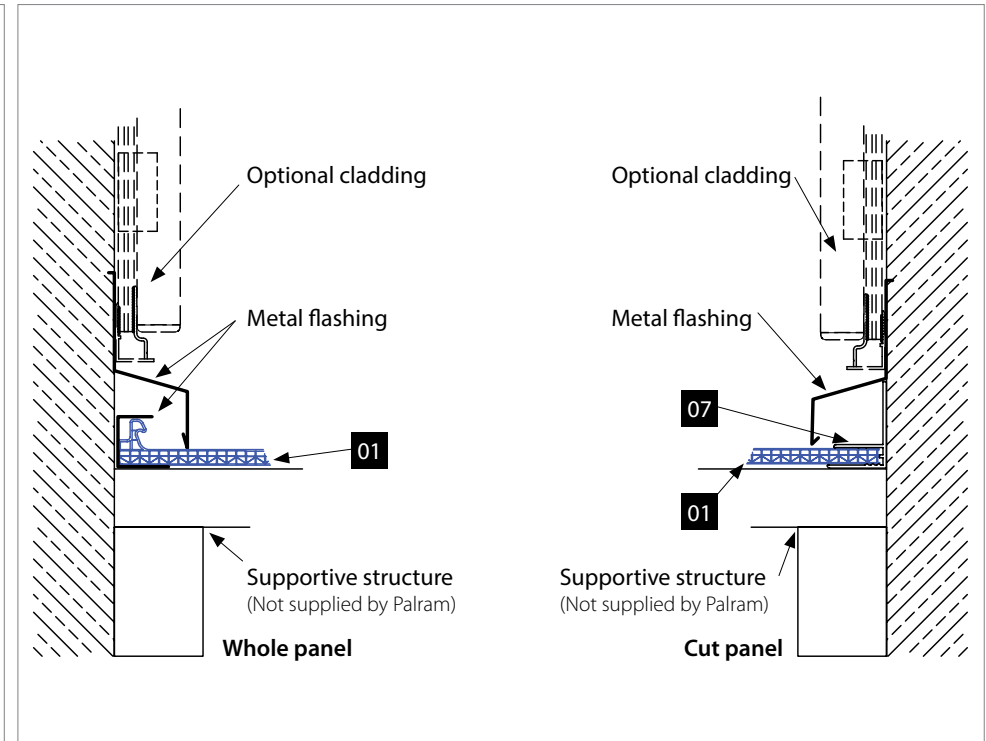
Please note:

All drawings are available as CAD files from www.palram.com.

Roofing Detail 3: Barge Details



Roofing Detail 4: Parallel Apron Flashing

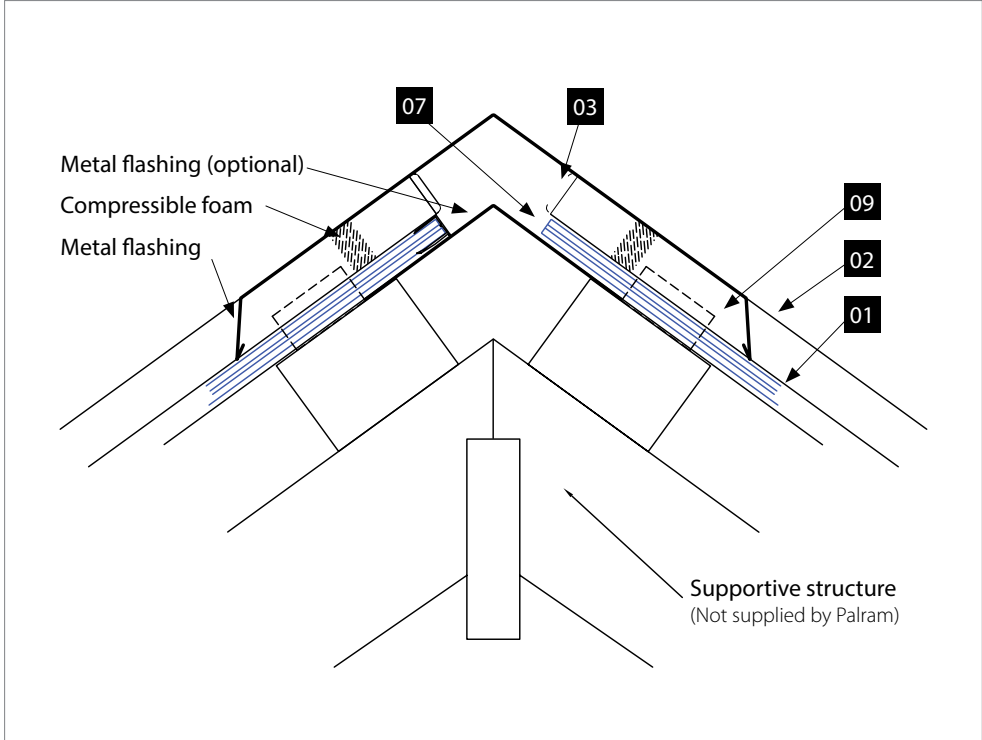


01	Panel	08	T- Fastener
02	PC Joiner	09	T- Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

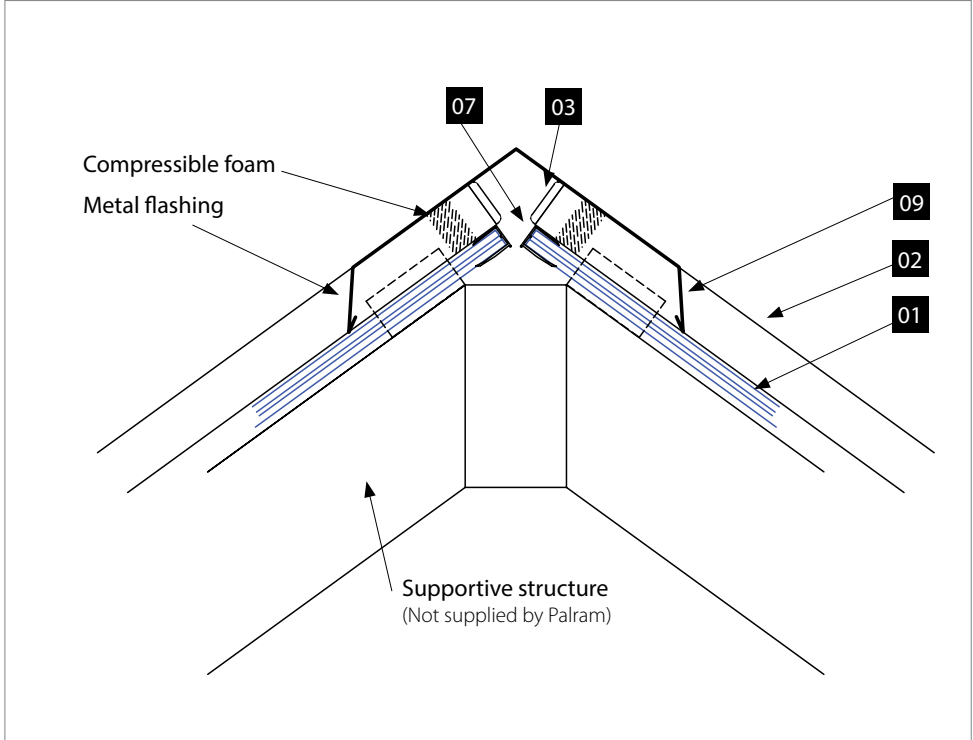
Please note:

All drawings are available as CAD files from www.palram.com.

Roofing Detail 5: Ridge Flashing



Roofing Detail 6: Hip Flashing

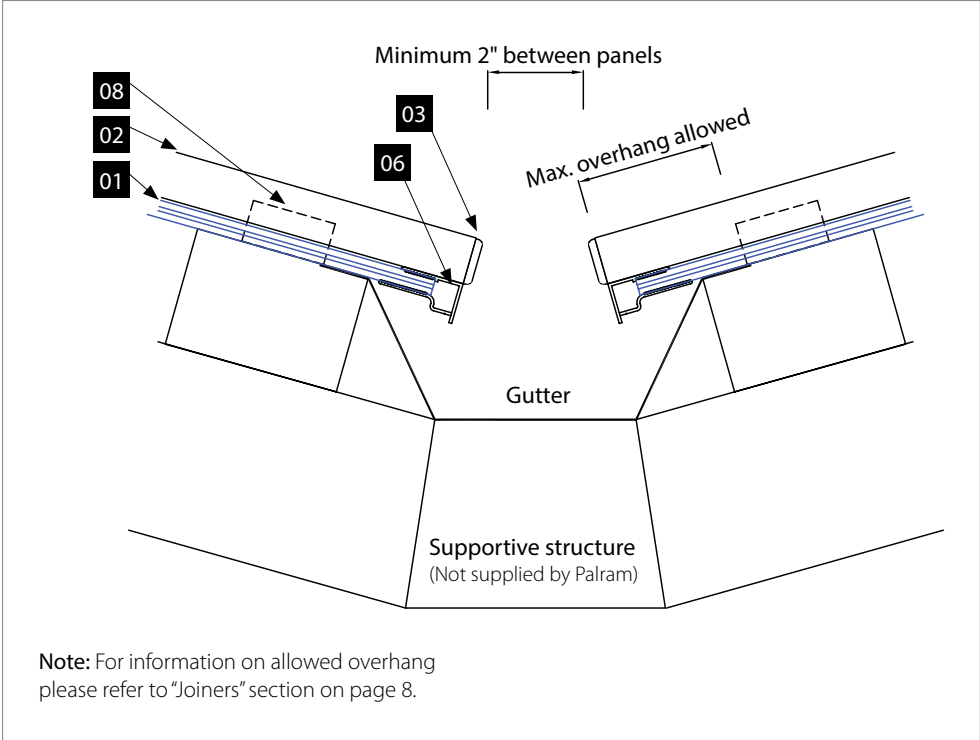


01	Panel	08	T-Fastener
02	PC Joiner	09	T-Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

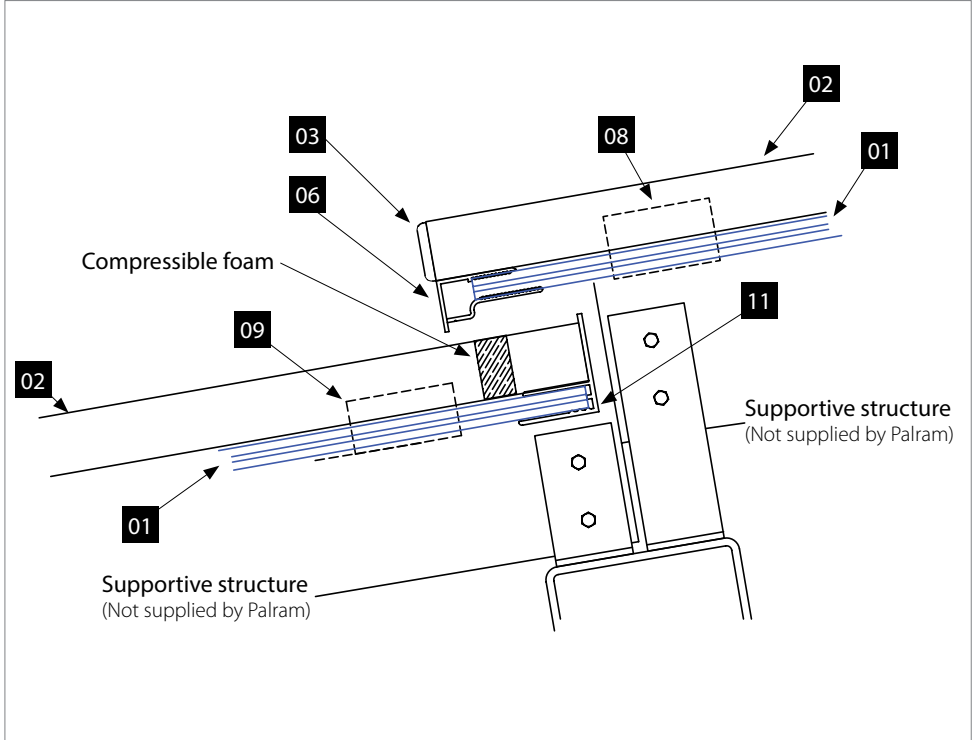
Please note:

All drawings are available as CAD files from www.palram.com.

Roofing Detail 7: Valley Gutter



Roofing Detail 8: Overlap Panels

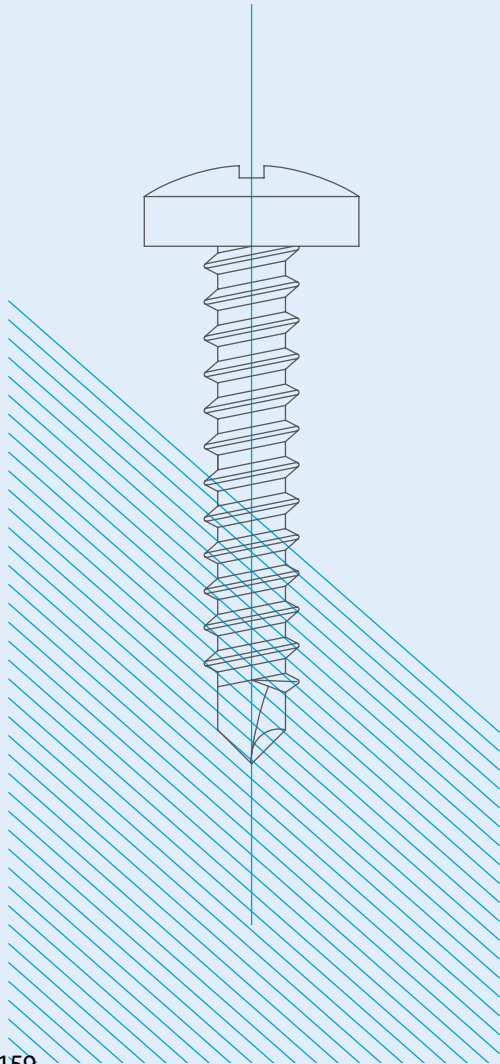


01	Panel	08	T-Fastener
02	PC Joiner	09	T-Stopper
03	End-Cap for PC Joiner	10	Aluminum Span-Bar
04	Aluminum Joiner 'C'	11	Aluminum F-Profile
05	End-Cap for Aluminum Joiner 'C'	12	Metal Screw
06	Aluminum Sealing Strip	13	Wood Screw
07	PC U-Profile	14	Aluminum U-Profile

Please note:
All drawings are available as CAD files from www.palram.com.

PALSUN®

Flat Solid Polycarbonate
Panel



Introduction

PALSUN combines a special variety of features, allowing a wide range of uses. This highly versatile and long lasting material is the answer to virtually all of the designer and contractor's covering and glazing needs. PALSUN is also readily machined and formed into a wide variety of tough and durable fabrications.

Polycarbonate is one of the most advanced polymers in the field of plastics today. It offers an unequalled combination of properties: strength, transparency, light weight, flexibility, durability, thermal and fire resistance.

PALSUN is transparent as glass, 200 times stronger and less than half the weight. In addition to all of these features, PALSUN can be bent either hot or cold (within limitations). PALSUN's absolute resistance to breakage qualifies it as the best existing safety glazing material available, with impact resistance that is impervious to hammer blows, stones etc.

PALSUN is ideal for use in areas exposed to vandalism and in cases of high impact. As is evident in many buildings around the world - just a few of them displayed in this brochure - PALSUN offers the user possibilities that weren't available previously. PALSUN constitutes a real breakthrough in design concepts and construction methods. The sheets are manufactured to comply with European and U.S. standard specifications.

Built-In UV Protection and UV Resistance

PALSUN flat polycarbonate sheets have an integrated, co-extruded UV protective layer on one side, while PALSUN UV2 offers co-extruded UV protective layer on both sides. This dramatically improves their durability and compliance with outdoor applications. Installation of PALSUN will protect the people, plants, furniture and other objects from exposure to harmful solar UV radiation.

Note: PALTUF is a general-purpose, UV stabilized flat solid polycarbonate without UV protective coating.

Main Benefits

- **Lightweight**

Less than half the weight of glass and aluminum.

- **Transparent**

Available in clear with up to 90% light transmission (same as glass). Tinted, colored and embossed PALSUN is also available for a variety of light transmission, light diffusion and surface options.

- **Weather Resistant**

PALSUN Sheets retain their characteristics for years under all conditions.

- **Thermal Insulation**

Both PALTUF and PALSUN exhibit good thermal insulation, considerably better than glass and aluminum.

- **Resistance to Chemicals**

PALTUF and PALSUN Sheets are resistant to various chemicals and other substances. However, they should be prevented from coming in contact with certain materials, as specified by the manufacturer.

- **Easy to Mount**

PALTUF and PALSUN Sheets are easy to work with and install.

- **Flexible, Formable, Machinable**

PALTUF and PALSUN Sheets can be bent either hot or cold, can be thermoformed into an unlimited range of shapes, and can readily be machined and/or fabricated.

- **Easy to Clean**

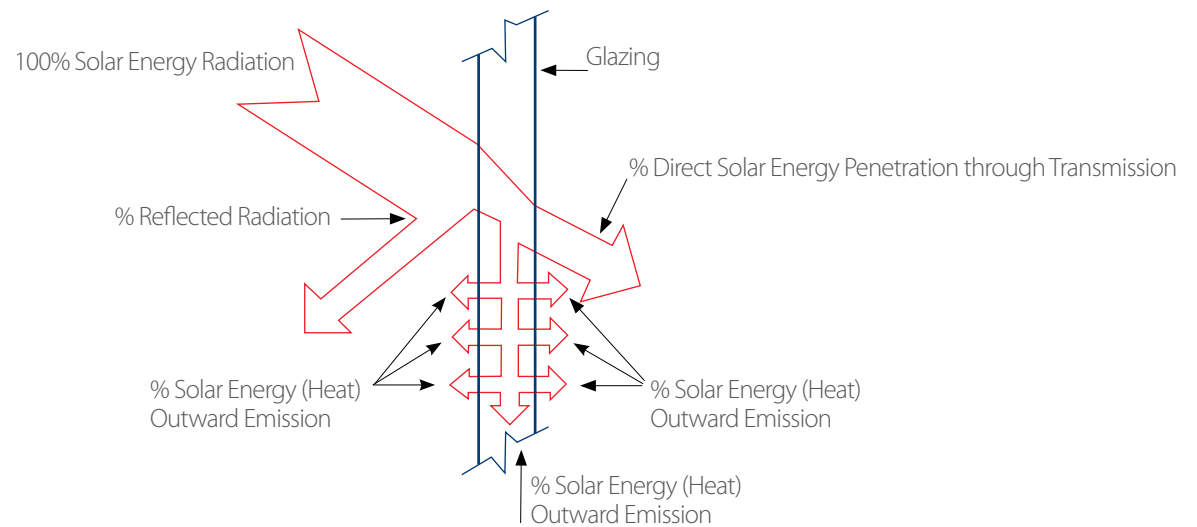
PALTUF and PALSUN Sheets can easily be cleaned with a 100% cotton cloth generous amounts of mild detergent and water.

Solar Transmission Properties

Solar energy transmission is an extremely important consideration with transparent materials.

Geographic location and typical thermal/optical properties of the specific glazing are the main factors influencing solar heat gain.

Solar Radiation Schematic Behavior Through Light Transmitting Material



Solar Transmission Properties

Colors and tints reduce the percentage of visible light transmitted through the sheets, but solar energy is still absorbed by the glazing itself, and in turn transferred by convection and far IR radiation from the heated glazing into the building.

PALSUN® Color*	% Light Transmission	% Total Solar Rejection	% Solar Heat Gain	Shading Coefficient
Clear	90	13	87	1.00
Opal	30	60	40	0.46
Bronze	50	35	65	0.75
Bronze	35	44	56	0.64
Bronze	20	54	46	0.52
Solar Grey	50	35	65	0.75
Solar Grey	35	44	56	0.64
Solar Grey	20	55	45	0.51
Solar Olympic	50	37	63	0.73
Solar Olympic	35	48	52	0.60
Solar Olympic	20	59	41	0.47
Solar Control	50	44	56	0.64
Solar Control	35	52	48	0.54
Solar Control	20	67	33	0.36
Smart Green	70	42	58	0.67

*Values in the table above relate to 3mm Sheet. Further information on additional products is available upon request.

Typical Physical Properties

The following table displays physical properties of 3mm (0.12 inch) PALSUN and PALTUF sheets.

Property	Method**	Conditions (U.S. Customary)*	Units - SL (U.S. Customary)*	Value (U.S. Customary)*
Physical				
Density	D-792		g/cm ³ (lb/ft ³)	1.2 (75)
Water Absorption	D-570	24 hr. @ 23°C	%	0.15
Mechanical				
Tensile strength at yield	D-638	10 mm/min (0.4 in./min)	MPa (psi)	62.5 (9,100)
Tensile strength at break	D-638	10 mm/min (0.4 in./min)	MPa (psi)	65 (9,500)
Elongation at yield	D-638	10 mm/min (0.4 in./min)	%	6
Elongation at break	D-638	10 mm/min (0.4 in./min)	%	>80
Tensile Modulus of Elasticity	D-638	1 mm/min (0.4 in./min)	MPa (psi)	2,300 (290,000)
Flexural Modulus	D-790	1.3 mm/min (0.052 in./min)	MPa (psi)	2,350 (343,000)
Flexural Strength at Yield	D-790	1.3 mm/min (0.052 in./min)	MPa (psi)	93 (13,600)
Notched Impact Strength Izod	D-256	23°C (73°F)	J/m (ft-lbf/in.)	800 (15)
Notched Impact Strength Charpy	D-256	23°C (73°F)	J/m (ft-lbf/in.)	800 (15)
Impact Falling Weight	ISO-6603/1b		J (ft-lbf)	158 (117)
Rockwell Hardness	D-785		R scale / M scale	125 / 75
Thermal				
Long Term Service Temperature			°C (°F)	-50 to +100 (-175 to +212)
Short Term Service Temperature			°C (°F)	-50 to +120 (-175 to +250)
Heat Deflection Temperature	D-648	Load: 1.82 MPa (264 psi)	°C (°F)	135 (275)
Vicat Softening Temperature	D-1525	Load: 1 kg (2.2 lb)	°C (°F)	150 (300)
Coefficient of Linear Thermal Expansion	D-696		mm/m °C (Mil/in. °F)	0.065 (0.036)
Thermal Conductivity	C-177		W/m K (Btu-in/hr-ft ² ·°F)	0.21 (1.46)
Specific Heat Capacity	C-351		kJ/kg·°K (Btu/lb·°F)	1.26 (0.31)

*Properties in the table relate to the polycarbonate glazing panels in the SUNGLAZE system.

**ASTM method except where noted otherwise.

Typical Physical Properties

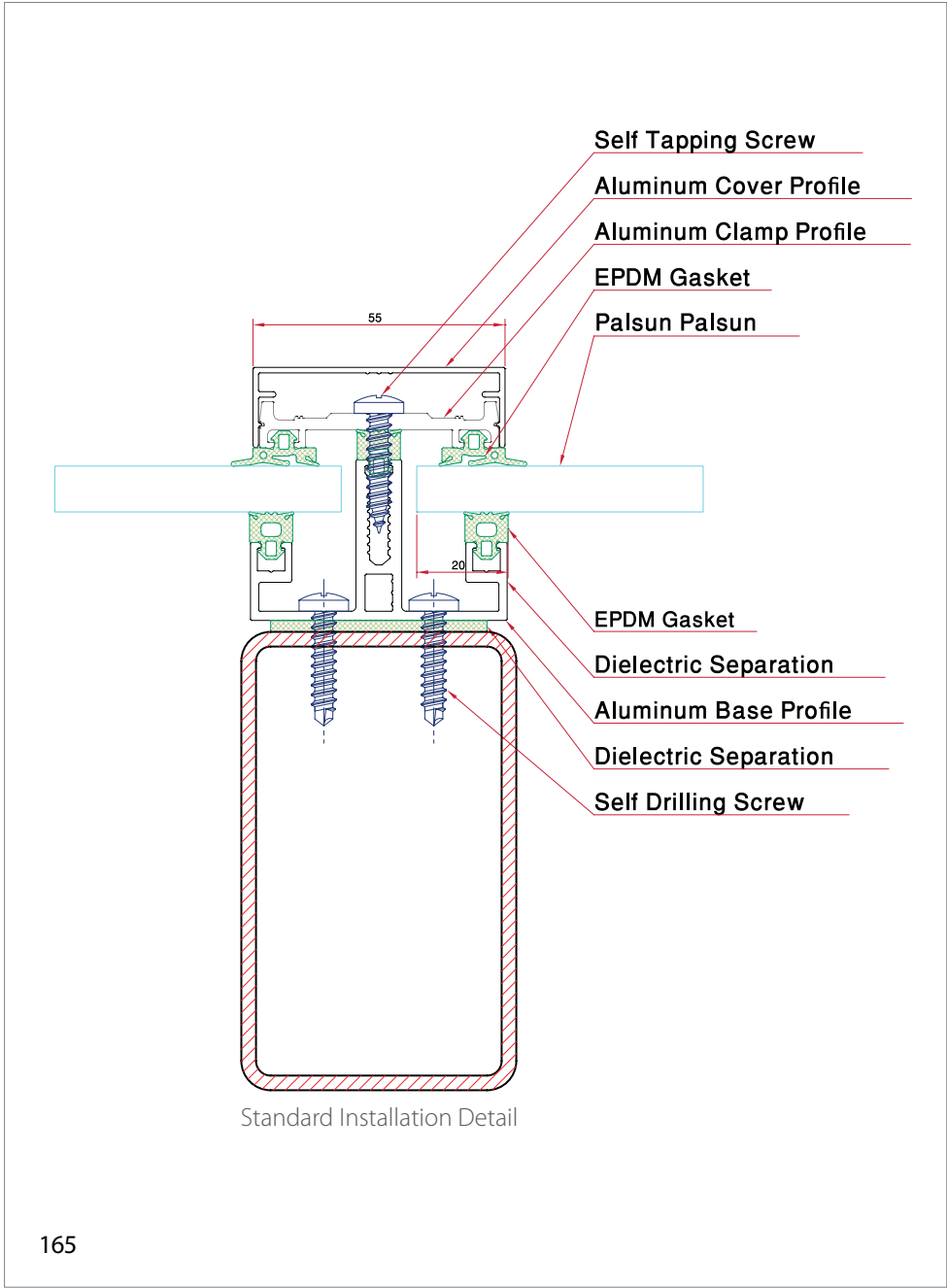
The following table displays physical properties of 3mm (0.12 inch) PALSUN and PALTUF sheets.

Property	Method**	Conditions (U.S. Customary)*	Units - SL (U.S. Customary)*	Value (U.S. Customary)*
Optical				
Haze	D-1003	Clear Sheet	%	<0.5
Light Transmission	D-1003	Clear Sheet	%	89
Refractive Index	D-542	Clear Sheet		1.586
Yellowness Index	D-1925	Clear Sheet		<1
Electrical				
				3.0
Dielectric Constant	D-150	50 Hz		2.9
	D-150	1 MHz		0.001
	D-150	1 MHz		0.01
Dielectric Strength Short Time	D-149	500 V/s	kV/mm (V/mil)	>30 (>770)
Surface Resistivity	D-257	Keithley	Ohm	10 ¹⁶
Volume Resistance	D-257	Keithley	Ohm-cm	10 ¹⁷

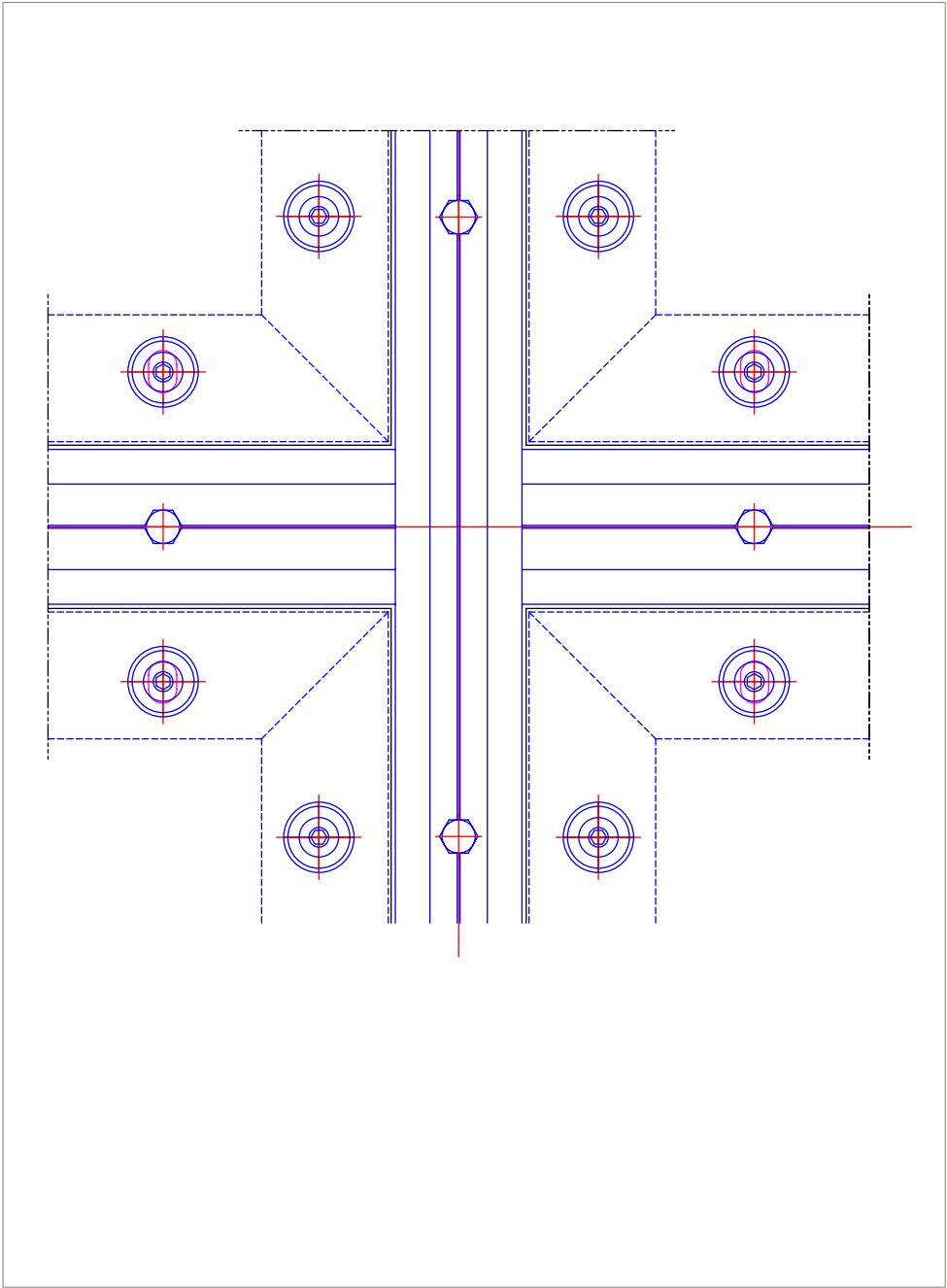
*Properties in the table relate to the polycarbonate glazing panels in the SUNGLAZE system.

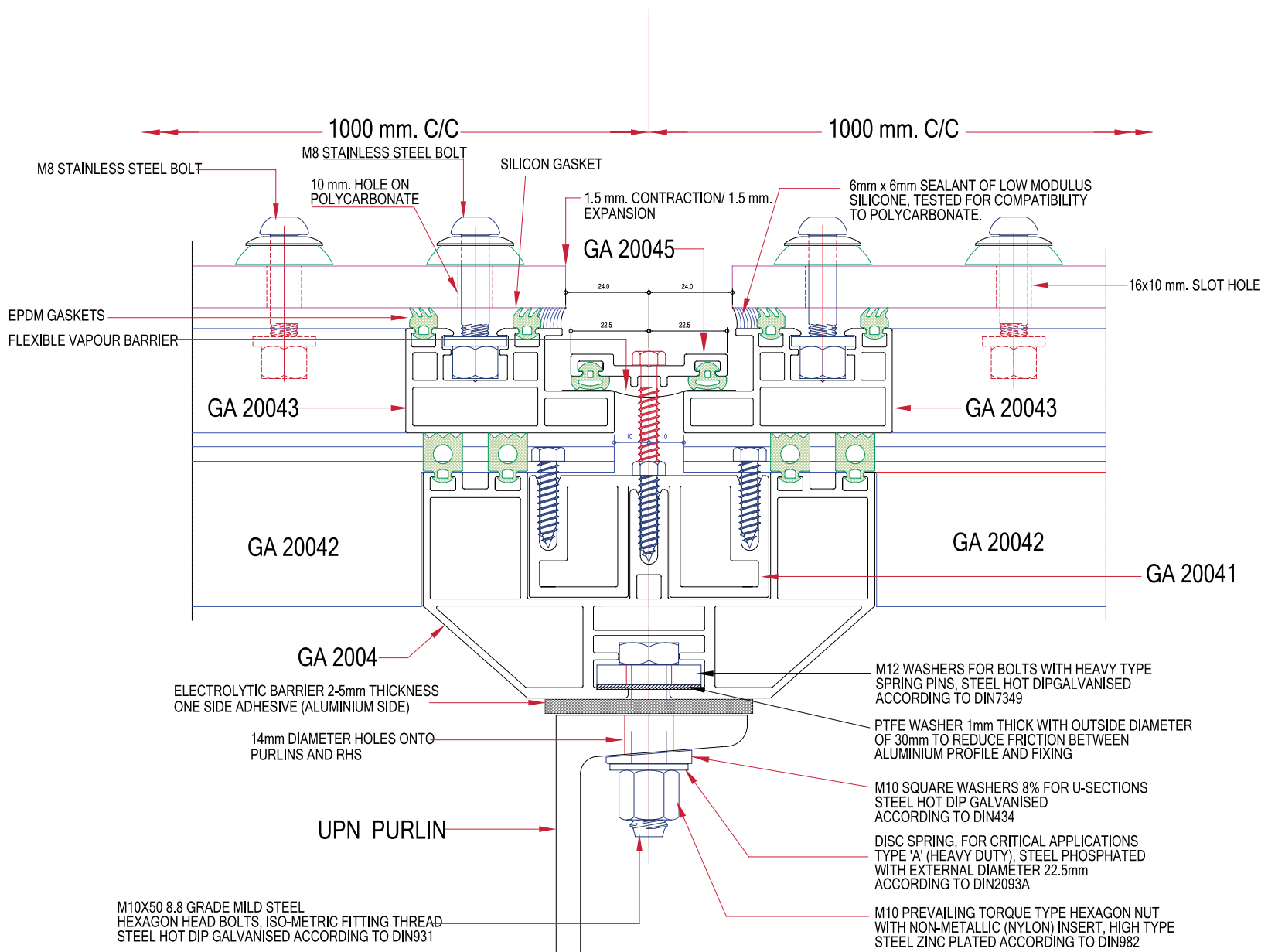
**ASTM method except where noted otherwise.

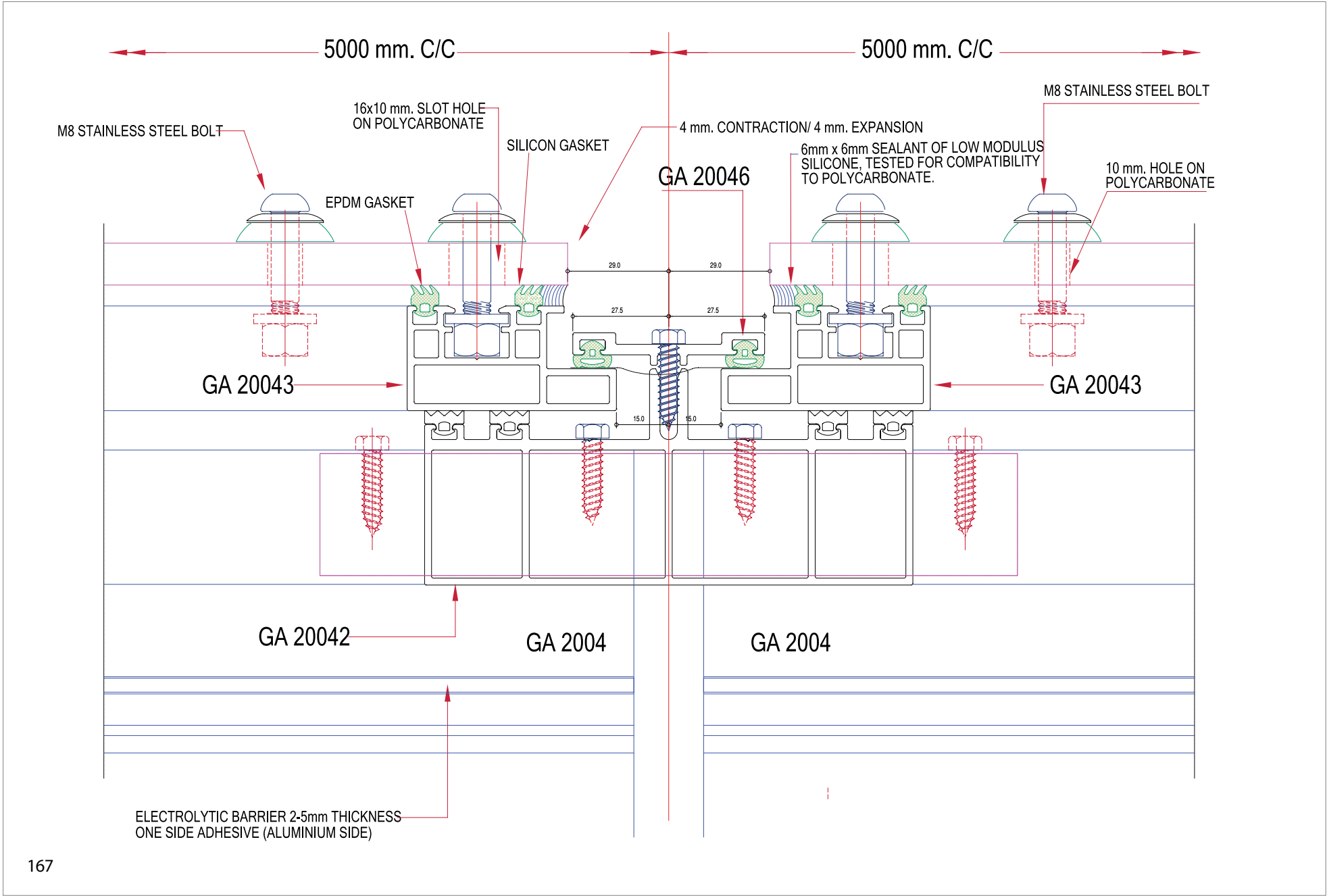
Standard Glazing Detail



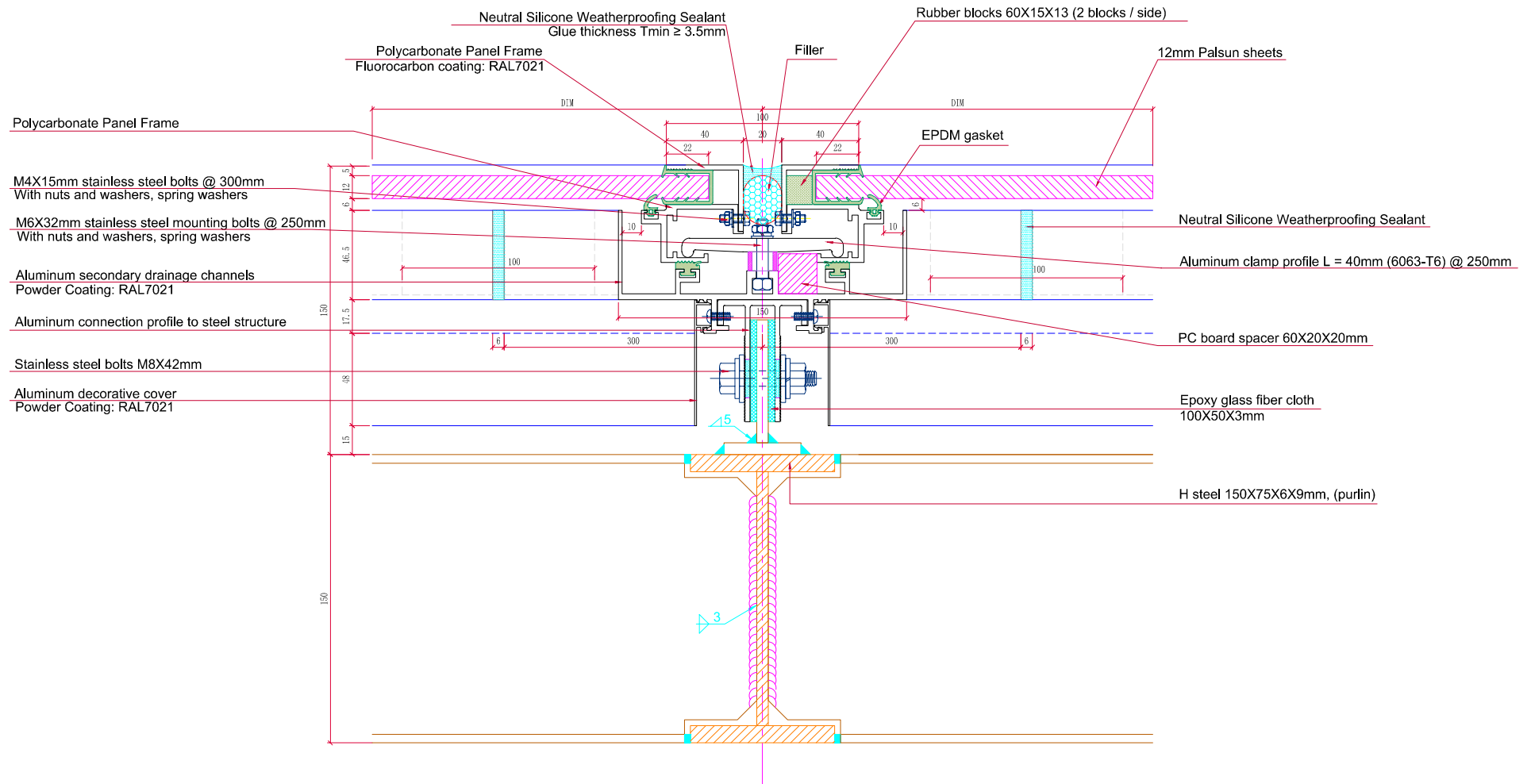
General Junction layout (GA-2004 system)





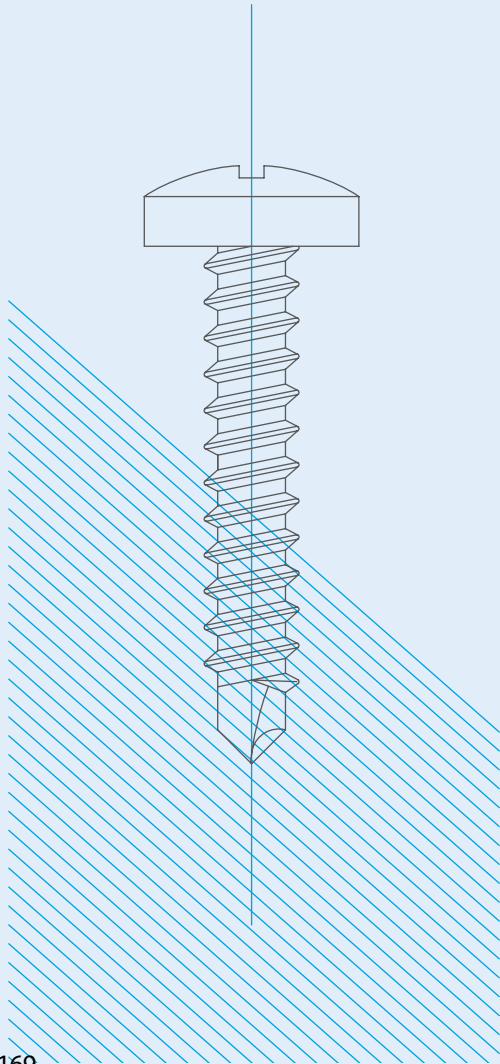


Glazing Details | Shenzhen Stadium



SUNLITE®

Multiwall Polycarbonate
Panel



Introduction

SUNLITE's cellular polycarbonate structure yields a lightweight sheet with high impact strength and superior thermal insulation.

High light transmission makes SUNLITE ideal for varied roofing, wall cladding, and glazing applications.

SUNLITE has a wide product range: from anti-condensation treatment for greenhouses and garden centers to SolarSmart™ sheets that create cool climatic conditions.

Interior designers and advertisers take advantage of SUNLITE's special appearance and add a unique touch to their designs.

Main Benefits

- High thermal insulation
- Lightweight and impact resistant
- High light transmission
- Excellent structural durability
- Weather and UV resistance
- Blocks virtually all UV radiation
- Easy to handle and install
- High fire performance rating

Typical Physical Properties

Property	Method*	Conditions	Units	Value
Density	D-792		g/cm ³	1.2
Heat deflection temperature (HDT)	D-648	Load: 1.82 MP	°C	135
Service Temperature - Short term			°C	-50 to +120
Service Temperature - Long term			°C	-50 to +100
Coefficient of linear thermal expansion	D-696		mm/mm °C	6.5 x 10 ⁻⁵
Tensile strength at yield	D-638	10 mm/min	MPa	62
Elongation at break	D-638	10 mm/min	%	>90
Impact falling dart	ISO 6603/1		J	40-400
Practical Thermal expansion/contraction			mm/m	3

*ASTM method except where noted otherwise

Colors and Light Transmissions*







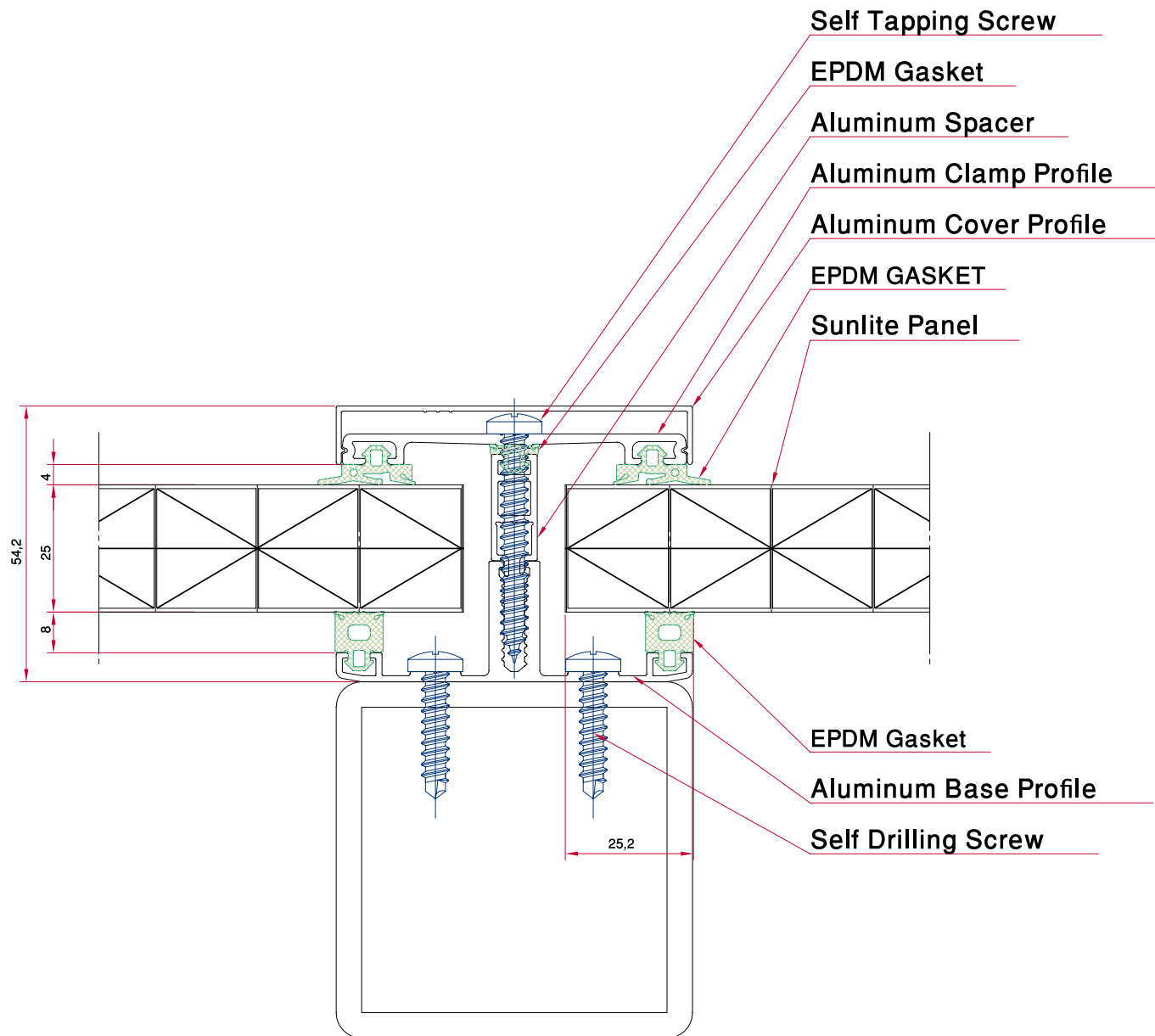
Structure	Standard Colors						Multi-Layered		LT = Light Transmission ST = Solar Transmission				
	Clear	Bronze	White Opal	White Diffuser	Green**	Blue**	Bronze/Opal	Solar Guard (Solar Control/ Opal)	Solar Metallic Reflective		Infra-Red Reflective		Selective See Through
									Solar Ice	Solar Control*	CL	SLT	Smart Green
Twin wall 4mm	82%	35%	30%		35%	30%				30%			
Twin wall 4.5mm	82%	35%	30%		35%	30%				30%			
Twin wall 6mm	80%	35%	20%		35%	30%				30%			
Twin wall 8mm	80%	35%	35%		35%	30%				25%	45%/34%	60%/55%	
Twin wall 10mm	79%	35%	30%		35%	30%				25%		60%/55%	
Triple wall 8mm	76%	35%	48%		35%	30%				25%			
Triple wall 10mm	76%	35%	48%		35%	30%				25%			
Triple wall 16mm	76%	35%		48%	35%	30%							
X-Lite 16mm	60%	25%		38%	35%						30%/25%		
V-Structure 20mm	63%												
X-Lite 25mm	60%	25%	15%				10%	5%	20%		20%/16%		42%/35%
X-Lite 32mm	58%	20%	15%				10%	5%	20%		20%/16%		42%/35%
X-Lite 35mm	57%	20%	15%				10%	5%	20%		20%/16%		42%/35%
X-Lite 40mm	57%	20%	15%										

*ASTM D-1003

**Blue, Green and Solar Control sheets are produced per order.

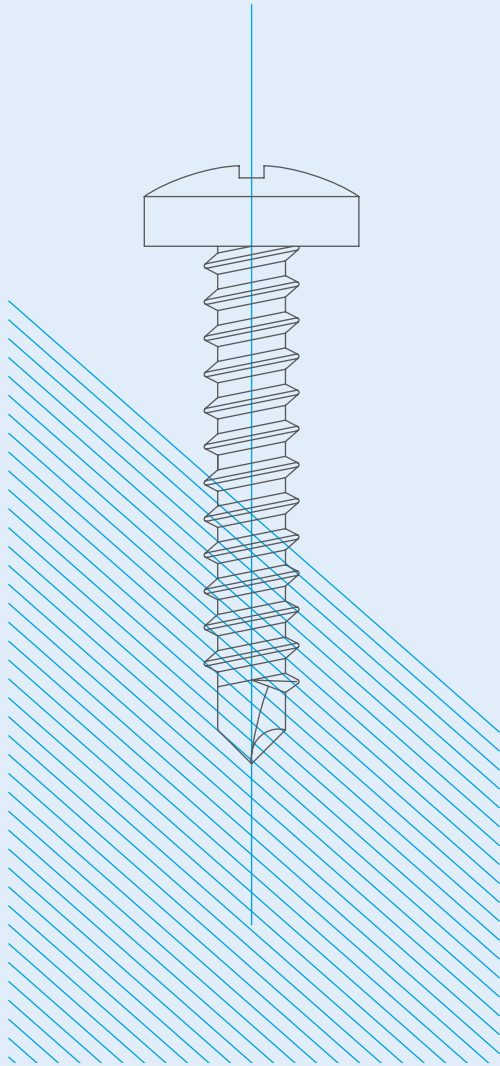
Standard Dimensions

Structure	Thickness (mm)	Area Weight Kg/m ²	U-Value W/m ² °K	Width (mm)											
				980	1050	1200	1220	1250	1600	1800	1830	2085	2090	2095	2100
Twin Wall 	4	0.8	3.8	✓	✓	✓	✓				✓				✓
	4.5	1.0	3.7	✓	✓	✓					✓				✓
	6	1.3	3.5	✓	✓	✓	✓				✓				✓
	8	1.5	3.3	✓	✓	✓	✓				✓				✓
	10	1.7	3.0	✓	✓	✓	✓				✓				✓
Triple Wall 	8	1.7	2.9								✓				✓
	10	2.0	2.7								✓				✓
	16	2.7	2.3	✓	✓	✓	✓	✓	✓	✓	✓				✓
X-Lite 	16	2.6	2.1	✓	✓		✓	✓	✓	✓					✓
	25	3.4	1.7	✓	✓		✓	✓	✓	✓					✓
	32	3.7	1.6	✓	✓		✓	✓	✓	✓					✓
	35	3.9	1.5	✓	✓			✓	✓	✓					✓
	40	4.1	1.4												✓
V-Structure 	20	2.8	1.85									✓			
	25	3.4	1.6										✓		
	32	3.6	1.6											✓	
	35	3.6	1.45											✓	
	40	4.0	1.35												✓



SUNTUF®

Corrugated Polycarbonate
Panel



Introduction

SUNTUF corrugated polycarbonate sheet is an outstanding roofing material that offers superior physical properties.

SUNTUF is favored by professionals for noncorrosive industrial structural roofing and siding, and by home owners for a multitude of DIY applications, due to its high impact strength and wide service temperature range.

SUNTUF's high light transmission and unlimited range of profiles allow it to integrate as a high quality rooflight into any roofing profile. SUNTUF is also available in a wide variety of colors.

Main Benefits

- Impact resistant: virtually unbreakable
- Transparent - up to 90% light transmission
- Weather and UV resistant
- Wide service temperature range
- UV screening - better than sunscreens
- Lightweight
- Good flammability rating - does not emit toxic gasses when burning
- Warranted against yellowing, loss of light transmission and hail penetration
- Easy to work with and install

Unlimited Profile Matching

On top of SUNTUF's large profile catalog, it can be matched to any given pre-existing or custom ordered corrugation profile using Palram's proprietary production technology. The service is free of charge and does not delay supply schedules.

Benefits of SUNTUF Profile Matching

- Maintain an even and consistent roof assembly
- Simple and easy installation
- Rooflight implementation with no additional fittings
- Reduce duration and cost of the installation
- Maximum impermeability
- Maximum flexibility in new roof designs
- Maximum flexibility when matched to existing roof

SUNTUF is currently available in over 150 known profile. For a complete profile listing please see "SUNTUF Rooflights Profile Catalog" (Downloadable from the appropriate section at www.palram.com website).

Typical Physical Properties

SUNTUF corrugated polycarbonate sheet possesses electrical, mechanical, physical, optical and thermal properties, presented in the table below, that provide comprehensive solutions for a wide variety of applications. The combination of these characteristics qualifies SUNTUF sheets as a first class material.

Property	Method**	Conditions (U.S. Customary)*	Units - SL (U.S. Customary)*	Value (U.S. Customary)*
Physical				
Density	D-1505		g/cm ³	1.2
Water Absorption	D-570	24 hr. @ 23°C	%	0.15
Mechanical				
Tensile strength at yield	D-638	10 mm/min	MPa	62
Tensile strength at break	D-638	10 mm/min	MPa	65
Elongation at yield	D-638	10 mm/min	%	6
Elongation at break	D-638	10 mm/min	%	>70
Tensile Modulus of Elasticity	D-638	10 mm/min	MPa	2,300
Flexural Modulus	D-790	1.3 mm/min	MPa	1,890
Flexural Strength at Yield	D-790	1.3 mm/min	MPa	93
Notched Impact Strength Izod	D-256	23°C (73°F)	J/m	800
Notched Impact Strength Charpy	D-256	23°C (73°F)	J/m	800
Impact Falling Weight	ISO-6603/1b		J	50
Rockwell Hardness	D-785		R scale8	118
Thermal				
Long Term Service Temperature			°C)	-50 to +100
Short Term Service Temperature			°C	-50 to +120
Heat Deflection Temperature	D-648	Load: 1.82 MPa	°C	135
Vicat Softening Temperature	D-1525	Load: 1 kg	°C	150
Coefficient of Linear Thermal Expansion	D-696		10 ⁻⁵ cm/m °C	6.5
Thermal Conductivity	C-177		W/m K	0.21
Specific Heat Capacity	C-351		kJ/kg·°K	1.3

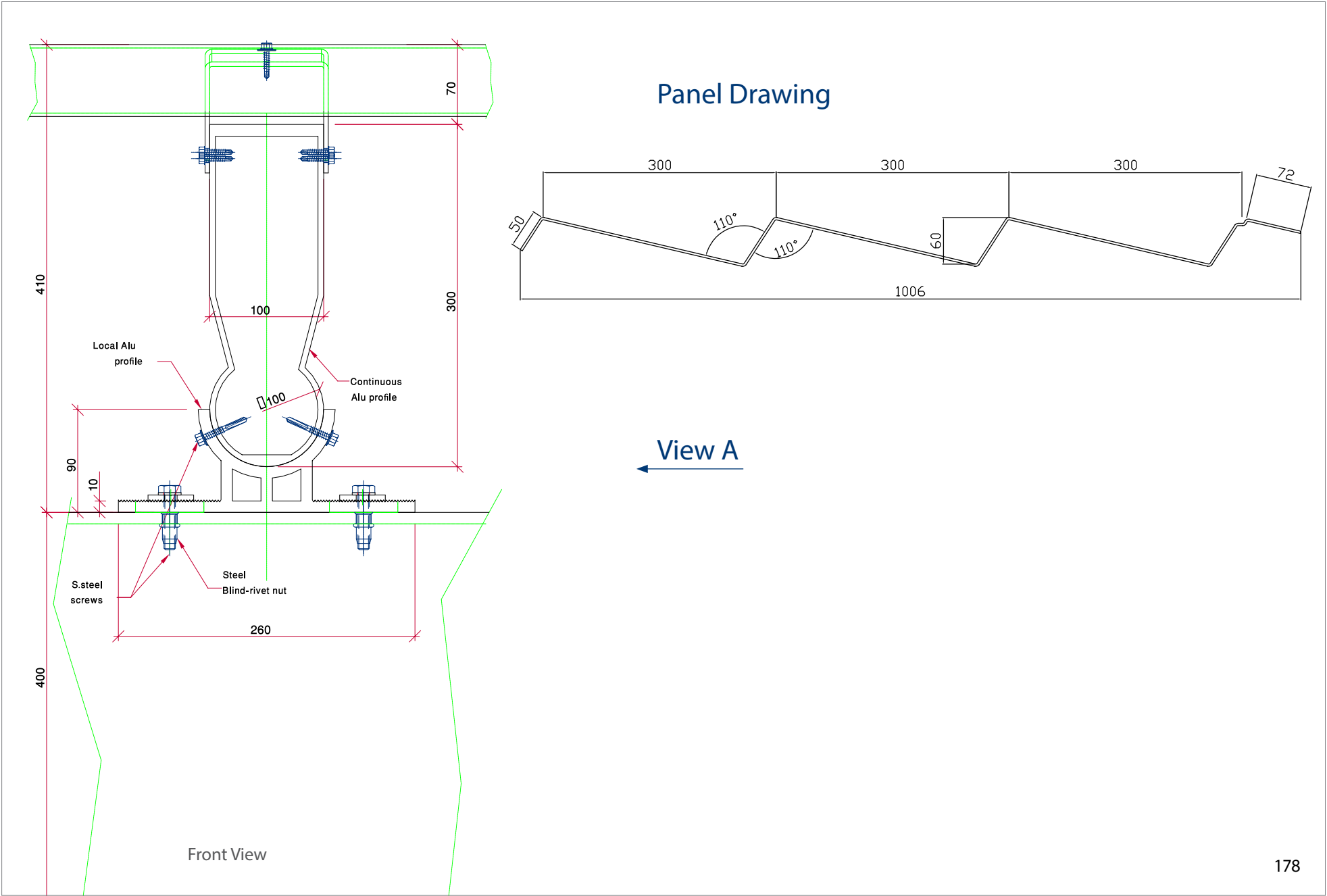
* ASTM method except where noted otherwise

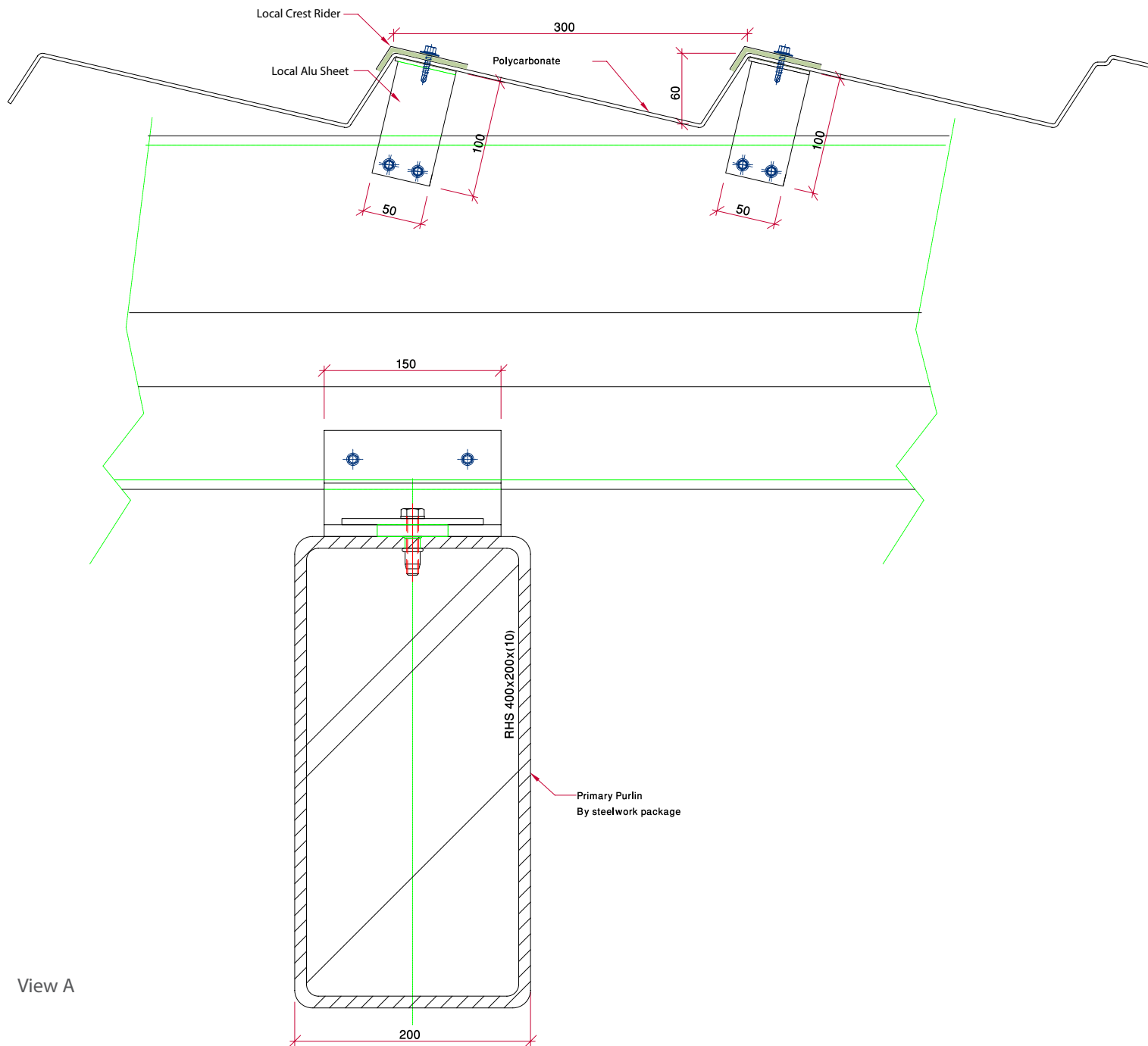
Typical Physical Properties

SUNTUF corrugated polycarbonate sheet possesses electrical, mechanical, physical, optical and thermal properties, presented in the table below, that provide comprehensive solutions for a wide variety of applications. The combination of these characteristics qualifies SUNTUF sheets as a first class material.

Property	Method**	Conditions (U.S. Customary)*	Units - SL (U.S. Customary)*	Value (U.S. Customary)*
Optical				
Haze	D-1003		%	<0.5
Light Transmission	D-1003		%	90
Refractive Index	D-542			1.57
Yellowness Index	D-1925			<1
Electrical				
Dielectric Constant	D-150	1 Hz		2.6
	D-150	1 MHz		2.4
Dielectric Factor	D-150	1 MHz		0.005
	D-150	1 MHz		0.02
Dielectric Strength Short Time	D-149	500 V/s	kV/mm	20
Surface Resistance	D-257	Kiethley	Ohm	4.1×10^{15}
Volume Resistance	D-257	Kiethley	Ohm-cm	1.7×10^{17}

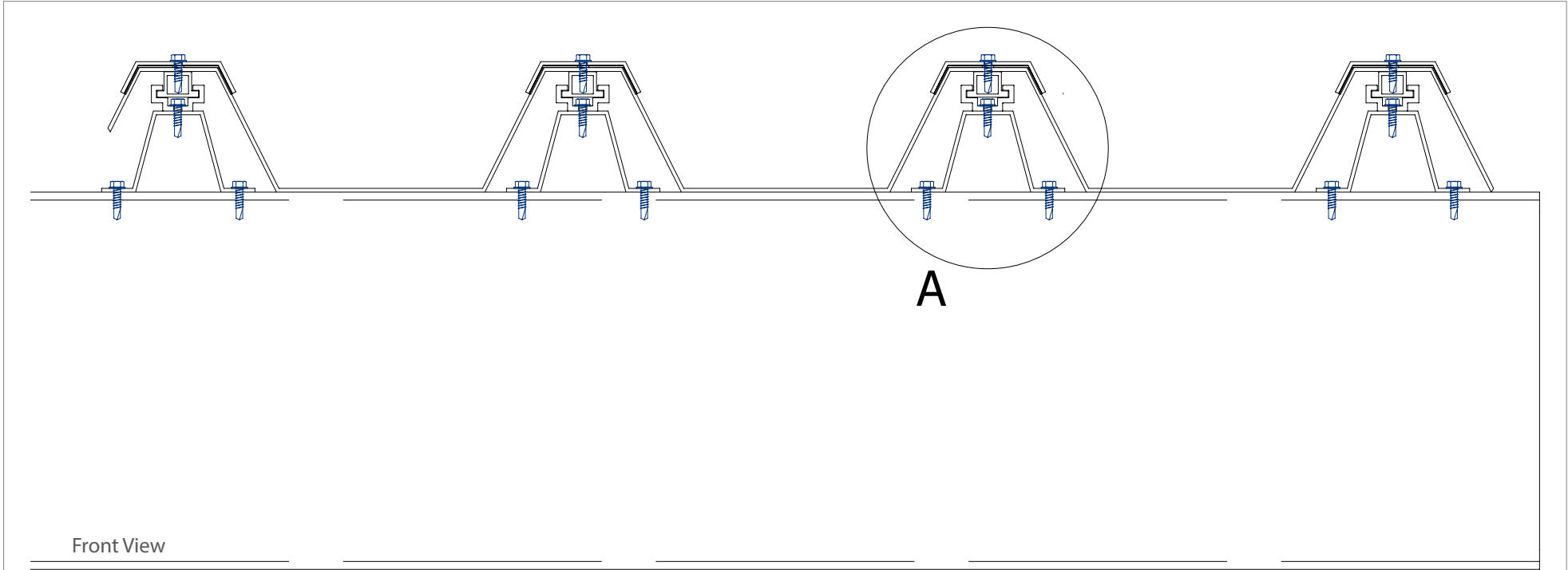
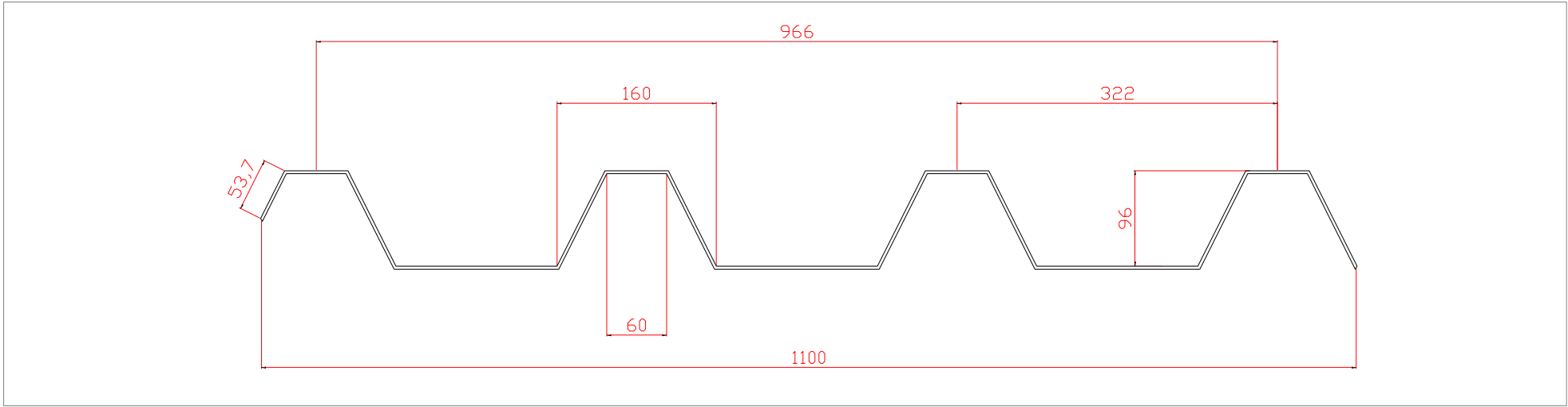
* ASTM method except where noted otherwise





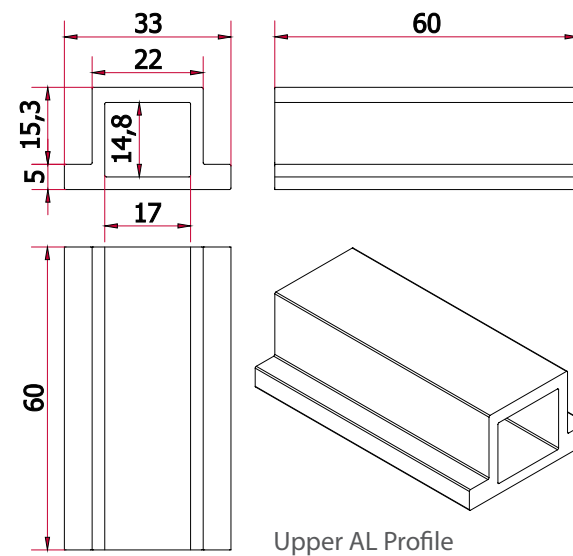
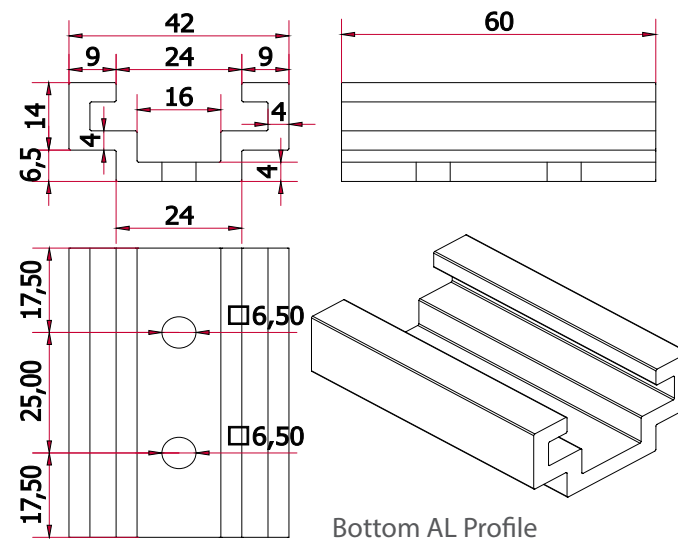
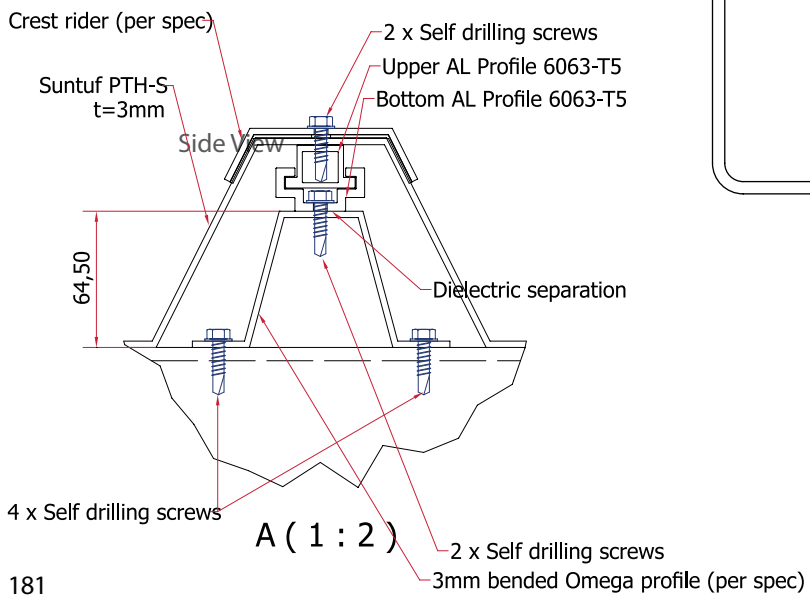
View A

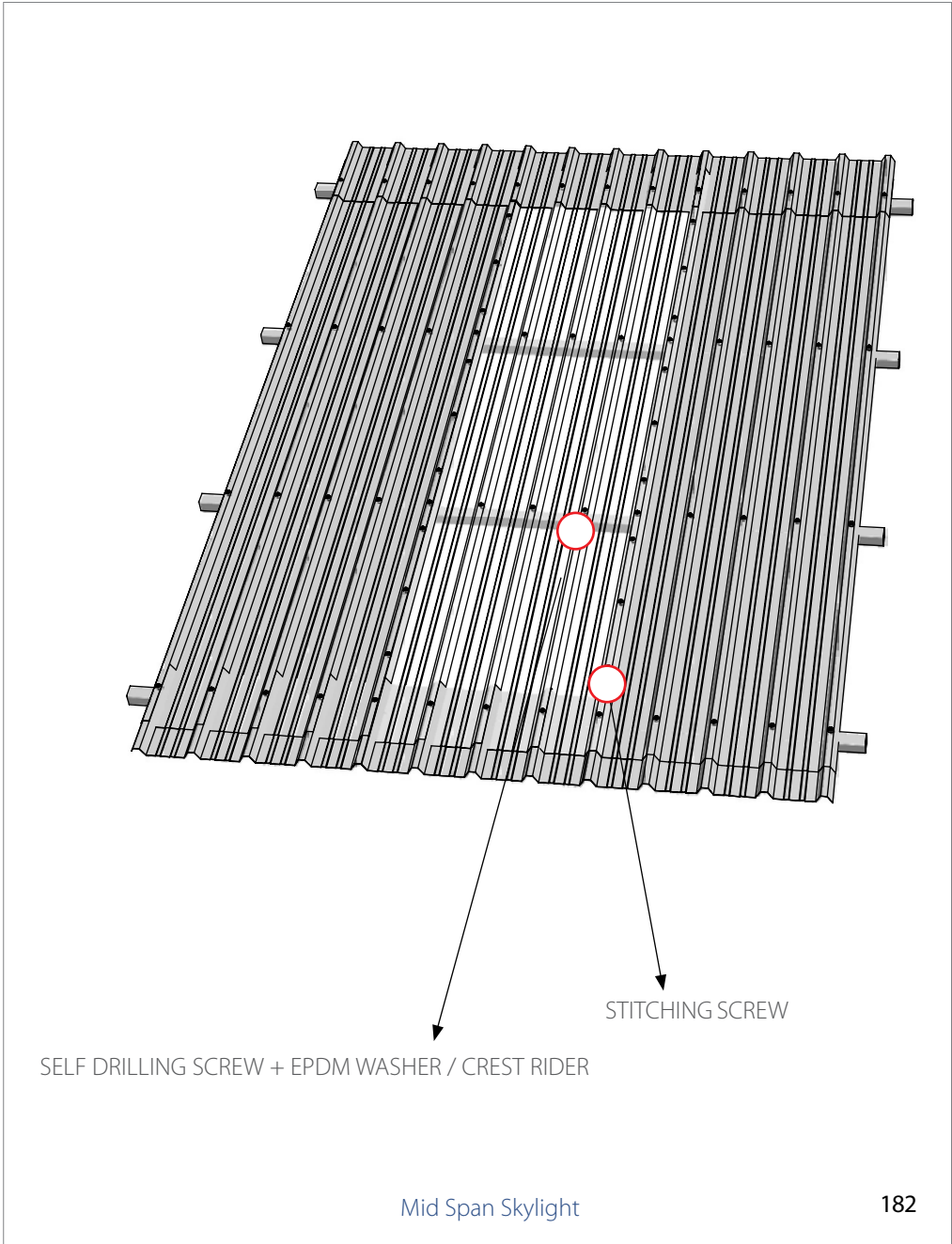
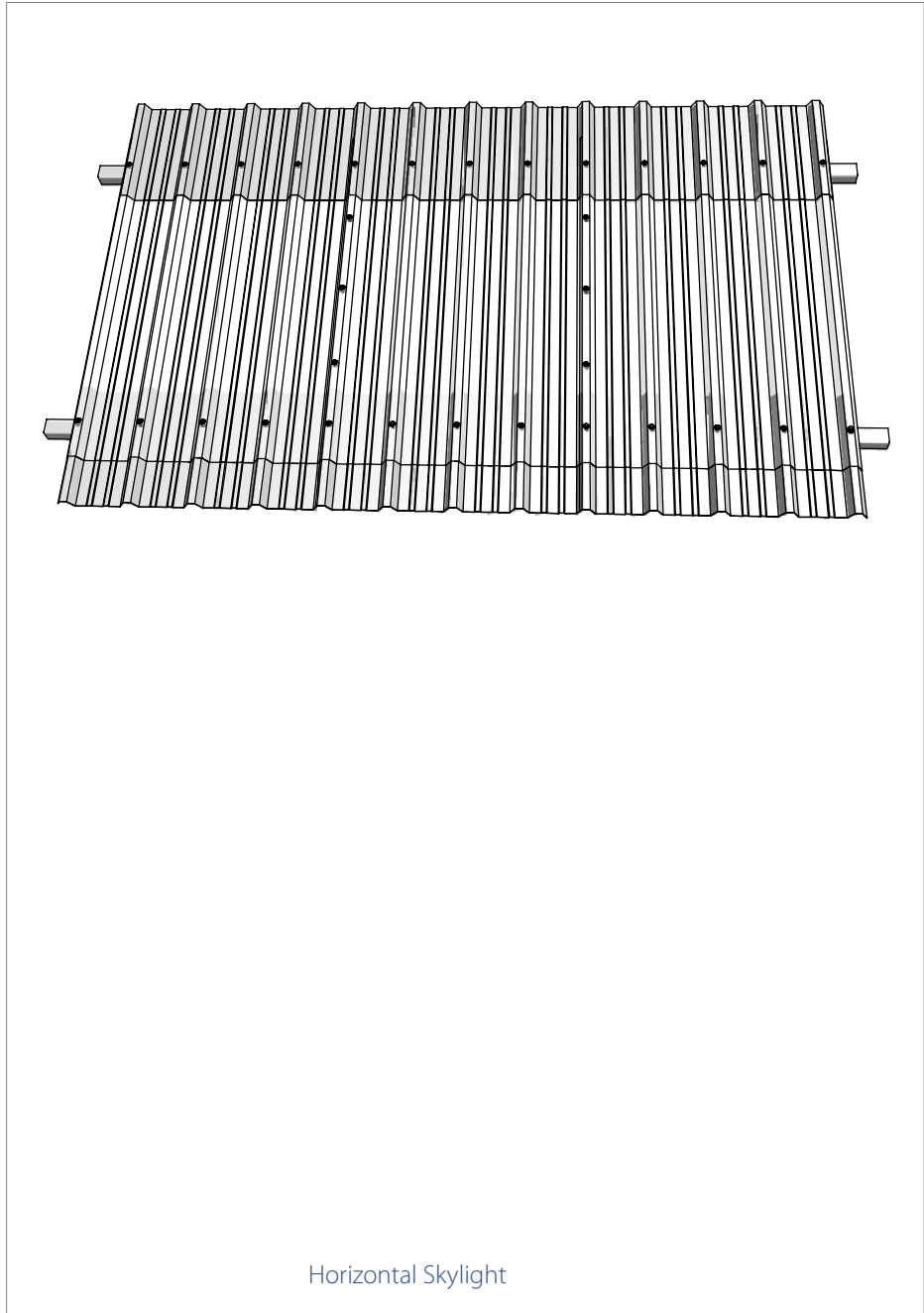
Typical Installation Details | Haifa Stadium



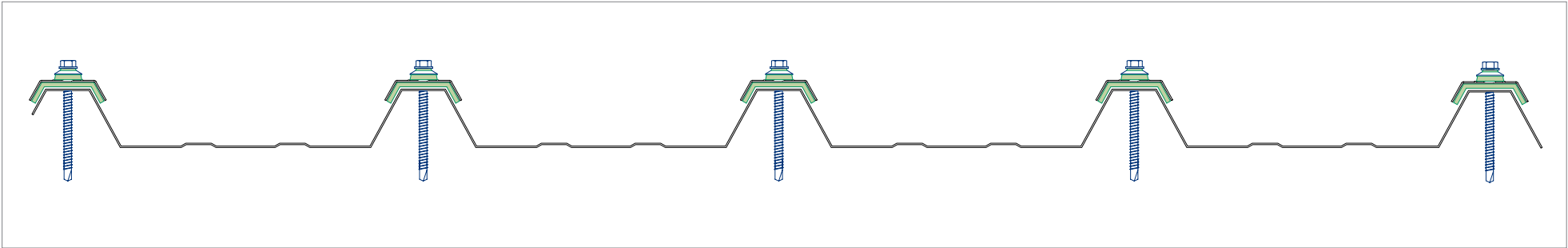
Front View

Typical Installation Details | Sami Ofer (Haifa) Stadium





SUNTUF® Accessories



Stitching Screw



Palram 25mm EPDM Washer



Self-drilling Screw



Storm Washer

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