

# Designed to last

Transport lighting solutions



**designplan**  
L I G H T I N G

**ROBUST CONSTRUCTION**

**LOW MAINTENANCE**

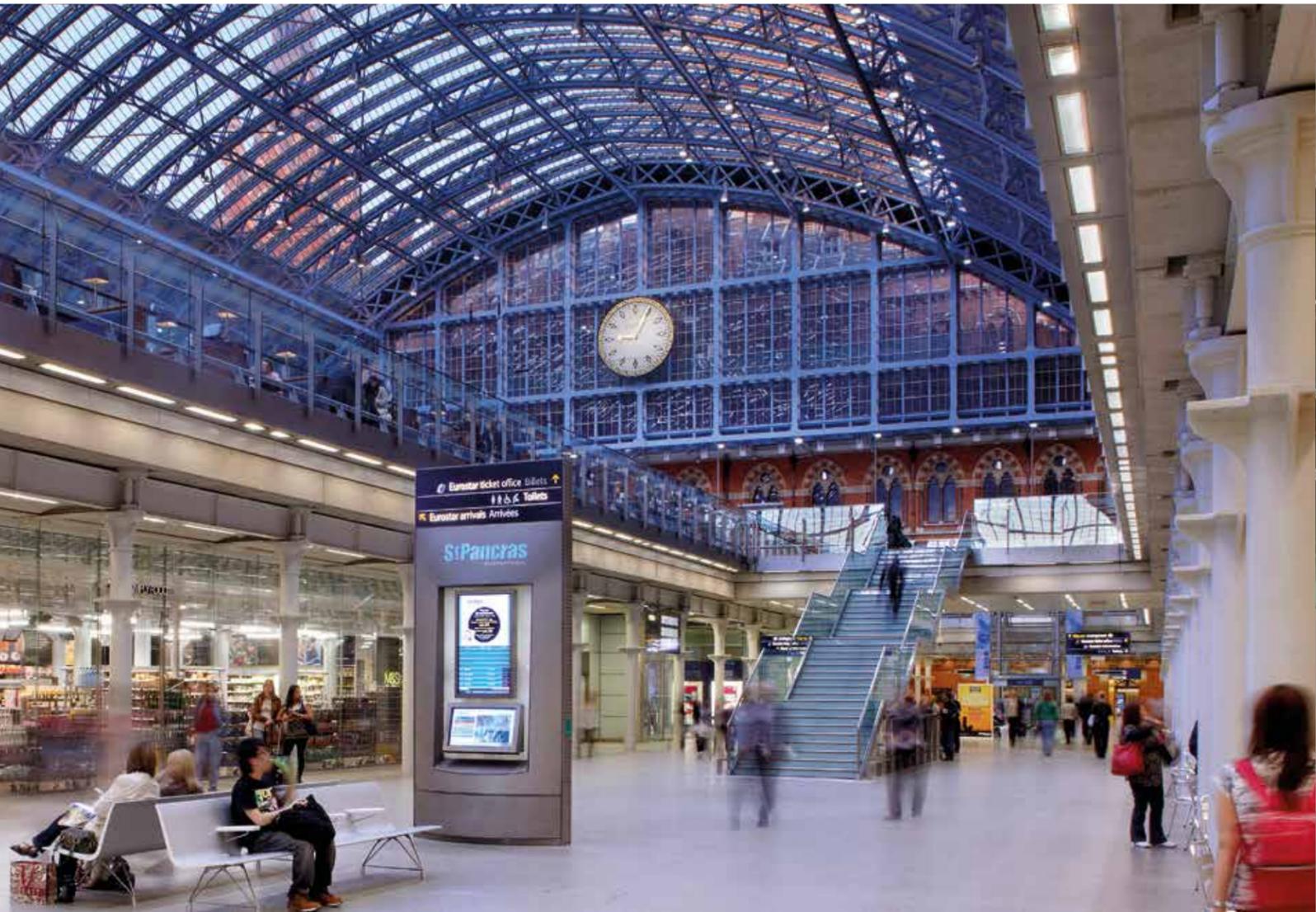
**EASY INSTALLATION**

**LOW TOTAL COST OF OWNERSHIP**

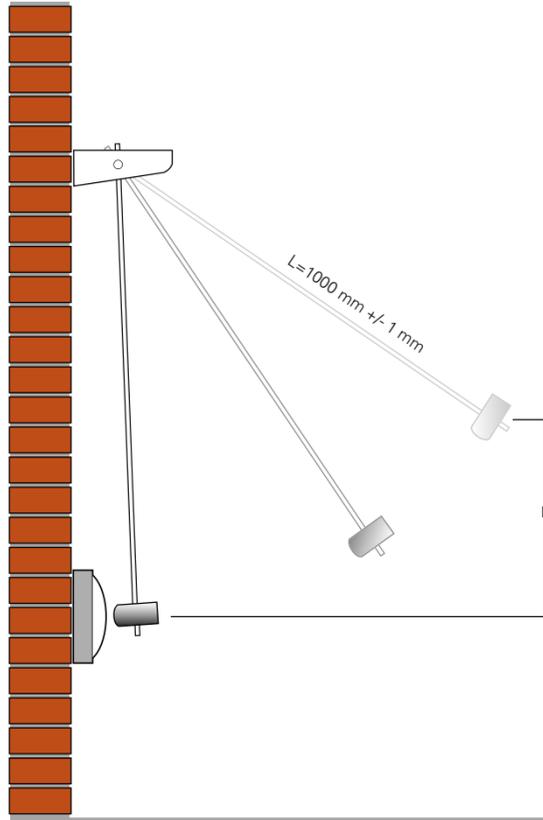
When it comes to lighting transport applications, and in particular surface and underground railways, Designplan has an unrivalled wealth of experience and products to offer.

Over the last 50 years Designplan has worked on some of the most prestigious transport projects in the UK and beyond.

Designplan's products are specifically designed for the demands of the rail sector, and have an enviable reputation for robustness, vandal resistance and low maintenance. They are built for longevity of operation in harsh environments, but we also appreciate the importance of ensuring that high product efficiency contributes to safer environments.



# Ensuring suitability for transport applications



## IP and IK ratings

IP and IK ratings are international standards describing a products' resistance to the environment in which it is used. IP ratings (International Standard IEC 60529-1:2003) refer to a how resistant to ingress of water and particulates a product is, and IK ratings (International Standard IEC 62262:2002 and IEC 60068-2-75:2014) note how much mechanical impact a product can resist.

The IP rating is divided into two numbers – the first number defines a product's resistance to the ingress of particulates or foreign objects, whereas the second refers to water resistance, varying from a few falling drops to complete immersion under pressure.

Almost all Designplan products have high IP and IK ratings, but our experience has taught us that IK10 is inadequate against the sort of vandalism our products face on a regular basis. By testing to the EN60068-2-75 standard using a pendulum hammer, we have extrapolated the ratings from the 20 joules (IK10) rating all the way up to 150 joules of impact (IK16).

HAMMER WEIGHT	HAMMER HEIGHT	IMPACT ENERGY	IK RATING
1.7kg	300mm	5 joules	IK8
5kg	200mm	10 joules	IK9
5kg	400mm	20 joules	IK10
10kg	350mm	35 joules	IK11
10kg	500mm	50 joules	IK12
10kg	750mm	75 joules	IK13
10kg	1000mm	100 joules	IK14
10kg	1250mm	125 joules	IK15
10kg	1500mm	150 joules	IK16

If you have any questions about the weather and vandal resistant features of our products, please contact us on +44 (0)20 8254 2020.

## Corrosion resistance

Not only are the bodies and diffusers of our products built to resist considerable impact, the paint we coat them with is as well.

First we clean our unpainted product bodies thoroughly using an etching low foam heavy duty cleaner and a two-stage demineralised water rinse. This removes any trace of dirt or residue from the bare metal and provides a key for the subsequent finishing.

Next comes the polyester powder coat, a free-flowing dry powder that is electrostatically applied to the metal. This is dried and sealed in our drying ovens to provide a tough skin. This finish is incredibly hard to remove, needing a sand blaster or 1500°C oven to make a mark.

We also use an accelerated corrosion test on our paint finishes. The surface is cross scribed and placed in a salt spray test cabinet before being sprayed with an atomised saline solution. This rapidly simulates extended exposure to corrosion over the life of the product. Our finishes last for over one thousand hours in these extreme simulation conditions, with no significant delamination or rust creep.



We have supplied thousands of robust light fittings to railway infrastructure contractors around the world, including numerous station projects throughout the UK.

Most recently our focus has been on extensive supply to many of the London Crossrail projects, plus the London Bridge Thameslink upgrade, where we have provided the majority of the lighting.

Outside of London, recent major projects include Birmingham New Street and multiple major upgrades on the East Coast route. For that, we provided a single point of supply and offered solutions based on a combination of both standard and bespoke products.

However, our experience of lighting stations is by no means limited to the UK alone.

We have completed many overseas surface rail projects; including Grand Central Station in New York City, Dan Helder Terminal in Holland, Poznan in Poland, the Kolsaasbanen in Norway and SNCF workshops for RFF - the French national rail contractors.

A recent success was obtaining products approved for use by Deutsche Bahn, in Germany.



Designplan have provided lighting solutions to a vast number of underground and metro systems.

During our 30 years of collaboration with London Underground a great number of project objectives have been met by our products. We have supplied lighting to projects across the whole of the network including the major recent upgrades to Victoria and Tottenham Court Road stations.

Our robust, low maintenance light fittings have consistently complied with London Underground's subsurface standard 1-085 (Section 12). This includes stringent IP and IK ratings as well as low smoke cable requirements and glass diffusers.

As a result, many of our products are in the London Underground Products Register, including our latest LED fittings.

In addition we have worked extensively with underground rail systems elsewhere, including the multi-million pound renovation of Strathclyde Public Transport, Liverpool's Merseyrail and the Newcastle Metro.

International projects include St. Denis, Stade de France Station in Paris, Metro North in New York City, Heyzel, Demey, Lemonnier, Porte de Hal in Brussels and Guangzhou in Guangdong, China.

Currently we are in the process of supplying the majority of the lighting for the 17 station CityLink project circling Copenhagen in Denmark.

Rail specific products include the popular Mission, Terminus and Tuscan – which has been supplied for over 25 years and is still going strong as a result of being upgraded to the latest LED technology.

We not only offer individual luminaires, but also complete systems, such as Mission CMS (Cable Management System). Furthermore, many of our products can also be supplied and retrofitted with LEDs, significantly reducing running costs.

In addition to our product expertise we understand the unique requirements involved in lighting railways and transport terminals. Our staff have an in-depth technical knowledge of the challenges and compliance issues surrounding such projects, meaning we can recommend lighting solutions with confidence.



## Extreme fittings for extreme environments



### Section 12 and 1-085 compliance.

Luminaires supplied to subsurface rail stations must follow a strict set of safety standards. Designplan has been fulfilling these requirements for more than twenty-five years. These fittings must be as robust and durable as our standard products, with extra specifications for fire safety and flammability.

Several of our products are compliant with the Fire Precautions for Subsurface Railway Stations Regulations' 1989 (UK) and 2009 (England only), commonly known as Section 12.

They also meet the London Underground subsurface standard 1-085 and feature glass (rather than plastic) diffusers, low smoke cables and a compliant paint finish.

These specifications and standards are often referenced in projects throughout the UK and across the world.

## Anatomy of a subsurface rail section 12 and 1-085 compliant Mission

### Low smoke/zero halogen cables

All London Underground subsurface standard 1-085 compliant fittings have to use low smoke and zero halogen emitting cabling, to prevent air becoming toxic in the case of a fire.

Designed in accordance with fire precautions for subsurface rail stations (Section 12).

### MISSION S12

### High IP65 rating

They also have to have a high IP rating to prevent ingress of particulates commonly found in the subsurface rail environment (brake dust particulates for example).

### Glass diffuser

Diffusers must be toughened and laminated glass to prevent harm to passengers and staff during a fire.



# Case Study

## Crossrail: Illuminating the platforms

**Crossrail is one of the largest infrastructure projects of its kind currently being undertaken in Europe.**

It is building 42km of tunnels, 10 new stations and improving 30 more. The finished railway, which will be named the Elizabeth line when it opens in central London in 2018, will be an accessible route of 40 stations from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east.

Designplan have supplied lighting solutions to several Elizabeth line stations including Canary Wharf, Bond Street, Liverpool Street, Tottenham Court Road, Whitechapel and Farringdon.



The platform at Canary Wharf



“Many considerations had to be taken into account by Designplan for a project of this scale” says Lee McCarthy, Technical Applications Director at Designplan Lighting. “This includes accessibility and the requirement for architecturally pleasing lighting”.

Designplan were asked to look at the platform lighting in 2013. “The architect had a specific vision of how the platforms should be lit” says Lee. “To achieve this we designed a light box to illuminate the platform edges”.

Each light box is 1.5 metre wide by 1 metre high, weighing about 90 kilos with a design life of 30 years. They produce an output of over 6,000 lumens, whilst consuming the energy of a 60 watt household lamp!

Approximately 150 light boxes are required for a platform, so a key consideration was to make maintenance quick and hassle free.

“For easy maintenance we designed a hinged LED array system to provide access from below” explains Lee. “Using LEDs also provides significant energy savings, as they last up to five times longer than traditional fluorescent lamps, reducing the overall cost of ownership”.

## Meeting high standards

“The regulations affecting all luminaires specified by Crossrail, are contained in a document practically an inch thick” explains James Coma, Project Manager at Designplan Lighting.

“Accordingly all our light boxes are designed in accordance with the Fire Precautions (Subsurface Railway Stations - England) Regulations 2009, commonly known as section 12, and comply with London Underground’s subsurface standard 1-085. The light boxes were rigorously blast and fire tested, assessed for electro-magnetic field interference and impact, ingress and safety tested”.



## Adapting to the needs of the project

“Having our manufacturing facility and design team on site enabled us to adapt to the needs of the Crossrail project” explains Lee.

“For example, we collaboratively developed the brackets for the light boxes as well as a method for mounting them. This was tested at our factory to ensure ease of installation prior to being installed on site.”

In addition, a new production line was created and a reusable metal packaging system was designed for securely delivering the light boxes and minimising waste”.



Standard and bespoke luminaires have been installed throughout the Crossrail project including (from left to right) PES light boxes, Flair, Terminus and Terminus Wall.

# Recommended luminaires



CE100



CEB100



CE150



CEB150



CE200



CEB200



CES100



CESB100



CES200



CESB200



CER2010



CERB2010



CE Escalator



Curve VR



Flair



FlairEvo



Flair Angled



Flair High Bay



FSRDL 2



Gemini Metro



Maxi Callisto



Mission



Mission Bulkhead



Mission S12



Mission CMS



Monitor



Parkalux



Parkalux Angled



QuadEvo



Quadriga



Stromma



Terminus



Terminus Surface



Terminus Wall



Tuscan 89



Tuscan 89 Angled



Tuscan 88



Tuscan 88 Angled



Tuscan S12



Tuscan II



Zelos Beam



Zelos Bollard



Zelos Post Top



Zelos Wall



Zelos Wall Max

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