EPIC GLOBAL SERVICES PVT.LTD

Title: Limitations on the Repair of Understructure Components

Vertical bowing of understructure components can occur due to various factors such as cargo overloading, improper weight distribution, and impact damage. This issue is exacerbated during typical container lifting operations and at sea, where gravitational forces, including acceleration and deceleration, are at play.

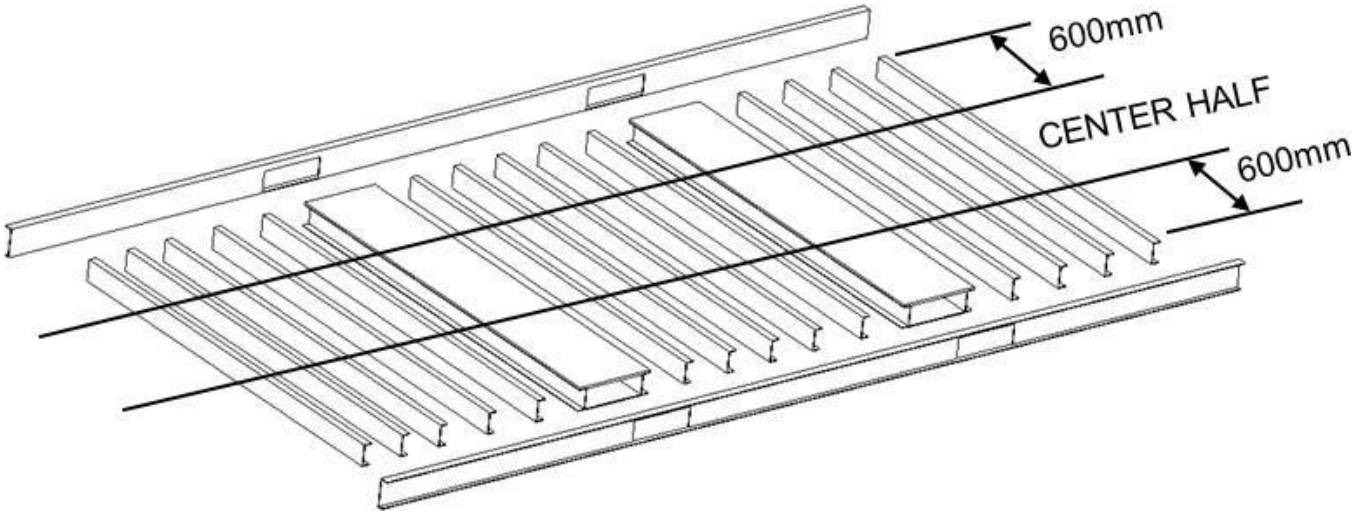
When understructure components, particularly crossmembers, fork pocket components, and occasionally bottom rails, gooseneck tunnel bolster, and rails, experience vertical bowing beyond the IICL limits, it indicates that they have surpassed their material structural yield point. The yield point signifies the boundary between elastic and plastic behavior in a stress-strain curve. Once the material enters the plastic behavior, characterized by permanent deformations, it cannot be reversed or rectified through heat-based straightening methods. Consequently, the material's strength and its ability to withstand future loads become compromised.

For the repair of bowed down understructure components exceeding tolerances, the recommended methods are:
1. Full Replacement
2. Insertion within the specified limitations on page 2.

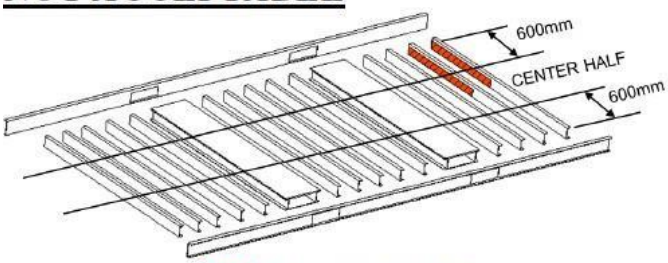
It's important to note that non-conforming repair methods include cutting relief notches for straightening understructure components or attempting to straighten bowed down understructure components. Conversely, normal alignment work necessary for fitting inserts is considered an acceptable repair method.

Insert Limitations: Crossmember & Forklift Pocket Side Walls

A correct repair should aim to restore the profile of the damaged component and the surrounding areas as closely as possible to the original configuration. Welding repairs to members (crossmember/forklift pocket side wall) are prohibited within the central half of two adjacent members. The central half of a member is described as the section of the member located more than 600mm from the nearest bottom side rail. If both adjacent members have welding repairs within their central halves, either one of the members must be replaced, or the inserts must be extended to ensure they do not end within the central half of the member.

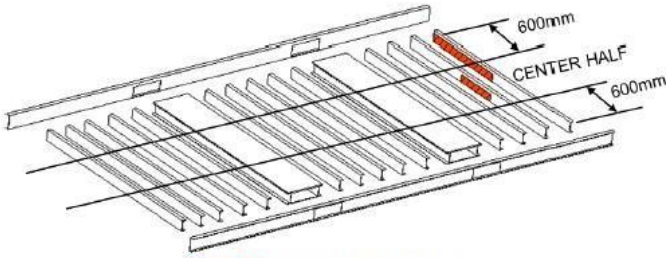


NOT ACCEPTABLE



NOT ACCEPTABLE

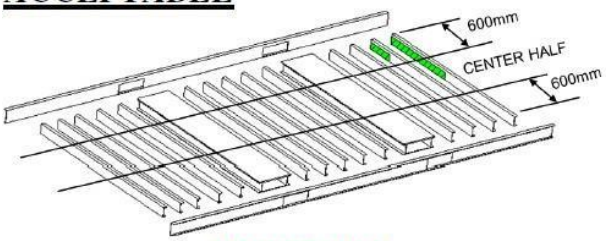
The insert on the right side is acceptable because it is the 1st crossmember with an insert. But the 2nd insert on the left is not acceptable because the weld seam terminates in the center half of the container.



NOT ACCEPTABLE

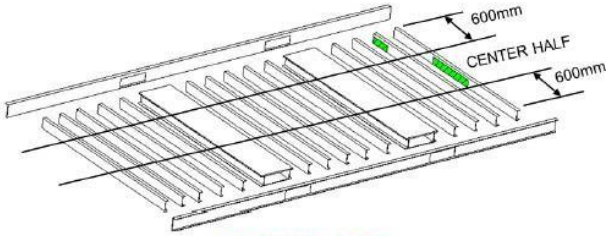
The insert on the right side is acceptable because it is the 1st crossmember with an insert. The 2nd insert on the left is not acceptable because the weld seams terminate in the center half of the container.

ACCEPTABLE



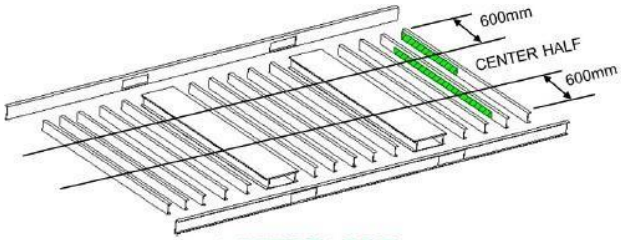
ACCEPTABLE

The insert on the right side is acceptable because it is the 1st crossmember with an insert. The 2nd insert on the left is also acceptable because the weld seams terminate within 600mm from the bottom side rail.



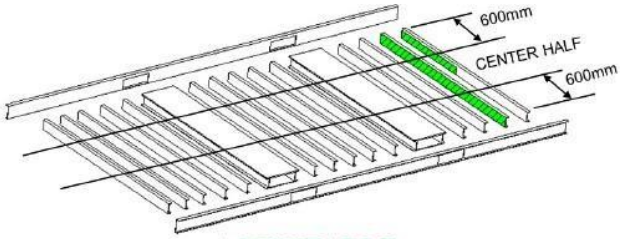
ACCEPTABLE

The insert on the right side is acceptable because it is the 1st crossmember with an insert. The 2nd insert on the left is also acceptable because the weld seams terminate within 600mm from the bottom side rail.



ACCEPTABLE

The insert on the right side is acceptable because it is the 1st crossmember with an insert. The 2nd insert on the left is also acceptable because the weld seams terminate within 600mm from the bottom side rails.

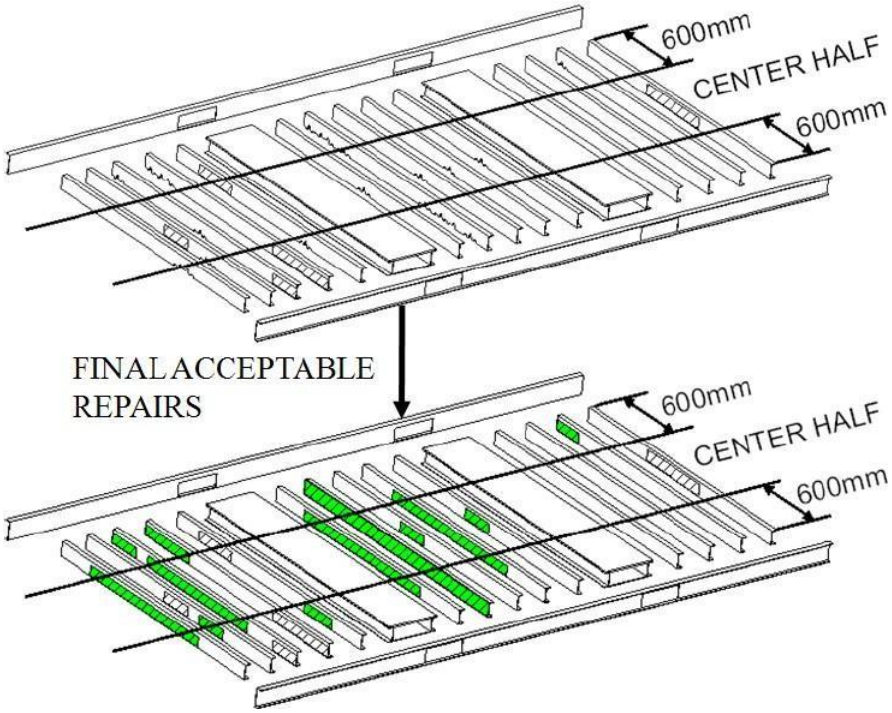


ACCEPTABLE

The insert on the right side is acceptable because it is the 1st crossmember with an insert. The 2nd cross member is also acceptable because it is actually a full replacement.

FULL CONTAINER EXAMPLE

AN EXAMPLE of new damage locations and pre-existing inserts.



Approved inserts are determined by considering new damage locations and existing inserts, as depicted above. It is crucial to emphasize that this represents just one instance of a potential combination of damage and acceptable repair inserts. Numerous alternative scenarios may exist. This diagram is intended solely as a reference for identifying the most secure and cost-effective repair approach on a case-by-case basis.

Furthermore, apart from the constraints and illustrations provided for welding repairs to adjacent members, the guidelines for inserting crossmembers and forklift pockets should adhere to additional insert repair instructions.

The following photos depict some examples of bowed down understructure components.