GANTREX®
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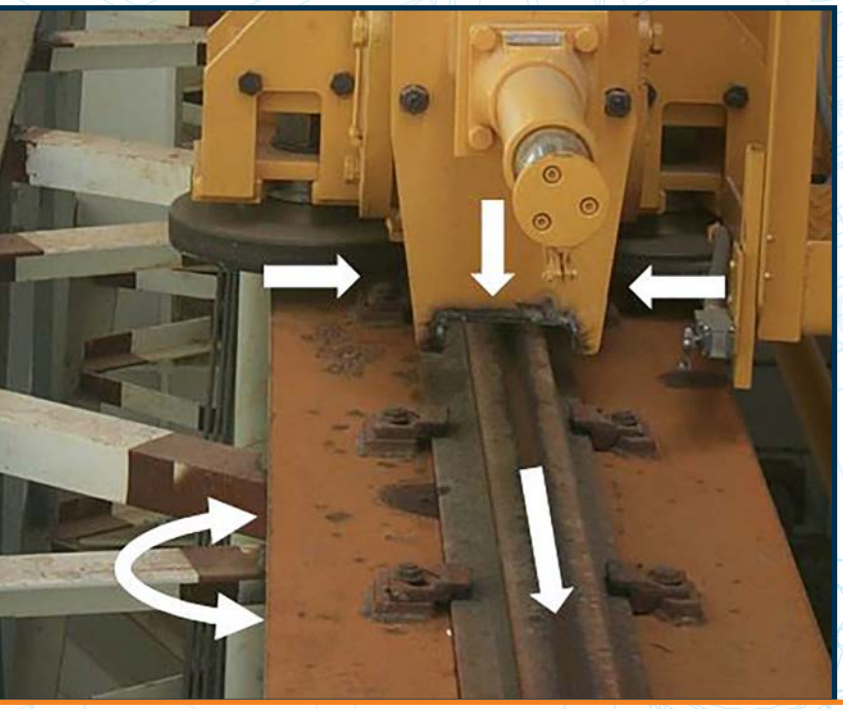
Crane girder tieback assemblies



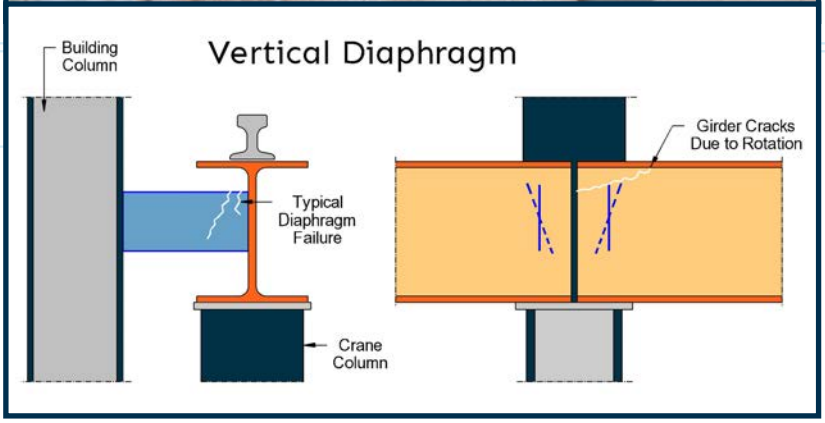
What is a tieback?

When a crane travels down a runway, it generates vertical, longitudinal and lateral forces. The lateral forces go from the crane wheel into the web of the rail, are transferred to the crane rail clips through the rail flange and from there into the crane girder. These forces have to be transferred from the crane girder to a building column, located at the end of the girder, and into the foundation.

A tieback is the connection between a girder and a building column that facilitates the transfer of these forces.

Traditional tiebacks

In the past, tiebacks were manufactured from channels or angles and formed rigid connections between the crane girder and the building column. Other methods included the use of horizontal plates with slotted angles or vertical diaphragms, again rigid connections.

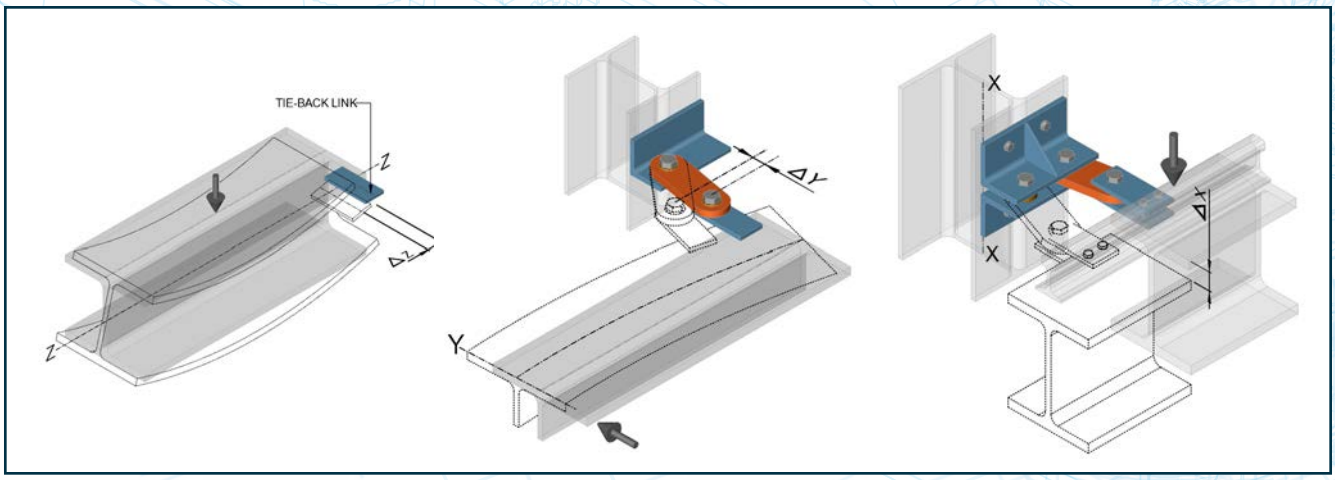


Unfortunately, when a crane was in the middle of the girder span, it caused the girder to deflect vertically and the girder ends to rotate. Further as the crane passed over the crane column, supporting the girder, it also caused the crane column to deflect.

The rigid connections could not handle the complex stresses caused by the girder rotation and deflections and failed in fatigue. Stronger plates and angles simply transferred the failure to another location.

Forces imposed on the tieback

- Girder deflections of L/1000, or other chosen allowable bending limits between the support columns cause top flange compression. This deflection results in girder end rotation in the (Z) direction.
- Side thrust of the crane generated by trolley movement, crane skewing, and imperfect rail alignment cause girder end rotation in the (Y) direction.
- Vertical loading of the crane directly above the girder column support will result in compression of this support relative to the building column in the (X) direction.



The Gantrex Solution

To overcome the problems of the traditional tiebacks, GANTREX™ Tiebacks incorporate a steel link with bearings at each end. The bearings are life time lubricated and require no maintenance in normal day-to-day operations.

The link design allows the forces to be transferred rigidly into the column while the bearings provide flexibility to accommodate the girder deflection and end rotation.

GANTREX™ Crane Girder Tiebacks, supplied only as complete assemblies with crane girder and column brackets, are the proven solution to accommodate flexural movements without fatigue, whilst providing the necessary load transfer to the building column.

The assemblies are custom designed to suit your crane loading and building configuration and can be used for new construction or runway reburbishment.

For multiple industries

Multiple industries and specific applications for those industries use GANTREX™ Tieback Assemblies such as:

- Aluminum smelters – cast house, pot lines, anode bake building, etc.
- Power plant – turbine house cranes.
- Steel plant – Furnace bay, hot and cold mills, pickling and annealing lines, slab yard, coil storage, shipping, etc.
- Automotive
- Railway
- Industrial building manufacturing

Our team of 300 Gantrex crane rail specialists worldwide will guide and offer the tieback assemblies best suiting your needs with the support of our Technical Department's design calculations, including crane loading, duty cycles, structural conditions and ease of installation.

Gantrex tieback assembly styles

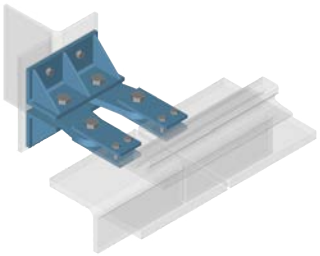
There is an infinite variety of building column sizes and crane girders. The layouts also vary from plant to plant. Based on these layouts, Gantrex provides different assembly styles, customized to suit specific needs. Tiebacks also fall into two categories – single and double:

The normal tieback, placed at a location between two adjacent girders, consists of one bracket each for the two girders, connected with two links to a common bracket on the column. This is considered a double tieback.

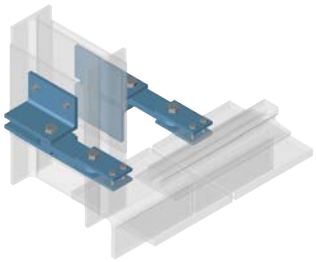
If there is limited space, between the column and the girder, single tiebacks are mounted to the sides of the column. Single tiebacks are also used for runway end girders or where a continuous girder bridges a building column.

Typical GANTREX™ Tieback Assembly configurations:

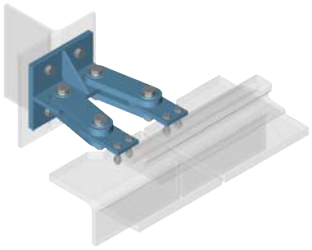
Assembly 1



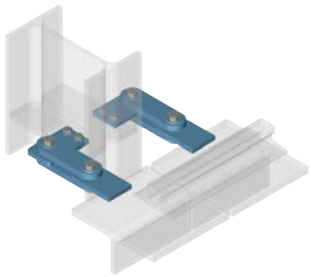
Assembly 2



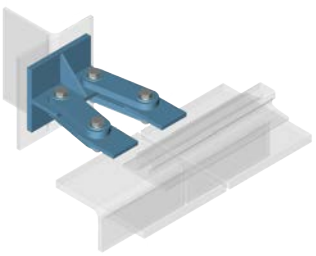
Assembly 3



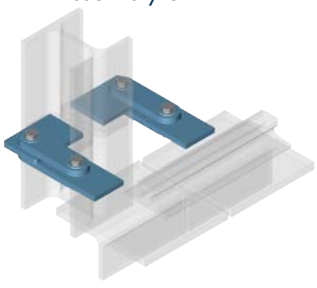
Assembly 4



Assembly 5



Assembly 6



Please contact your local Gantrex representative to finalize your assembly details.