

# **GlideRail**

Ship-To-Shore Trolley Short Rail System

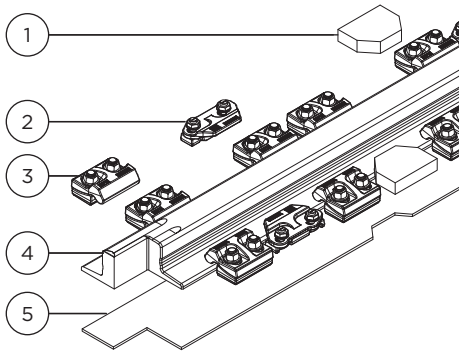
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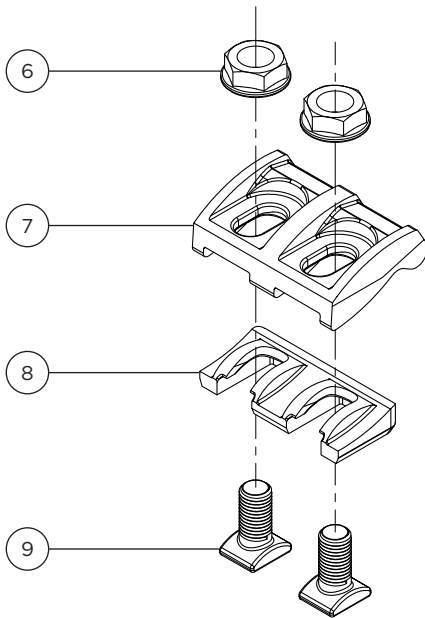
UK Patent Application Number GB2201490.6  
UK Patent Application Number GB2000947.8

### COMPONENTS



#### GlideRail:

1. Rail Anchor
2. Gantrail 1216/15 Clip
3. GlideRail Clamp
4. Short Rail
5. Shim Plate



#### GlideRail Clamp:

6. M20 Flange Nut
7. GlideRail Clamp Cap
8. GlideRail Clamp Base
9. Curved Head Bolt

Booms on ship to shore cranes are exposed to harsh operating conditions, often leading to early system failure and crane operator discomfort.

This is caused by multiple factors:

- High impact forces during boom articulation.
- High frequency cyclic forces from trolley movements.
- The corrosive environment.
- Poor tolerancing / levelling of supporting structures.

All of these factors lead to degradation of the boom hinge short rail system and reduce operational life.

For many years, crane rail system suppliers have tried to design fixtures capable of withstanding these harsh operating conditions, but port operators are still experiencing part degradation and early failures. This is usually due to poor clamp design, where the supporting beam tolerances cause clamp sizing difficulties, leading to high stresses in the bolt; over time these bolts tend to fail completely or they yield to allow part movement, causing loosening and vibration problems. The short rail is another area which causes problems because the geometry around the hinge point does not encourage smooth transitions.

The GlideRail system has specially designed features to avoid these issues by utilising a new patented clamp and short rail design.

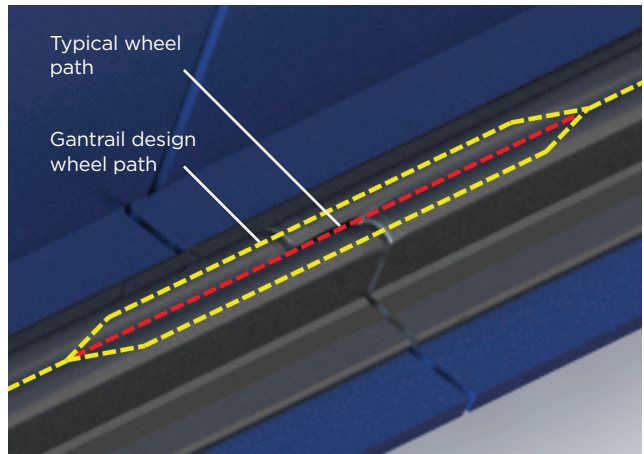
### FEATURES:

- GlideRail:
  - Specially designed profile machined into the rail head.
  - The profile allows for smoother transition between the rails at the hinge rail joint.
  - Reduced rail wear.
  - Increased driver comfort.
  - Reduces system replacements and down time due to maintenance.
- GlideRail Clamp:
  - Produces a clamping force to hold the rail in place throughout the life of the system.
  - Adjustable height to mitigate any extreme stress caused by varying bed heights.
  - Adjustable height allows for variety of rail profiles to be used.
  - Specially designed curved bolt and recess that allows the bolt to move with the clamp. Stress in the bolt caused by varying heights is reduced.

**FEATURES:**

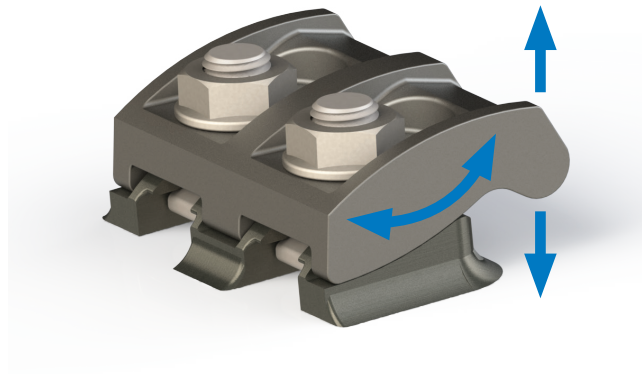
When a wheel rolls along the rail, the typical contact path runs along the centre of the rail head (shown by the red line on the diagram). The single contact point in the centre of the rail head generates high stress concentrations that causes material failure around the boom hinge region. It also leads to higher vibrations.

The GlideRail design mitigates this issue by incorporating a specially designed rail head profile that creates a double contact path at the boom hinge to reduce rail head stress and create a smooth transition of the boom hinge gap. This reduces material failure and vibrations at the boom hinge joint.



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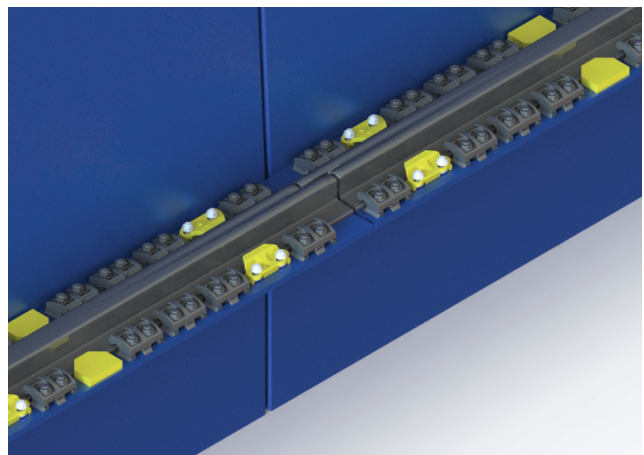
The GlideRail Clamp has been specially designed with a curved profile and bolt to allow continuous vertical adjustment, which accounts for tolerances and any change to the rail level.



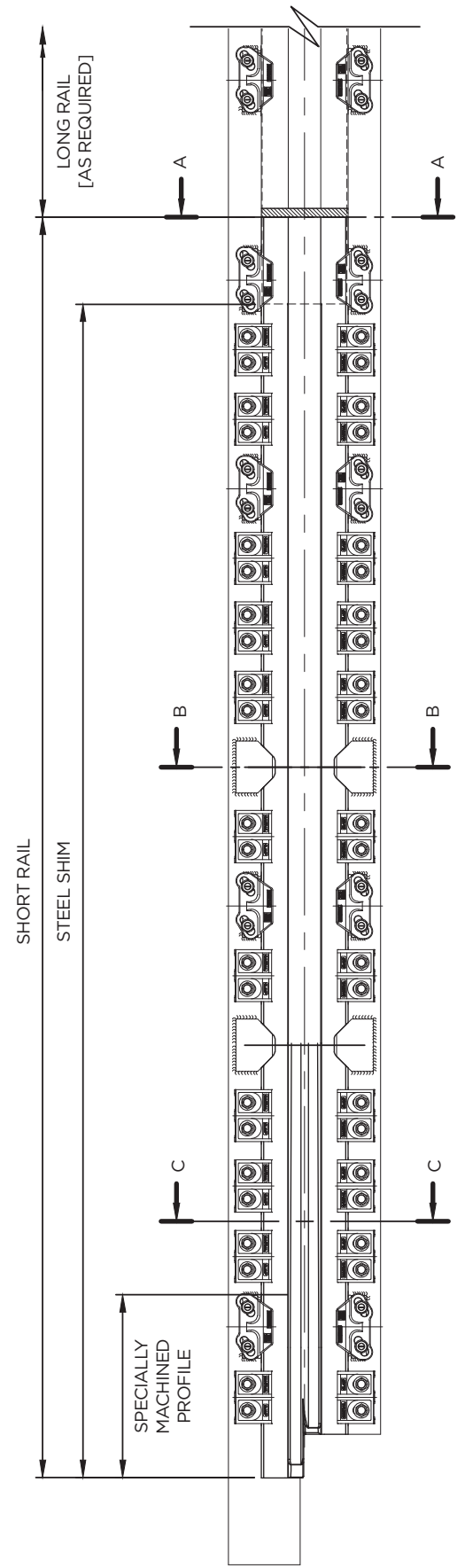
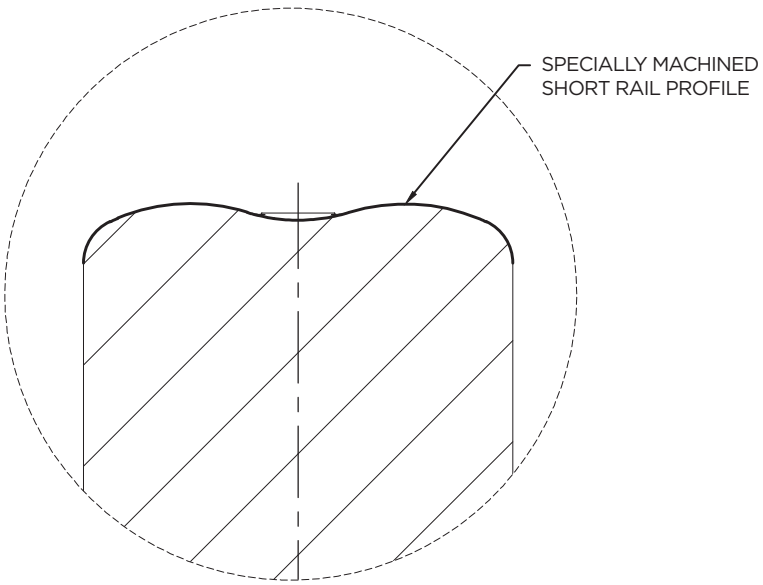
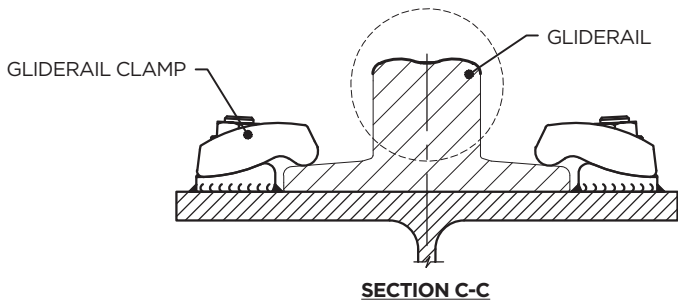
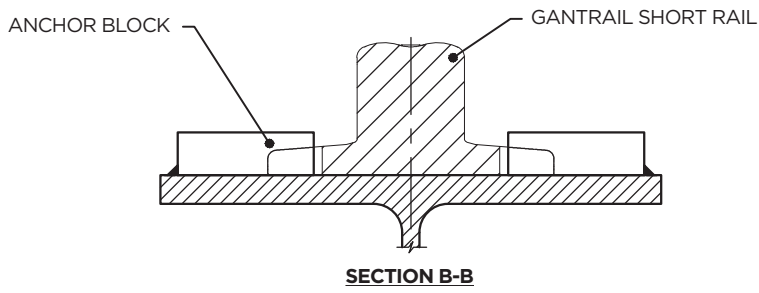
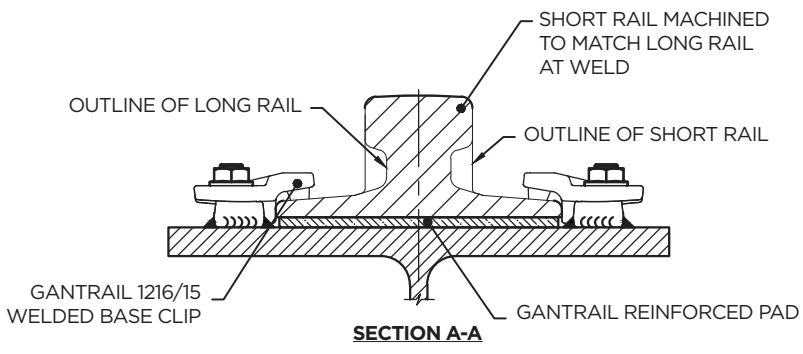
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Gantrail 1216/15 welded base clips provide sideload resistance to ensure the rail remains in position throughout the life of the system.

Rail anchors are also used to prevent any longitudinal rail movement. The rail anchors give crane operators the confidence the rail will not move during use or when the boom is raised.

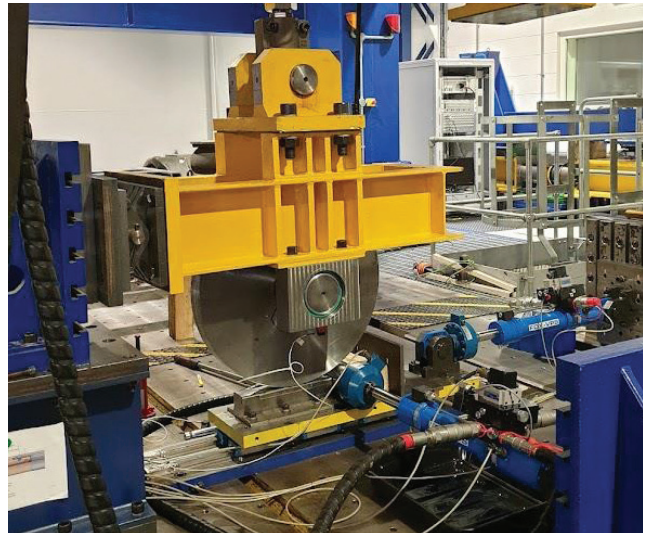
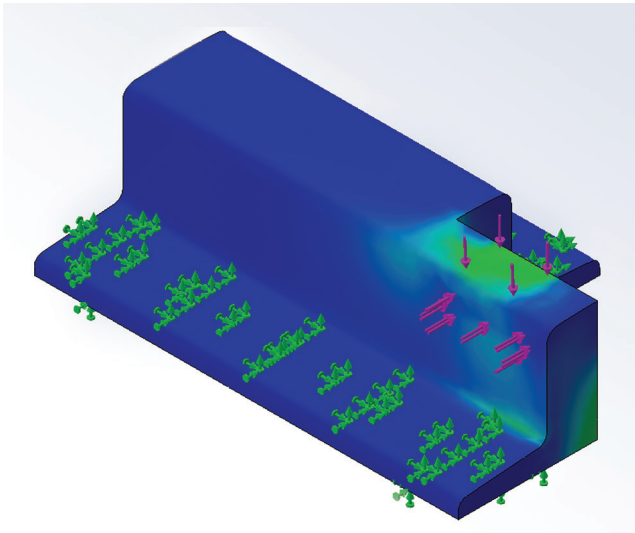


DESIGN FEATURE	BENEFIT
GlideRail	<ul style="list-style-type: none"> <li>• Smoother transition across boom hinge joint</li> <li>• Reduced rail wear</li> <li>• Reduced damaging vibrations</li> <li>• Reduced crane down time</li> <li>• Increased operator comfort</li> </ul>
GlideRail Clamp	<ul style="list-style-type: none"> <li>• Adjustable height</li> <li>• Reduced clip failure</li> </ul>





## R&D AND PERFORMANCE:



The GlideRail system has been developed by our experienced technical team. Over several years our team has researched boom trolley rail systems, existing designs, and reported failures from multiple sites.

The GlideRail system has undergone extensive digital simulation and physical testing under operational and extreme conditions experienced in the field.

Tests measuring cyclic fatigue, static strength, rail wear and vibration at the rail transition have all been carried out. The testing was completed under strict observation and recording procedures ensuring confidence in the results.

The GlideRail system passed the fatigue and strength tests with zero failures and was shown to reduce the wheel vibrations.

## INSTALLATION:

To enable a successful and fast installation, the contractor performing the work needs to be prepared with supporting beam survey data and existing system measurements.

Replacing only the short rail is not recommended, because the boom hinge undergoes hundreds of thousands of cycles before replacement. Minor shifts in the boom and girder will occur over time, which can affect the alignment of the short rail. If the top surface of the stringers is not cleaned to bare metal and new clips and clamps installed, a misalignment in the short rail area is likely to occur, affecting the performance of the trolley and jeopardizing the short rail system.

A level installation surface is required to ensure alignment of the system either side of the boom hinge. There are several methods of levelling or repairing the support beam depending on the condition of the surface. Please contact GANTRAIL to discuss the most suitable method for your system.

A proper installation mitigates the minor misalignment between the boom and girder, restoring the short rail system to a like-new condition. This prolongs the life of the short rail system and improves the performance of the trolley.

Please contact GANTRAIL, for full installation instructions.

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