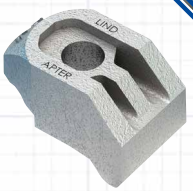
# St Pancras Station Refurbishment

Lindapter Girder Clamps provided a solution for securing a new roof to the existing structure.

## Project Background



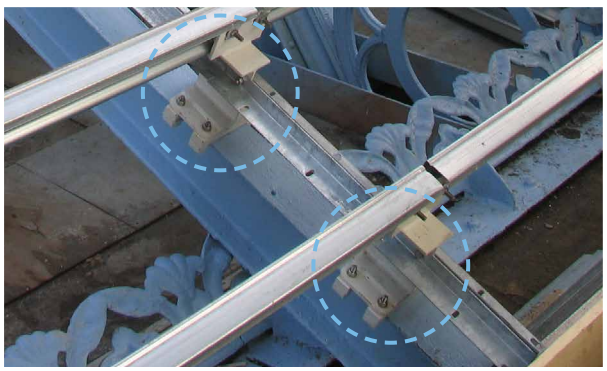
**Location:** London, UK
**Product:** Type AF Girder Clamp
**Market:** Rail
**Client:** London & Continental Railways Ltd
**Engineer:** Rail Link Engineering

The historic St Pancras Railway Station was designed by eminent railway engineer Sir William Barlow, opening in 1868. When services were diverted to Kings Cross and Euston in the 1960's however, St Pancras became surplus to requirements and began falling into disrepair. By the mid 1980's the station was semi-derelict.

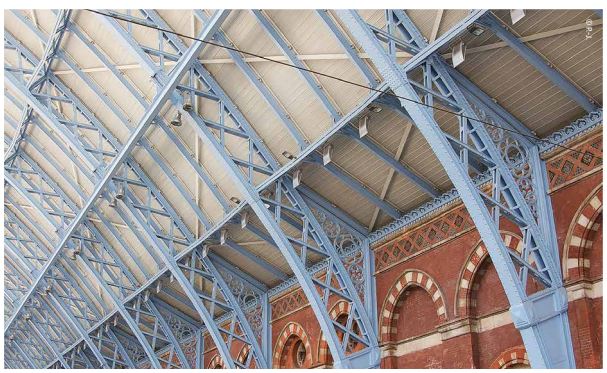
## Client Requirement

As part of East London's huge urban regeneration plan, St Pancras Station was chosen as the Eurostar Terminal for the Channel Tunnel Rail Link. The project involved the complete refurbishment and redevelopment of the Grade 1 listed station, including fitting a new roof.

At 243 ft across, 689 ft long and 100 ft above ground, some of the steel beams and purlins of the existing roof had sagged or corroded. The challenge was to find a suitable method of connecting the steel framework of a new roof to the existing structure without damaging the Victorian arches and the protective coatings. Drilling and bolting the original beams was not permitted and welding at height would have been difficult and costly.



Bracket assembly and girder clamps



Internal view of the arched steel roof

# St Pancras Station Refurbishment

## Design Solution

Lindapter worked with engineers and English Heritage to design a solution which incorporated a bespoke bracket assembly and Type AF high slip resistance Girder Clamps in a four-bolt connection.

This arrangement allowed contractors to adjust both the height and lateral position of each connection point onto the existing steelwork and avoided drilling or welding as the installation only requires hand tools to tighten each clamp.

## Installation

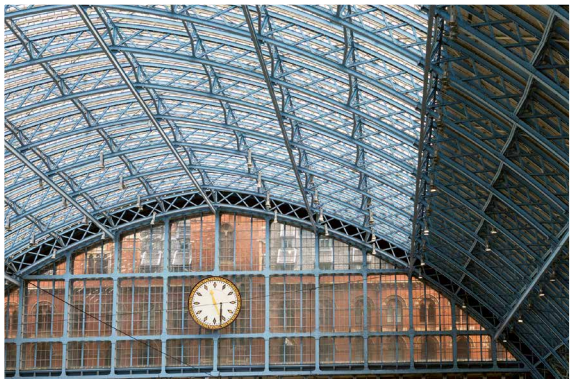
Each pre-fabricated bracket assembly was carefully lifted into position and then fixed to the top flange of the existing beams, using a combination of size M12 Type AFs, washers, packing pieces and location plates. This gave the contractor the flexibility to overcome problems with areas that had sagged and the difference in thicknesses of the original beams. After each bracket was secure the contractor was able to fit the new steel framework and finally the glass roofing panels.

**Click here** to watch the installation video >>>

## Result

Type AF Girder Clamps provided a drilling and weld free connection that prevented any damage to the existing steel structure. The contractor found the process of locating the brackets quick and easy due to the adjustability of the assembly and clamps, enabling them to be positioned accurately along the curvature of the arched roof ready for the glass panels to be installed.

Type AFs have independent technical accreditations, including the CE mark (ETA-13/0300), TÜV and Lloyd's Register approvals, which verify the high load and slip capacities that led to a safe and successful installation. After a long but thorough refurbishment the station was officially re-opened as St Pancras International in 2007.



*Completed roof with new glass panels*

## Key Benefits

- ✔ High slip resistance for tensile and frictional loads
- ✔ No drilling or welding required
- ✔ Hot Dipped Galvanised finish offers a cost effective and low maintenance solution

**Click here** for more details