IICL TB 012 April 2013

Title: Front Corner Post Insert Repairs – 45' Pallet Wide Containers, 45'CPC

The IICL is issuing repair criteria for 45' pallet wide and 45' CPC containers. The unique design of the 45' PW/CPC front corner post and damage possibilities requires specific repair criteria for corner post insert repairs.

Background:
Front corner posts are subjected to various types of damages. To correct some of these damages the IICL allows for standard ISO 20' & 40' dry container front corner posts to be repaired by installing an insert.

The standard dry container square-profile corner post design allows only one formed edge (corner radius/ joggle) subject to insert repair. The current repair criteria listed in Section 4 (Corner Posts) & Figure 4.1 of the Repair Manual for Steel Freight Containers (Fifth Edition) outlines the specifics for installing insert repairs.

With this technical bulletin we are addressing the unique design of front corner posts from 45' Pallet Wide (45'PW) and 45' CPC container front corner posts.

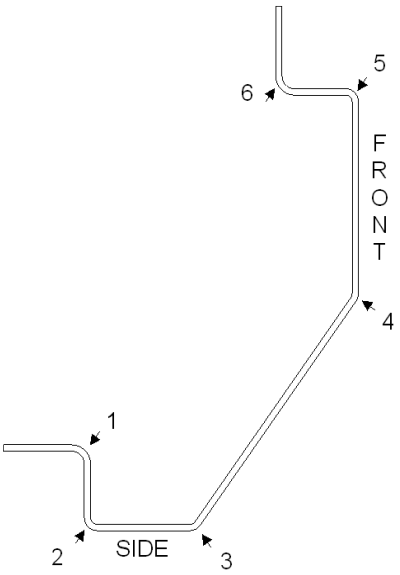


Figure 1: 45' Pallet Wide, with 6 formed edges

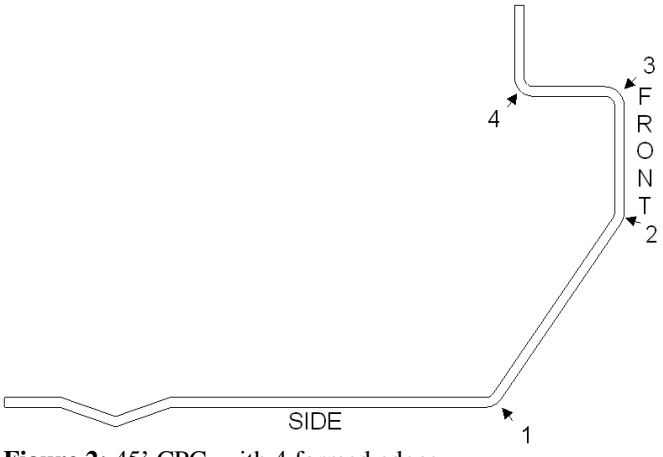
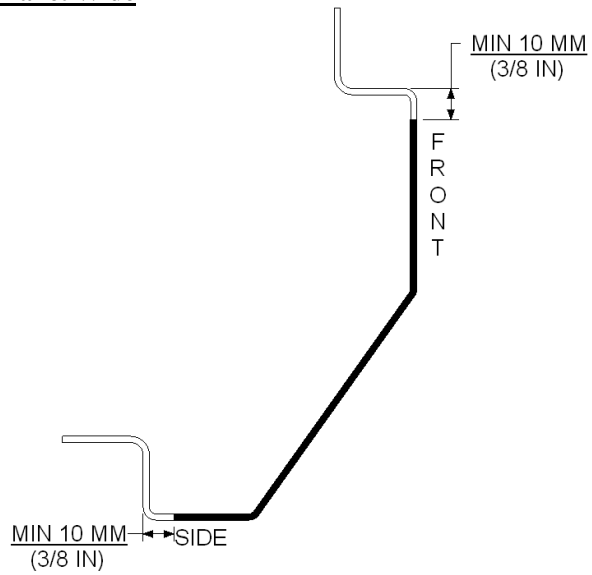


Figure 2: 45' CPC, with 4 formed edges

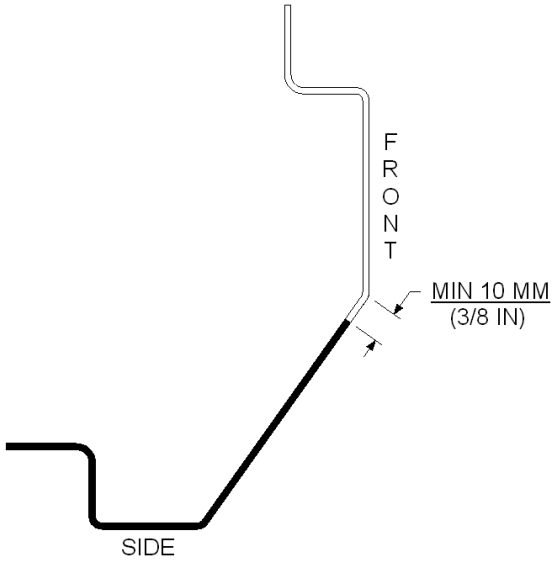
The slightly different designs we've identified by some manufacturers have as many as 6 radii. Therefore in order to correct damages which would allow for an insert involving multiple radii we have to allow for exemptions to the current repair criteria as referenced above in the repair manual.

Damage:
We've identified different damages which could occur to the front corner post of a 45'PW/CPC container. The drawings listed below will outline where we've seen damage that would require an insert repair.

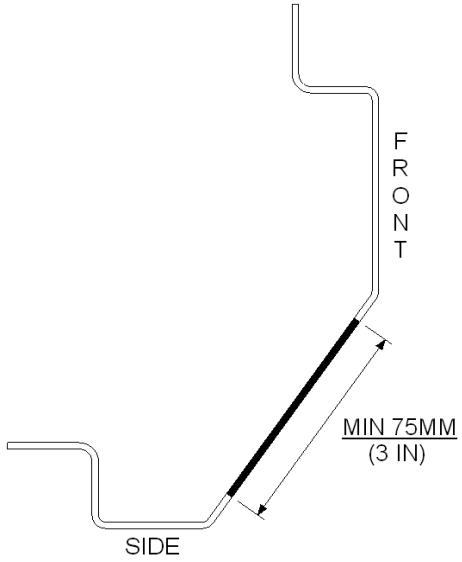
45' Pallet Wide



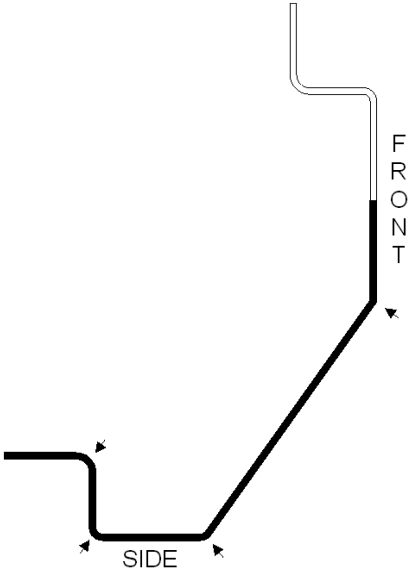
ACCEPTABLE A



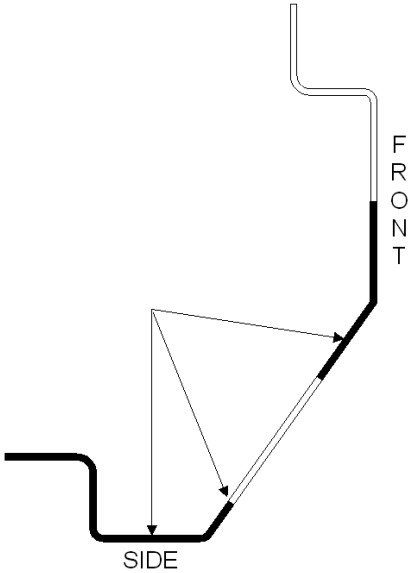
ACCEPTABLE B



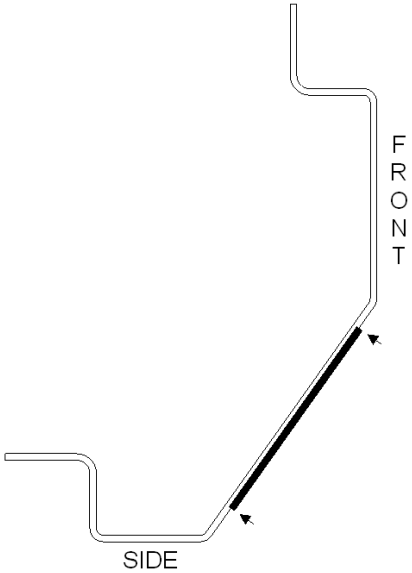
ACCEPTABLE C



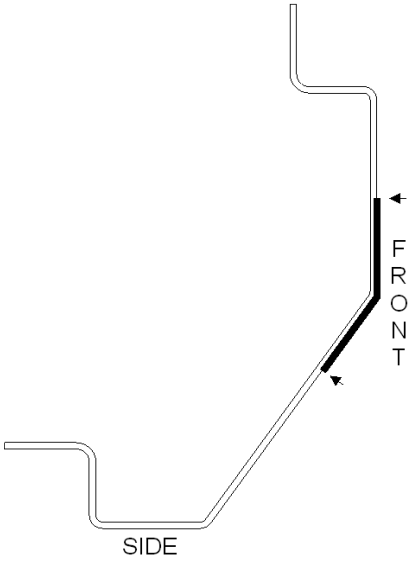
NOT ACCEPTABLE D
INSERT MAY NOT EXTEND THROUGH MORE THAN THREE (3) FORMED EDGES



NOT ACCEPTABLE E
TWO INSERTS MAY NOT OCCUPY THE SAME HORIZONTAL PLANE



NOT ACCEPTABLE F
INSERT EXTENDS BEYOND THE PLANE OF THE ORIGINAL POST



NOT ACCEPTABLE G
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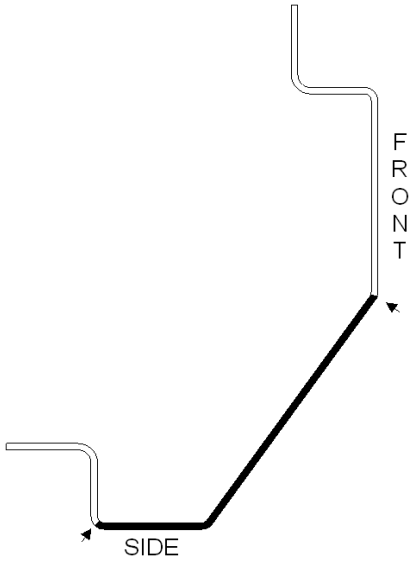
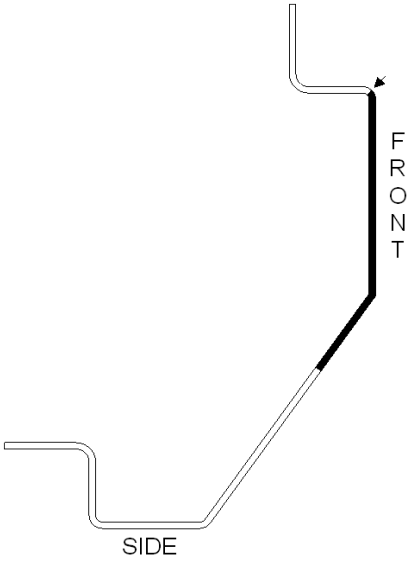
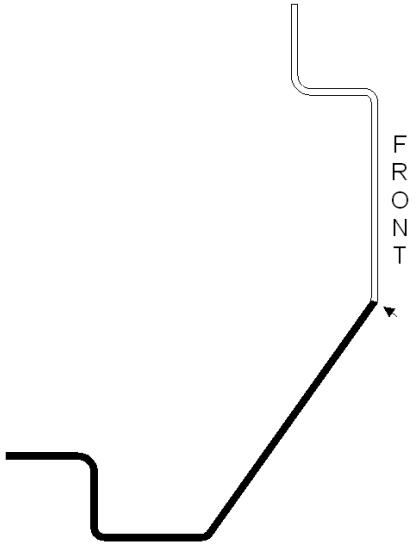


NOT ACCEPTABLE H
INSERT TERMINATES AT A FORMED EDGE OF THE CORNER POST



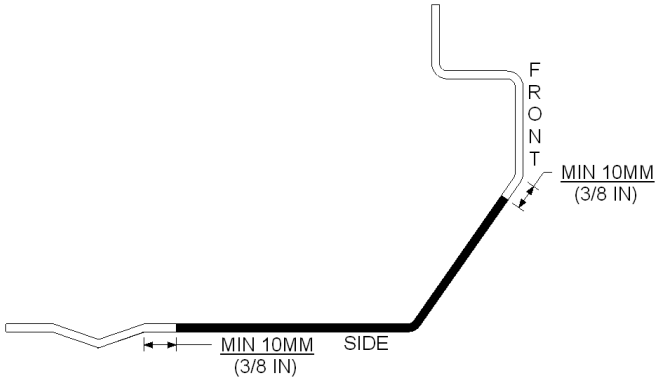
NOT ACCEPTABLE I
INSERT TERMINATES AT A FORMED EDGE OF THE CORNER POST



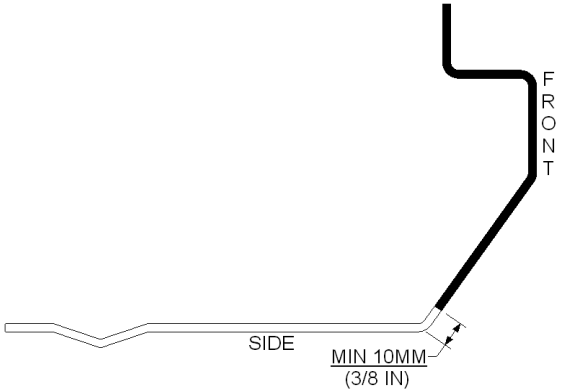
NOT ACCEPTABLE J

INSERT TERMINATES AT A FORMED EDGE OF THE CORNER POST

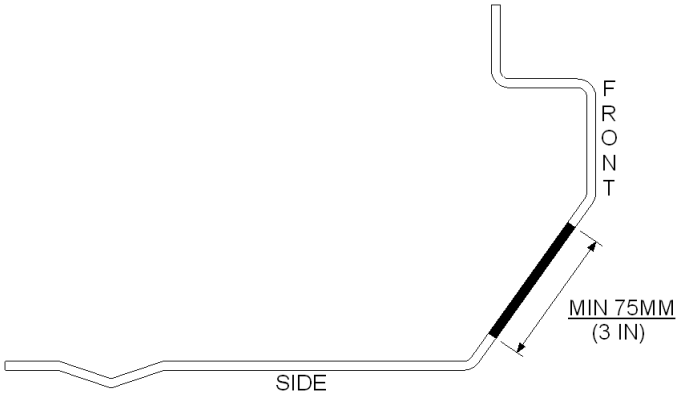
45'CPC



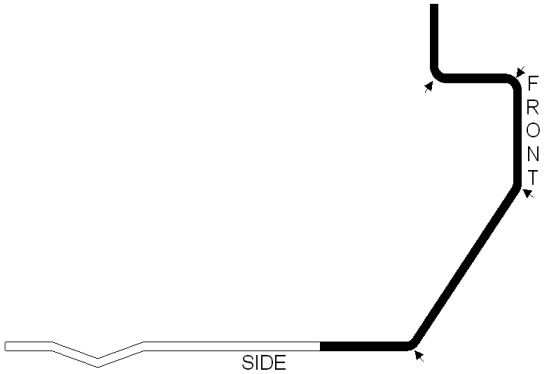
ACCEPTABLE A



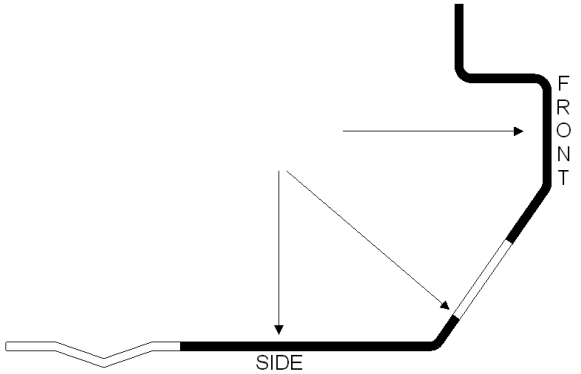
ACCEPTABLE B



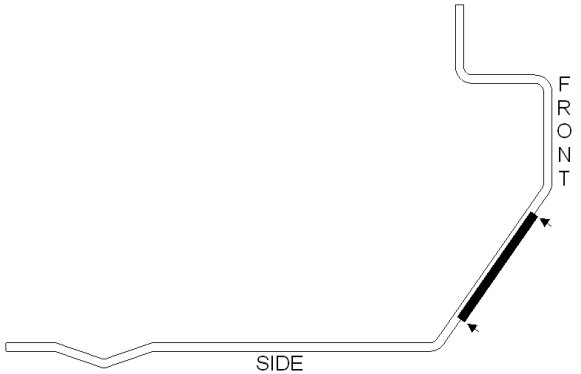
ACCEPTABLE C



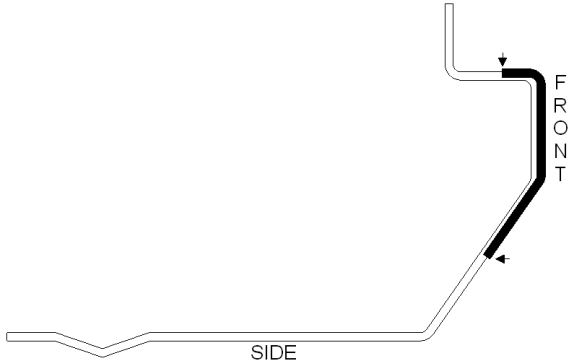
NOT ACCEPTABLE D
INSERT MAY NOT EXTEND THROUGH MORE THAN THREE (3) FORMED EDGES



NOT ACCEPTABLE E
TWO INSERTS MAY NOT OCCUPY THE SAME HORIZONTAL PLANE



NOT ACCEPTABLE F
INSERT EXTENDS BEYOND THE PLANE OF THE ORIGINAL POST



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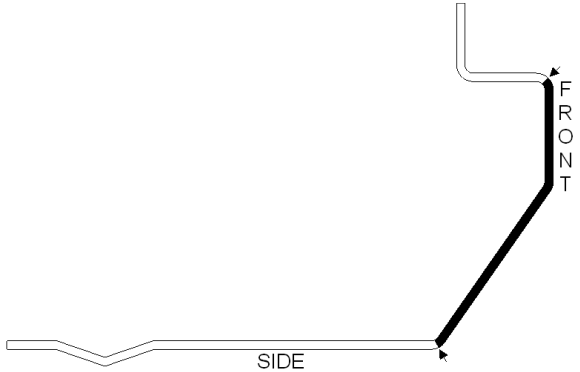
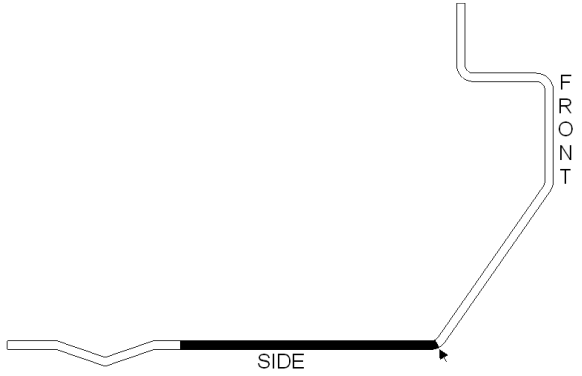
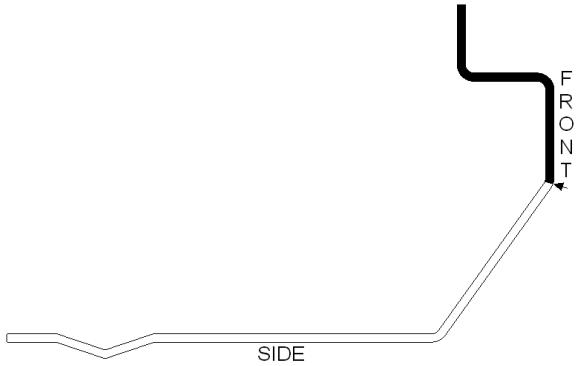




INSERT EXTENDS BEYOND THE PLANE OF THE ORIGINAL POST

NOT ACCEPTABLE H
INSERT TERMINATES AT A FORMED EDGE OF THE CORNER POST

NOT ACCEPTABLE I
INSERT TERMINATES AT A FORMED EDGE OF THE CORNER POST



NOT ACCEPTABLE J
INSERT TERMINATES AT A FORMED EDGE OF THE CORNER POST

Repair Criteria

Limitations on Front Corner Post Inserts for 45'PW/CPC containers

The following limitations apply to inserts in the 45'PW/CPC front posts ONLY:

- Full profile sections through the complete cross-sectional profile of a 45'PW/CPC corner post are **not** allowed.
- There is no limit to the number of inserts allowed in a 45'PW/CPC front corner post provided all the other limitations listed herein are observed (see the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.2). (Nevertheless, the number of inserts may be limited in practice if combining inserts or performing another acceptable type of repair would be more economical to perform.)
- 45'PW/CPC inserts must be fitted flush with the original material and butt-welded (compare previous figures ACCEPTABLE A, B, C with NOT ACCEPTABLE F and G).
- A 45'PW/CPC front corner post insert must be at least 150 mm (6 inches) in length, unless it terminates at a corner fitting (see the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.2 B and D).
- A 45'PW/CPC front corner post insert that would terminate within 300 mm (12 inches) of a corner fitting must be extended to the fitting, and must be at least 300 mm (12 inches) in length (reference and compare to the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.2 A, C and D with Figure 4.3 A).
- There are no maximum height limitations for 45'PW/CPC front corner post inserts. Full-height 45'PW/CPC front corner posts inserts are acceptable (see the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.2 F).
- No 45'PW/CPC insert to a front post shall share the same horizontal plane as another insert (see previous figure NOT ACCEPTABLE E, and the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.3 D).
- An insert in 45'PW/CPC front corner post may not terminate within 10 mm (3/8 inch) of any formed edge (see figure ACCEPTABLE A). In addition, the insert must extend through at least 75mm (3 inch) of the cross-sectional profile of the post (see figure ACCEPTABLE C).
- 45'PW/CPC front corner post inserts may be rectangular, oval or diamond in shape.
- Horizontal insert welds of rectangular 45'PW/CPC front corner post inserts or extremity welds of diamond or oval shaped inserts must be a minimum of 150 mm (6 inches) apart (compare the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.2 D with 4.3 C).
- A 45'PW/CPC front corner post insert that would terminate within 150 mm (6 inches) of an existing insert must be extended to the existing insert to form a common weld (see the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.2 E).
  NOTE: The common weld must extend horizontally through the profile of the 45'PW/CPC post. When diamond or oval shaped inserts are involved, they must, therefore, be cut to provide a horizontal edge that will butt against and be welded to the adjacent insert.
- When two inserts share a common weld, the total length of the horizontal plane of the common weld must not extend through more than half of the external cross-sectional profile of the 45'PW/CPC post (see the latest edition of *Repair Manual For Steel Freight Containers;* Figure 4.2 E).

Repair Procedure

Damages to the front corner post of a 45'PW/CPC container can be repaired by inserting. The recommended steps for installing an insert are as follows:

1. Identify the length and width of the damaged corner post area in order to determine whether or not an insert repair would be applicable.

2. If an insert is deemed acceptable, fabricate the insert to fit into the area of the 45'PW/CPC front post which will be replaced. The insert must be made of like for like material, have its edges to be welded beveled at 30 degrees, and have the precise profile of the area to be repaired (NO MISMATCH ALLOWED).

    - NOTE: If the type of material in the corner post is not known, the replacement steel should be Corten or Corten equivalent weathering steel of the same or greater thickness with a minimum yield point of 34 kg/sq.mm or 50,000 psi.

3. Remove the damaged area of the 45'PW/CPC front post with a cutting disc (identify other appropriate tools if necessary).

    - NOTE: When removing the damaged area of the post for an insert, guide bars can be positioned and tack-welded to the existing front post, to ensure straight cuts for later proper fitting of the insert. This will better insure straight cuts in the original front post, and avoid creating excessive gaps between the edges of the replacement insert and the edges of remaining portion of the front post.

    - NOTE: Optionally, short steel backing strips can also be temporarily welded along cut edges of the original post, if these will help in alignment of edges of the new insert with cut edges of the original front post. If installed, these short strips must be removed after the insert is welded in place, and the strip mounting areas are to be ground smooth and repainted.

4. Make sure the new insert material as well as the existing corner post material edges combined are beveled 60 degrees to assure proper weld penetration and area of coverage.

    - NOTE: 60 degree beveling of the steel edges will require multiple weld passes.

5. Tack weld the insert into place.

6. Weld the entire perimeter of the insert allowing for a minimum of 3 weld passes to the beveled area to assure proper coverage.

7. Grind smooth any excessive weld material. If applicable, also remove any backing strips.

8. Clean, mask, prime and top coat the repaired area.

IICL TB 011 was prepared under the supervision of the IICL Technology Committee.