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DEPARTMENT OF DEFENSE HANDBOOK

GUIDE TO CONTAINER INSPECTION FOR COMMERCIAL AND MILITARY INTERMODAL CONTAINERS



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FOREWORD

It is important to maintain basic safety while handling and transporting large heavily laden intermodal containers around the world. A container inspection program, therefore, helps ensure that no injury to person or damage to property occurs from a structural failure or deficiency.

This handbook provides inspection criteria and procedures to be used when visually examining intermodal containers. Following the criteria and procedures contained herein will enable personnel to identify containers that are serviceable and safe for loading and shipping.

This handbook applies to the selection of any commercially owned or military owned intermodal container meeting the standards of the International Organization for Standardization (ISO) and certified under the provisions of the International Convention for Safe Containers (CSC). This handbook is specifically used by worldwide civilian and military personnel responsible for inspecting and selecting serviceable intermodal containers and ISO Shelters for shipment of Department of Defense (DOD) materiel.

Certain portions of the criteria contained within this handbook are segregated into two parts. The basic part of the criteria applies to containers used only for shipment of general cargoes. The second part provides additional criteria that must also be followed to qualify containers for shipment of United Nations (UN) Hazard Class 1 explosive materials.

This handbook provides a variety of helpful illustrations. While some illustrations depict acceptable container repairs, this handbook is not to be used as a standard for performing such repairs.

Beneficial comments (recommendations, additions, deletions), and any other pertinent data that may be of use in improving this document, should be addressed to: Director, U.S. Army Defense Ammunition Center; ATTN: SOSAC-AST, McAlester OK 74501-9002; by using the DD Form 1426 appearing at the end of this document or by letter, or by e-mail to sosac-ast@dac.army.mil. The above activity acts as Agent for the MIL-HDBK-138B and is largely responsible for its technical content.

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1. GENERAL

1.1 Purpose. This handbook provides inspection criteria and procedures to be used when visually examining intermodal freight containers. Following the criteria and procedures contained herein will enable personnel to identify containers that are serviceable and safe for loading and shipping.



NOTE!

This handbook is not to be used as a standard for performing container repairs.

1.2 Scope. This handbook applies to the selection of any commercially owned or military owned intermodal container meeting the standards of the International Organization for Standardization (ISO) and certified under the provisions of the International Convention for Safe Containers (CSC). This handbook is specifically used by worldwide civilian and military personnel responsible for inspecting and selecting serviceable intermodal containers for shipment of Department of Defense (DOD) materiel.

1.3 Application.

Certain portions of the criteria contained within this handbook are segregated into two parts. The basic part of the criteria applies to containers used only for shipment of general cargoes. The second part provides additional criteria that must also be followed to qualify containers for shipment of United Nations (UN) Hazard Class 1 (IMDG) explosive materials in accordance with IMDG requirements.

1.4 Objective. Inspecting personnel will use this handbook to cause:

- a. Inspection standardization among DOD agencies for selection of intermodal containers owned by the DOD.
- b. Preparation of inspection reports that are properly annotated to reflect container condition and reason(s) for rejection; and
- c. Compliance with international treaties and conventions and United States transportation law.

2. APPLICABLE DOCUMENTS

2.1 Government Documents.

2.1.1 Specifications. The following specifications form a part of this handbook to the extent specified herein. Unless otherwise specified, the editions of these specifications are those in effect at the time of inspection.

FEDERAL SPECIFICATIONS

A-A-52029 Container, Cargo, Side-Opening

A-A-52032 Container, Cargo, End-Opening

A-A-52033 Container, Cargo, Half-High

MILITARY SPECIFICATIONS

MIL-C-52661 Containers, Cargo

(Unless otherwise indicated, copies of federal and military specifications are available from the Defense Automated Printing Service, Document Automation and Production Service, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government Documents. The following other Government documents form a part of this handbook to the extent specified herein. Unless otherwise specified, the editions are those in effect at the time of inspection.

DEPARTMENT OF DEFENSE

DOD 4500.9-R-1 Management and Control of the DoD Intermodal Container System

DEPARTMENT OF TRANSPORTATION (DOT)

49 CFR Code of Federal Regulations - Transportation

(Application for copies should be addressed to Superintendent of Documents, PO Box 371954, Pittsburg, PA 15250-7954; or visit the following website: www.access.gpo.gov/nara/cfr)

INTERNATIONAL MARITIME ORGANIZATION (IMO)

CSC International Convention for Safe Containers

IMDG Code International Maritime Dangerous Goods Code

TIR Customs Convention - Transport Internationale des Routiers

Copies of these documents can be obtained directly from the International Maritime Organization, 4 Albert Embankment, London, SE1 7SR, United Kingdom. Publication sales can be made with a credit card by telephone at 011-44 (0)20 75 87 32 41, or by email to publication-sales@imo.org. You may also visit their website at www.imo.org/imo/pubs/pubstart.htm.

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2.2 Non-Government Standards. The following standards form a part of this specification to the extent specified herein. Unless otherwise specified, the editions are those in effect at the time of inspection.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 668	Series 1 Freight Containers - Classification, Dimensions and Ratings
ISO 1161	Series 1 Freight Containers - Corner Fittings Specification
ISO 1496	Series 1 Freight Containers - Specification and Testing
ISO 6346	Freight Containers - Coding, Identification and Marking

(Application for copies should be addressed to the American National Standards Institute, 25 W. 43rd Street, New York, NY 10036.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 1925	Specification for Engineering and Design Criteria for Rigid Wall Relocatable Structures.
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(Copies should be obtained from the American Standards for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken PA. 19428-2959).

3. CONTAINER GENERAL DESCRIPTIONS

3.1 Typical End-Opening Steel Container. Refer to Figure 3.1. The most common type of freight container is the general purpose dry cargo type. This container completely encloses its contents by permanent steel structures and provides cargo loading access through end opening doors.

Typical steel containers can be 10, 20, 30, or 40 feet long by 8, 8-1/2, or 9 1/2 feet high. The standard width of an intermodal container is 8 feet. The walls of a typical steel container are usually constructed of corrugated sheet steel panels that are welded to the main structural steel top and bottom side rails and end frames. The end frames are fitted with standard corner fittings (steel castings) at all eight corners that are welded to the four corner posts, top and bottom side and front rails, and rear door sill and header.

The roof is usually constructed of either flat or corrugated sheet steel panels welded to the top side and end rails and door header and may have roof bows for support. The doors are usually either shaped steel frame with steel panels or plymetal (steel faced wood) panels fitted with locking and anti-rack hardware and weather-proof seals (gaskets).

The flooring may be soft or hard laminated woods, planking, plywood, or composition material either screwed or bolted to the floor cross members. The floor cross members may be box, C, Z, or I shaped steel beams bolted or welded to the bottom side rails. Some containers are configured with an all-steel flooring or a combination of wood and steel.

An intermodal freight container is primarily handled via connection with its internationally standard corner fittings; however, many steel containers are also provided with empty and/or loaded capacity forklift pockets to improve container handling versatility. Performance specifications for a typical end-opening steel container are provided by commercial item description A-A-52032.

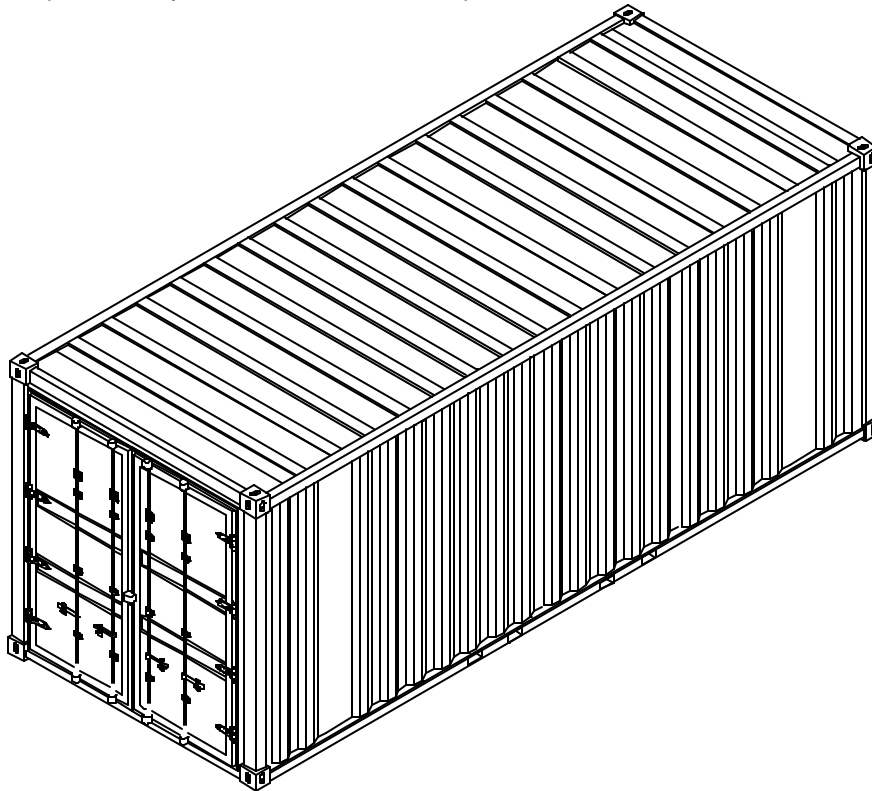


FIGURE 3.1 TYPICAL END-OPENING STEEL CONTAINER

3.2 Typical End-Opening Aluminum Container. Refer to Figure 3.2. A typical end-opening aluminum container, often referred to as aluminum/steel container, usually has steel end frames and structural steel or extruded aluminum side rails.

The end frames are fitted with standard corner fittings (steel castings) at all eight corners. The walls are constructed of either interior or exterior intermediate aluminum posts to which sheet aluminum is riveted or welded.

The inside walls usually have a plywood liner either riveted to the intermediate posts or over the sheet aluminum.

The door panels are either aluminum post and sheet construction or plymetal (metal faced wood) construction and are fitted with steel locking and anti-racking hardware and weather-proof seals (gaskets).

Roof bows, that support the aluminum roof panels, are usually aluminum extrusions that are bolted, riveted, or welded to the top rails.

The flooring may be soft or hard laminated woods, planking, or plywood either screwed or bolted to the floor cross members. The floor cross members may be box, C, Z, or I shaped beams of either steel or aluminum that are bolted, riveted, or welded to the bottom side rails.

The nominal dimensions and many construction details are otherwise similar to those of steel end-opening containers.

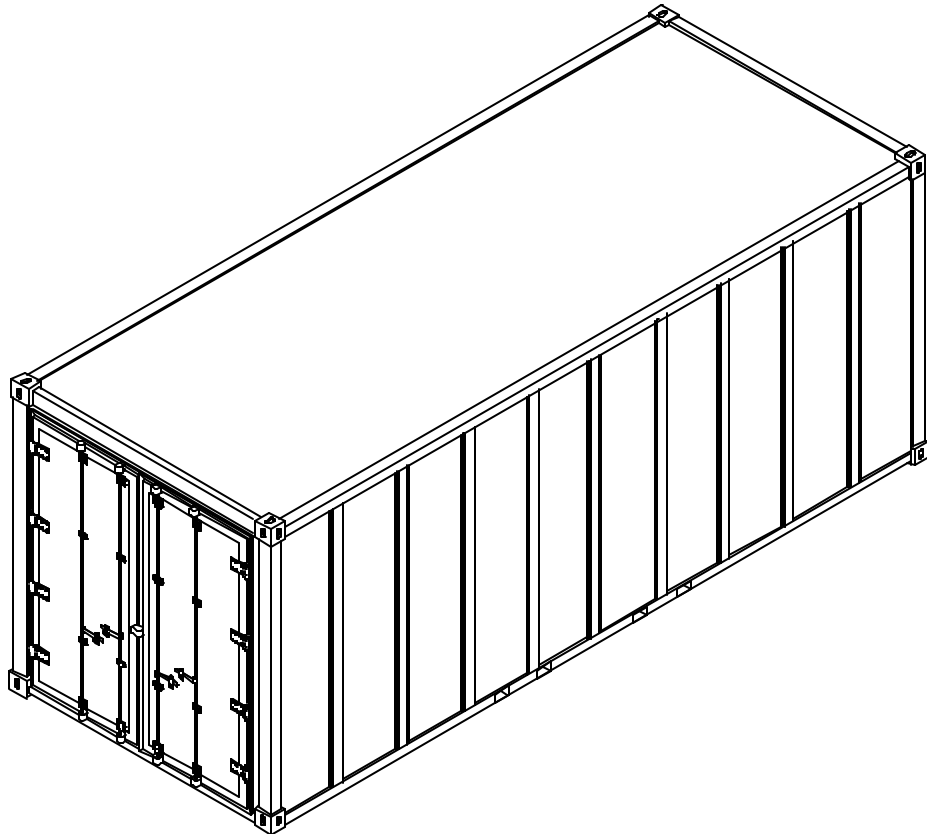


FIGURE 3.2 TYPICAL END-OPEN ALUMINUM CONTAINER

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3.3 Typical End-Opening FRP Container. Refer to Figure 3.3. A typical end-opening Fiberglass Reinforced Plywood (FRP) container is usually constructed of structural steel framing; fitted with standard corner fittings (steel castings) at all eight corners; and has FRP panels on the side walls, front end wall, and roof.

Normally there are no roof bows used to support the roof panel. The FRP panels are usually imbedded in a mastic, to provide water tightness, and are riveted to the top and bottom rails and the corner posts.

The door panels are also constructed of FRP and are fitted with steel locking and anti-rack hardware and weather- proof seals (gaskets).

The flooring may be soft or hard laminated woods, planking, or plywood either screwed or bolted to the cross members. The floor cross members may be box, C, Z, or I shaped beams.

The nominal dimensions and many construction details are otherwise similar to those of steel end-opening containers.

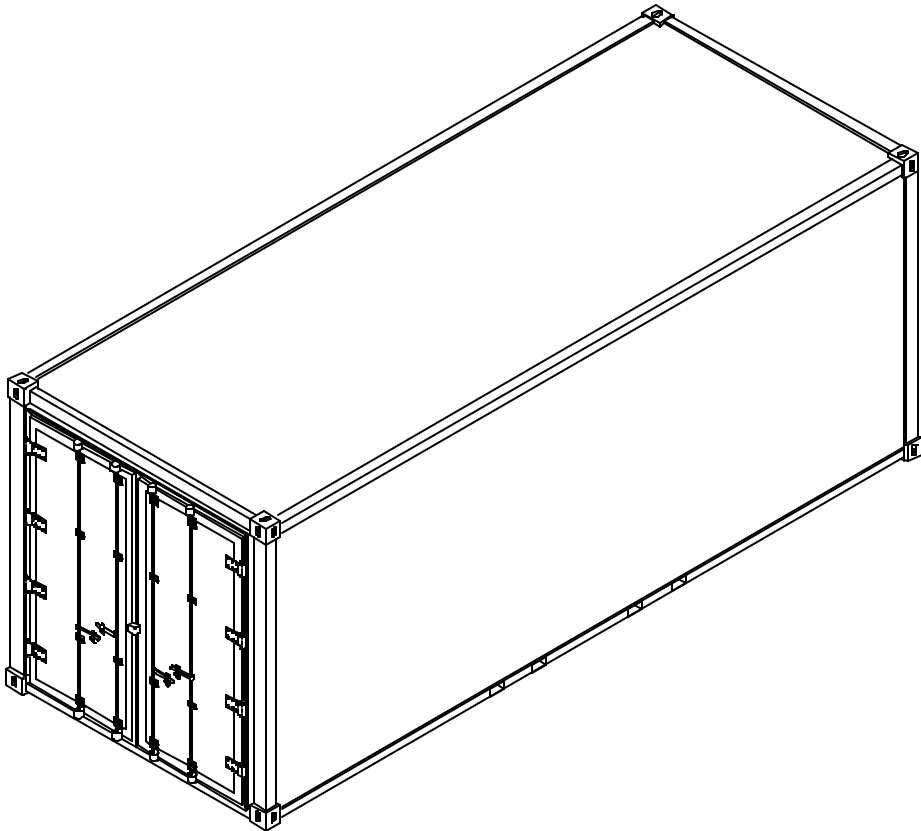


FIGURE 3.3 TYPICAL END-OPENING FRP CONTAINER

3.4 Typical Side-Opening Container. Refer to Figure 3.4. A side-opening container is similar in many respects to a typical steel end-opening container except there are doors on the side to provide access to the cargo space and the bottom side rails usually have a deeper profile. There may or may not be doors in the end frame of the container.

Performance specifications for a typical side-opening container are provided by commercial item description A-A-52029.

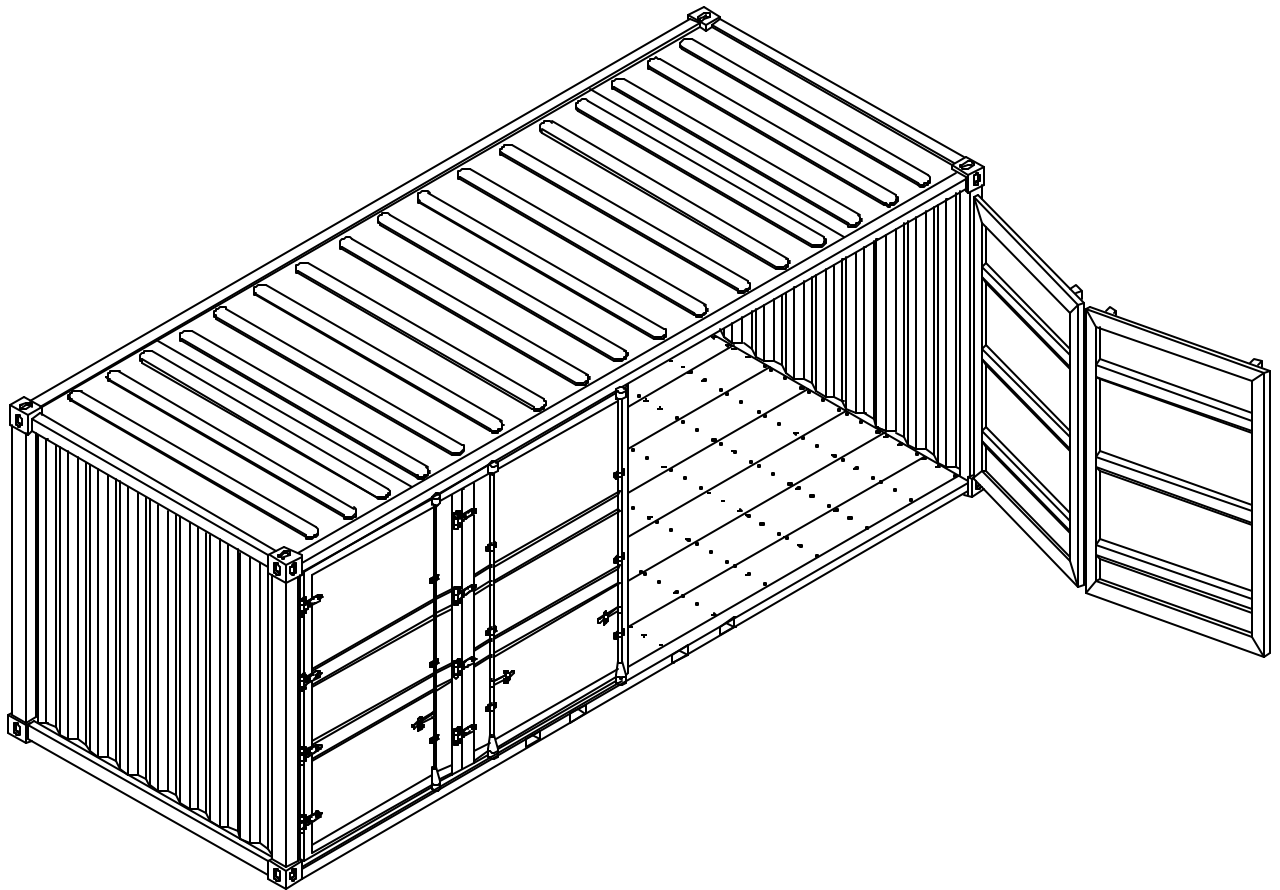


FIGURE 3.4 TYPICAL SIDE-OPENING CONTAINER

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3.5 Typical Open-Top Container. Refer to Figures 3.5A and 3.5B. An open-top container is similar in all respects to a typical steel container except it has no rigid roof. Instead, it has a flexible or removable cover.

The removable cover (tarp) is usually made of canvas or reinforced vinyl material and is supported on movable or removable roof bows. The tarp has reinforced eyelets in the perimeter that fit (nest) over corresponding loops welded to the side panel, end panels, and door(s). The tarp is secured by a plastic sheathed wire rope threaded through the welded steel loops.

An open-top container may also have a movable or removable door header to facilitate access to the cargo. In some open-top containers, the end door opens downward to function as a loading ramp. Some open-top containers have all steel floors.

Three typical heights for open-top containers are 4 feet 3 inches high (half high), 5 feet 8 inches high (two-thirds high), and 8 feet 6 inches high (full high). Performance specifications for a typical half-high open-top container are provided by commercial item description A-A-52033.

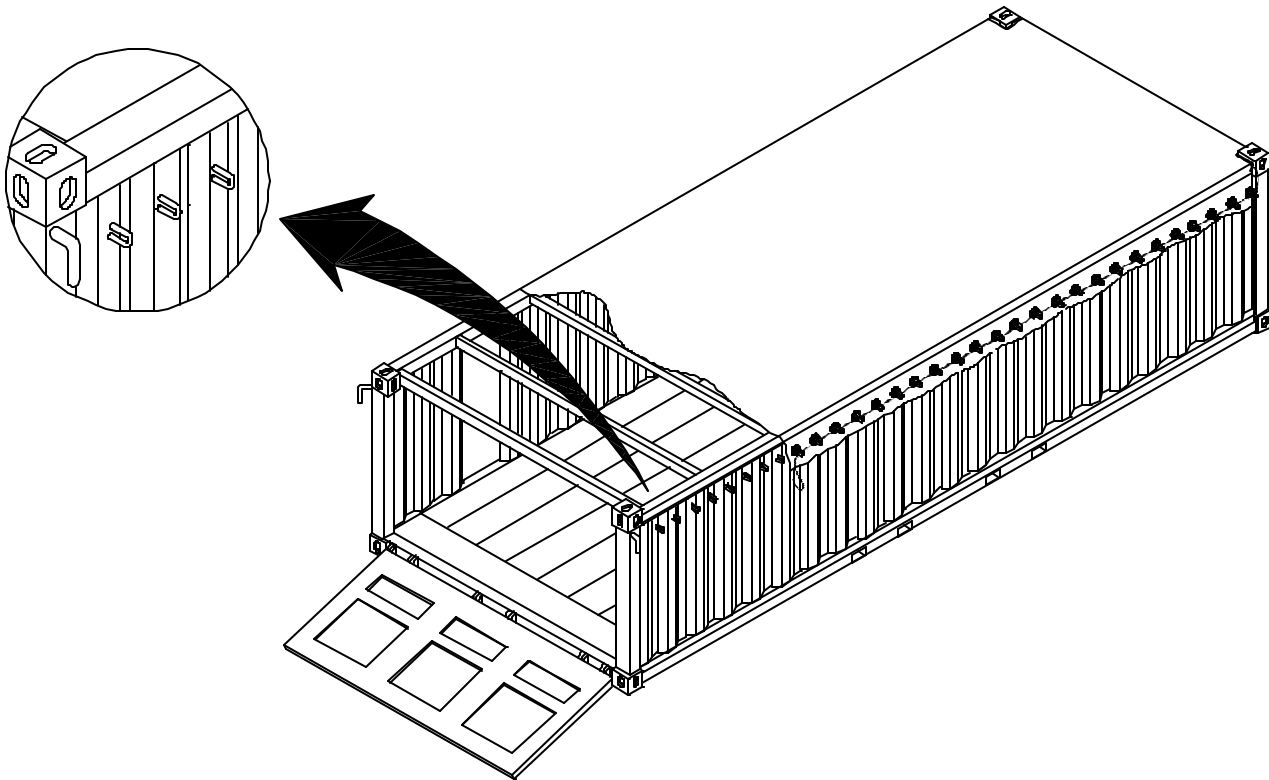


FIGURE 3.5A TYPICAL 1/2 HIGH OPEN-TOP

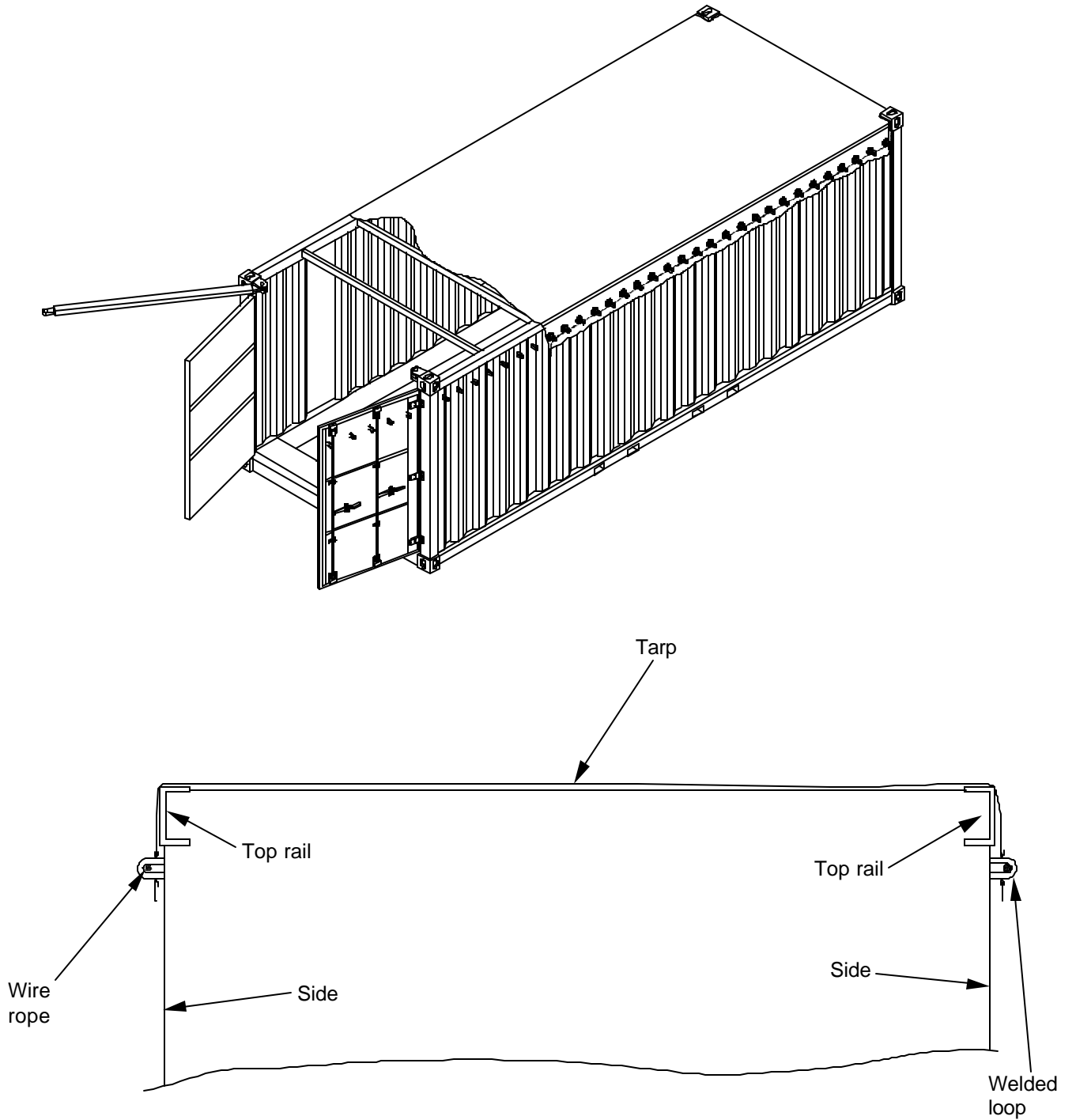


FIGURE 3.5B TYPICAL 2/3 HIGH OPEN-TOP CONTAINER

3.6 Typical Flatrack Container. Refer to Figure 3.6. The nominal dimensions and many construction details of a flatrack container are similar to those of a typical steel container except it does not have rigid side walls or a roof structure.

A flatrack container is configured with eight internationally standard corner fittings, a substantial platform (understructure), and two end wall assemblies that may either be of fixed construction or folding design. Flatracks used to ship ammunition must have paneled end walls.

Components of the flatrack container such as the bottom rails of the platform and the corner posts of the end wall assemblies are of a heavier construction than the corresponding components of a closed type container.

Stake pockets (stanchions) and cargo tiedown provisions are usually provided along the side rails to facilitate blocking and bracing of cargo.

The flooring is usually either soft or hard wood planking that is specially treated and either screwed or bolted to the cross members. The planking may be intentionally configured with gaps between boards to allow drainage.

A flatrack container does not provide weather protection.

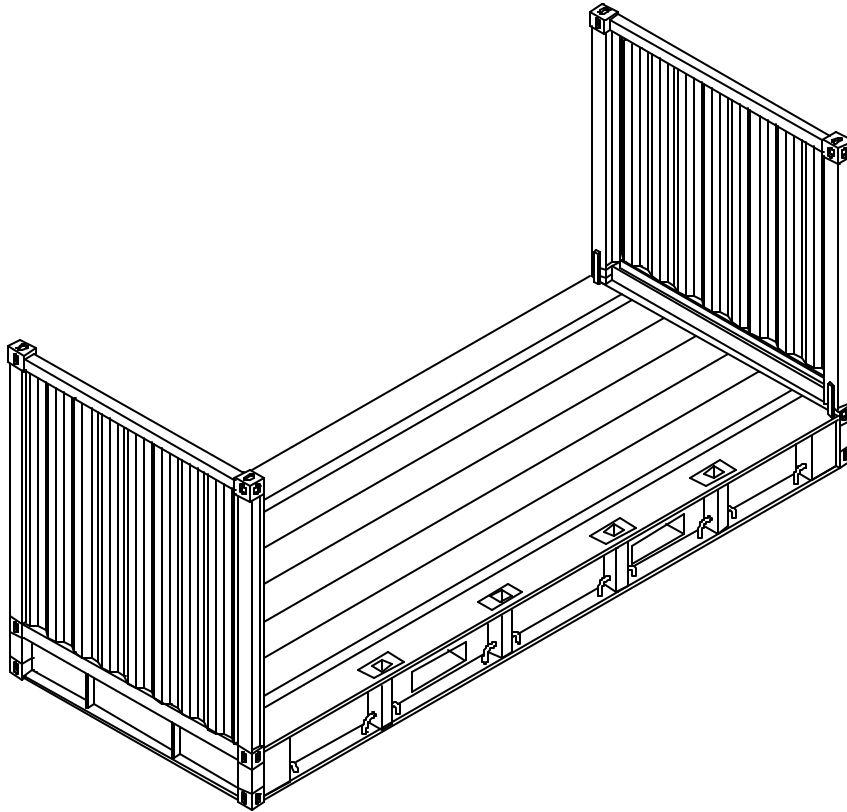


FIGURE 3.6 TYPICAL FLATRACK CONTAINER

3.7 Tactical ISO Shelters: Tactical ISO Shelters are lightweight, shipping containers transportable via land, sea and air. Most shelters are integrated with electrical service and installed equipment. Upon arrival at their destination, these shelters can be unpacked and serve as modular, live-in/work-in facilities, which can be joined together (complexed) with other shelters. The applications range from deployable kitchens to command and control centers.

Like freight containers, all Tactical ISO Shelters are equipped with ISO 1161 corner fittings, structural frame, end and/or side doors, forklift pockets, wall, floor & roof panels.

The shelters are 8' W x 8' H and either 10' or 20' L, in accordance with ISO 668, with gross weights of up to 20,000 lbs. The shelter walls, floor and roof are constructed of a "sandwich panel" consisting of a thin aluminum inner and outer skin, separated by either a "foam-beam" or "honeycomb" core construction. All Tactical ISO shelters are in the federal stock class (FSC) 5411, and are designed in accordance with the applicable ANSI/ ISO standards and ASTM E 1925.

There are three different basic structural design groups (families) of Tactical ISO Shelters: Army, Marine Corps, and Navy. Within each of these groups, there are several standard configurations. Although there are several different NSN items within this shelter family, the basic structural design of the shelters, within a given group is the same. There are a total of 18 NSN items for the standard Tactical ISO shelter configuration. This section provides descriptive information intended to help identify the types of Tactical ISO shelters.

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3.7.1 Army Tactical ISO Shelters. (Refer to Figure 3.7.1). The Army Tactical ISO Shelters are 8' high by 8' wide by 20' long structures, with a gross weight of up to 15,000 lbs. Although there are 6 different configurations of Army Tactical ISO Shelters, the basic structural design is the same. The shelters can either be non-expandable, 1-side expandable, or 2-side expandable.

The shelters are constructed of an aluminum structural frame, with eight flanged corner fittings (steel castings), bolted to the frame at each corner. The walls, floor and roof are sandwich panels constructed of aluminum with paper-honeycomb core, which are bolted to the structural frame.

The floor cross members and forklift pockets are aluminum, welded to the structural aluminum base frame. There is a 3' wide personnel door on one end and a set of double 3' cargo doors on the opposite end. The doors are constructed of the same aluminum-honeycomb sandwich panel as the walls, floor, and roof, and use a 3 point latch, located on the door interior. There is anti-rack hardware located at both end doors. Table 3.7.1 lists the different configurations of Army Tactical ISO shelters.

Table 3.7.1 Army Tactical ISO Shelters.

SHELTER CONFIGURATION		NSNs
Non-expandable	S-781/G (60amp service)	5411-01-136-9837
	S-782/G (100 amp service)	5411-01-294-6390
One-side expandable	S-783/G (60 amp service)	5411-01-124-1377
	S-784G (100 amp service)	5411-01-295-3433
Two-side expandable	S-785/G (60 amp service)	5411-01-136-9838
	S-786/G (100 amp service)	5411-01-294-9866

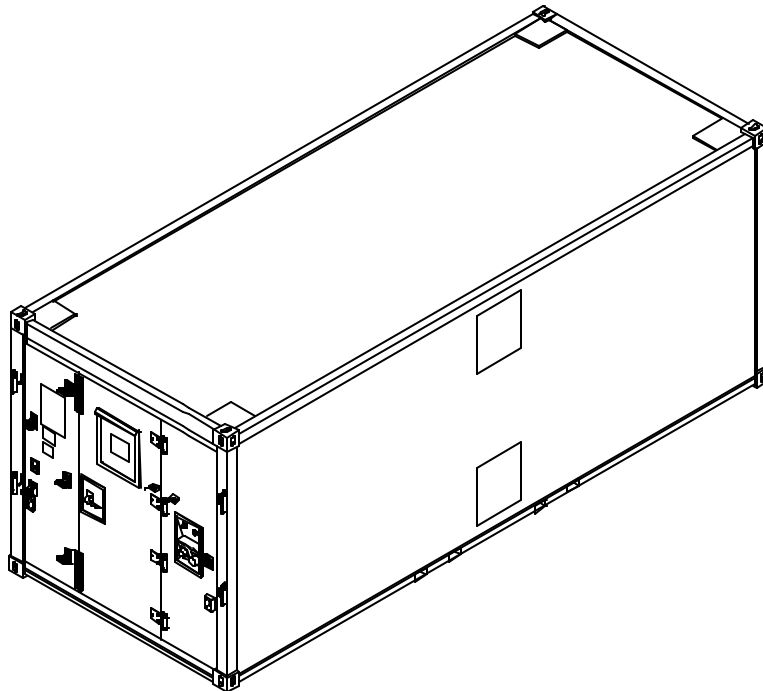


FIGURE 3.7.1 ARMY TACTICAL ISO SHELTER.

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3.7.2 Marine Corps ISO Shelters (Refer to Figure 3.7.2). The Marine Corps ISO Shelters are 8' high by 8' wide by 10' and 20' long structures, with gross weight of up to 15,000 lbs. Although there are 5 different NSN items within this shelter family, the basic structural design of these shelters is the same. There are non-expandable 10' and 20' shelters and a 20' knock-down type.

The shelters are constructed with an aluminum structural frame, with eight flanged corner fittings (steel castings), bolted to the frame at each corner. The walls, floor and roof are sandwiched panels constructed of aluminum with paper-honeycomb core, which are riveted to the structural frame.

The floor cross members and forklift pockets are formed sheet aluminum, welded to the structural aluminum base frame. There is a 3-1/2' wide personnel door on each end. The doors are constructed of the same aluminum-honeycomb sandwich panel as the walls, floor, and roof, and use a 3 point latch, located on the door interior.

All shelters, except the EMI Shielded shelters have removable side and end walls. Four Knock-down Shelters in the storage mode can be stacked and shipped in the transport mode. Table 3.7.2 lists the different configurations of Marine Corps ISO shelters.

Table 3.7.2 Marine Corps ISO Shelters.

SHELTER CONFIGURATION		NSNs
10' Non-Expandable	General Purpose	5411-01-287-4341
	EMI Shielded	5411-01-206-6079
20' Non-Expandable	General Purpose	5411-01-209-3451
	EMI Shielded	5411-01-206-6078
20' Knock-down	General Purpose	5411-01-206-6077

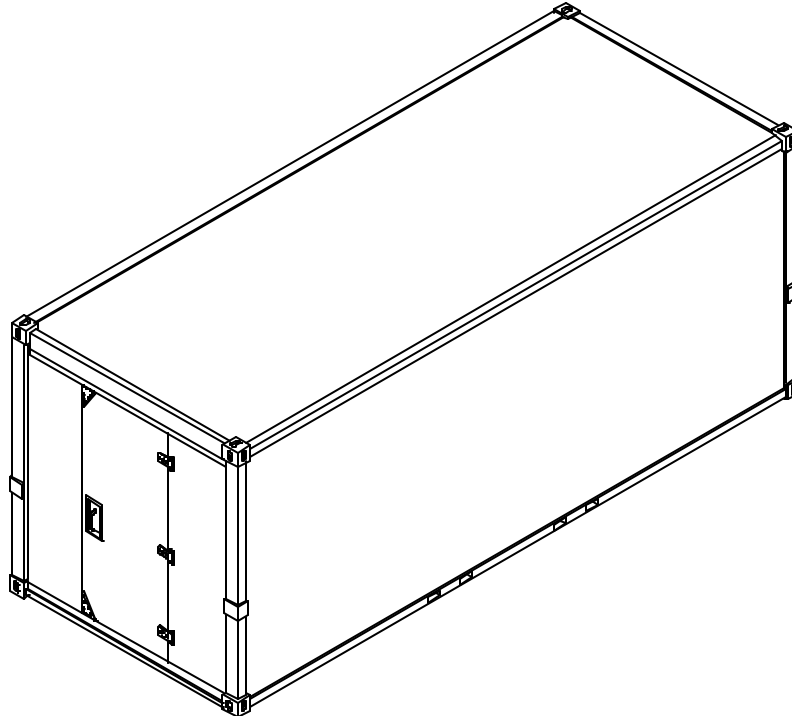


FIGURE 3.7.2 MARINE CORPS TACTICAL ISO SHELTER

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3.7.3 Navy ISO Shelters. Refer to Figure 3.7.3A and 3.7.3B. The Navy ISO Shelters are a family of 8' high by 8' wide by 20' long structures, with a gross weight of up to 20,000 lbs. Although there are 7 different NSN items within this shelter family, the basic structural design of these shelters is the same, and are all non-expandable 20'.

The shelters are constructed with steel structural frame, with eight corner fittings (steel castings), welded to the frame at each corner. The walls, floor and roof are sandwiched panels constructed of aluminum with structural foam core, which are riveted to the structural frame. Within these panels there are tubular aluminum frame members, spaced every 22" on center.

The floor cross members and forklift pockets are formed sheet steel, welded to the structural steel base frame.

The BMF, INU, SOMF-A shelters are equipped with a 4' wide door on each end. The SOMF-C is equipped with a 4' door on only one end. The SOMF- B is equipped with a 3-1/2' door on the side and the modified SOMF-B has an additional set of 80" double doors on one end.

The doors are constructed of the same foam and beam sandwich panel as the walls, floor, and roof, and use a 3-point latch, located on the door interior. All shelters in the standard configuration, (except the SOMF-C) can have up to 3 power entry (waterfall) panels, located on the sidewall.

The SOMF-A and B shelters have one fixed sidewall and one removable sidewall. The fixed sidewall has two 4' removable panels. The SOMF-C has two removable sidewalls.

The BMF shelters have two fixed sidewalls. One of the sidewalls has one 4' global removable Navy panel. The INU shelters also have two fixed sidewalls. One of the sidewalls has two 4' removable panels and the other side has only one.

All shelters have three removable, full-length skids, 2.56 in (65.02mm) high, mounted to the base frame. Table 3.7.3 lists the different types of Navy ISO shelters.

Table 3.7.3 Navy ISO Shelters.

SHELTER TYPE		NSNs
Basic Mobile Facility (BMF)	BMF-A	5411-01-355-4322
	BMF-B	5411-01-355-4323
Side Opening Mobile Facility (SOMF)	SOMF-A	5411-01-355-4320
	SOMF-B	5411-01-355-4321
	SOMF-B, Modified	5411-01-355-4319
	SOMF-C	5411-01-355-6566
Integration Unit Mobile Facility (INU)	INU	5411-01-355-4318

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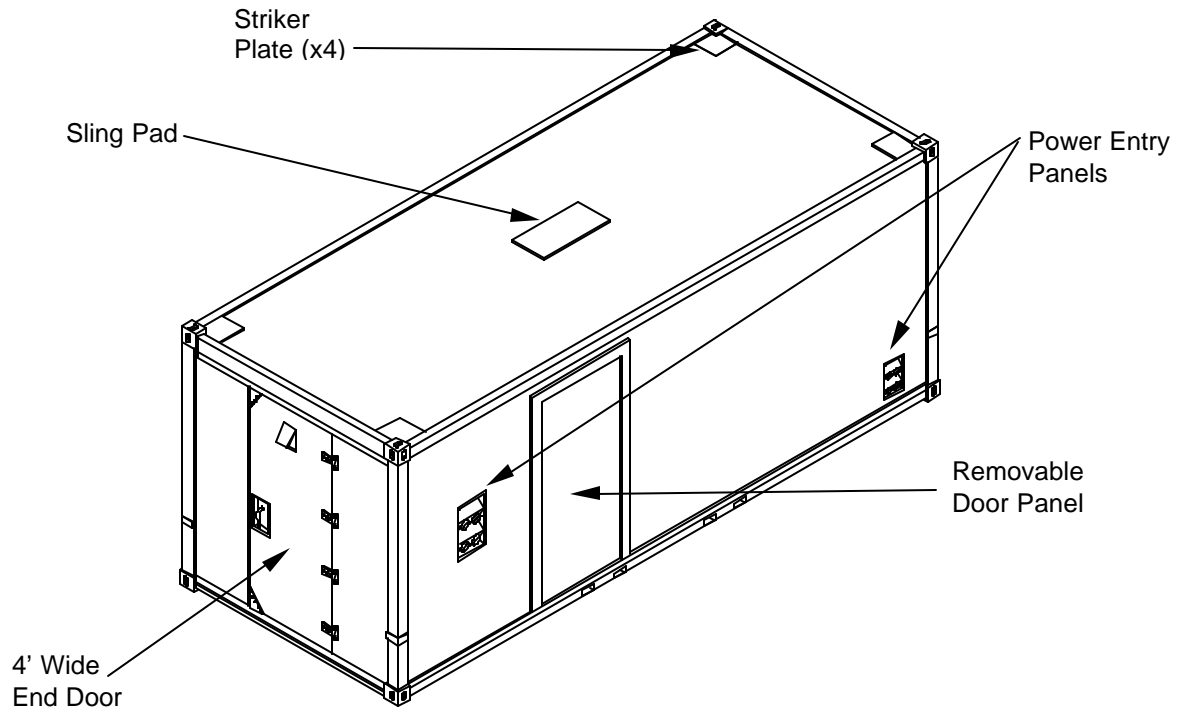


FIGURE 3.7.3A NAVY BMF ISO SHELTER

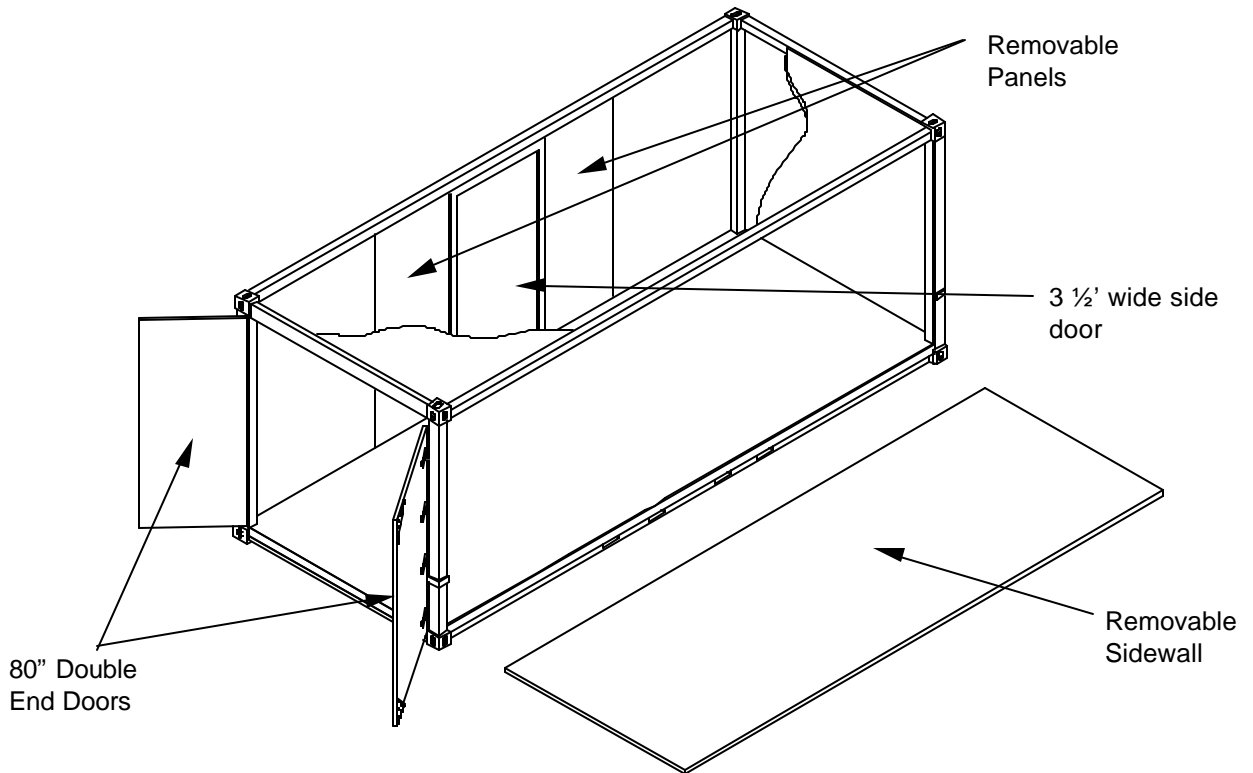


FIGURE 3.7.3B NAVY SOMF-B (MODIFIED) ISO SHELTER

3.8 DEPMEDS Container

The DEPMEDS containers are used in direct support of the Surgeon General's fielding of the Deployable Medical systems. They are used for shipping and storage of components for various operating rooms, medical support, and laboratories, which comprise the Deployable Medical Systems. The DEPMEDS container is designed to ANSI/ISO standards and is produced from a military performance specification. The container is constructed of steel with hardwood flooring, and the interior walls are lined with plywood. The floor and inside walls contain tie down rings for securing cargo. The container is equipped with one double door opening on the side and one double door opening at the rear end of the container.

NSN: 8115-01-241-7524

Length: 20' Width: 8' Height: 8'

Tare Weight: 5,150 lbs, 2,322 kg, Maximum Gross weight: 44,800 lbs, 20,320 kg

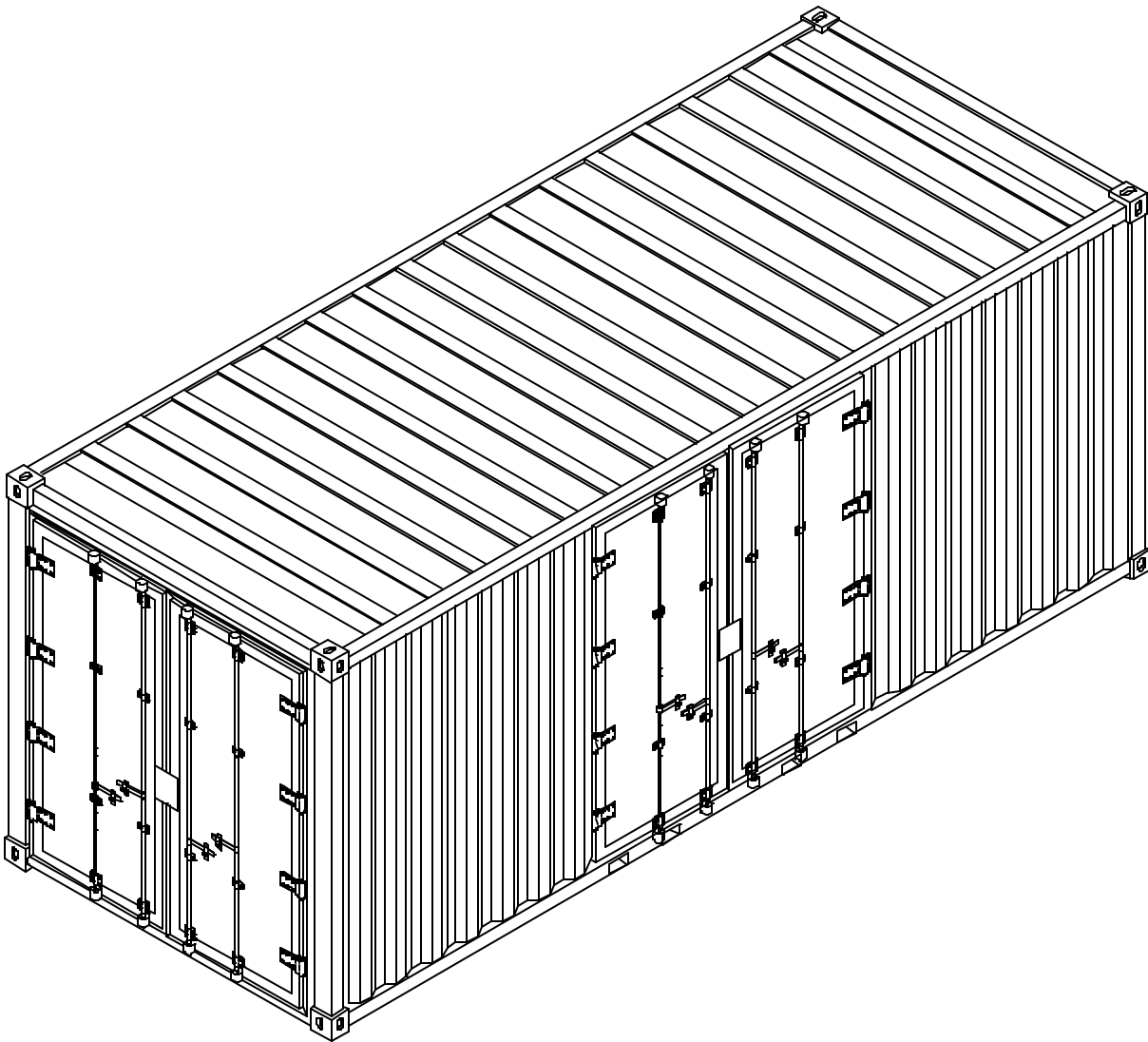


FIGURE 3.8 ARMY DEPMEDS CONTAINER

4. CONTAINER TERMINOLOGY

4.1 Primary Structural Components. Refer to Figure 4.1.

Note: On some ISO shelters, some of the primary structural components may be concealed within the wall, roof, and floor panels. The areas where the adjacent panels join will be thoroughly inspected. This inspection will meet the criteria for the Wall Beams and the Roof Beams.

4.1.1 Corner Fitting. Internationally standard fitting (casting) located at the eight corners of the container structure to provide means of handling, stacking and securing containers. Specifications are defined in ISO 1161.

4.1.2 Corner Post. Vertical structural member located at the four corners of the container and to which the corner fittings are joined.

4.1.3 Door Header. Lateral structural member situated over the door opening and joined to the corner fittings in the door end frame.

4.1.4 Door Sill. Lateral structural member at the bottom of the door opening and joined to the corner fittings in the door end frame.

4.1.5 Rear End Frame. The structural assembly at the rear (door end) of the container consisting of the door sill and header joined at the rear corner fittings to the rear corner posts to form the door opening.

4.1.6 Top End Rail. Lateral structural member situated at the top edge of the front end (opposite the door end) of the container and joined to the corner fittings.

4.1.7 Bottom End Rail. Lateral structural member situated at the bottom edge of the front end (opposite the door end) of the container and joined to the corner fittings.

4.1.8 Front End Frame. The structural assembly at the front end (opposite the door end) of the container consisting of top and bottom end rails joined at the front corner fittings to the front corner posts.

4.1.9 Top Side Rail. Longitudinal structural member situated at the top edge of each side of the container and joined to the corner fittings of the end frames.

4.1.10 Bottom Side Rail. Longitudinal structural member situated at the bottom edge of each side of the container and joined to the corner fittings to form a part of the understructure.

4.1.11 Cross Member. Lateral structural member attached to the bottom side rails that supports the flooring.

4.1.12 Understructure. An assembly consisting of bottom side and end rails, door sill (when applicable), cross members and forklift pockets.

4.1.13 Forklift Pocket. Reinforced tunnel (installed in pairs) situated transversely across the understructure and providing openings in the bottom side rails at ISO prescribed positions to enable either empty capacity or empty and loaded capacity container handling by forklift equipment.

4.1.14 Forklift Pocket Strap. The plate welded to the bottom of each forklift pocket opening or part of bottom siderail. The forklift pocket strap is a component of the forklift pocket.

4.1.15 Gooseneck Tunnel. Recessed area in the forward portion of the understructure to accommodate transport by a gooseneck chassis. This feature is more common in forty foot and longer containers.

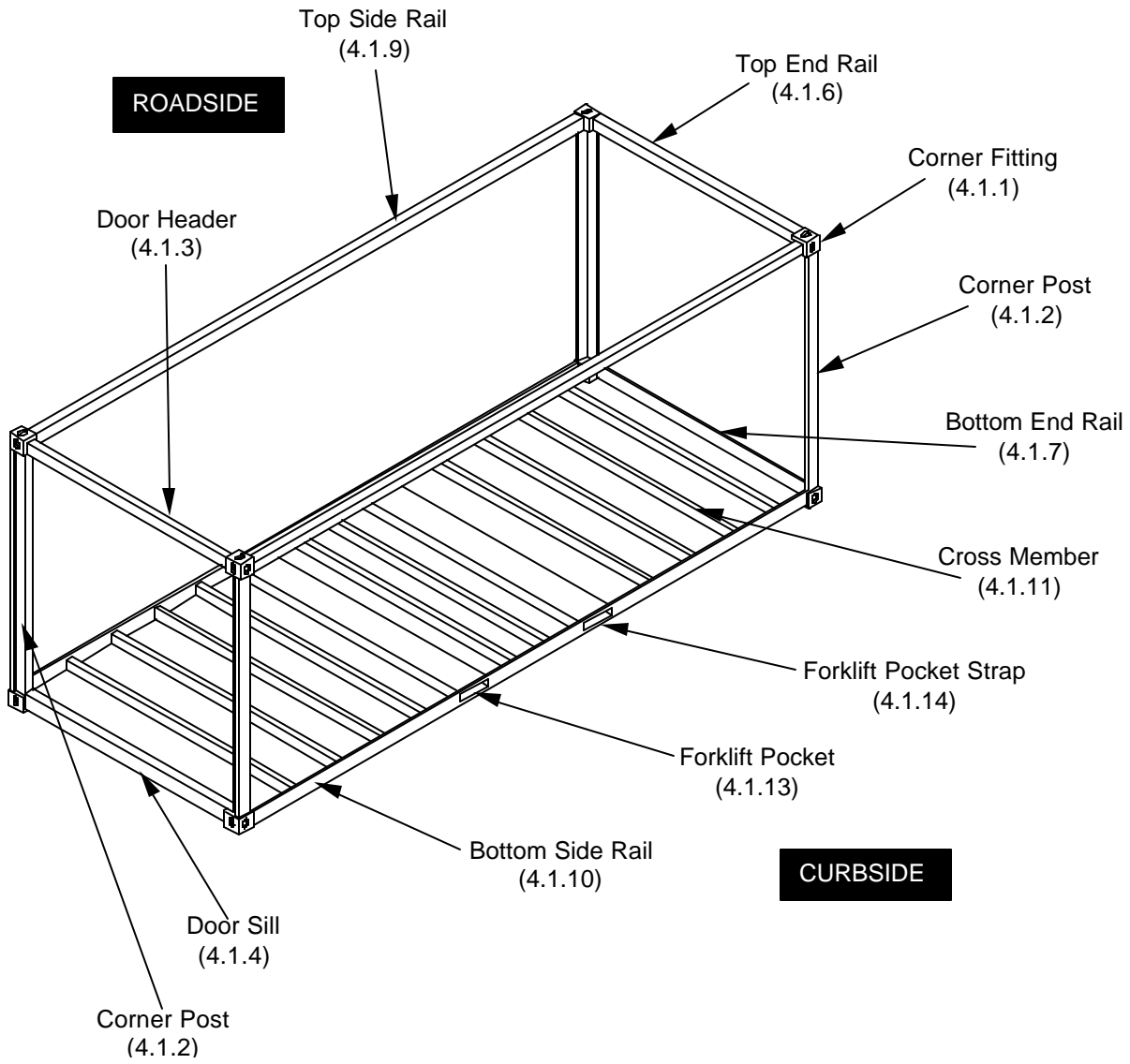


FIGURE 4.1 PRIMARY STRUCTURAL COMPONENTS

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4.2 Walls, Roof, and Floor. Refer to Figures 4.2A, 4.2B, 4.2C, 4.2D, 4.2E, 4.2F, 4.2G, and 4.2H.

4.2.1 Fiberglass Reinforced Plywood (FRP). A material constructed of laminates of fiberglass, polyester resins, and plywood, also known as sandwich panel. (4.2C)

4.2.2 Wall Panel. Corrugated or flat sheet steel, a riveted or bonded aluminum sheet and wall post assembly, FRP, foam and beam, aluminum, or honeycomb material that forms the side wall or end wall.

4.2.3 Wall Post. Interior or exterior intermediate vertical component to which sheet aluminum or steel is riveted or welded to form a wall panel. (4.2B)

4.2.4 Wall Beam. Encapsulated vertical component to which sheet aluminum or steel is bonded to form a wall panel. This is found in foam and beam panels. (4.2E)

4.2.5 Marking Panel. A side wall panel of a corrugated steel configured with a flat portion used for the display of markings and placards. (4.2A)

4.2.6 Lining. Plywood or other like material attached to the interior side and end wall to protect the walls and/or cargo and facilitate loading operations. (4.2B)

4.2.7 Lining Shield. A strip of thin metal installed at the bottom of the interior walls to protect the lower portion of the lining from damage by materials handling equipment during loading or unloading operations. (4.2B)

4.2.8 Kick Plate. A common name for a lining shield installed on the lower portion of the interior front end wall. (4.2B)

4.2.9 Ventilator. Two or more devices permanently attached to the side or end wall panel that provides openings for the exchange of air (but not water) between the outside and the container interior. (4.2A)

4.2.10 Roof Panel. Corrugated or flat sheet steel, sheet aluminum, FRP, or foam and beam and aluminum honeycomb panel that forms the top closure of the container. (4.2A, 4.2B, 4.2E, and 4.2F)

4.2.11 Roof Bow. Lateral non-structural member attached to the top side rails and supporting the underside of the roof panel. Roof bows used with removable cover (tarp) assembly are unattached. Not all container designs require roof bows. (4.2B and 4.2D)

4.2.12 Roof Beam. Encapsulated horizontal component to which sheet aluminum or steel is bonded to form a roof panel. (4.2E)

4.2.13 Roof Reinforcement Plate. An additional metal plate on the interior or exterior of the roof panel adjacent to the top corner fittings that provides protection of the roof panel or top rail components from misaligned handling equipment. (4.2B)

4.2.14 Tarp. Jargon for "tarpaulin" which is a waterproof and flexible fabric used for covering the top of an open-top container. This covering is referred to as a "Tilt" in some countries. (4.2D)

4.2.15 TIR Cable. Plastic sheathed wire rope that is designed in accordance with TIR customs convention (Refer to paragraph 4.5.6) and is threaded through the welded loops on the sides, end panels and door panels of an open-top container to secure the tarp. (4.2D)

4.2.16 Flooring. Material that is supported by the cross members and bottom rails to form a load bearing surface for the cargo. The flooring is usually constructed of laminated wood planks, plywood sheets, or other composition material and is screwed or bolted to the cross members. Some containers have welded steel or aluminum flooring, sandwich panels or a combination of metal and wood. (4.2A, 4.2B, 4.2E and 4.2F)

4.2.17 Joint Strip. A formed steel or aluminum strip (usually hat-shaped section) installed between joints of the plywood sheet flooring or joints of the plywood sheet lining to help integrate and support the edges of the plywood. (4.2A)

4.2.18 Threshold plate. Plate forward of the door sill to protect the entrance area of the container floor. This plate is commonly referred to as a crash plate. (4.2B)

4.2.19 Steps. Folding steps are found on some ISO Shelters and are used to gain access to the roof. They must be folded up prior to transporting shelter. (4.2F)

4.2.20 Sandwich Panel. A type of fixed or removable panel construction used in ISO Shelters consisting of a thin inner and outer sheet aluminum skin, bonded or fastened to a core constructed of either honeycomb or structural foam and aluminum beams. (4.2C, 4.2G, and 4.2H)

4.2.21 Striker Plate. An additional metal plate on the exterior of the roof panel adjacent to the top corner fittings that provides protection to the roof panel or top rail components from misaligned handling equipment. (4.2E)

4.2.22 Sling Pad. An additional metal plate on the exterior of the roof panel located in the center of the roof panel that provides protection to the panel from lowered handling equipment. (4.2E)

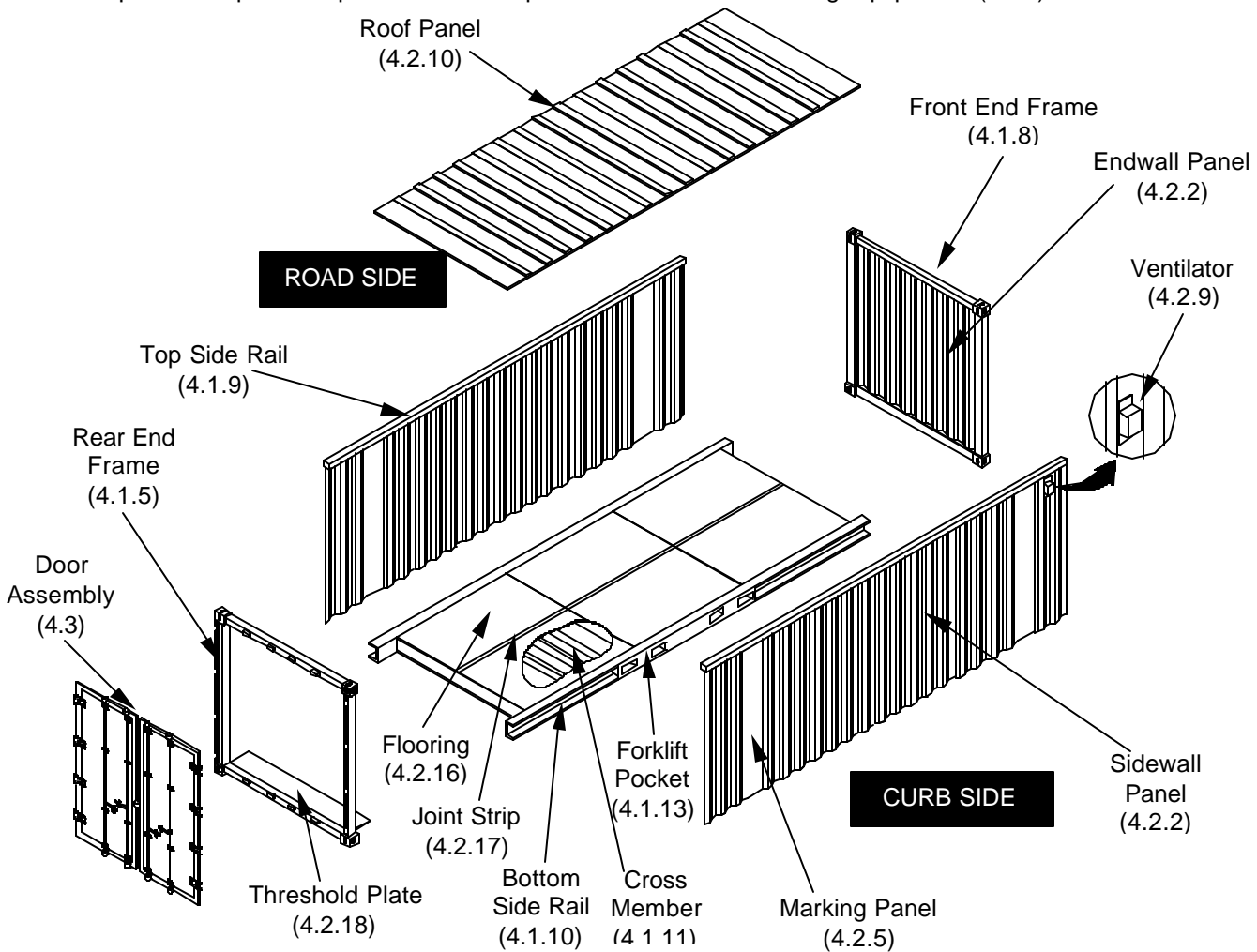


FIGURE 4.2A TYPICAL STEEL CONTAINER (EXPLODED VIEW)

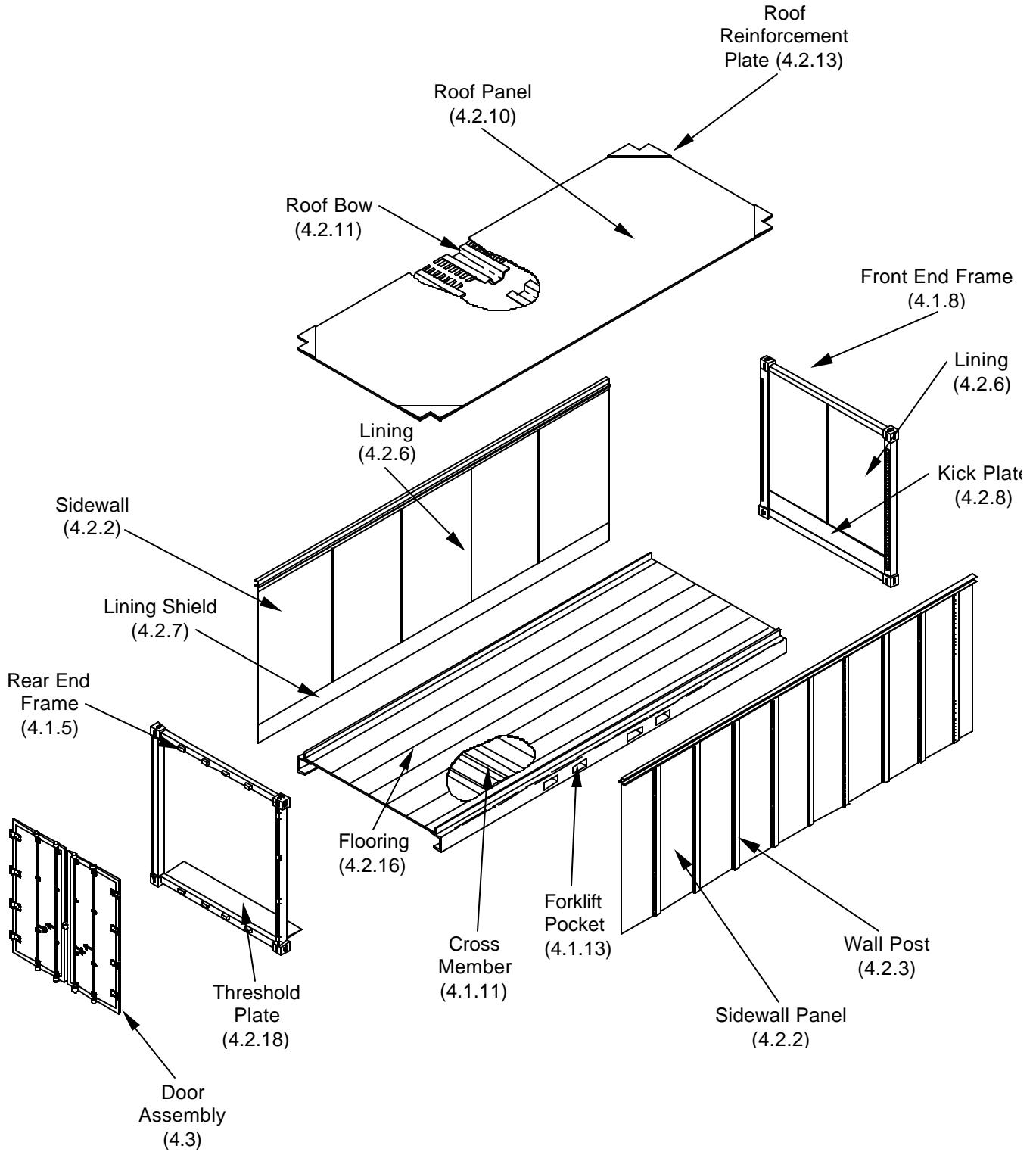


FIGURE 4.2B TYPICAL ALUMINUM CONTAINER (EXPLODED VIEW)

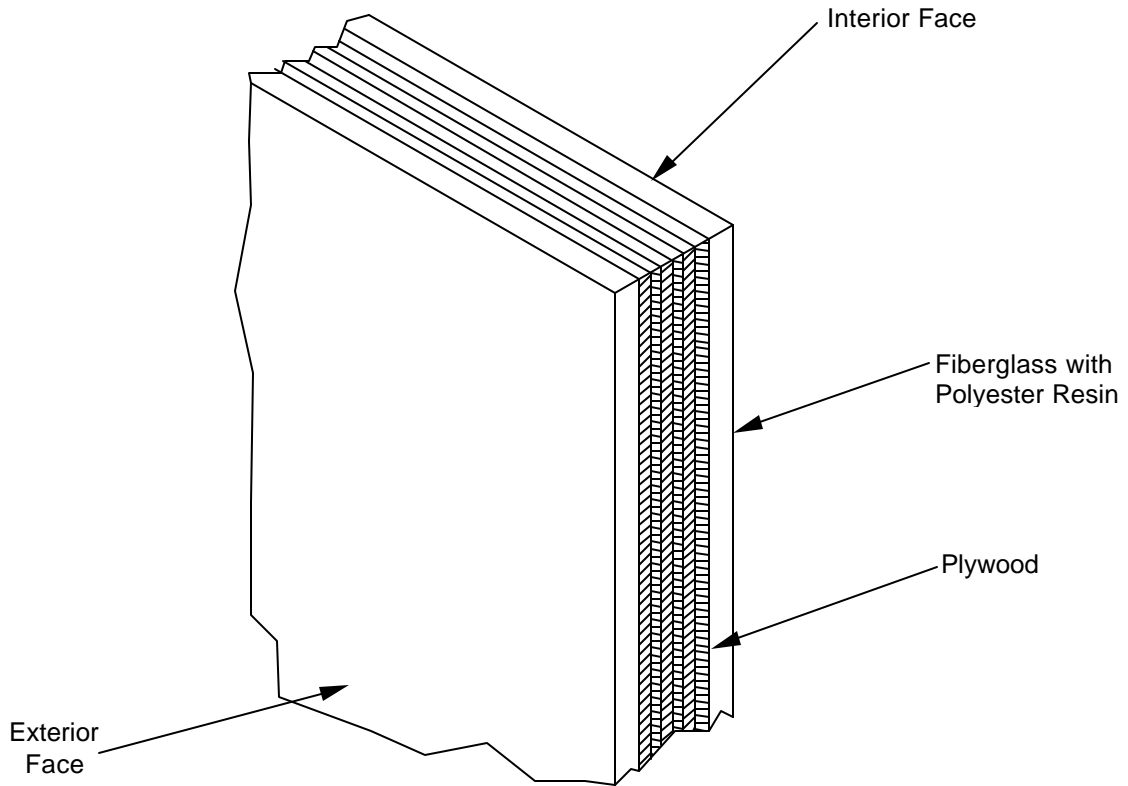


FIGURE 4.2C FIBERGLASS REINFORCED PLYWOOD (FRP)

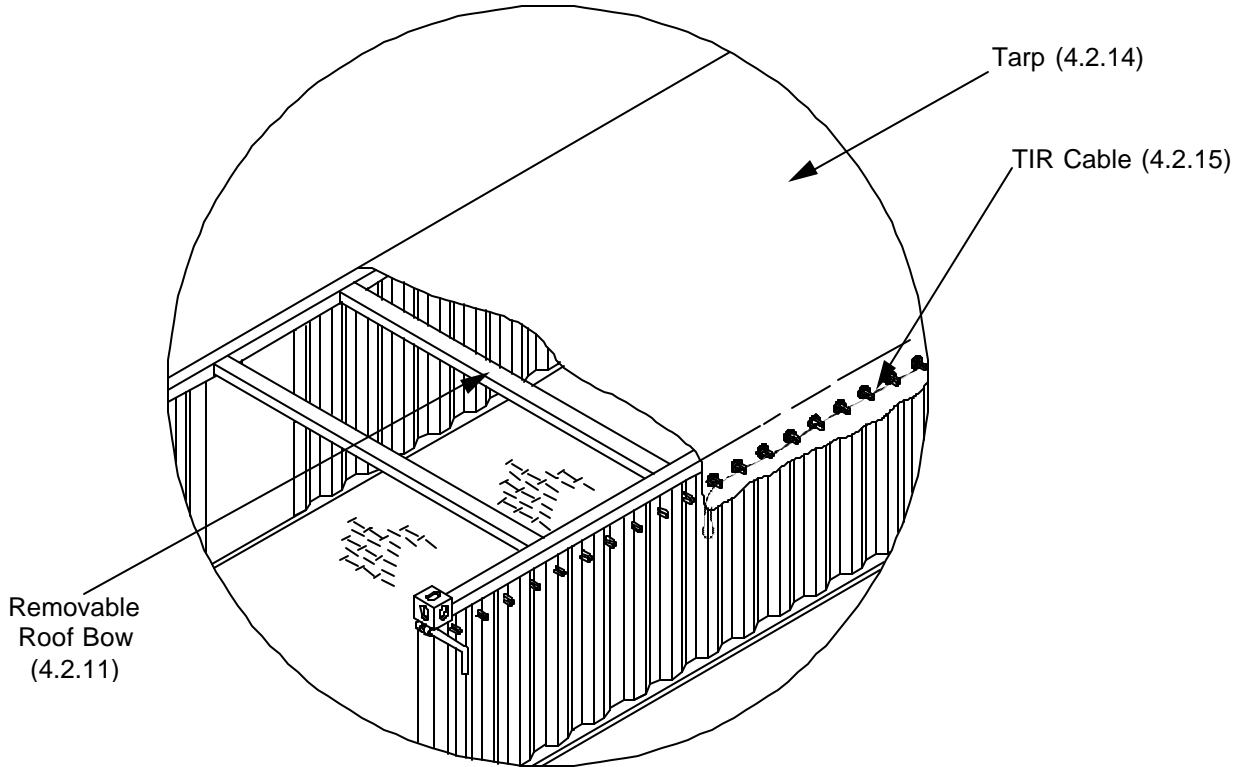


FIGURE 4.2D REMOVABLE COVER (TARP) ASSEMBLY

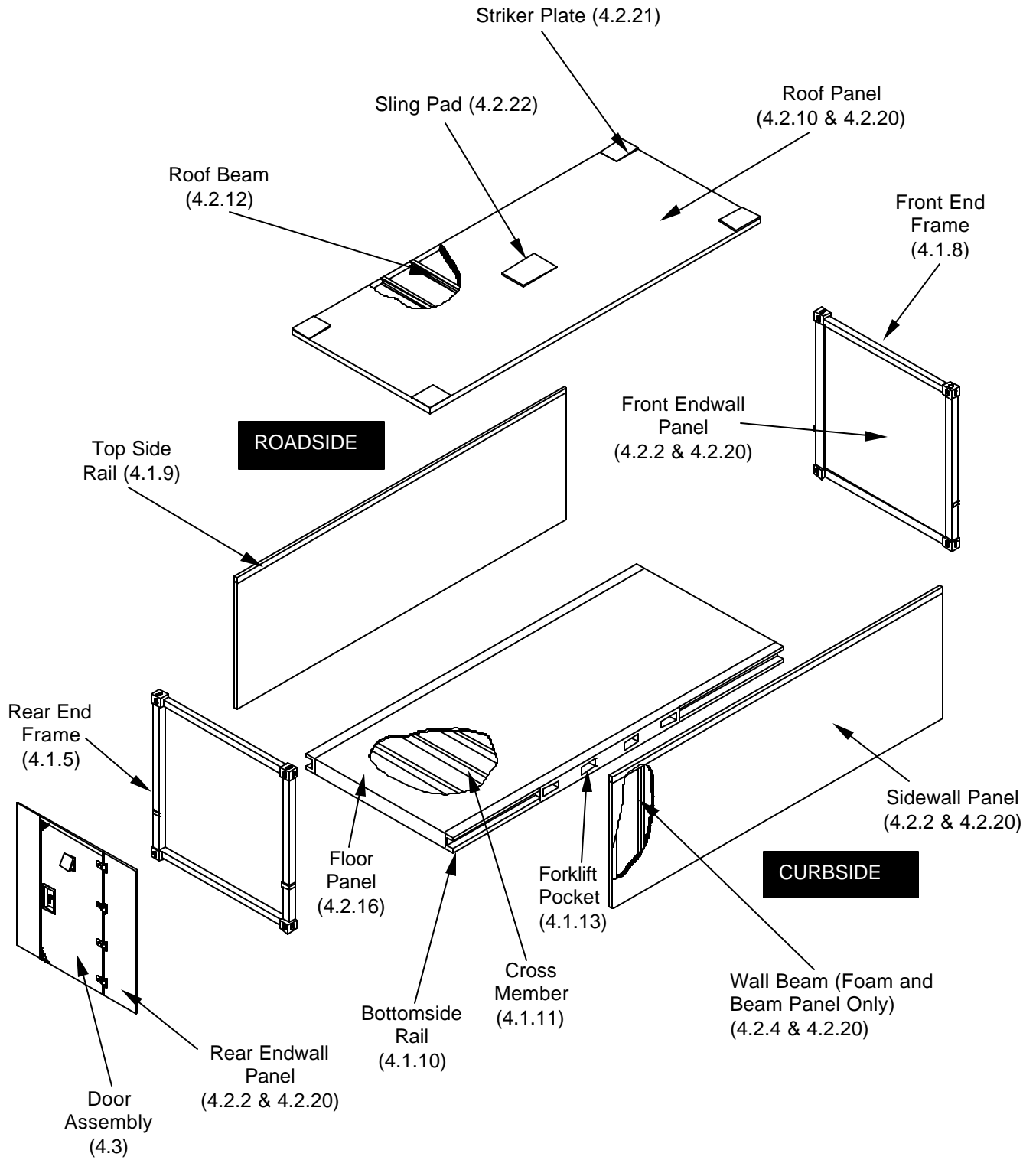


FIGURE 4.2E TYPICAL ISO SHELTER (EXPLODED VIEW)

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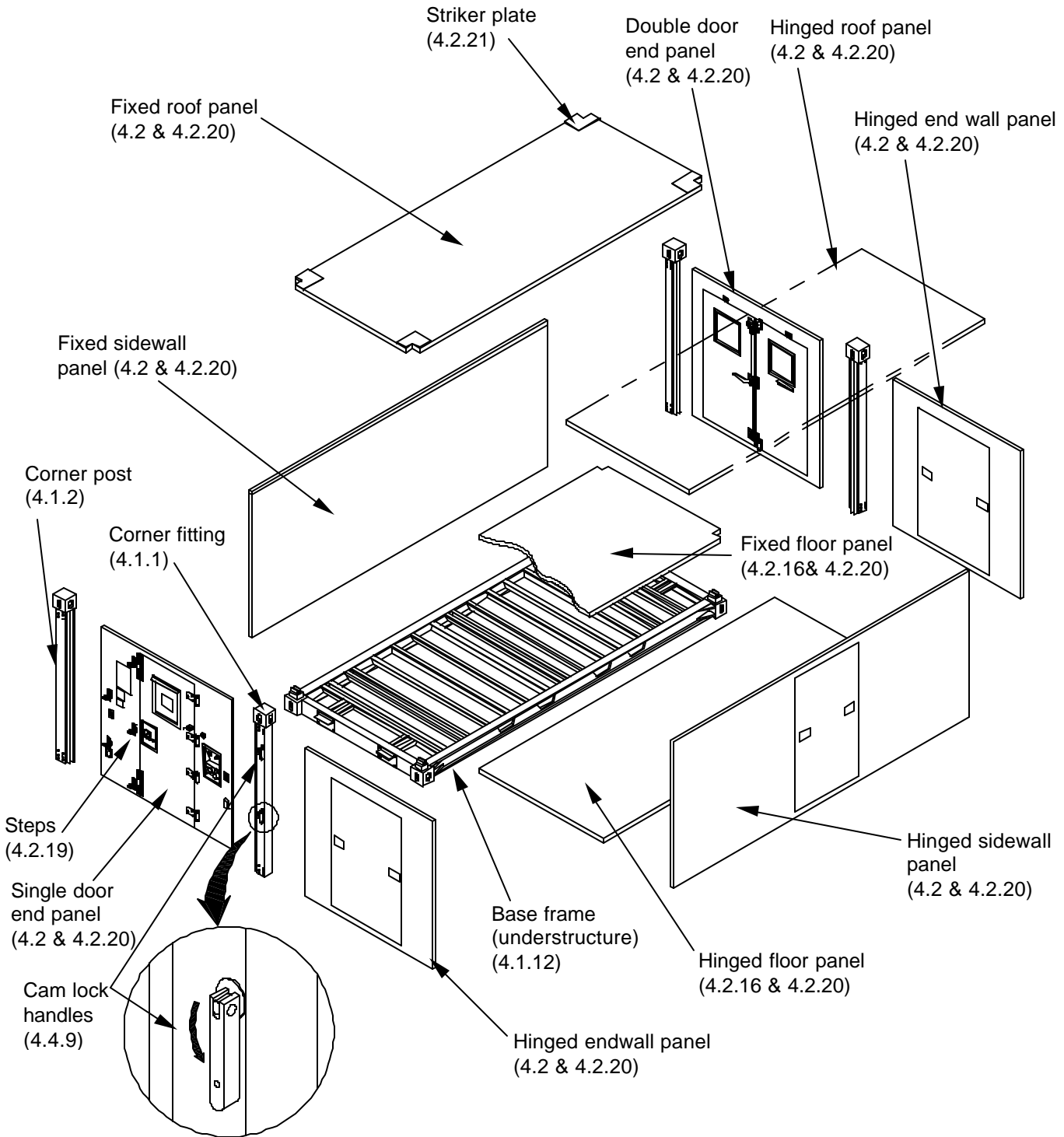


FIGURE 4.2F TYPICAL ONE-SIDE EXPANDABLE ISO SHELTER (EXPLODED VIEW)

NOTE

Hinged panels are those which will be enclosed inside the container during transport and storage.

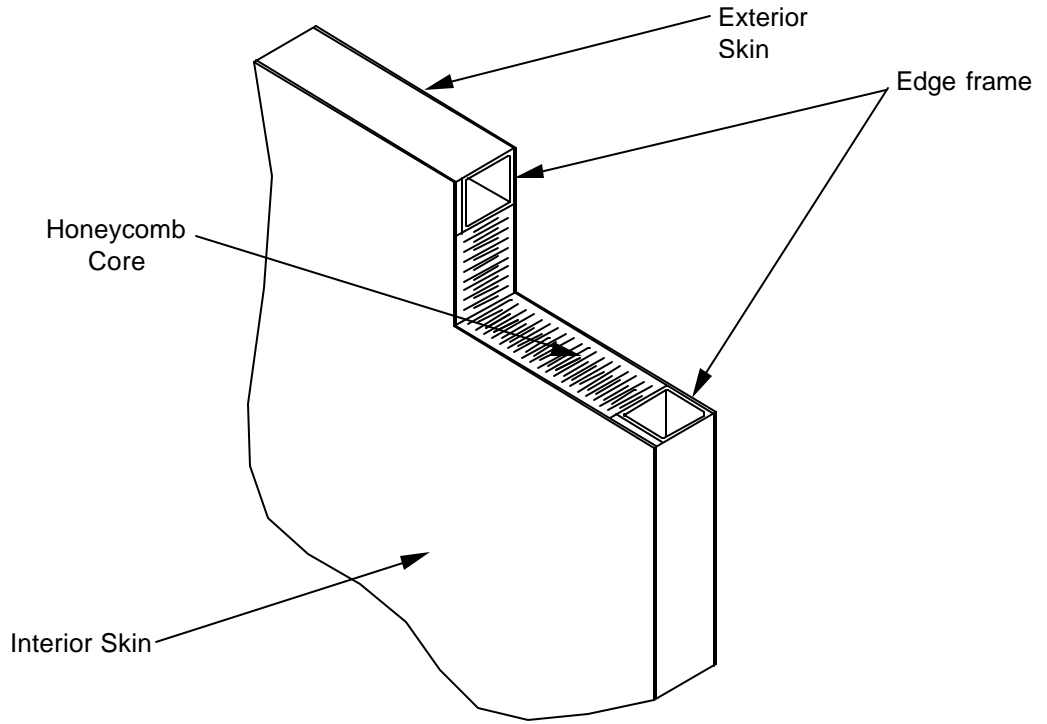


FIGURE 4.2G HONEYCOMB SANDWICH PANEL

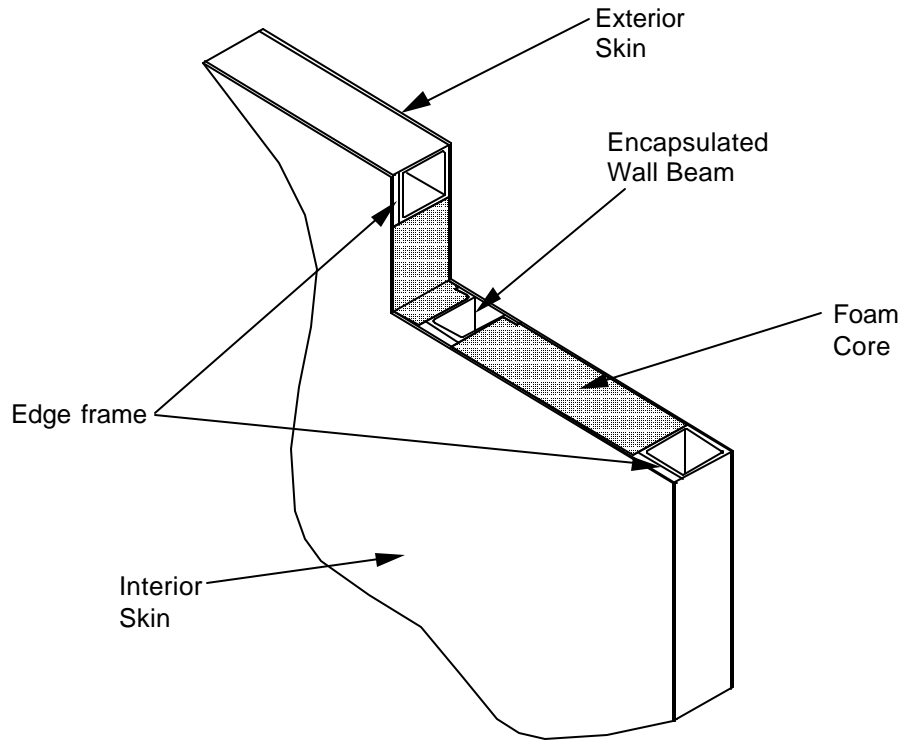


FIGURE 4.2H FOAM & BEAM SANDWICH PANEL CONSTRUCTION

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4.3 Door Assembly. Refer to Figures 4.3A, 4.3A1, 4.3B, 4.3C1, and 4.3C2.

4.3.1 Door Panel. Corrugated or flat sheet steel, plymetal (metal faced wood) material, aluminum sheet and post assembly, sandwich panel, or FRP panel that forms either a portion or all of a door.

4.3.2 J-Bar. The portion of the exterior edge of the corner post structure in a doorway frame that encircles and supports the door hinges.

4.3.3 Hinge. Hardware comprised of a blade permanently joined to the door and a lug integral to the corner post structure. A series of hinges enables the door to rotate open or closed.

4.3.4 Hinge Pin. Hinge component that attaches the two components of the hinge and provides a line of rotation. A hinge pin may be surrounded with a bushing to reduce friction and resist corrosion.

4.3.5 Hinge Pin Weld. The weld affixed to the hinge pin to prevent pilferage by removing the hinge pin and door without breaking the custom seal. This is a TIR requirement.

4.3.6 Locking Bar. Vertical rod of the door assembly with cam locks fitted at each end. When rotated, it engages the cam retainers on the doorway frame. On some open-top containers' ramp type doors, this rod may be placed horizontally.

4.3.7 Locking Bar Mounting Bracket. One of the brackets that holds the locking bars in place on the door assembly.

4.3.8 Cam. Fitting on each end of a locking bar that has offset protrusions. Through lever type action, it engages a cam retainer to secure the door to the doorway frame.

4.3.9 Cam Retainer. Female component (retainer) located on the sill and header of the rear end frame or top and bottom side rails of a side opening container. It engages and retains the cam of a locking bar.

4.3.10 Door Locking Handle. Handle attached to the door locking bar that rotates the bar (rod) when opening or closing (locking) the container door.

4.3.11 Door Locking Handle Retainer. Fixed or pivoting hardware to hold the locking handle in the closed position and provide a means to place a lock and/or security seal on the door(s).

4.3.12 Anti-rack Hardware. Hardware attached to the doors and doorway frame to provide resistance against transverse twisting (racking) of the container. It consists of locking bars, locking bar mounting brackets, cams, cam retainers, locking handles, handle retainers and other support brackets.

4.3.13 Customs Catch. Rod or plate permanently affixed near center edge of outer door to preclude inner door opening without opening the outer door. Customs catch is only required if door design does not provide a metal overlap as defined by the TIR convention.

4.3.14 Door Seal (Gasket). Flexible plastic, rubber or synthetic rubber attached to the door edges with a retaining strip and fasteners to provide a water proof seal between doors and between the doors and the door frame.

4.3.15 Rain Gutter. The structure attached to the door header on some containers to divert water away from the doorway frame.

4.3.16 Three Point Latch. A latch system used on ISO shelter doors that secures the door to the doorway frame using 3 roller cams.

4.3.17 Chain Bolt. A spring-loaded bolt used to lock upper portion of one of the double doors on an ISO Shelter.

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4.3.18 Foot Bolt. A spring-loaded bolt used to lock lower portion of one of the double doors on an ISO Shelter.

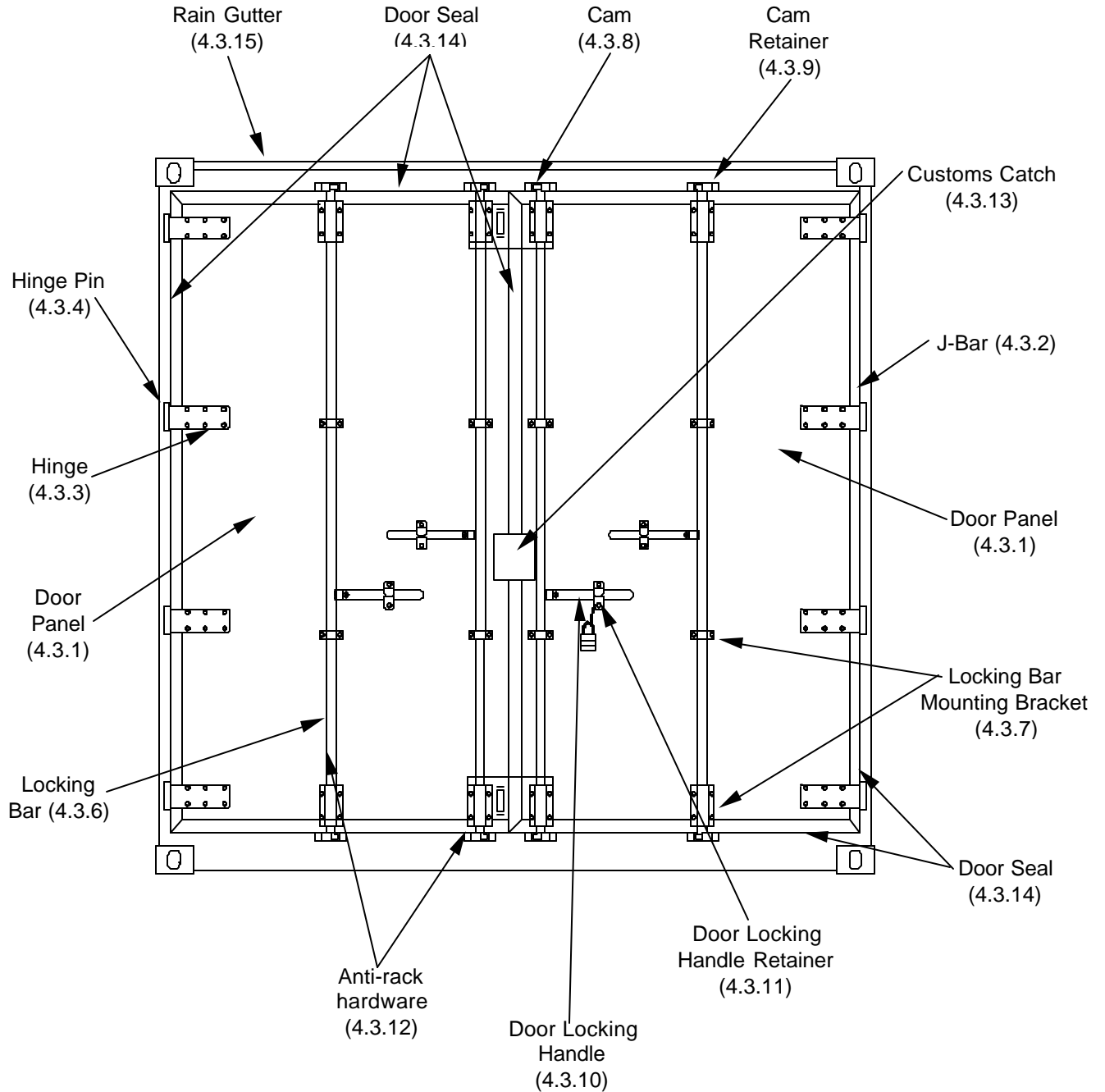


FIGURE 4.3A TYPICAL REAR END DOOR ASSEMBLY

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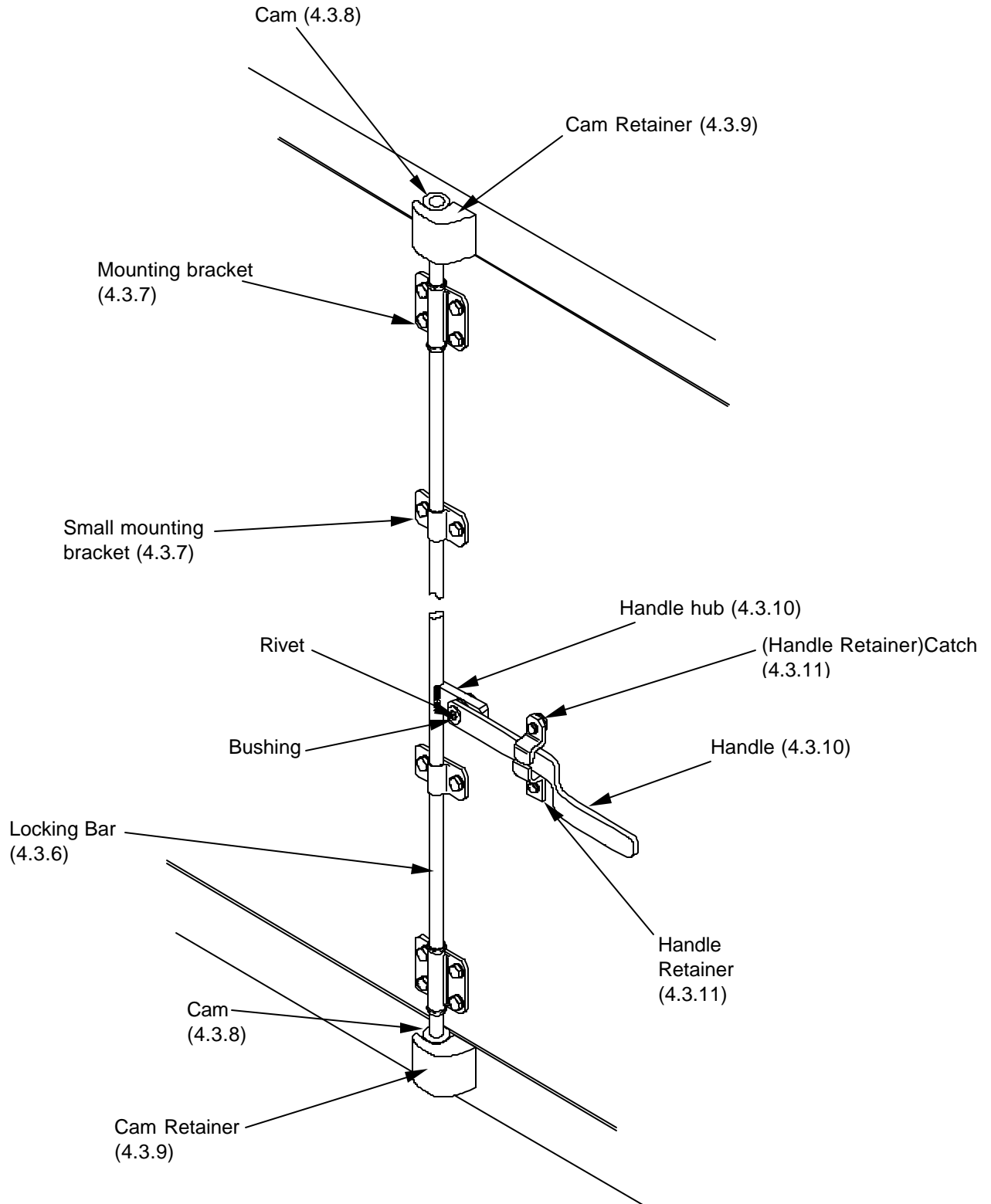


FIGURE 4.3A.1 DOOR HARDWARE

NOTE

Purchase locking bar locally.

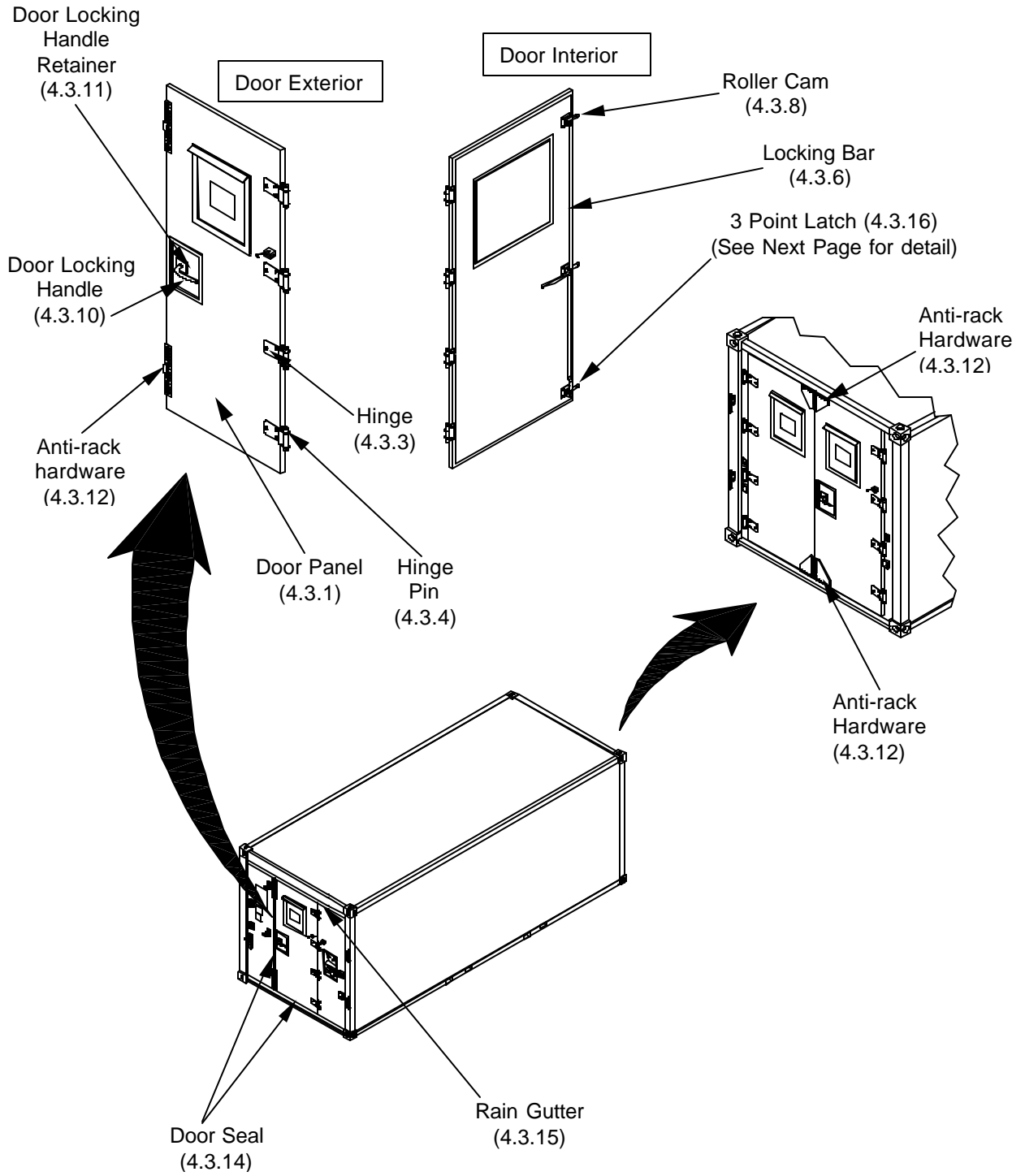


FIGURE 4.3B TYPICAL SHELTER DOOR ASSEMBLY

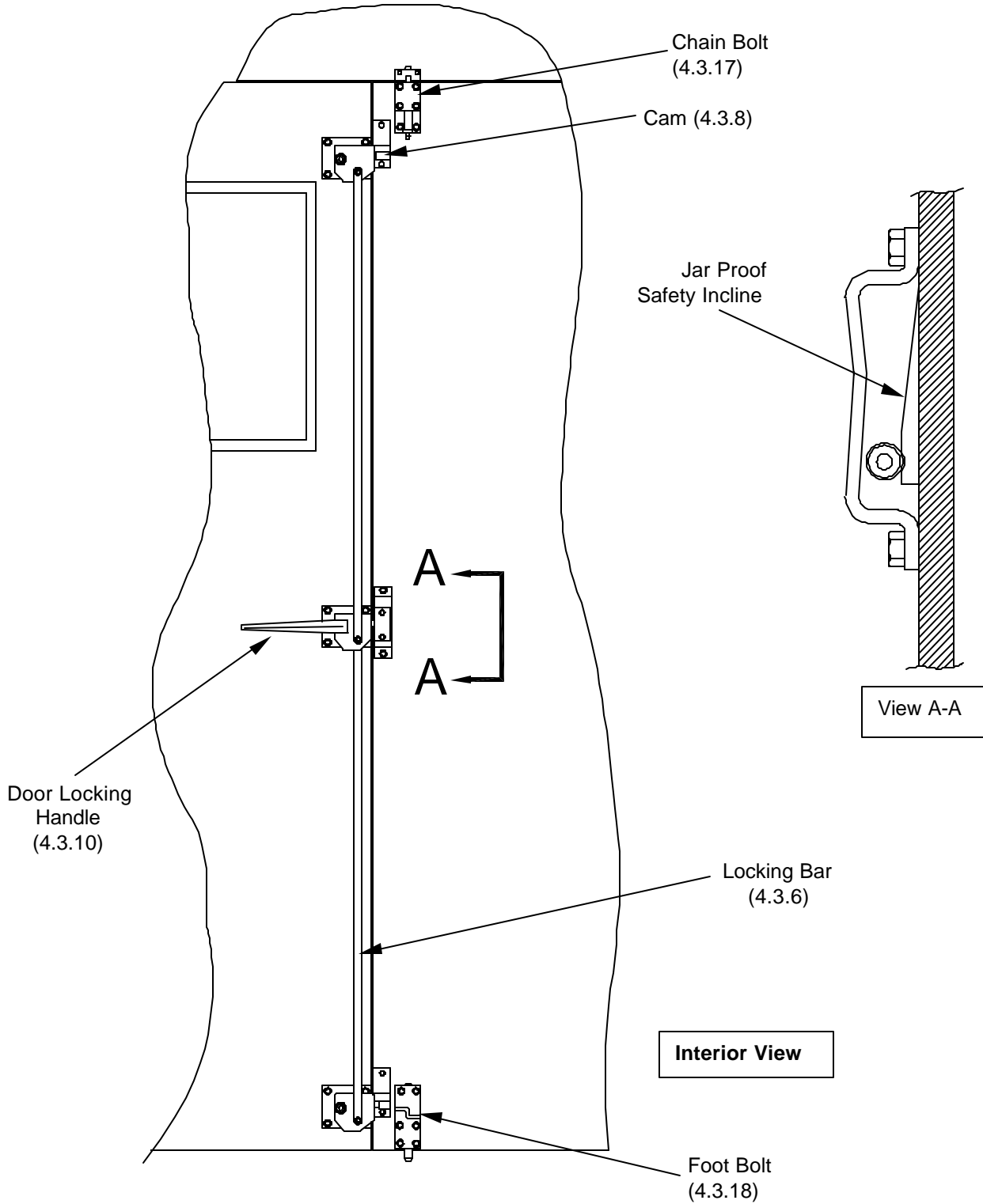


FIGURE 4.3C.1 ARMY, MARINE THREE POINT LATCHING SYSTEM

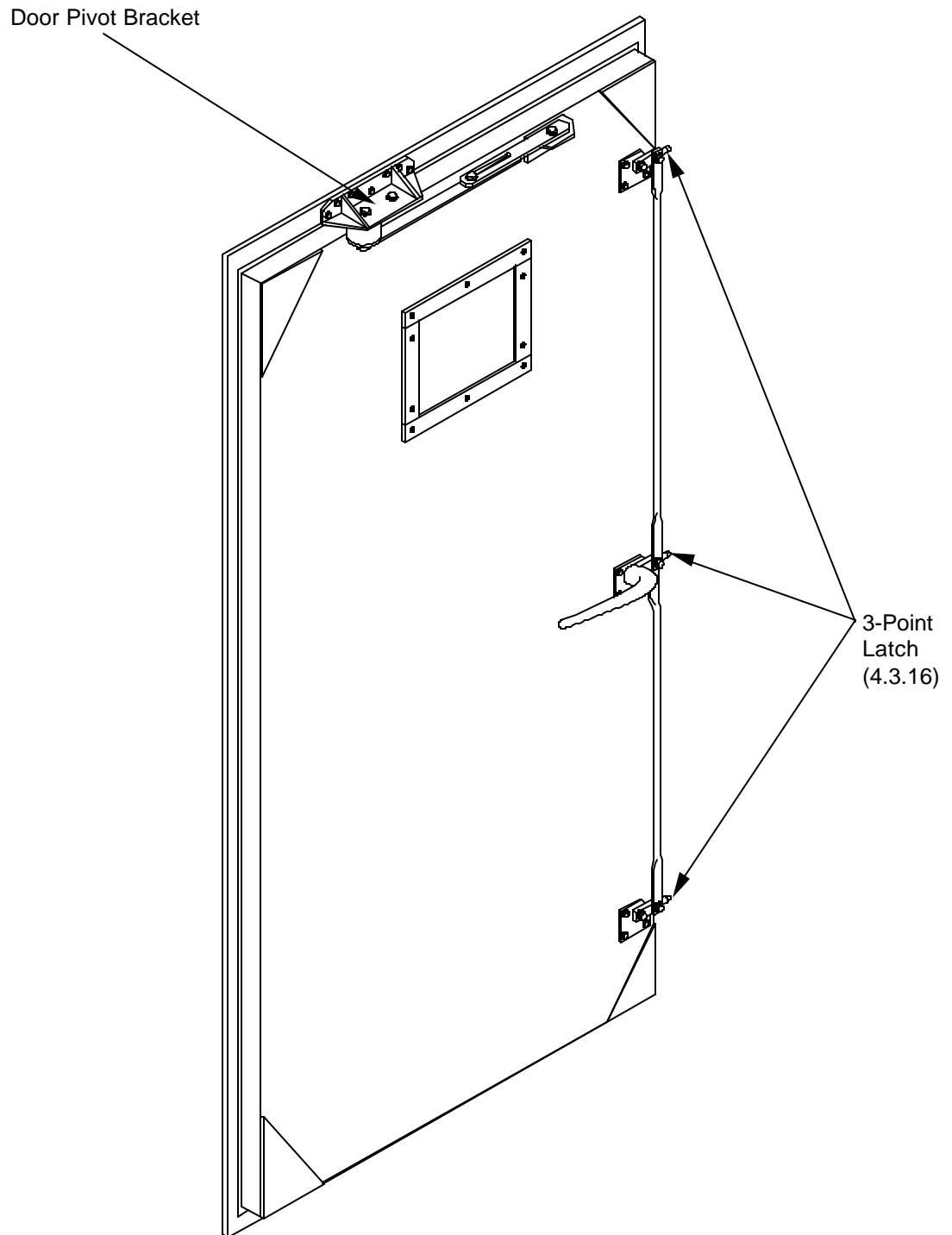


FIGURE 4.3C.2 NAVY THREE POINT LATCHING SYSTEM

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4.4 Special Terminology. Refer to Figures 4.4A, 4.4B, 4.4C, 4.4D, 4.4E, and 4.4F.

4.4.1 Container. A structure designed to carry goods. For the purpose of this handbook, the term container is assumed to be an intermodal, ISO type container, shelter, MILSPEC VAN, flatrack, quadcon, tricon, or other structures which comply with CSC requirements.

4.4.2 Intermodal. Specially designed to facilitate the carriage of goods by one or more modes of transport without requiring intermediate reloading and so equipped with ISO standard corner fittings to permit ready handling from one mode to the other.

4.4.3 MILSPEC VAN. A military-owned demountable cargo container conforming to military specification MIL-C-52661. A MILSPEC VAN is an ISO standard 1496 series 1 intermodal freight container with nominal dimensions of 8 feet wide by 20 feet long. A MILSPEC VAN can be either a Type I (8 feet high with plywood liner), Type II (8 feet high with mechanical restraint system), Type III (8-1/2 feet high with plywood liner), or Type IV (8-1/2 feet high with mechanical restraint system).

4.4.4 Cargo Restraint. Restraint fixtures or material that facilitate cargo securement within the container during handling and transport.

a. Mechanical Restraint System for End-Opening Freight Containers. A type of cargo restraint which consists of eight slotted horizontal rails intermittently spaced and welded on each side wall of the container, a pair of slotted vertical rails welded to the door end corner posts and 25 independent shoring beam assemblies with end fittings that interlock into the slots of the rails.

b. Dunnage. Additional restraint materials installed around cargo to prevent shifting and/or damage of the cargo items during shipment.

c. Load Bearing Surface. A smooth rigid interior surface on the primary structure of the container capable of withstanding dynamic loads imposed by accelerated weight of cargo during container handling and transport.

d. Load Retainer. A device or fixture welded to the door corner post that provides a strong load bearing surface for cargo restraint dunnage. Many of the DOD-owned end-opening containers are equipped with a pair of these.

e. Tiedown Provision (Lashing Bar or Ring). Provision or fitting for attachment of straps or other cargo restraint devices.

f. Stanchion. A rectangular provision (tube) on flatrack siderails that acts as a stake pocket for a side blocking stake or dunnage assembly.

4.4.5 Tare Weight. Weight of the empty container or shelter as manufactured.

4.4.6 Payload. Maximum allowable weight of the contents (cargo) of a container including any additional required load blocking materials (dunnage), not normally assigned or attached to a container.

4.4.7 Maximum Gross Weight. Total permitted gross loaded weight of a container including the tare weight plus the maximum allowable payload.

4.4.8 Shelter. An ISO container which provides live-in or work-in capability. A shelter is inspected with the same criteria as a general cargo container.

4.4.9 Cam Lock Handle. Handles located on the cornerposts of Expandable ISO Shelters. They are used to secure folding panels while shelter is in transport mode. Two handles per corner post. A one side expandable ISO Shelter will have them on two cornerposts. A two side Expandable ISO Shelter has them on all four cornerposts.

4.4.10 Skids. Navy ISO Shelters have three removeable, full length skids, 2.56 in (65.2 mm) high, mounted to the base frame. These are used to keep the bottom of the shelter off the ground allowing air to circulate to prevent moisture damage. They can be removed when transporting shelter.

4.4.11 IMDG. The International Maritime Organization's IMDG Code contains specific inspection criteria for containers carrying UN Hazard Class 1 (ammunition and explosives) materials (IMDG Para 7.4.6.4). In this handbook, use of the term "IMDG" indicates that information or criteria which applies to containers for carrying ammunition and explosives.

4.4.12 Non IMDG In this handbook, use of the term "non IMDG" indicates that information or criteria which applies to shelters and to containers that will carry hazardous materials other than UN Hazard Class 1 and all non-hazardous materials. The IMDG Code provides NO inspection criteria for these containers, thus the term "non IMDG".

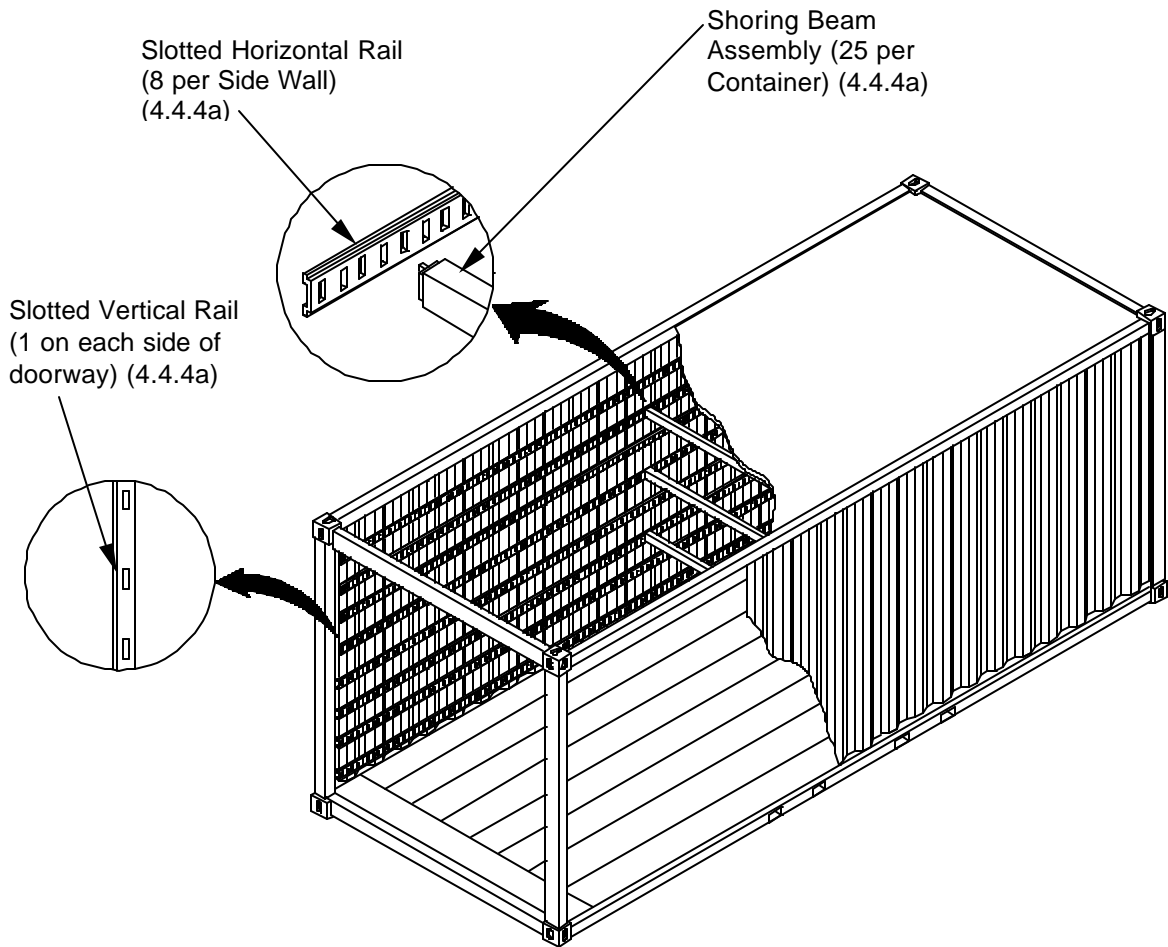


FIGURE 4.4A – MECHANICAL RESTRAINT SYSTEM FOR MILVAN

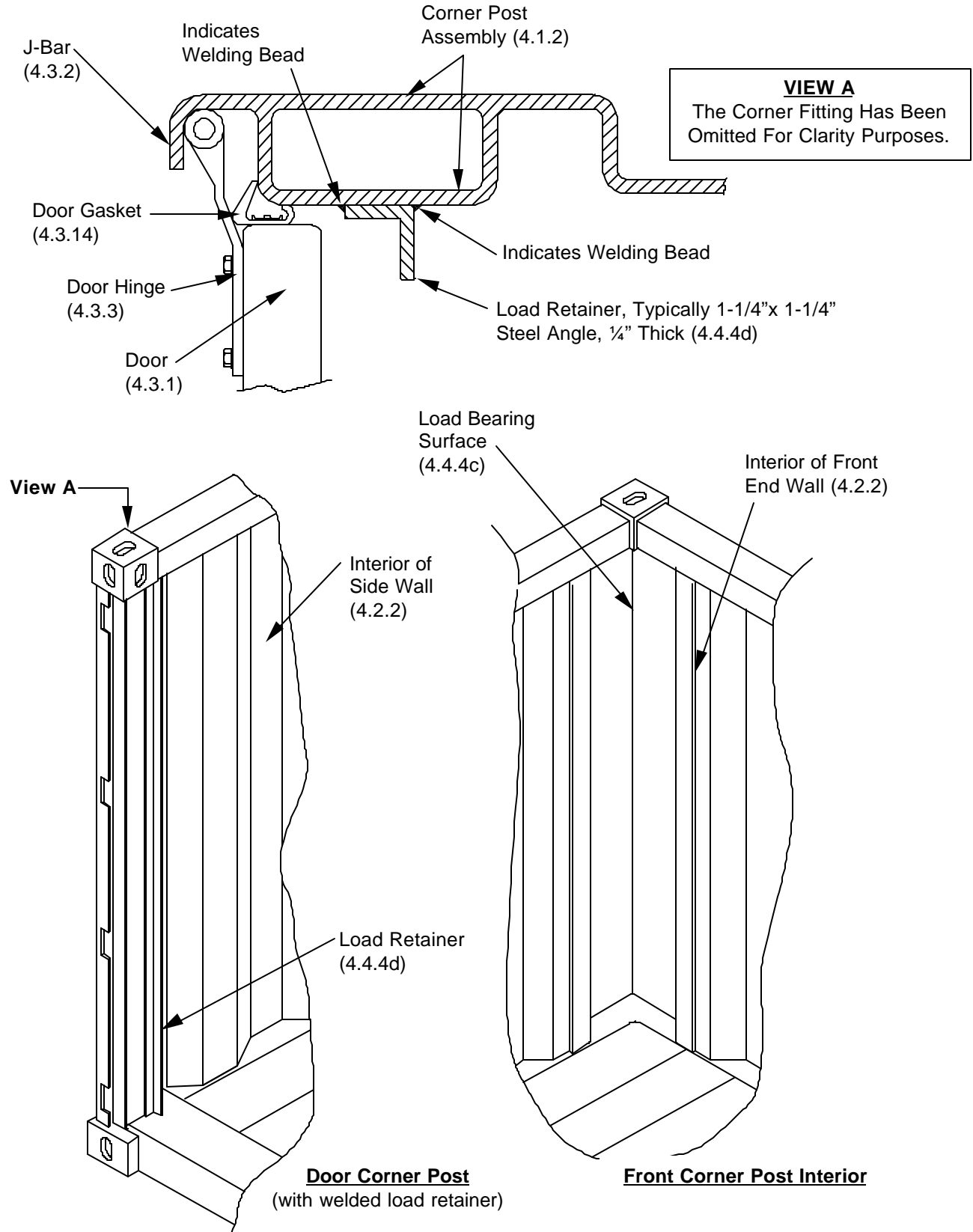


FIGURE 4.4B – CARGO RESTRAINT SYSTEM FOR END-OPENING CONTAINER

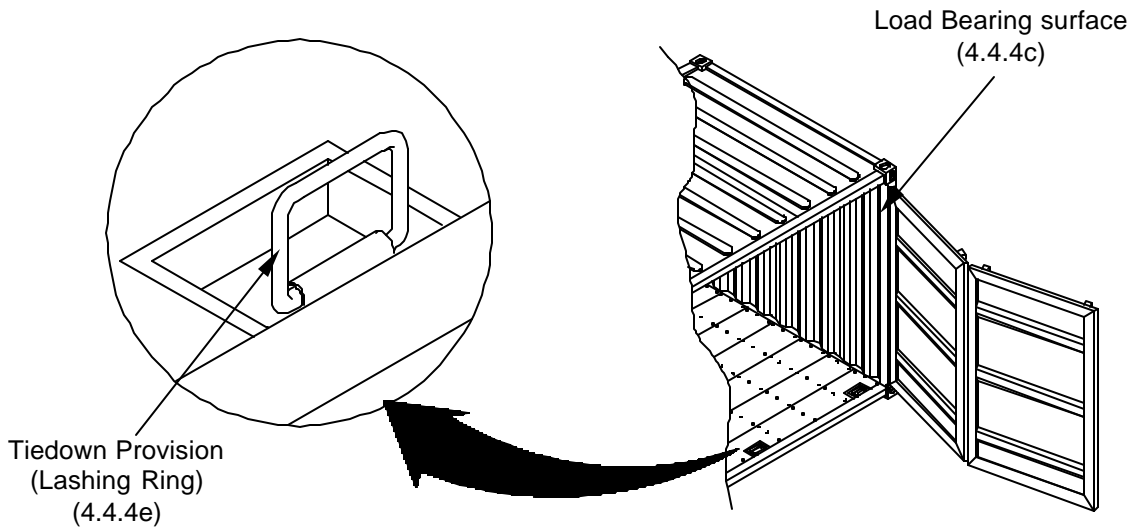


FIGURE 4.4C – CARGO RESTRAINT SYSTEM FOR SIDE-OPENING CONTAINER

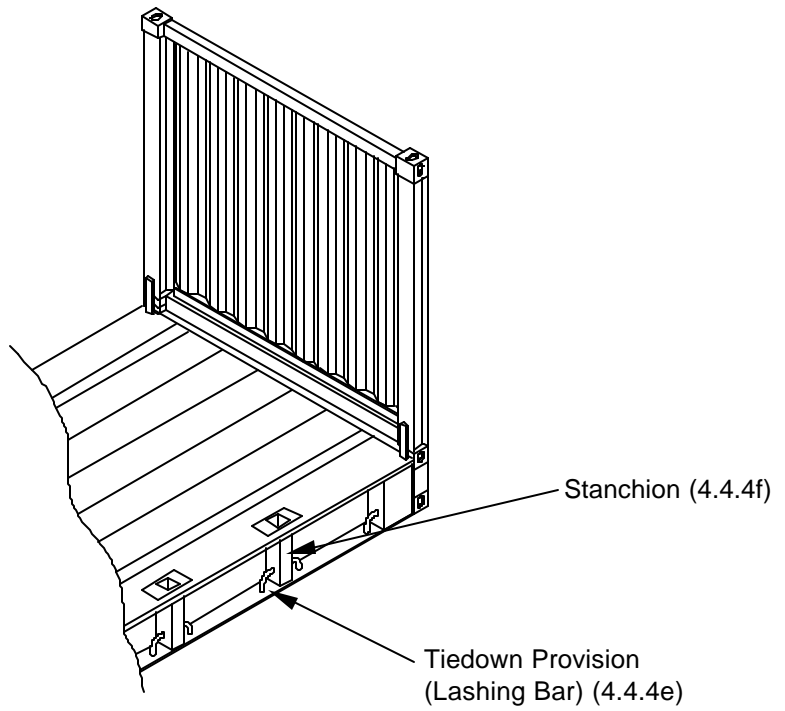


FIGURE 4.4D –RESTRAINT PROVISION FOR FLATRACK CONTAINER

Load Bearing Surface
(4.4.4c)

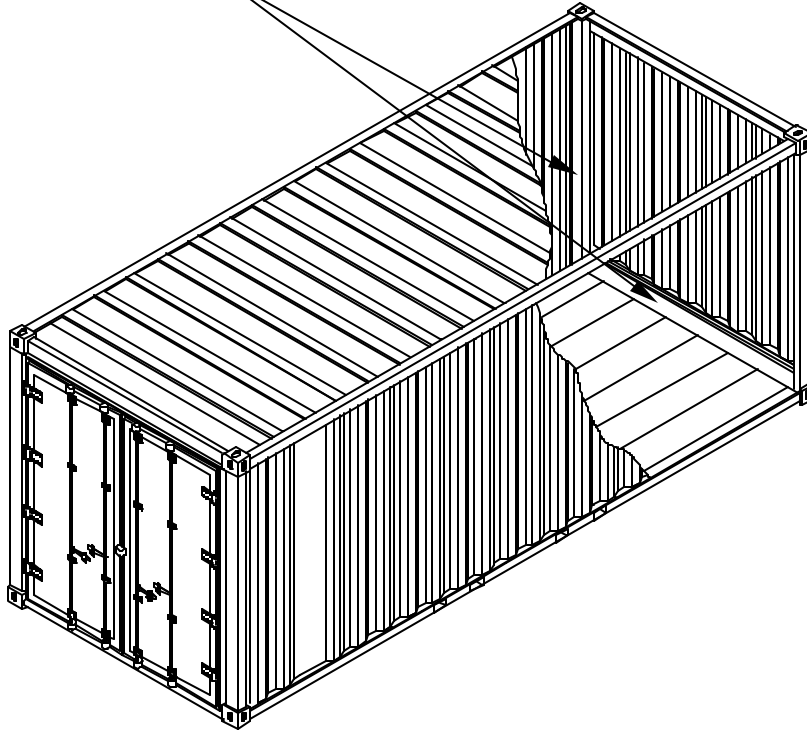


FIGURE 4.4E – LOAD BEARING SURFACES IN GENERAL CARGO MILVANS.

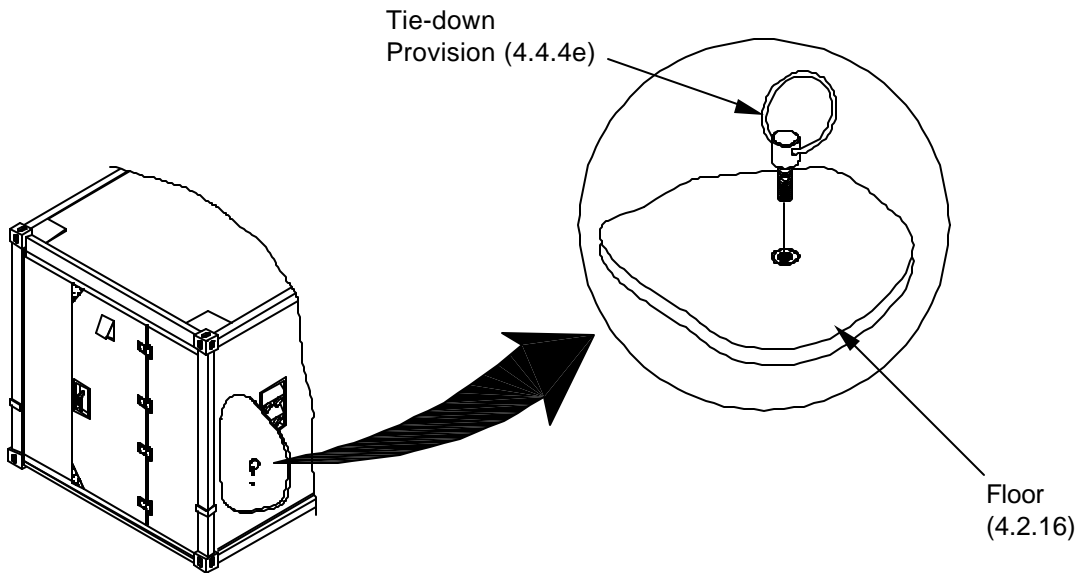


FIGURE 4.4F –CARGO RESTRAINTS FOR SHELTER

4.5 Conventions and markings. Refer to Figures 4.5A, 4.5B, 4.5C, 4.5D and 4.5E.

4.5.1 ISO (International Organization for Standardization). An international organization composed of various national organizations that prescribes standards. The organization is headquartered in Geneva, Switzerland and includes technical committees (TCs) such as ISO TC 104 for technical work involving intermodal freight containers.

4.5.2 ISO Markings. Numbers, letters and symbols placed on a container in conformance to ISO standard 6346 to identify such items as container size, type, owner code, registered serial number, tare weight, gross weight, and cubic capacity. Some ISO Markings are mandatory and some are optional.

4.5.3 CSC (International Convention for Safe Containers). An international treaty requiring structural safety approval on all intermodal containers moving in international transport. In addition, periodic inspections at specified intervals are required to ensure continued safe condition. United States compliance with CSC is mandated by 49 CFR Parts 450 to 453 and Public Law 95-208.

4.5.4 CSC Safety Approval Plate. A durable data plate required by CSC to indicate CSC certification by a nationally approved testing agency. The required format of the CSC Plate is depicted in Figure 4.5D. The information on the plate must be inscribed in at least the English or French language.

4.5.5 ACEP (Approved Continuous Examination Program). The alternative program to periodic examinations of containers. This program also complies with CSC requirements and although not used by DOD, is used by many commercial owners. An ACEP marking on the container indicates the date that this method of examination was initially approved, and not the date of the next required re-inspection. The elements of an ACEP are identified in 49 CFR parts 452.7 and 452.9.

4.5.6 TIR (Transport Internationale des Routiers). An international customs convention providing transport approval under regulation of customs authorities of different nations. TIR approval usually permits sealed containers to cross international borders without inspection.

4.5.7 TIR Markings or Plate. Markings or data plate identifying that container design has been certified to meet TIR requirements.

4.5.8 TCT (Timber Component Treatment). A treatment of exposed wooden components that complies with Plant Quarantine requirements of the Australian Department of Health.

4.5.9 UIC (Union Internationale des Chemins de Fer). An organization composed primarily of European railroads that establishes standards for container transport on member railroads.

4.5.10 Manufacturer's Data Plate. A plate affixed to the container identifying manufacturer, date of manufacture, and other pertinent container design data.

4.5.11 Consolidated Data Plate. A single plate affixed to the container that consolidates all container data and approval information, without violating individual data format requirements.

4.5.12 Placard Holder. Fixture used to display placards that identify hazardous material classification of cargo being shipped.

4.5.13 Magazine Stowage Type A. Type of ship stowage designation for certain hazardous materials as defined by the IMDG Code and 49 CFR part 176.130. This type of stowage is typically designated for bulk type powders or bulk type initiating explosives. A container meets requirements for "Magazine Stowage Type A" if its floor consists of tightly fitted wooden boards, plywood or equivalent non-metallic material and it has non-metallic wall lining.

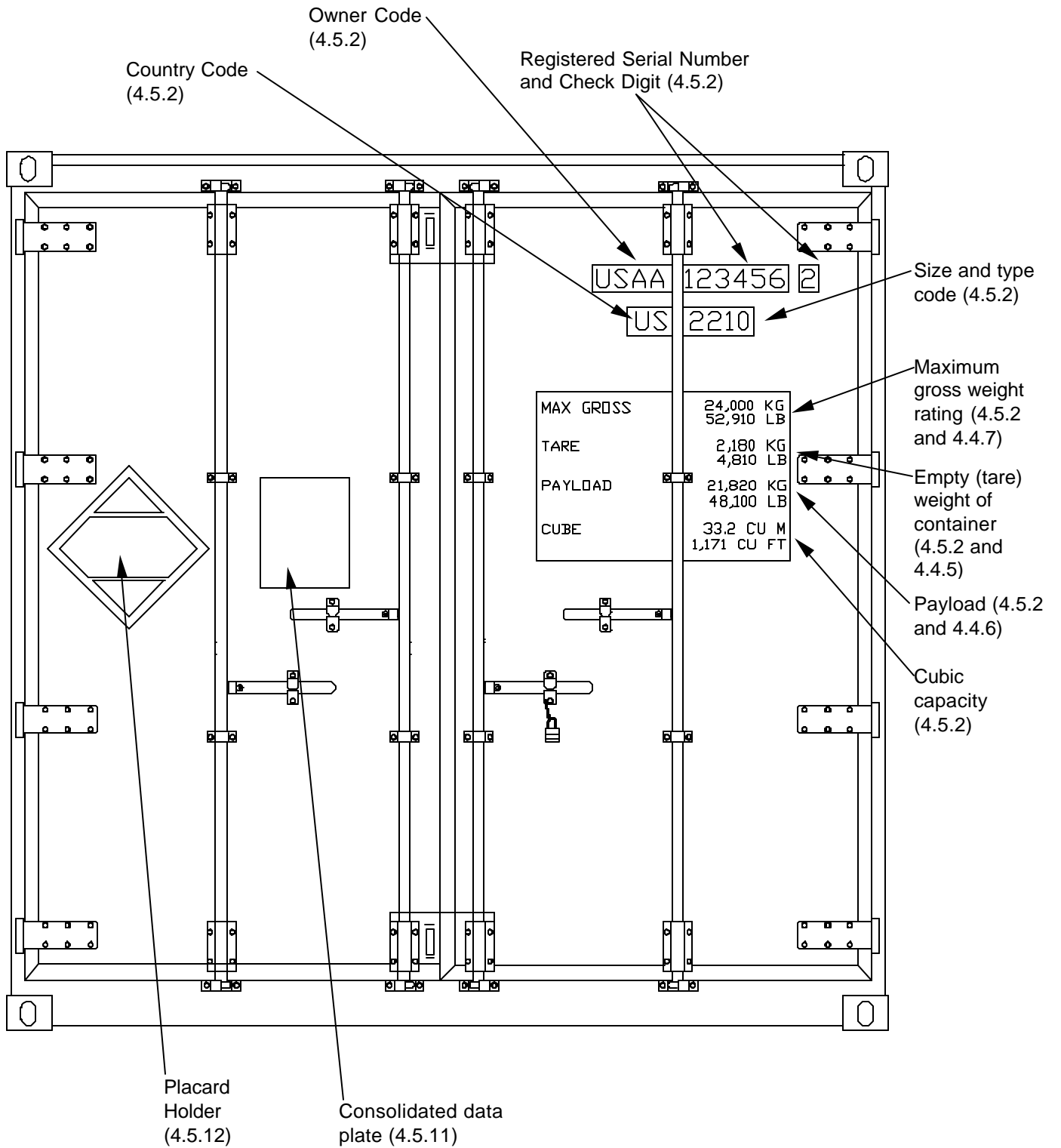
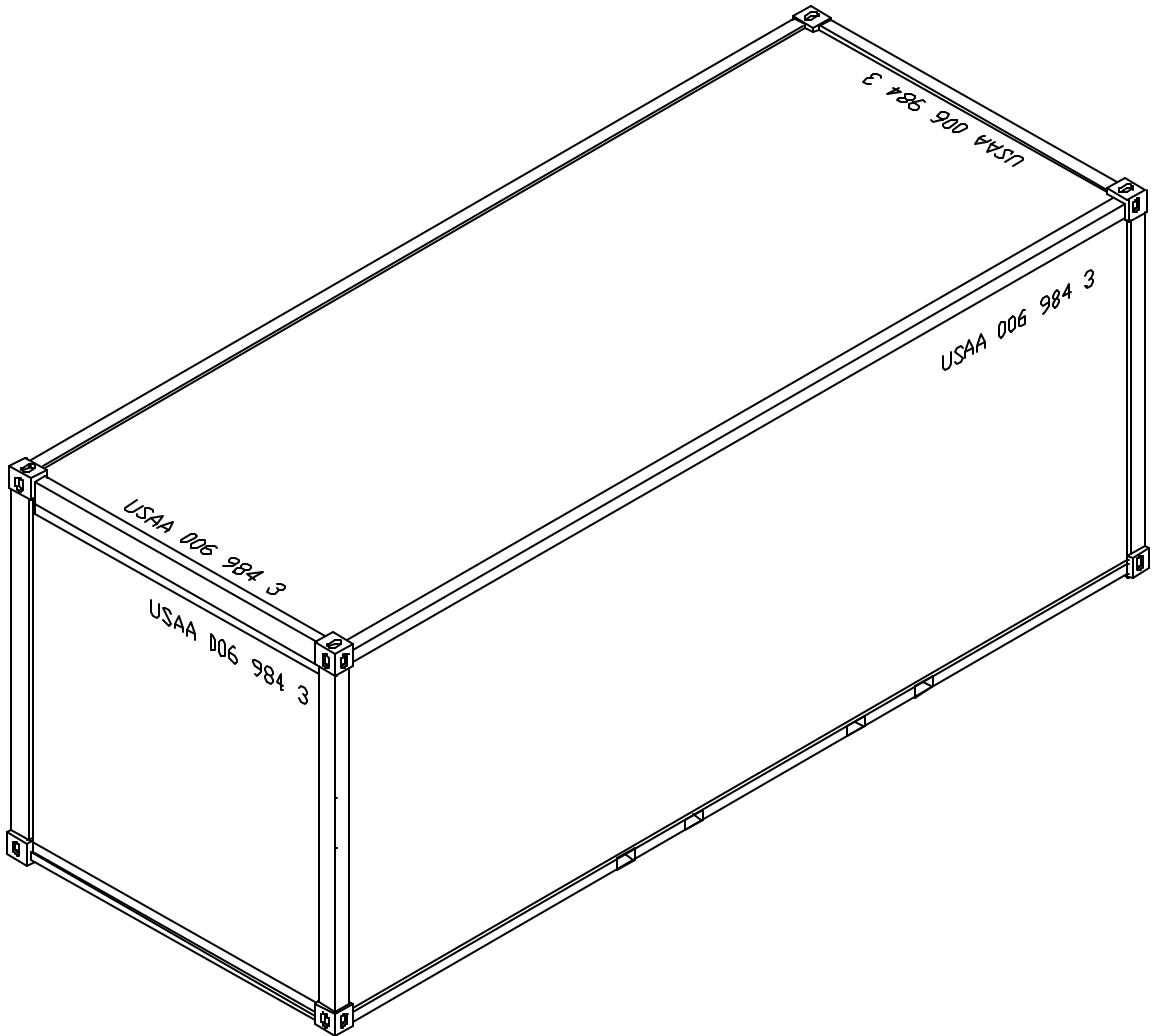


FIGURE 4.5A –TYPICAL DOOR MARKINGS



**FIGURE 4.5B –TYPICAL HORIZONTAL LAYOUT OF
ISO IDENTIFICATION MARKINGS**

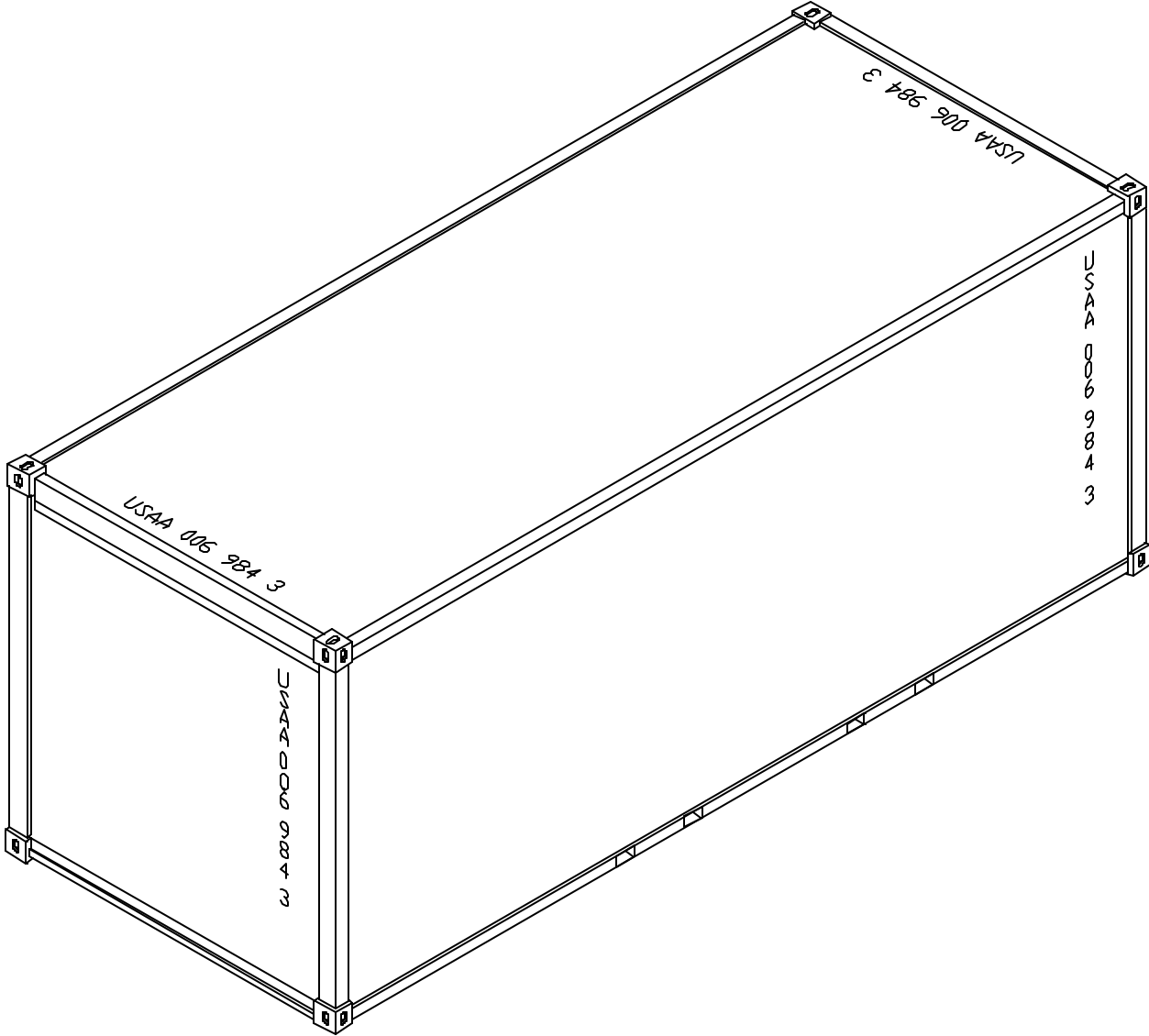
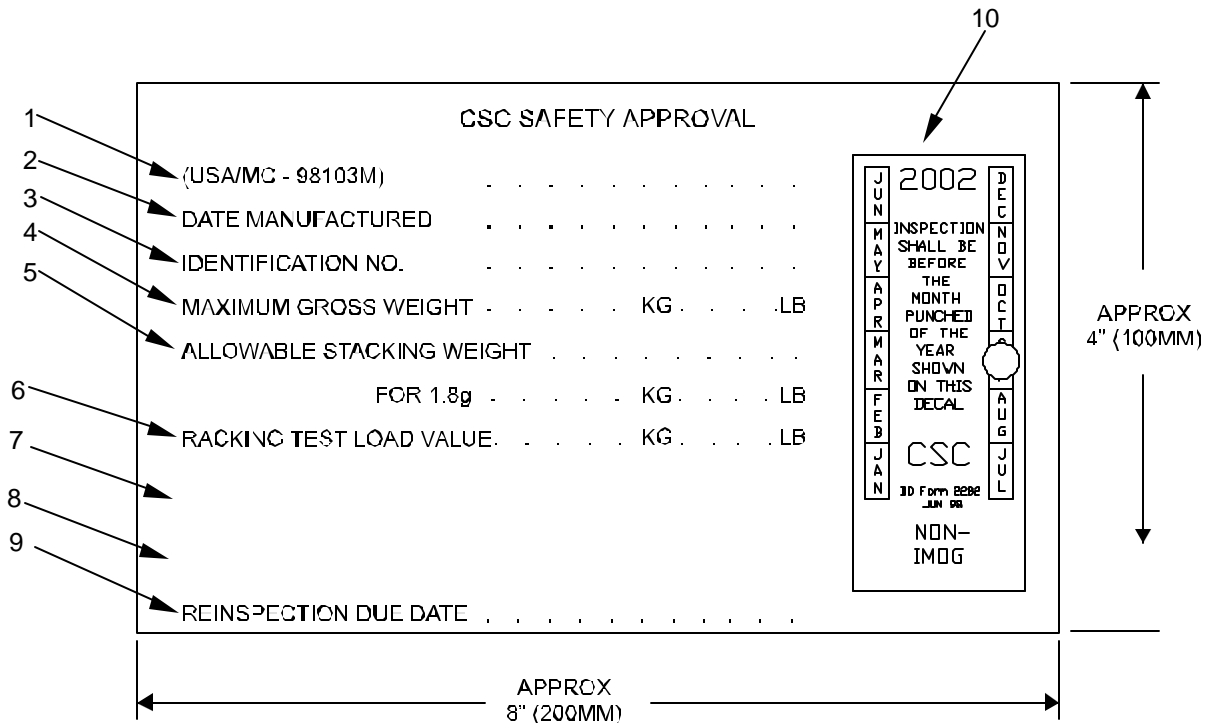


FIGURE 4.5C –TYPICAL VERTICAL LAYOUT OF ISO IDENTIFICATION MARKINGS



REQUIRED LINES OF INFORMATION:

1. Alphanumeric reference code similar to example shown above indicating Country of approval and reference number for approval.
2. Date (month and year) of manufacture.
3. Manufacturer's identification number or the ISO identification number (i.e., owner code, serial number and check digit) assigned to the container.
4. Maximum gross weight rating (kilograms and pounds).
5. Allowable stacking weight (kilograms and pounds) container can support when subjected to 1.8 times the force of gravity.
6. Transverse racking test load value (kilograms and pounds).
7. End wall strength expressed in kilograms and pounds or as fraction of the permissible payload (P). This is only required to be marked on the CSC plate if end walls are designed to withstand a load of less than or greater than 0.4P.
8. Side wall strength expressed in kilograms and pounds or as fraction of the permissible payload (P). This is only required to be marked on the CSC plate if side walls are designed to withstand a load of less than or greater than 0.6P.
9. First re-inspection due date (month and year) for new container or DD Form 2282 decal indicating subsequent re-inspection due date (month and year).
10. Alternate location on CSC plate for application of DD Form 2282 decal.

FIGURE 4.5D—TYPICAL FORMAT OF CSC SAFETY APPROVAL PLATE

APPROX
8" (200MM)

APPROVED FOR TRANSPORT UNDER CUSTOMS SEAL

USA/775-MC/91

TYPE **102S/2** MANUFACTURER'S NO. OF THE CONTAINER **ABC 1575**

OWNED BY
U.S. ARMY
5611 COLUMBIA PIKE
FALLS CHURCH, VA 22041

TIMBER TREATMENT
CHLORDANE GLUELINE METHOD

APPROVED BY MARINE CONTAINER
EQUIPMENT CERTIFICATION
MC/775/91

MANUFACTURED BY
ABC COMPANY
ANYWHERE, USA

CSC SAFETY APPROVAL

USA/MC/98-103M	
DATE MANUFACTURED	AUGUST 1998
IDENTIFICATION NO.	USAA 123456-2
MAXIMUM GROSS WEIGHT	24000 KG 52910 LB
ALLOWABLE STACKING WEIGHT FOR 1.8G	192000 KG 423280 LB
RACKING TEST LOAD VALUE	15240 KG 33600 LB
REINSPECTION DUE DATE	AUGUST 2003

APPROX
11" (280MM)

FIGURE 4.5E-TYPICAL CONSOLIDATED DATA PLATE

4.6 Damage and Repair. Refer to Figures 4.6A, 4.6B, 4.6C, 4.6D and 4.6E.

4.6.1 Patch. Any repair of a wall, roof, or door panel that adds or replaces material without complete replacement of the panel. An acceptable patch is of permanent design, of similar material and configuration, and weatherproof. Patch is a generic repair term, which for the purposes of this inspection criteria, is reserved exclusively for repairs on non-structural components such as wall, roof, or door panels. A patch may be either an insert or overlapping type of repair.

4.6.2 Splice. Any repair of a primary (main) structural component (member) that replaces material without complete replacement of the member. Gussets, backup plates or other reinforcement (protector) plates are not to be construed as splices. Splice is a regulatory repair term, which for the purposes of this inspection criteria, is reserved exclusively for repairs on components of the primary structure where allowed. A splice may be either an insert or section type of repair for steel components and overlap only for aluminum. Refer to section 5.2 for details.

4.6.3 Gusset. Reinforcement plate attached to or between adjacent components to reinforce the structure and provide added resistance to handling damage.

4.6.4 Backup Plate. A reinforcement (doubler) plate may be installed on the backside of a structural component and is usually located behind a splice. It must not be installed on the exterior of any component's profile. The backup plate serves to stiffen and strengthen the component.

4.6.5 Insert. A specific type of repair in which replacement material is fitted flush with the original component and only a partial profile of the component's cross section is replaced.

4.6.6 Section (Full Profile). A specific type of repair in which replacement material is fitted flush with the original component and the entire profile of the component's cross section is replaced.

4.6.7 Web. The vertical portion between the upper and lower flanges of a cross member or rail.

4.6.8 Flange. The wide portion at the top or bottom of a cross member or rail. A flange usually projects at a right angle to the web.

4.6.9 Hole. A penetrating puncture through any part of the container.

4.6.10 Pinhole. A pinhole typically results from a tiny skip or porosity in a weld and usually is only detected during a light leak test.

4.6.11 Welder's Hammer. A hammer with a chisel shaped head used to tap on a welded joint and/or surface of a steel structural component to ascertain the strength and integrity.

4.6.12 Corrosive Failure. Definition of Stage IV corrosion: rust or black or white corrosion with powdering, scaling, severe pitting and holes and irregular areas of surface material eroded away. Unacceptable corrosion of structural members can be determined if the corroded metal can be punctured by striking the area lightly with a welder's hammer.

4.6.13 Caulking. A sealant compound used to provide water tightness around patches in panels, around riveted seams, in holes of pop rivets, in joints between dissimilar metals, in gaps between floor board edges, and in gaps where the floor boards adjoin the interior container walls.

4.6.14 Undercoating. Bituminous material or other waterproof coating brushed or sprayed on the entire underside of the container, to protect all the metal understructure against corrosion and to waterproof the wooden flooring.

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4.6.15 Overlap (Lapped). A specific type of repair in which replacement material is extended over a portion of the undamaged area of the original component and changes the profile of the component's cross section.

4.6.16 Delamination. A failure in which the panel separates into constituent layers, as evidenced by bulging and waviness of the surface. This type of failure applies to sandwich panels, FRP, plywood, and plymetal.

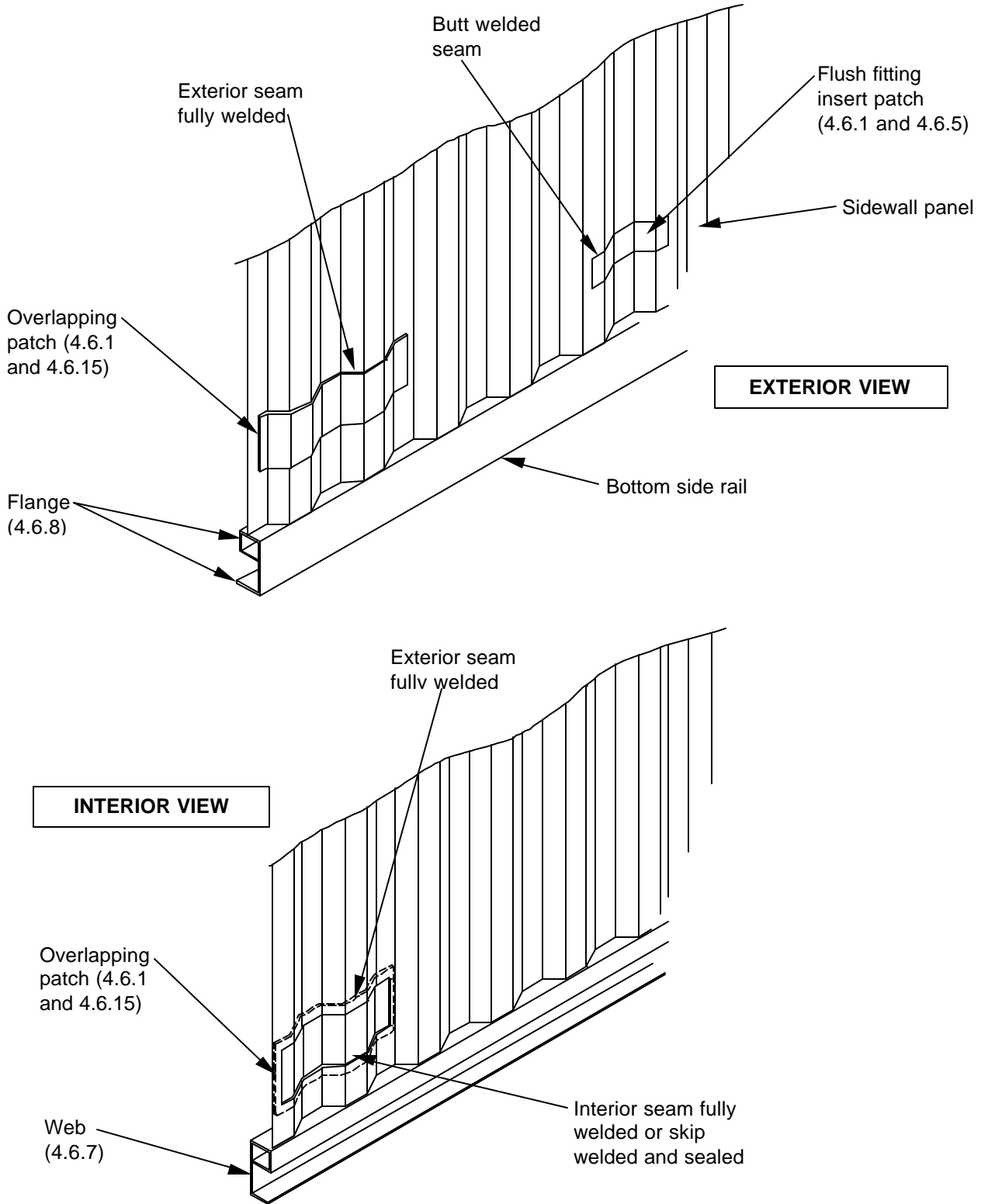
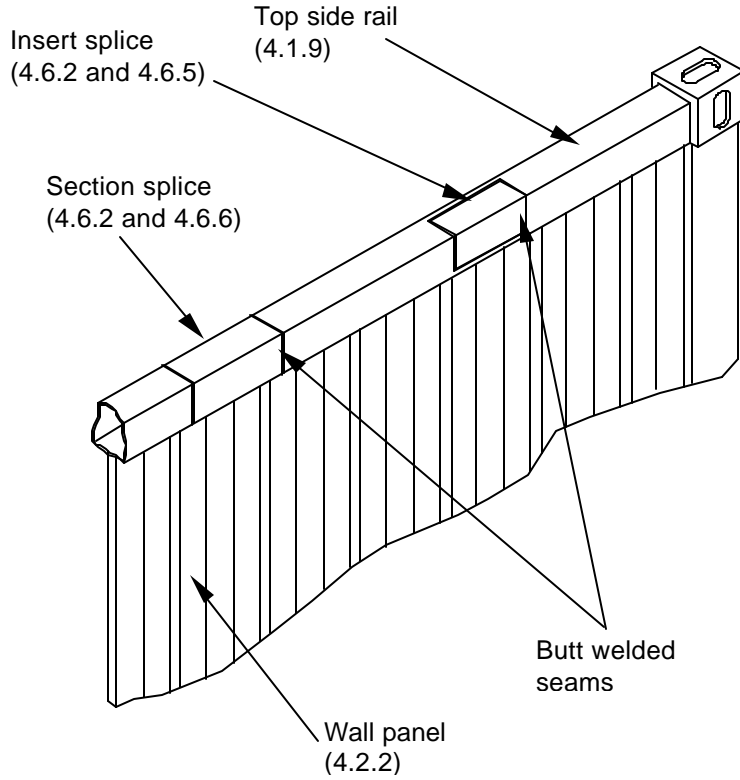
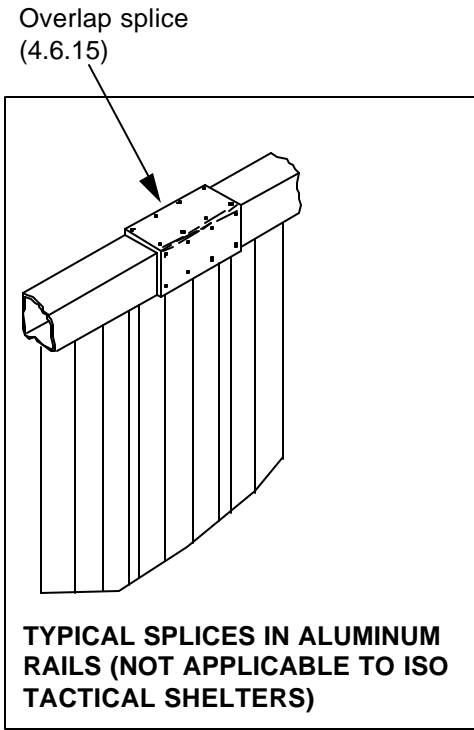
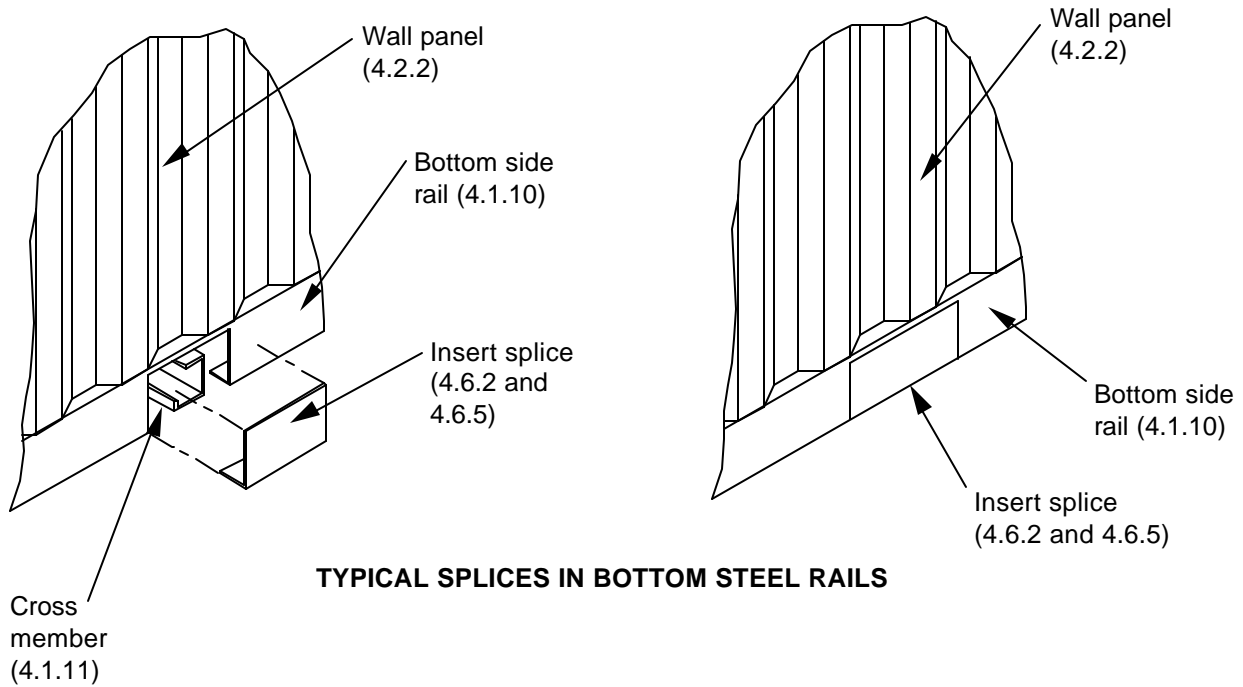


FIGURE 4.6A—TYPICAL WELDED PATCHES ON STEEL WALL PANELS



TYPICAL SPLICES IN TOP STEEL RAILS



TYPICAL SPLICES IN BOTTOM STEEL RAILS

FIGURE 4.6B—TYPICAL SPLICES IN RAILS

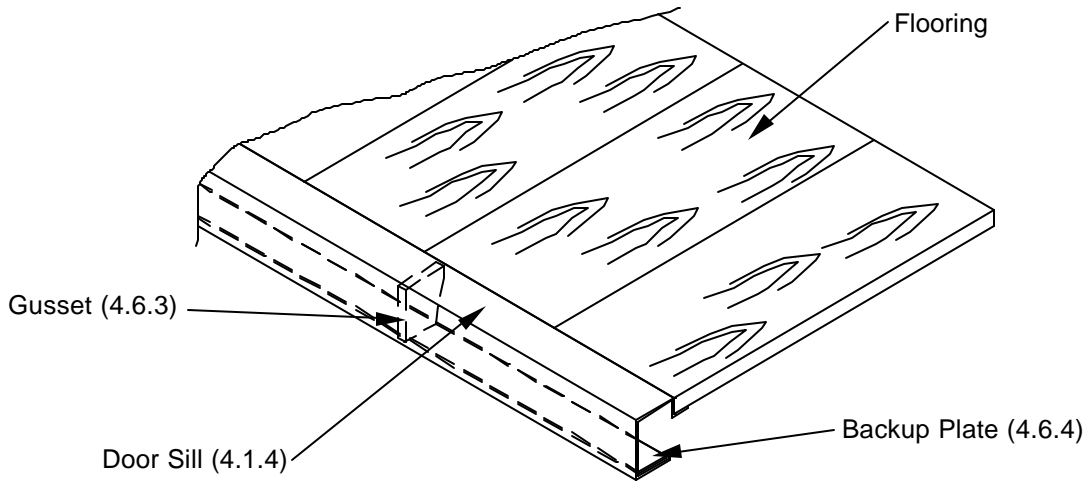


FIGURE 4.6C-TYPICAL REINFORCED DOOR SILL

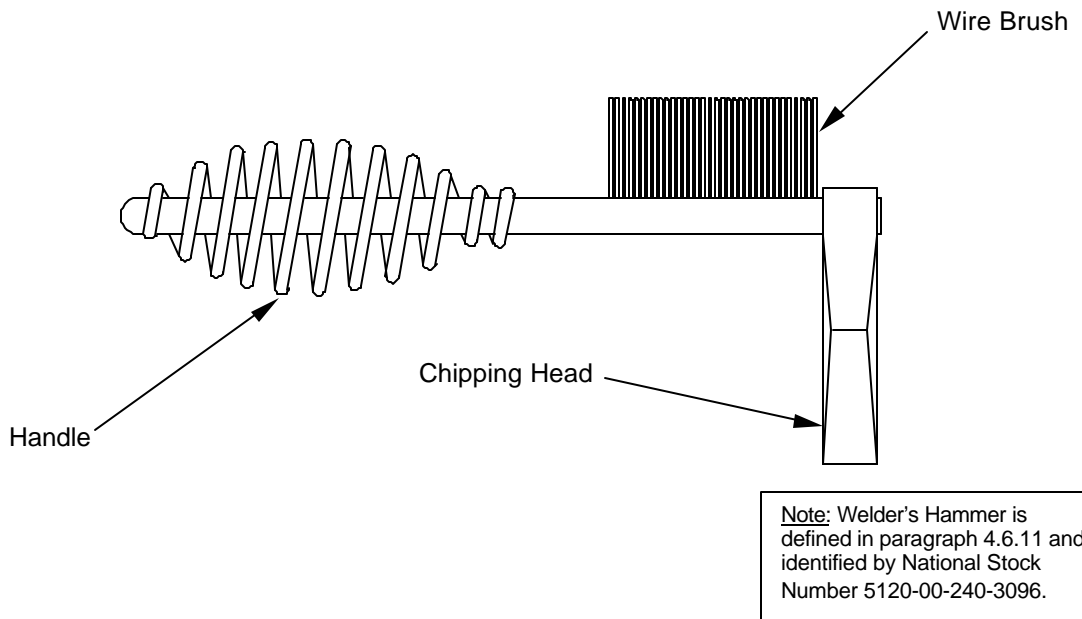
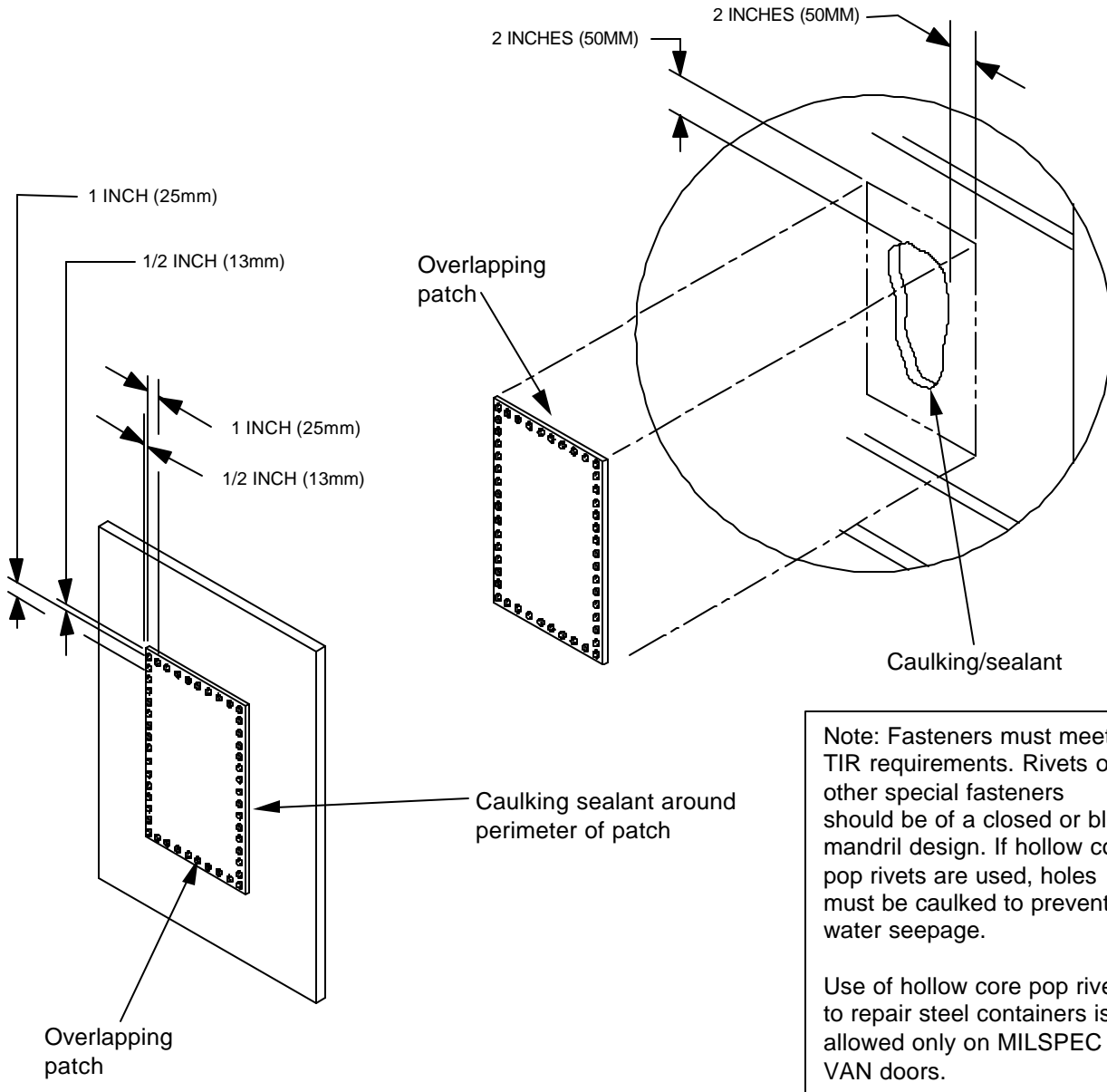


FIGURE 4.6D - WELDER'S HAMMER



**FIGURE 4.6E—TYPICAL RIVETED PATCHES ON WALL
(ALUMINUM, STEEL, OR SANDWICH PANEL)**

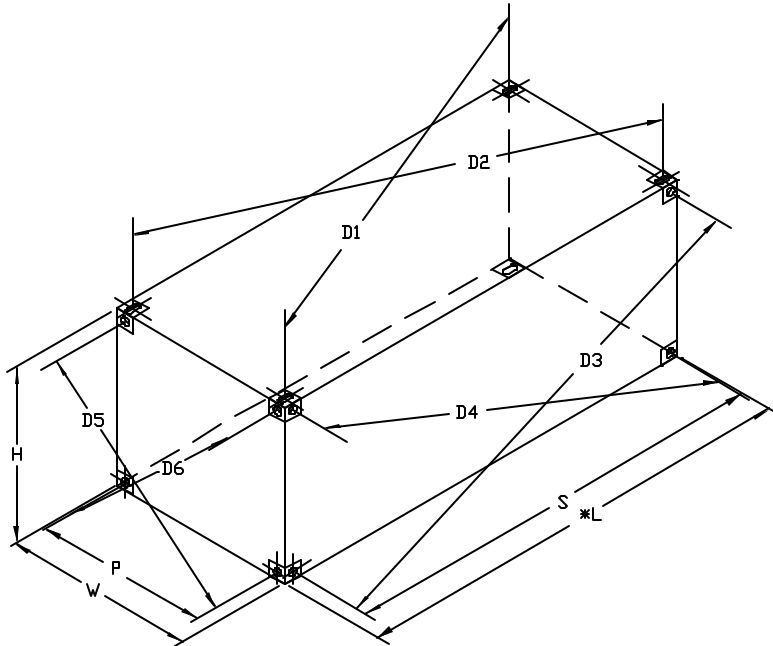
5. CONTAINER INSPECTION CRITERIA

5.1 General Requirements.

5.1.1 Regulatory Mandates. An intermodal container may not be offered for the carriage of any type of cargo unless the container is structurally serviceable as evidenced by a CSC Safety Approval Plate and verified by a detailed visual examination. The CSC Safety Approval Plate and the visual examination must conform to the mandates of 49 CFR, parts 451 and 452. Furthermore, before a container is loaded with UN Hazard Class 1 (IMDG) (explosive) materials, it must meet specific structural serviceability requirements as prescribed by the IMDG Code and mandated by 49 CFR part 176.172. If a container has any safety related deficiency or damage that could place any person in danger, it will not be used.

5.1.2 Markings and Data Plates. A container must bear legible ISO markings conforming to ISO Standard 6346. A container must also bear a legible CSC Safety Approval Plate or a Consolidated Data Plate marked in accordance with CSC format requirements. Mandatory ISO operational markings (i.e., maximum gross weight and tare weight) must appear on at least one location such as on the door, as depicted in Figure 4.5A. Mandatory ISO identification markings (i.e., owner code, serial number and check digit) must be located on all 4 sides, and top as depicted in Figures 4.5B and 4.5C. The CSC Safety Approval Plate may be securely affixed at a readily visible place on the container, where it is not easily damaged. All maximum gross weight markings on the container must be consistent with the maximum gross weight on the CSC Safety Approval Plate.

5.1.3 Configuration. Any distortion of the overall configuration great enough to preclude proper engagement of handling/lifting equipment, mounting and securing on chassis, vehicle, or aircraft pallet, or insertion into the cell of a ship is unacceptable. No part of the container may protrude beyond the outside surfaces of the corner fittings. The external dimensions must be within the tolerances prescribed by ISO standard 668 as depicted in Figure 5.1.



SPECIAL NOTE FOR FLATRACKS ONLY: In accordance with ISO standard 1496 part 5, an additional tolerance of +/-3/8 inch (+/-10mm) is allowed for the top external length L of flatrack containers. For example, the maximum permitted overall top dimension of a nominal 20 foot flatrack is 19 feet 10-7/8 inches (6,068mm) when empty and the minimum permitted overall top dimension is 19 feet 9-7/8 inches (6,042mm) when loaded to rated capacity.

External Dimensions and Tolerances in Millimeters and Feet and Inches										
Nominal Length FT	L (External Length) *				S			K1 MAX.		
	MM	FT	IN		MM	FT	IN	MM	IN	
40	12,192	+0	40 0	+0	11,985	+6	39 3-7/8	+1/4	19	3/4
		-10		-3/8		-6		-1/4		
30	9,125	+0	29 11-1/4	+0	8,918	+6	29 3-1/8	+1/4	16	5/8
		-10		-3/8		-6		-1/4		
20	6,058	+0	19 10-1/2	+0	5,853	+5	19 2-7/16	+3/16	13	1/2
		-6		-1/4		-5		-3/16		
10	2,991	+0	9 9-3/4	+0	2,787	+4	9 1-23/32	+5/32	10	3/8
		-5		-3/16		-4		-5/32		

	W (External Width)			P			K2 MAX.			
	MM	FT	IN	MM	FT	IN	MM	IN		
All Lengths	2,438	+0	8 0	+0	2,259	+4	7 4-31/32	+5/32	10	3/8
		-5		-3/16		-4		-5/32		

Nominal Height FT	H (Overall Height)			
	MM	FT	IN	
9-1/2	2,896	+0	9 6	+0
		-5		-3/16
8-1/2	2,591	+0	8 6	+0
		-5		-3/16
8	2,438	+0	8 0	+0
		-5		-3/16
5-2/3	1,727	+0	5 8	+0
		-5		-3/16
4-1/4	1,295	+0	4 3	+0
		-5		-3/16

S = LENGTH BETWEEN CENTERS OF CORNER FITTING APERTURES
 P = WIDTH BETWEEN CENTERS OF CORNER FITTING APERTURES
 D = DISTANCE BETWEEN CENTERS OF APERTURES OF DIAGONALLY OPPOSITE CORNER FITTINGS
 K1 = DIFFERENCE BETWEEN D1 AND D2 OR D3 AND D4
 K2 = DIFFERENCE BETWEEN D5 AND D6

FIGURE 5.1 –ISO DIMENSIONS AND TOLERANCES

5.2 Primary Structural Components. An intermodal container with any major defect in any component of its primary structure is unacceptable. For purposes of this criteria, primary (main) structural components (members) include: corner fittings, corner posts, door sill and header, top and bottom end rails, top and bottom side rails, floor cross members, and forklift pockets.

5.2.1 Acceptable Welding Patterns. Containers are originally deemed suitable for use if they have been given CSC certification by such agencies as Marine Container Equipment Certification Corp., American Bureau of Shipping, Germanischer Lloyd, Bureau Veritas, Registro Italiano Navale, Nippon Kaiji Kyokai, Lloyds Register of Industrial Services, Det Norske Veritas, Polish Register of Shipping, et al. These international agencies are highly reputable and bear the liability that the container is manufactured in accordance with ISO and CSC requirements. Welding patterns conforming to the original manufacturer's design are, therefore, acceptable. Only abnormal welding patterns due to damage and/or improper repair are cause for rejection. Typically, a juncture between structural members at a corner fitting is welded continuously on the exterior surface of the container. Rails and headers formed from tubular steel are typically welded all around the juncture (exterior and interior). Since welding patterns may vary depending on design and manufacture, inspection should be directed at looking for broken junctures or welded repairs that are not consistent with other corresponding welds of that container.

5.2.2 Acceptable Splicing. For purposes of these criteria, a splice is any repair of a primary structural member that replaces material without complete replacement of the member. Areas repaired by straightening and/or bead welding are not to be construed as splices. Gussets, backup plates or other reinforcement (protector) plates are not to be construed as splices. An acceptable splice on steel rails is butt-welded, flush-fitting and restores the original size and cross-sectional profile of the repaired component. On aluminum rails, splice may overlap the damaged area (overlapped or lapped splice) and will be riveted. An acceptable splice is a minimum of 6 inches (150mm) long. Both inserts and section (full profile) are acceptable types of splices, but not in all cases. Read inspection criteria of the component for specific splicing allowances. If a splice would end within 12 inches (300mm) of another weld, such as at the juncture with the corner fitting, it must be extended to that weld. Backup plates installed on the backside of a splice are permissible if the backup plate extends a minimum of 6 inches (150mm) beyond each end of the splice.

5.2.3 Straightening. Straightening is an acceptable means of repair for certain structural members. Repairs must be made IAW applicable repair manuals.

5.2.4 Major Defects.

a. General Cargo Container (non IMDG). If the container is to be used for shipping general cargo or is a shelter, a major defect includes:

- 1) A crack, break, cut, tear, puncture, or corrosive failure in any primary structural component;
- 2) A missing, cracked, or broken weld at the juncture between any primary structural components;
- 3) A loose or missing fastener at the juncture between any primary structural components;
- 4) Any deformation such as a dent, bend or bow in any primary structural component that is in excess of ISO external dimensional tolerances as depicted in Figure 5.1;
- 5) An improper splice (e.g. less than 6 inches long) in any primary structural component;
- 6) Any damage to or degradation within a structural component which could place any person in danger during subsequent handling, stacking, or transport of the intermodal container.

b. UN Hazard Class 1 (IMDG) Container. If the container is to be used for shipping IMDG UN Hazard Class1 (explosive) items, a major defect includes any of the defects listed above for a general cargo container and also:

A dent or bend in any primary structural component that is greater than 3/4 inch (19mm) in depth, regardless of length.

5.2.5 Corner Fittings. Refer to Figure 5.2.5. (IMDG or non IMDG) Corner fittings must not be distorted or cracked and must not have any worn, broken or gouged apertures that would prevent engagement or safe use of transport securement devices or container lifting devices. No repairs may be performed on a corner fitting.

5.2.6 Corner Posts. Refer to Figure 5.2.6. A container is unacceptable if a corner post has any major defect.

a. General Cargo Container (non IMDG). If the container is to be used for shipping general cargo or is a shelter, a major defect in a corner post includes:

- 1) A dent or bend that is greater than 3/4 inch (19mm) in depth, regardless of length;
- 2) A crack, break, cut, tear, puncture, or corrosive failure;
- 3) A defective, cracked, or broken weld at the juncture with a corner fitting.
- 4) A loose or missing fastener at the juncture with a corner fitting (aluminum frame).
- 5) Any deformation such as a dent, bend or bow that is in excess of ISO external dimensional tolerances as depicted in Figure 5.1;
- 6) More than two splices or an improper splice (5.2.2). A splice must not extend through or across more than ½ the cross-sectional profile of the post;
- 7) Any splice in a steel corner post other than a butt welded insert or full profile splice;
- 8) Any splice on an aluminum cornerpost other than an overlap riveted splice.
- 9) A missing cam lock handle on shelter corner posts. A damaged cam lock handle which no longer performs its intended function of securing the folding panels or damage which causes camlock handle to exceed ISO external dimensions. (Refer to figure 5.2.6)

b. UN Hazard Class 1 (IMDG) Container. If the container is to be used for shipping IMDG UN Hazard Class1 (explosive) items, a major defect in a corner post includes any of the defects listed above for a general cargo container and also any splice.

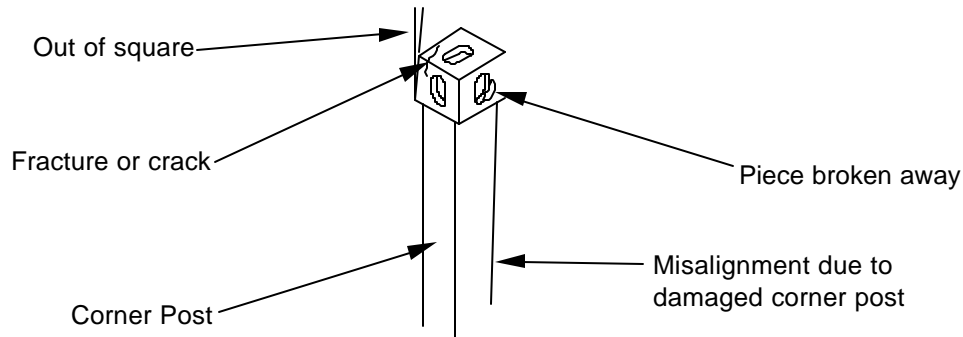


FIGURE 5.2.5 –CORNER FITTING

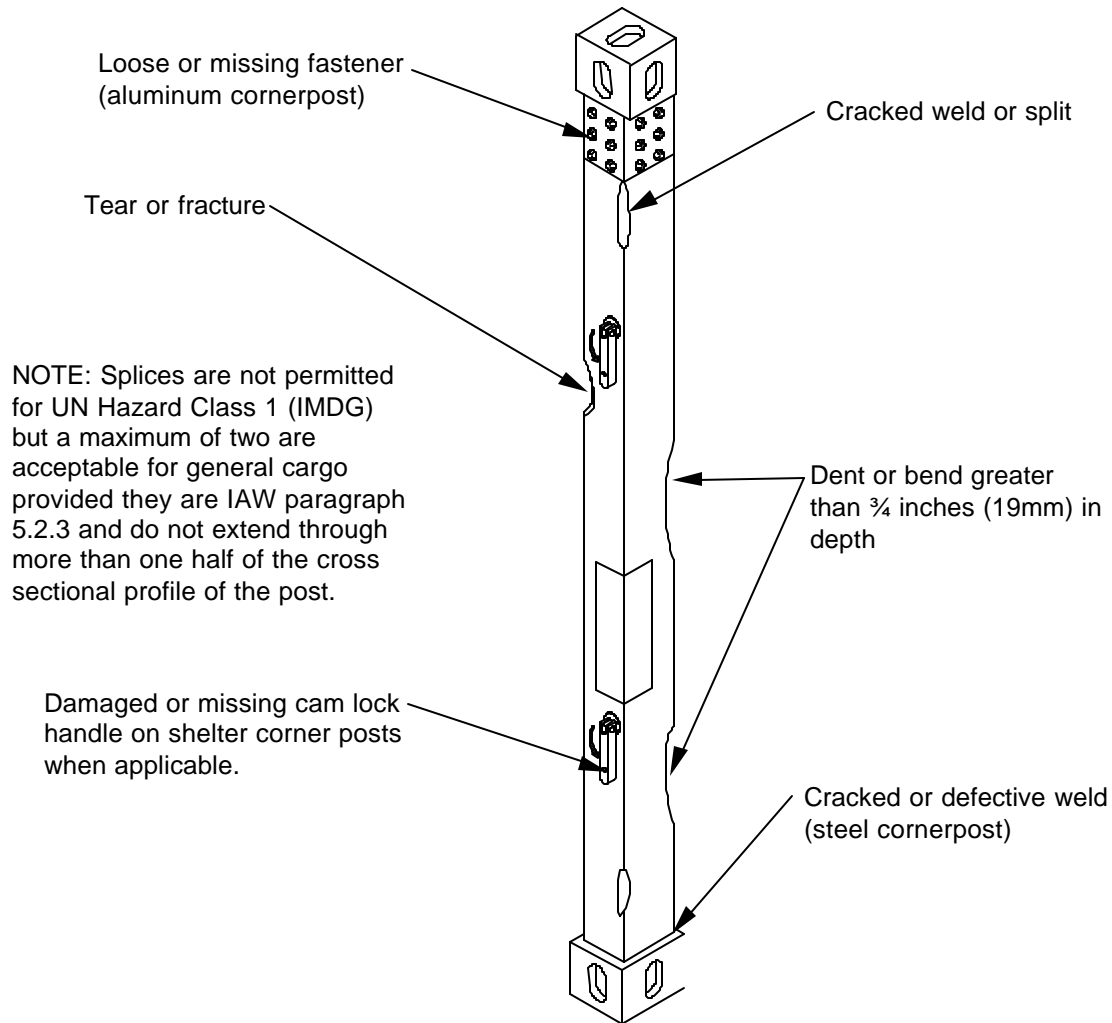


FIGURE 5.2.6 –CORNER POST

5.2.7 Door End Frame. Refer to Figures 5.2.7A and 5.2.7B. A container is unacceptable if a rear end frame has any major defect.

a. General Cargo Container (non IMDG). If the container is to be used for shipping general cargo or is a shelter, a major defect includes:

- 1) A dent or bend in the door header that is greater than 1-1/4 inch (32mm) in depth, regardless of length.
- 2) A dent or bend in the door sill that is greater than 1- 9/16 inch (40mm) in depth, regardless of length.
- 3) A crack, break, cut, tear, puncture, or corrosive failure in either the door header, or the door sill.
- 4) A missing, cracked, or broken weld at the juncture between any primary structural components.

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- 5) A loose or missing fastener at the juncture between any primary structural components.
- 6) Any deformation such as a dent, bend or bow in any primary structural component that is in excess of ISO external dimensional tolerances as depicted in Figure 5.1.
- 7) An improper splice (Refer to 5.2.2) in door sill or door header.
- 8) Any splice in a steel rail other than a butt welded insert or full profile splice.
- 9) Any splice on an aluminum rail other than an overlap riveted splice.
- 10) Any splice which interferes with the locking of the anti-rack hardware or the sealing of the door gasket.
- 11) Any dent or distortion in the rain gutter or J-bar which restricts proper operation of the door.

b. UN Hazard Class 1 (IMDG) Container. If the container is to be used for shipping UN Class 1 (explosive) items, a major defect includes any of the defects listed above for a general cargo container and also:

- 1) A dent or bend in the door header or the door sill that is greater than 3/4 inch (19mm) in depth, regardless of length.
- 2) More than one splice in a door header.
- 3) Any splice in a door sill.

NOTE: Aluminum shelters or containers may use fasteners or rivets to join structural components.

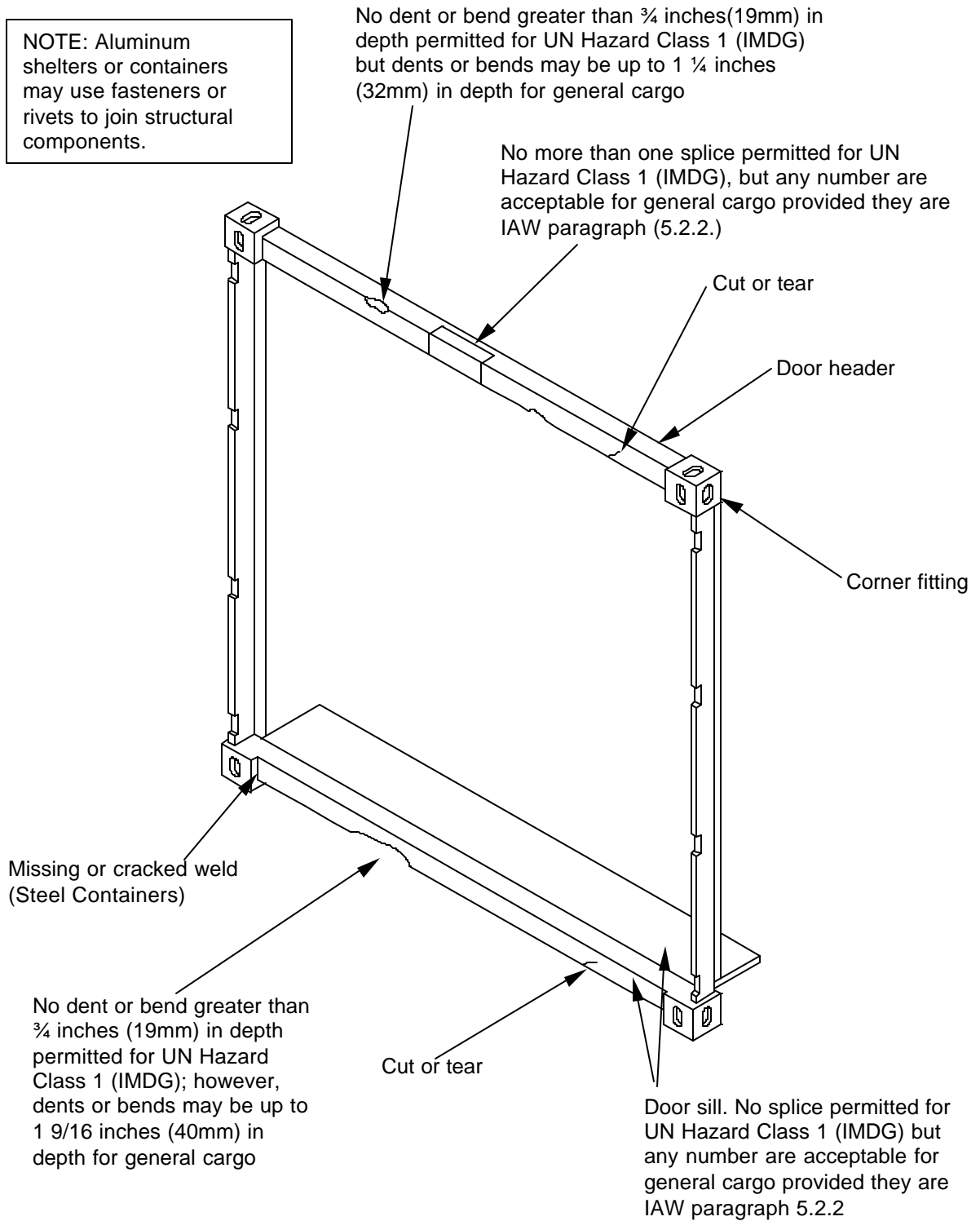
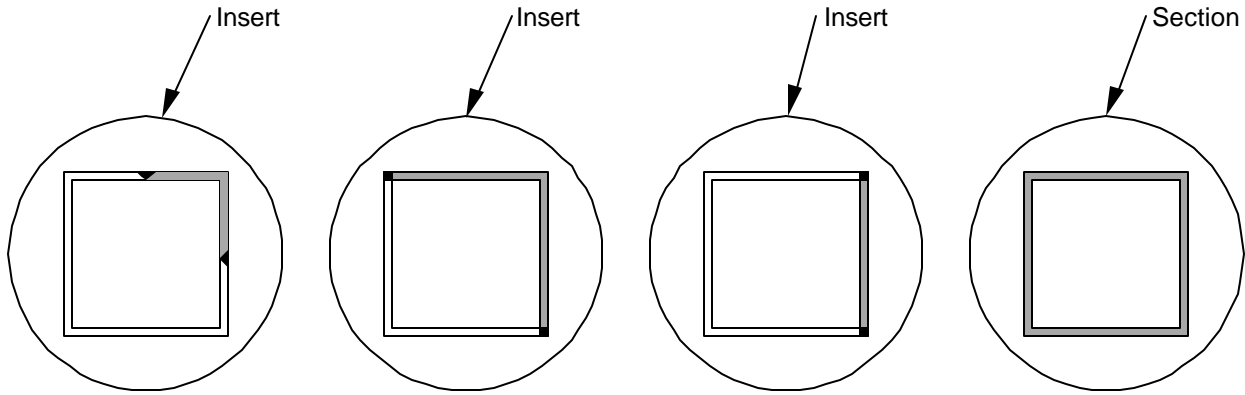
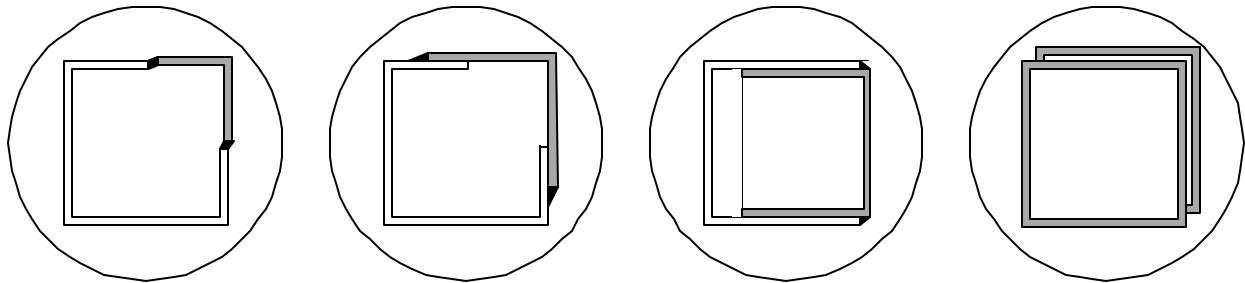


FIGURE 5.2.7A – REAR END FRAME



Examples of Acceptable Header and Door Sill (non IMDG) Splices



Improper Splices – Inserts not flush with remaining rail

Section not in line with rail

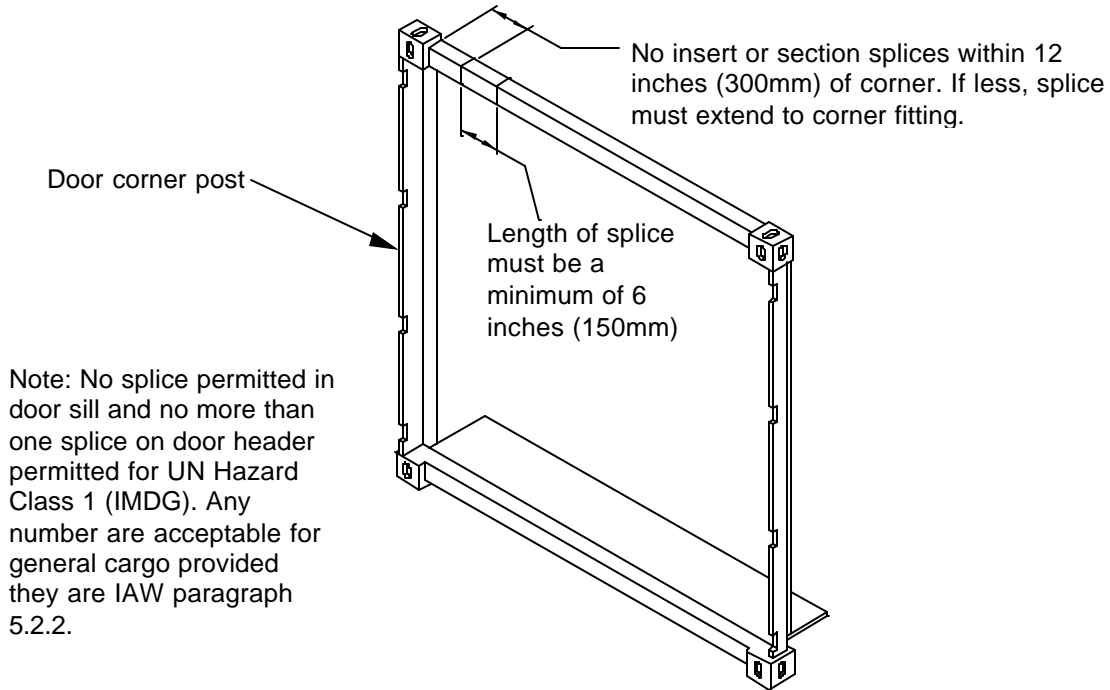


FIGURE 5.2.7B – SPLICE LIMITATIONS FOR DOOR HEADER AND SILL

5.2.8 End Frame. (Without Door) Refer to Figures 5.2.8A and 5.2.8B. A container is unacceptable if an end frame has any major defect.

a. General Cargo Container (non IMDG). If the container is to be used for shipping general cargo or is a shelter, a major defect includes:

- 1) A dent or bend in the top end rail that is greater than 1-1/4 inch (32mm) in depth, regardless of length;
- 2) A dent or bend in the bottom end rail that is greater than 1-9/16 inch (40mm) in depth, regardless of length;
- 3) A crack, break, cut, tear, puncture, or corrosive failure in either the top end rail, or the bottom end rail;
- 4) A missing, cracked, or broken weld at the juncture between primary structural components;
- 5) A loose or missing fastener at the juncture between primary structural components;
- 6) Any deformation such as a dent, bend or bow in any primary structural component that is in excess of ISO external dimensional tolerances as depicted in Figure 5.1;
- 7) An improper splice in top or bottom end rail;
- 8) Any splice in a steel rail other than a butt welded insert or full profile splice; or
- 9) Any splice on an aluminum rail other than an overlap riveted splice.

b. UN Hazard Class 1 Container (IMDG). If the container is to be used for shipping UN Hazard Class1 (explosive) items, a major defect includes any of the defects listed above for a general cargo container and also:

- 1) A dent or bend in a top or bottom end rail that is greater than 3/4 inch (19mm) in depth, regardless of length.
- 2) More than one splice in a top or bottom end rail.

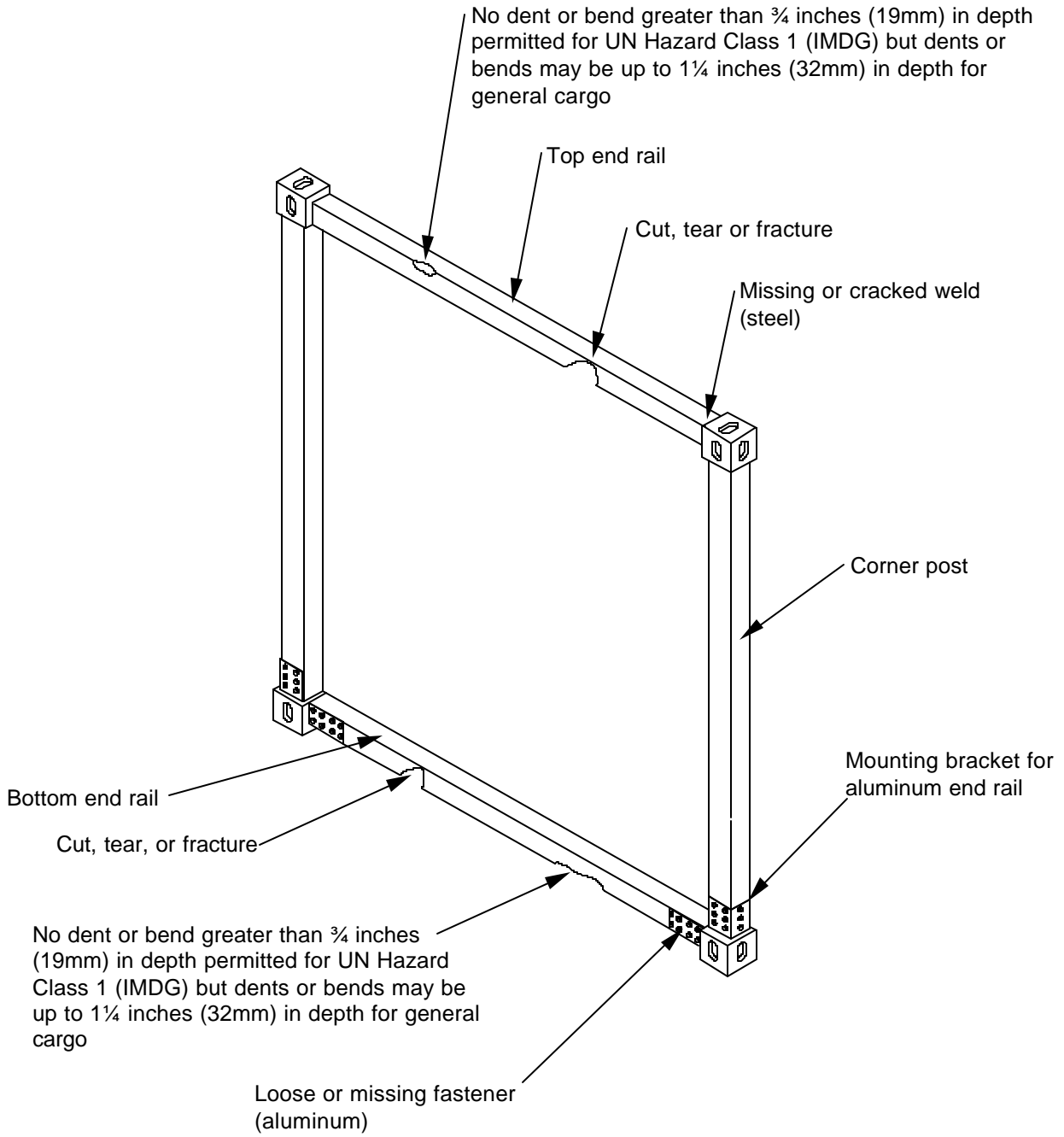
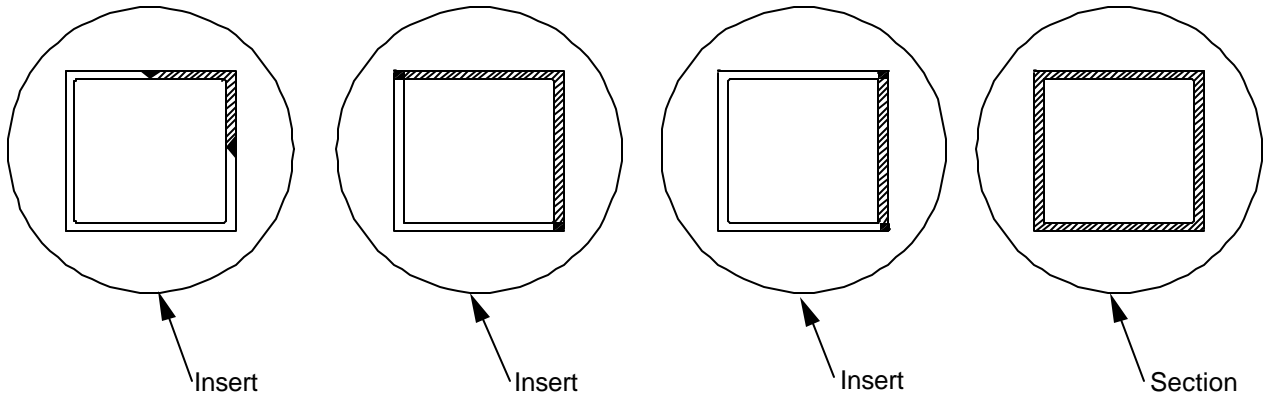
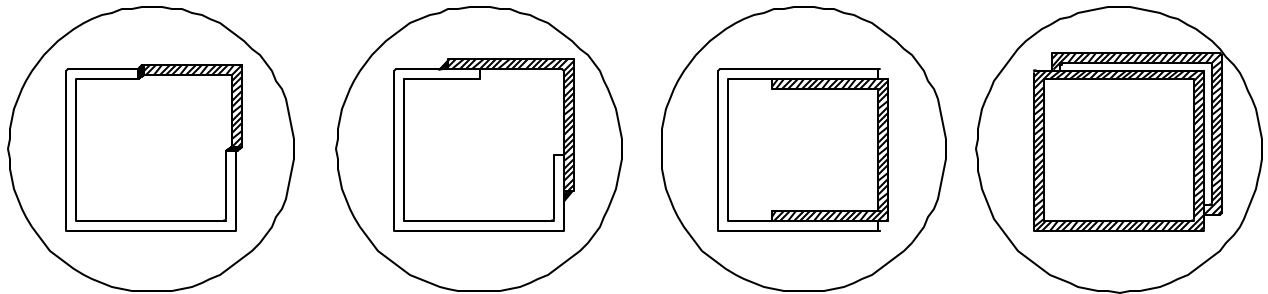


FIGURE 5.2.8A – FRONT END FRAME



Examples Of Acceptable End Rail Splices



Improper Splices – Inserts Not Flush With Remaining Rail

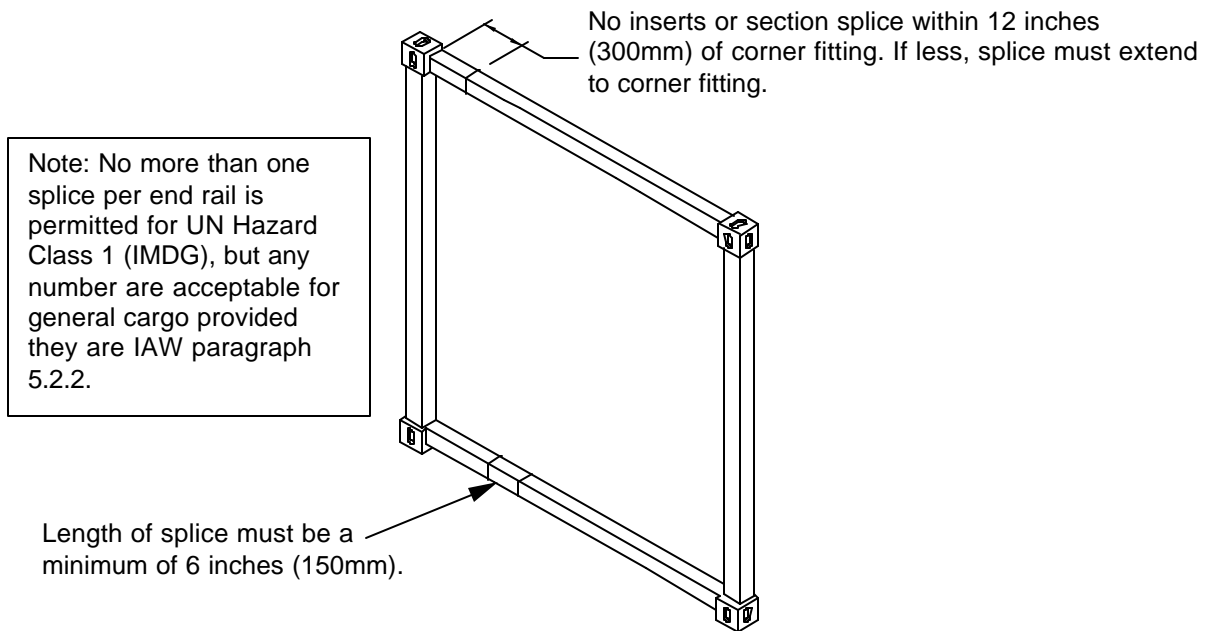


FIGURE 5.2.8B – SPLICE LIMITATIONS FOR END RAILS

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5.2.9 Side Rails. Refer to Figures 5.2.9A, 5.2.9B, 5.2.9C, 5.2.9D and 5.2.9E. A container is unacceptable if a side rail has any major defect.

a. General Cargo Container (non IMDG). If the container is to be used for shipping general cargo or is a shelter, a major defect includes:

- 1) A dent or bend in any top side rail that is greater than 1-1/4 inch (32mm) in depth, regardless of length;
- 2) A dent or bend in any bottom side rail that is greater than 1-9/16 inch (40mm) in depth, regardless of length;
- 3) A dent or bend in the web of any bottom side rail within 10 inches (250mm) of a corner fitting that is greater than 3/4 inch (19mm) in depth, regardless of length;
- 4) A crack, break, cut, tear, puncture, or corrosive failure in any side rail;
- 5) A missing, cracked, or broken weld at the juncture with other primary structural components;
- 6) A loose or missing fastener at the juncture with other primary structural components;
- 7) Any deformation such as a dent, bend or bow that is in excess of ISO external dimensional tolerances as depicted in Figure 5.1;
- 8) An improper splice (Refer to 5.2.2) in any side rail;
- 9) Any splice in a steel rail other than a butt welded insert or full profile splice;
- 10) Any splice on an aluminum rail other than an overlap riveted splice; or
- 11) Any splice which interferes with the proper operation of side doors (includes operation of anti rack hardware and gasket).

Note: On ISO shelters with expandable or removable side-walls or removable panels, repairs to side rails must not interfere with the proper operation of these features. (This is not a CSC requirement unless it is the only way to enter/exit the shelter (i.e. Navy SOMF-B shelter side door).

b. UN Hazard Class 1 Container (IMDG). If the container is to be used for shipping UN Hazard Class 1 (IMDG) (explosive) items, a major defect includes any of the defects listed above for a general cargo container and also:

- 1) A dent or bend in any side rail that is greater than 3/4 inch (19mm) in depth, regardless of length.
- 2) More than two splices in any one top or bottom side rail. (For purposes of this criteria, the door header and door sill of a side-opening container are considered to be side rails. Splices on these components must not interfere with the proper operation of the side doors.)

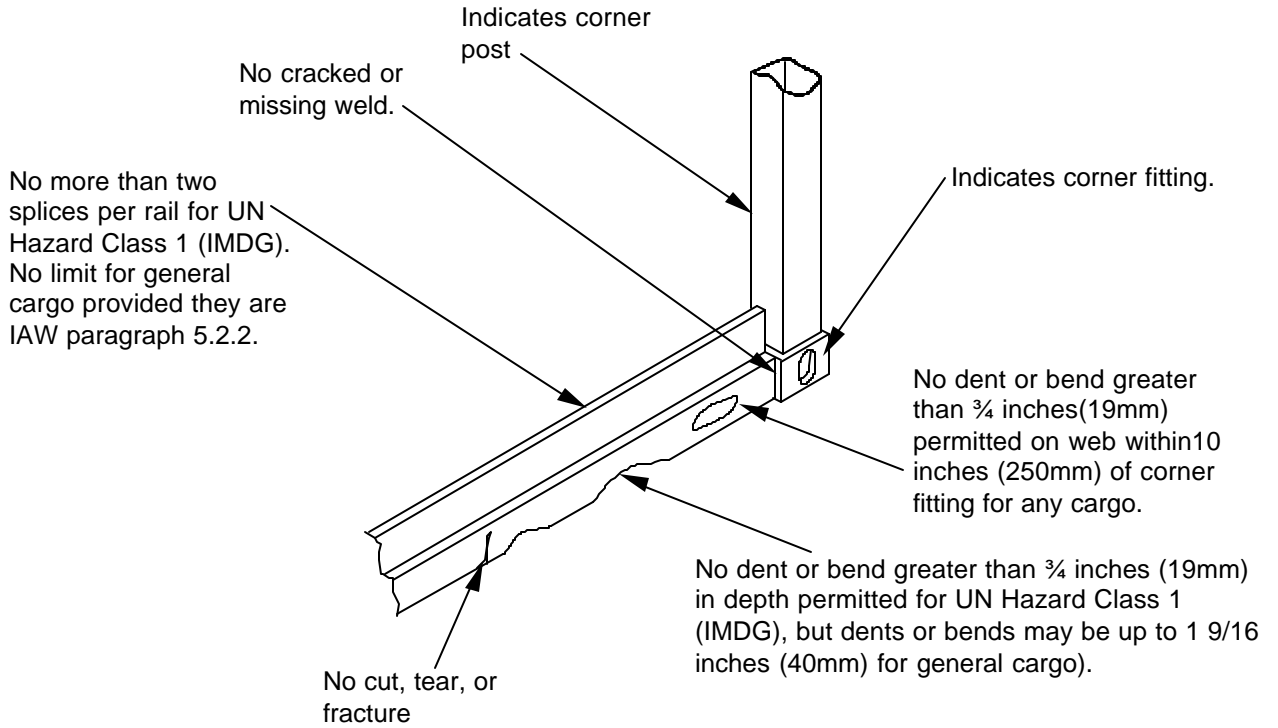


FIGURE 5.2.9A – STEEL SIDE RAIL

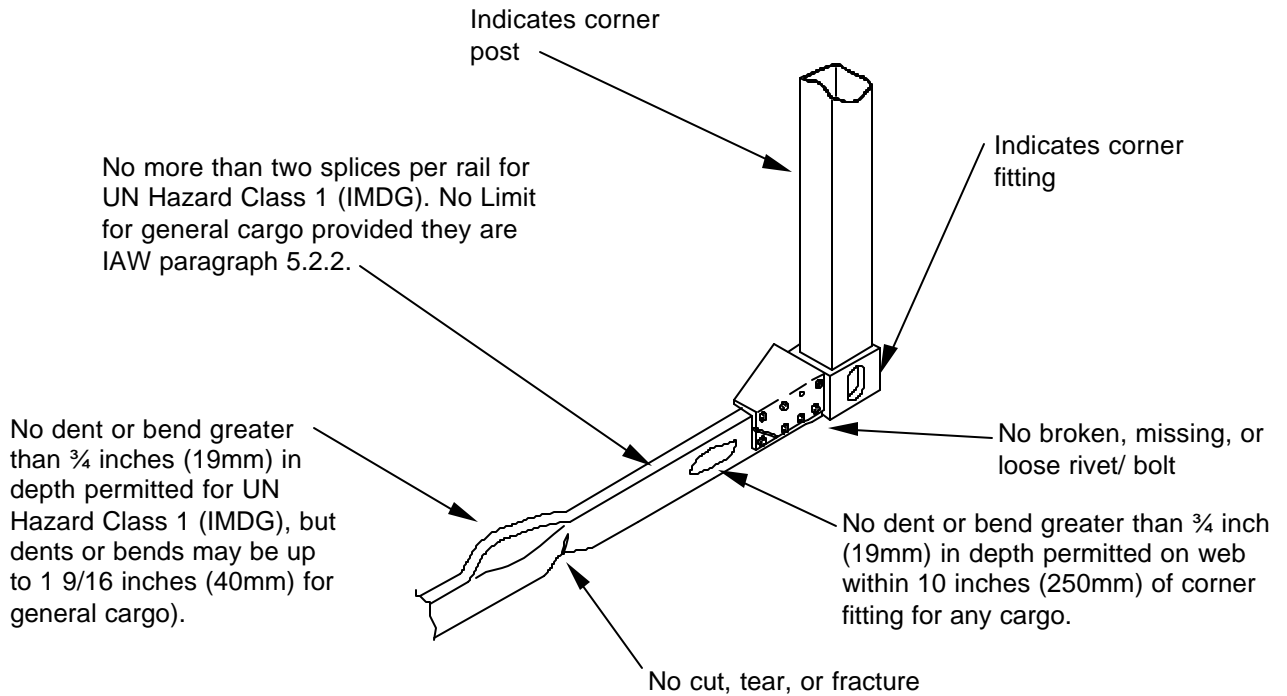


FIGURE 5.2.9B – ALUMINUM SIDE RAIL

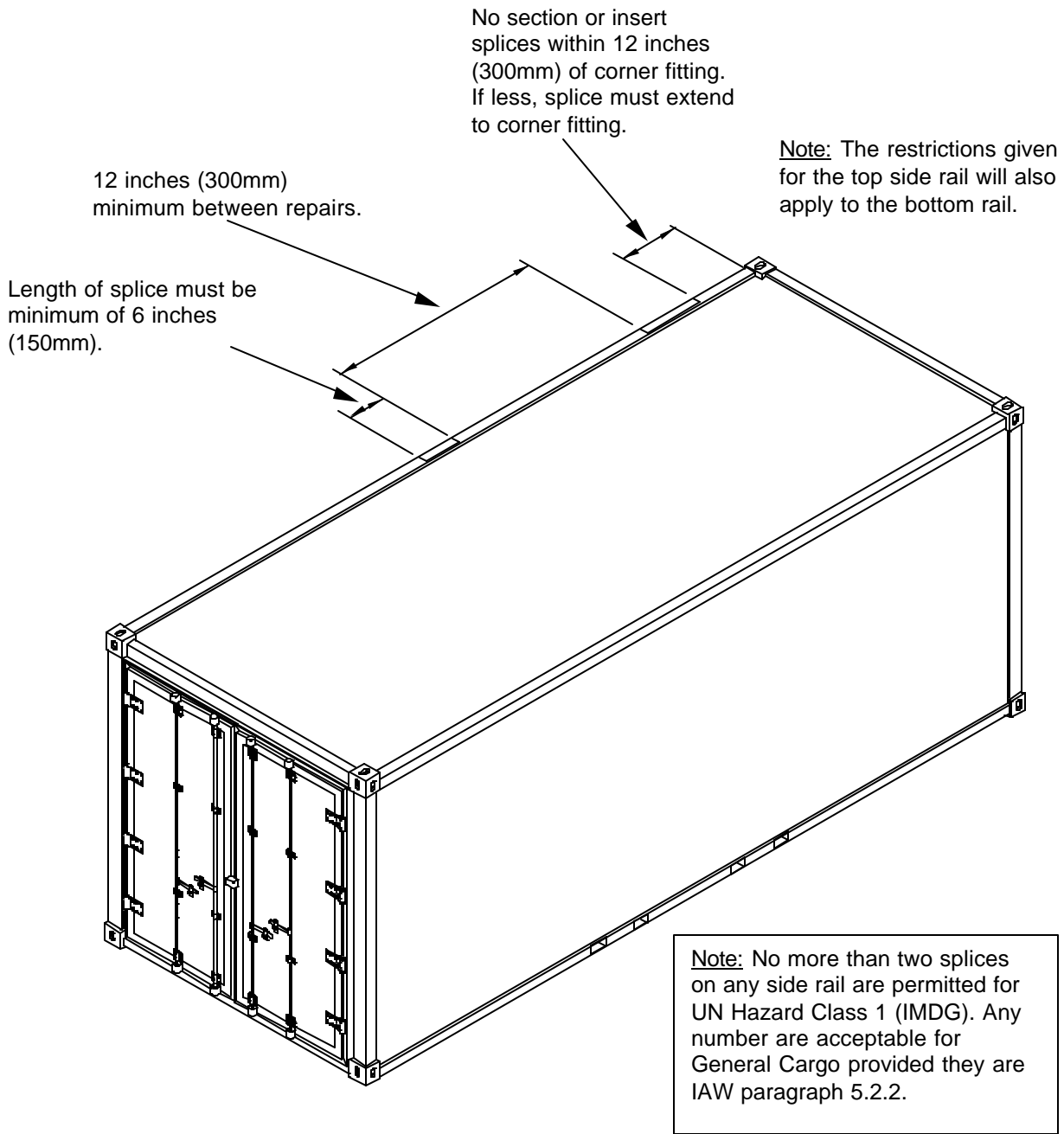
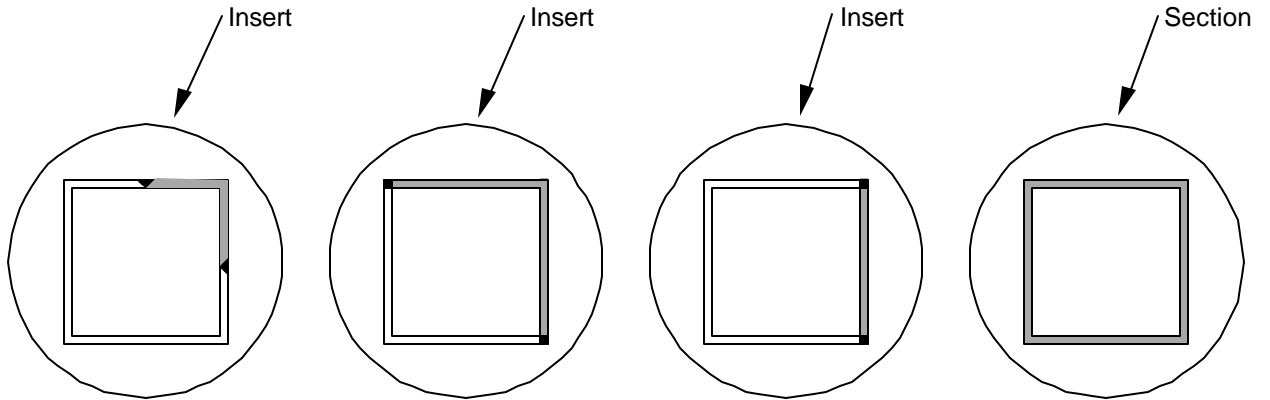
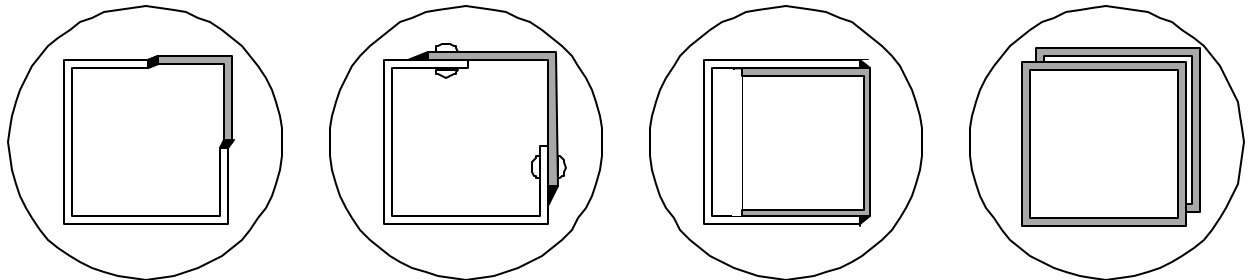


FIGURE 5.2.9C – SPLICE LIMITATIONS FOR SIDE RAILS

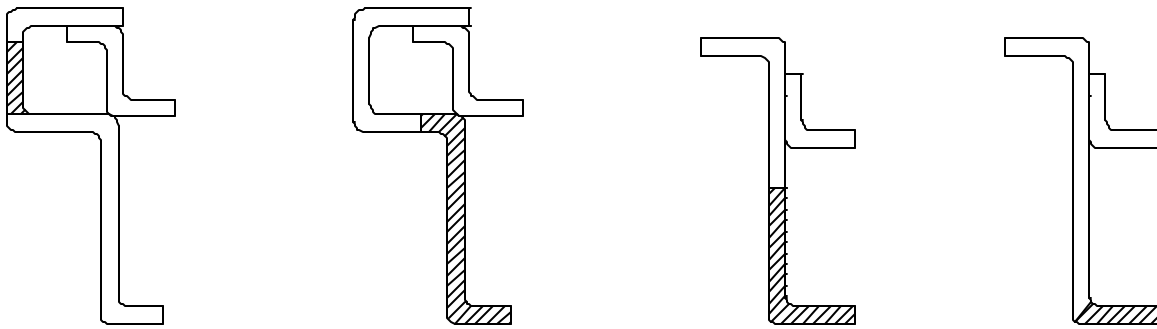
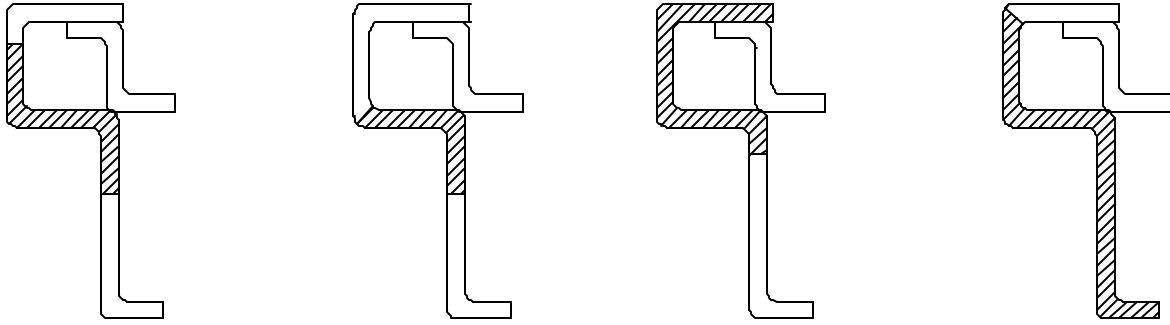


Examples Of Acceptable Top Side Rail Splices



Improper Splices – Inserts Not Flush With Remaining Rail

FIGURE 5.2.9D – EXAMPLES OF STEEL TOP SIDE RAIL SPLICES



Note: Figures depict cross sectional profiles of bottom side rails. All examples shown are acceptable insert splices. Full profile section splices are also acceptable.

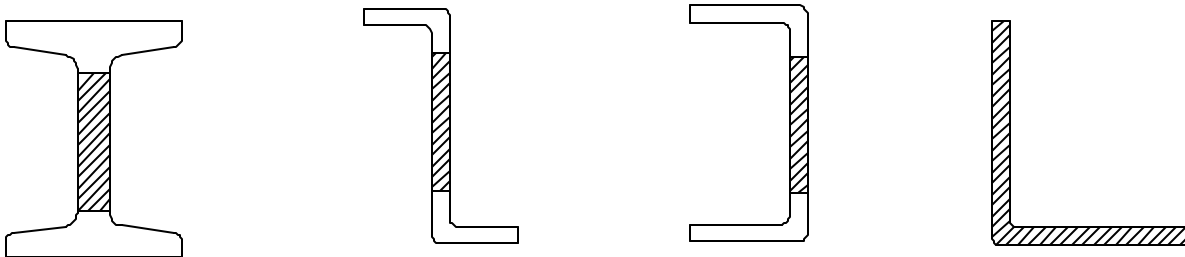
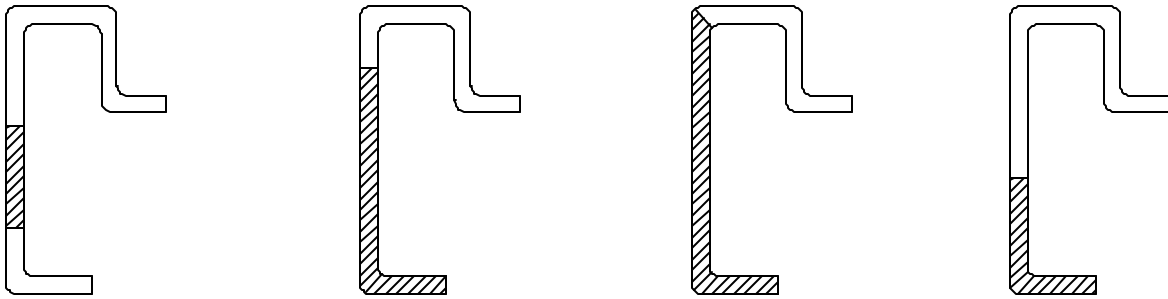


FIGURE 5.2.9E – EXAMPLES OF STEEL BOTTOM SIDE RAIL SPLICES

5.2.10 Floor Cross Members. Refer to Figures 5.2.10A, 5.2.10B, 5.2.10C, and 5.2.10D. Floor cross members are considered to be a part of the primary structure and a container is unacceptable if any floor cross member has any major defect.

a. General Cargo Container (non IMDG). If the container is to be used for shipping general cargo or is a shelter, a major defect includes:

- 1) A dent or bend in the web of any floor cross member that is greater than 1 inch (25mm) in depth, regardless of length;
- 2) A dent or bend in either the top or bottom flange of any floor cross member that is greater than 1-9/16 inch (40mm) in depth, regardless of length;
- 3) A crack, break, cut, tear, puncture, or corrosive failure in any floor cross member;
- 4) A missing, cracked, or broken weld at the juncture with the bottom side rail;
- 5) A loose or missing fastener at the juncture with the bottom side rail;
- 6) Any deformation such as a dent, bend or bow that is in excess of ISO external dimensional tolerances as depicted in Figure 5.1;
- 7) More than two splices, an improper splice, or any full profile splice;
- 8) Any splice in a steel cross member other than a butt welded insert;
- 9) Any splice on an aluminum cross member other than an overlap riveted splice;
- 10) A separation between the top of a cross member and underside of the flooring that is greater than 3/8 inch (10mm) at point of attachment.

b. UN Hazard Class 1 (IMDG) Container. If the container is to be used for shipping UN Hazard Class 1 (IMDG) (explosive) items, a major defect includes any of the defects listed above for a general cargo container and also a dent or bend in any floor cross member that is greater than 3/4 inch (19mm) in depth, regardless of length.

Note: Above criteria also applies to gooseneck tunnel components if present.

5.2.11 Steel Cross Member Juncture with Steel Side Rail. Welding patterns conforming to the original manufacturer's design are acceptable. Only abnormal welding patterns due to damage and/or improper repair are cause for rejection. Typically, the juncture between a cross member and a side rail is welded continuously on one side of the joint. Since welding patterns may vary depending on design and manufacture, inspection should be directed at looking for broken junctures or welded repairs that are not consistent with other corresponding welds of that container.

5.2.12 Acceptable Splicing on Steel Cross Members. A maximum of two splices per floor cross member is permissible. An acceptable splice is a minimum of 6 inches (150mm) long and is a butt-welded insert. If a splice would end within 12 inches (300mm) of another weld, such as at the juncture with the bottom side rail, it must be extended to that weld. An acceptable splice restores the original size and cross-sectional profile of the cross member. The top flange of the crossmember securing it to the floor and a minimum of 1/2 inch (13mm) of the vertical web must be left intact. A section through the complete profile is not permitted.

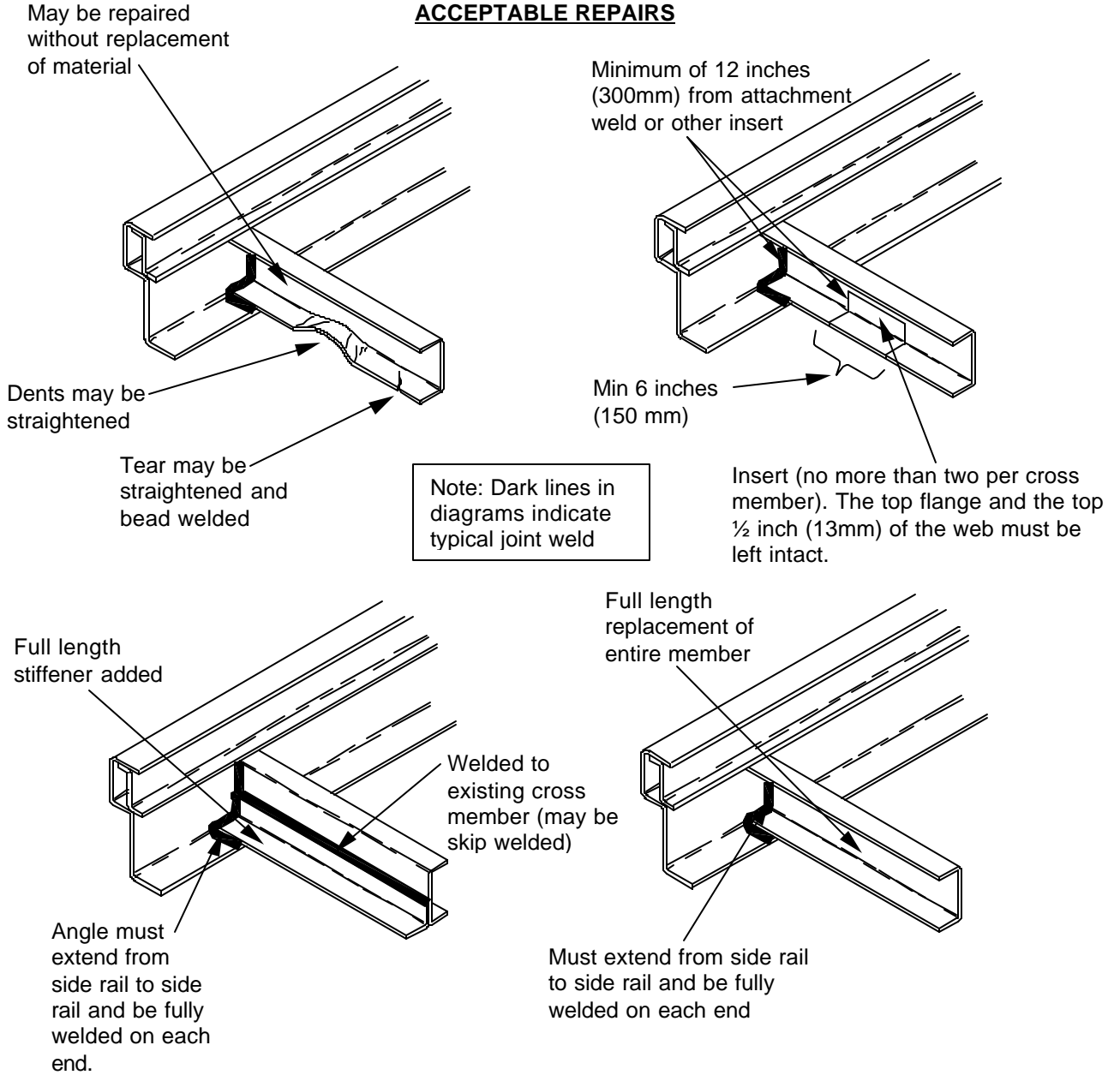
5.2.13 Cross Member Modifications. When many of the older military specification (MILSPEC) VANs were overhauled, the middle 17 cross members were strengthened with full length angle stiffeners. Subsequent cross member upgrades were also accomplished with a heavier (7 gauge) cross member

replacement. Any combination of these modifications on the same container is acceptable provided other limitations are adhered to and all of the middle 17 cross members have been upgraded with either a stiffener or a 7 gauge cross member. Any number of full length angle stiffeners are also permissible on other types of containers, but not required. Each stiffener must extend the full length of the cross member, be fully welded to the bottom side rails on each end, and not protrude beneath the surface of the lower edge of the bottom side rails.

5.2.14 Gussets and End Rail Stiffeners. There are no specific dent or bend limitations for gussets and end rail stiffeners. Dents and bends not affecting the structural integrity of the container are permissible. A container is unacceptable if any weld is broken, if there are any loose or missing fasteners, or a gusset or stiffener is missing, broken, cut, torn or punctured. Refer to Figure 5.2.14.

5.2.15 Structural Integrity of Understructure. Slightly oxidized (rusted), twisted, bent, dented, or bowed floor cross members are not a cause for rejection provided criteria of paragraph 5.2.10 is met, welds are not broken, and in the judgement of the inspector, the structural integrity of the container has not been reduced beyond safe limits. If the strength of the floor is in doubt, the dynamic floor weight test specified in Annex II of the International CSC should be conducted to ascertain that: the understructure does not deflect more than 1/4 inch (7mm) below the bottom surfaces of the bottom corner fittings; no component is permanently deformed; and no component or weld fails.

ACCEPTABLE REPAIRS



IMPROPER REPAIR

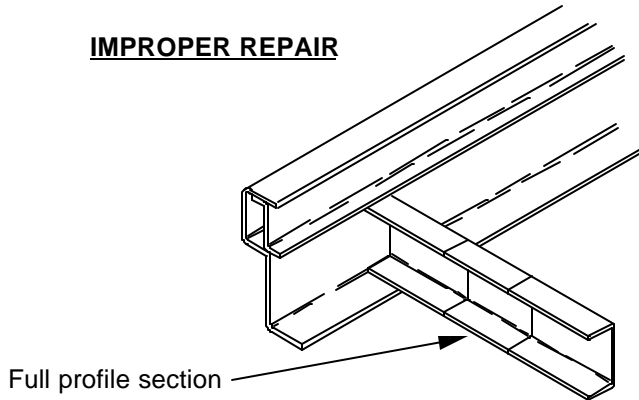
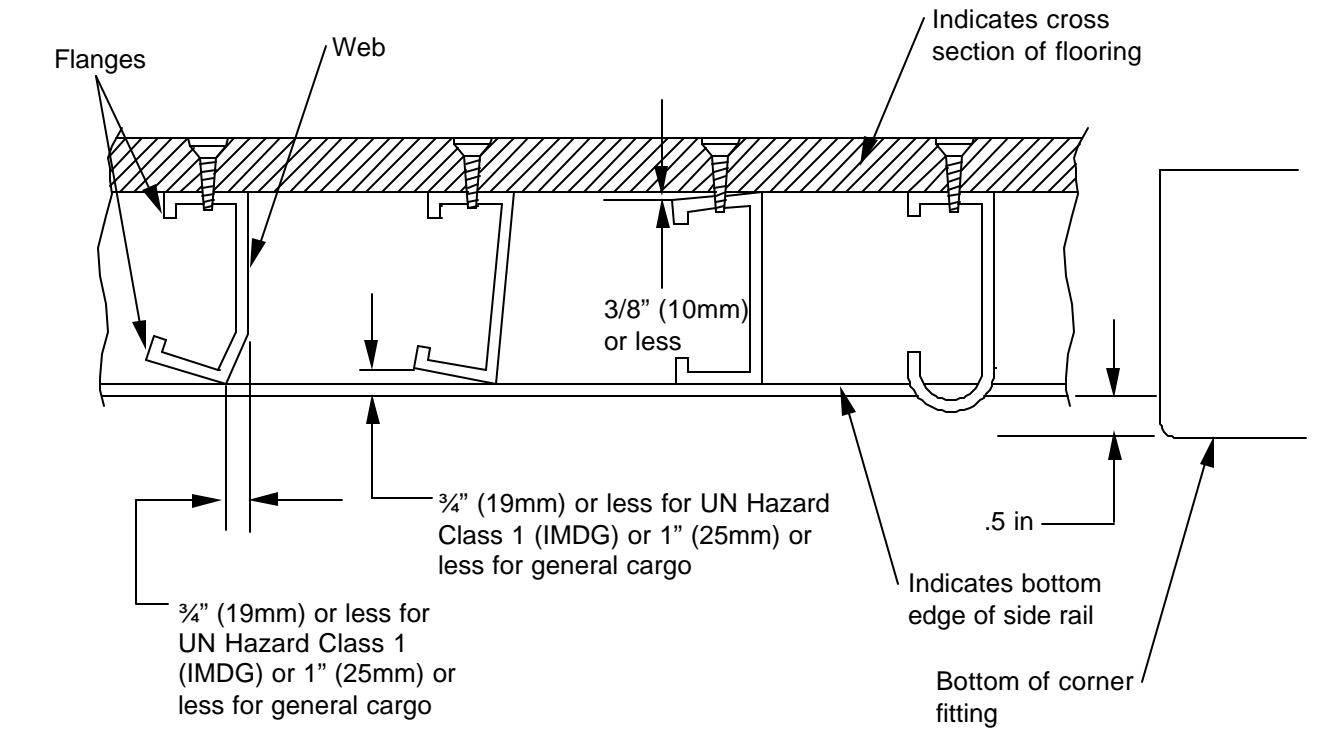
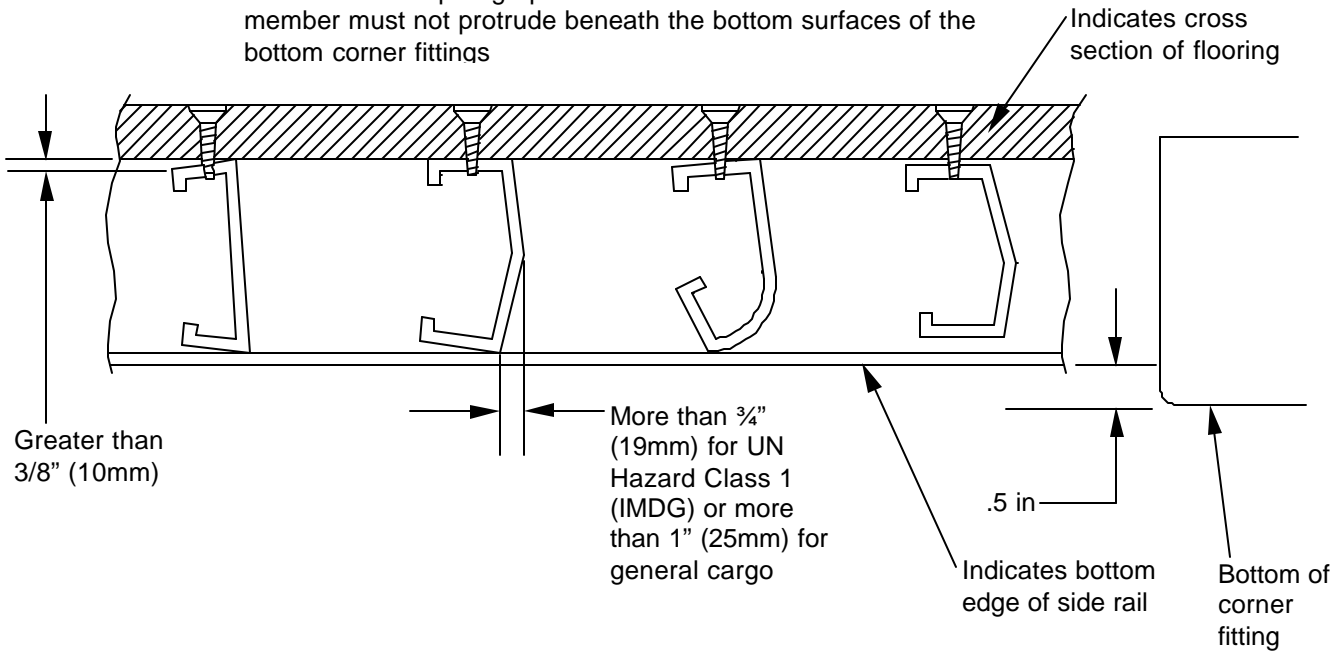


FIGURE 5.2.10A – STEEL CROSS MEMBER REPAIR LIMITATIONS



ACCEPTABLE CROSS MEMBERS

Note: Criteria of paragraph 5.2.10 must be met and cross member must not protrude beneath the bottom surfaces of the bottom corner fittings



UNACCEPTABLE CROSS MEMBERS

FIGURE 5.2.10B – DENT AND BEND LIMITATIONS FOR CROSS MEMBERS

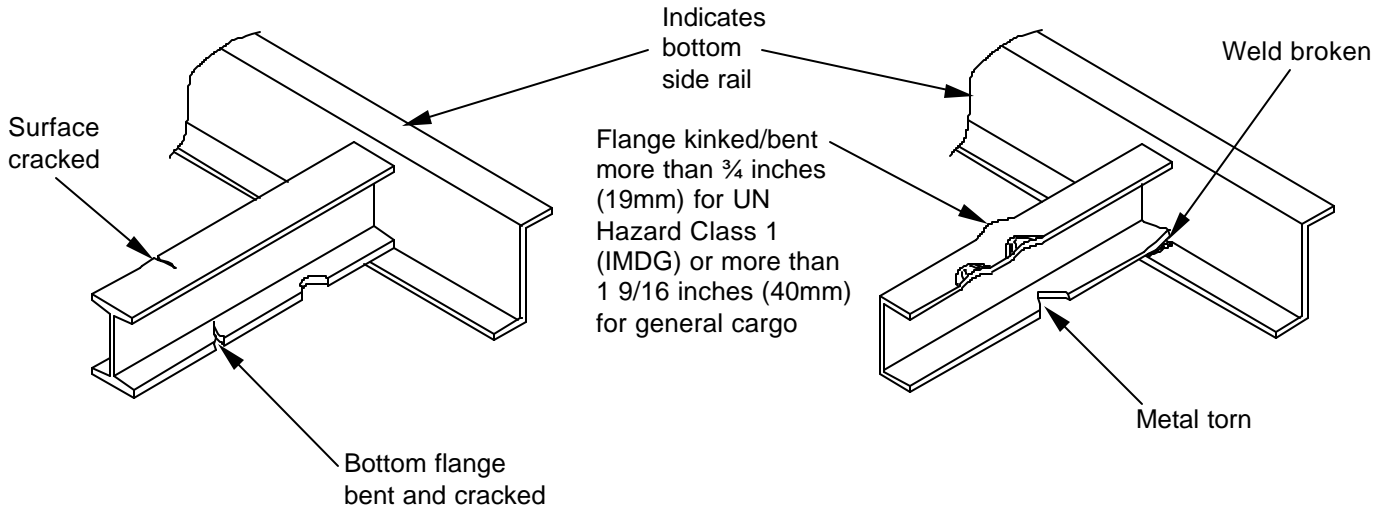


FIGURE 5.2.10C – UNACCEPTABLE STEEL CROSS MEMBER DAMAGE REQUIRING RAIL REPLACEMENT

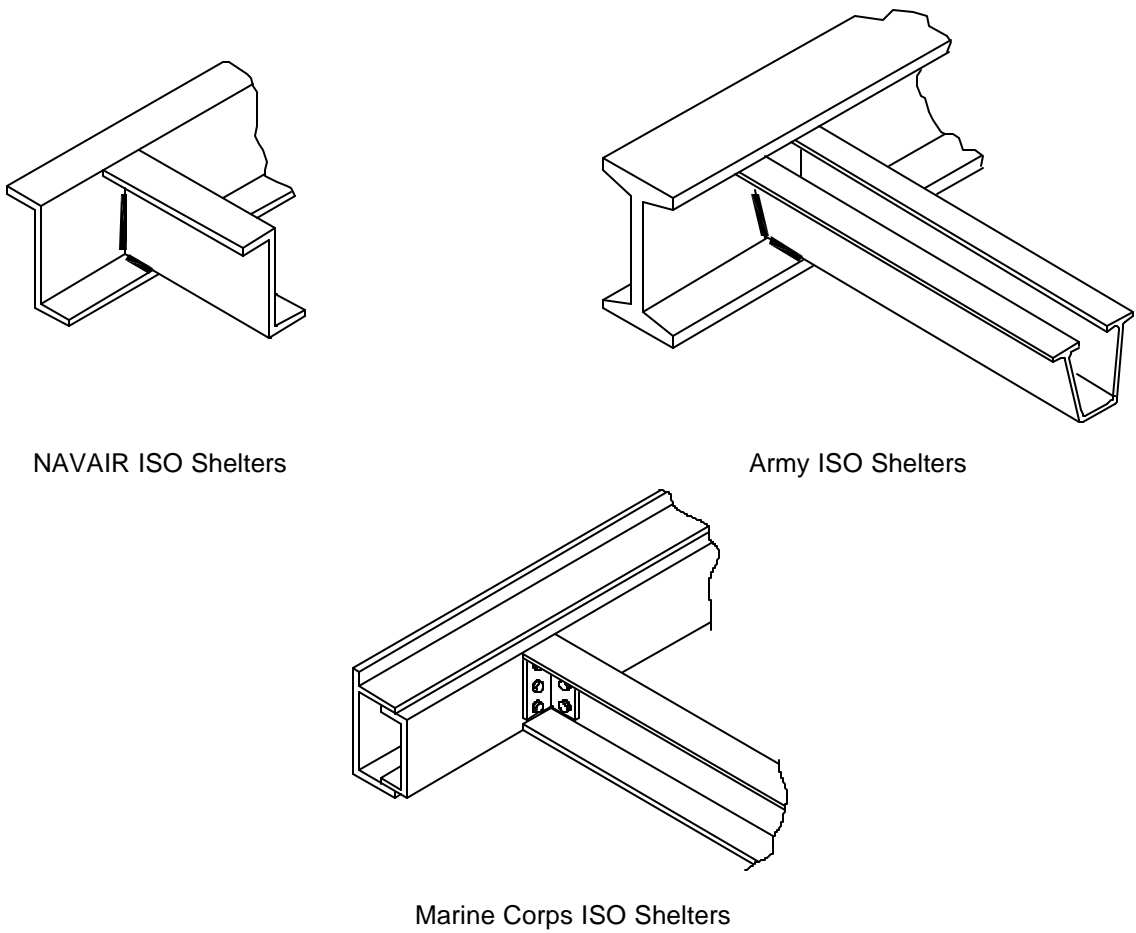


FIGURE 5.2.10D – TYPICAL CROSSMEMBER CONFIGURATION (ISO SHELTERS)

Note: There are no specific dent or bend limitations for gussets and stiffeners. Welds must not be broken and components must not be missing, broken, cut, torn, or punctured.

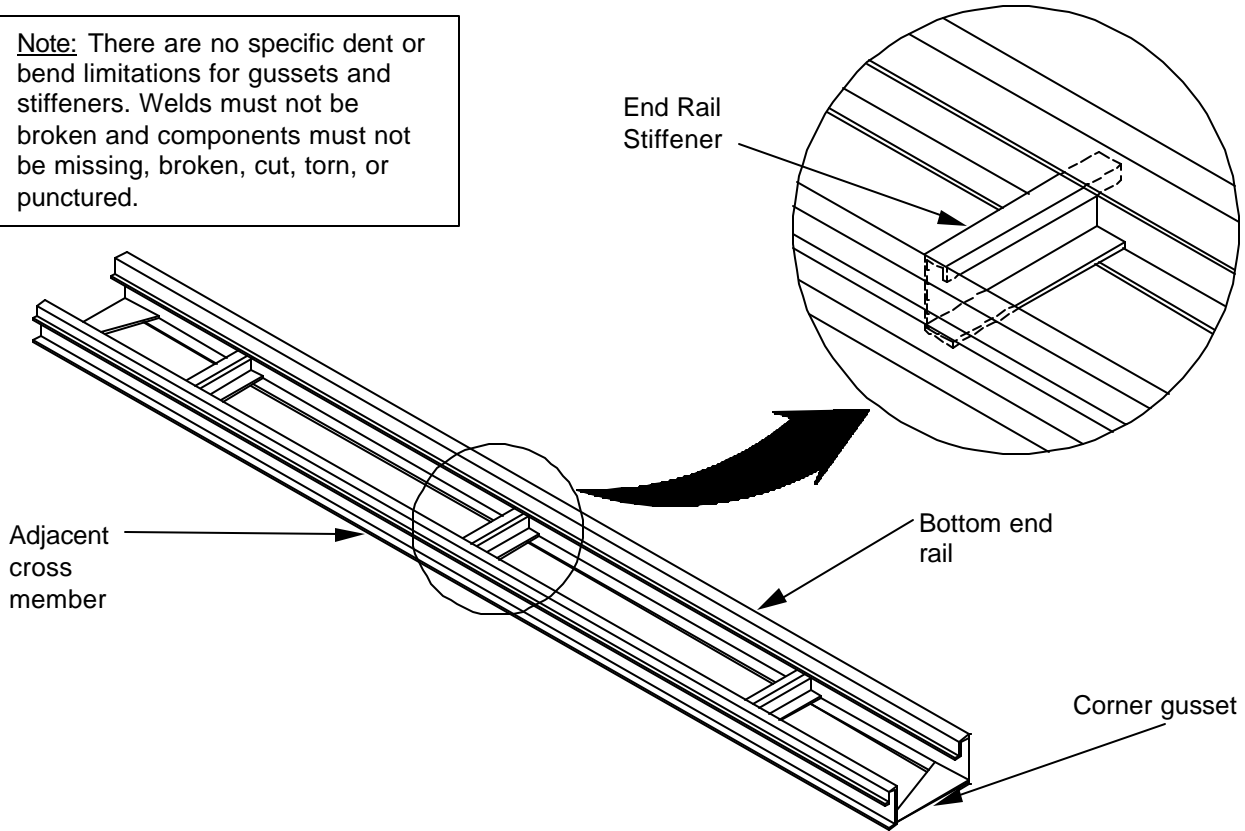


FIGURE 5.2.14 – GUSSETS AND END RAIL STIFFENERS ON STEEL CONTAINERS

5.2.16 Forklift Pockets. Refer to Figure 5.2.16. Forklift pockets are considered by DOD to be a part of the primary structure and a container is unacceptable if a forklift pocket has any major defect.

a. General Cargo Container (non IMDG). If the container is to be used for shipping general cargo or is a shelter, a major defect includes:

- 1) A dent or bend in the side of the forklift pocket that is greater than 1 inch (25mm) in depth, regardless of length;
- 2) A dent or bend in any tunnel plate or forklift pocket strap that is greater than 1-9/16 inch (40mm) in depth, regardless of length; or
- 3) A crack, break, cut, tear, puncture, or corrosive failure in any component forming the forklift pocket;
- 4) A missing, cracked, or broken weld at the juncture with the bottom side rail;
- 5) A loose or missing fastener at the juncture with the bottom side rail;
- 6) Any deformation such as a dent, bend or bow which prevents use of fork tines or that is in excess of ISO external dimensional tolerances as depicted in Figure 5.1;
- 7) More than two splices or an improper splice in any cross member forming the side of a forklift pocket; any full profile splice.
- 8) Any splice in a steel rail other than a butt welded insert splice;
- 9) Any splice on an aluminum rail other than an overlap riveted splice;
- 10) Any splice in a forklift pocket strap; or
- 11) Any damage or degradation (such as a broken strap) that would prevent safe handling by forklift equipment and could place any person in danger during subsequent handling, stacking, or transport of the intermodal container.

b. UN Hazard Class 1 Container (IMDG). If the container is to be used for shipping UN Hazard Class 1 (IMDG) (explosive) items, a major defect includes any of the defects listed above for a general cargo container and also a dent or bend in any component of the forklift pocket that is greater than 3/4 inch (19mm) in depth, regardless of length.

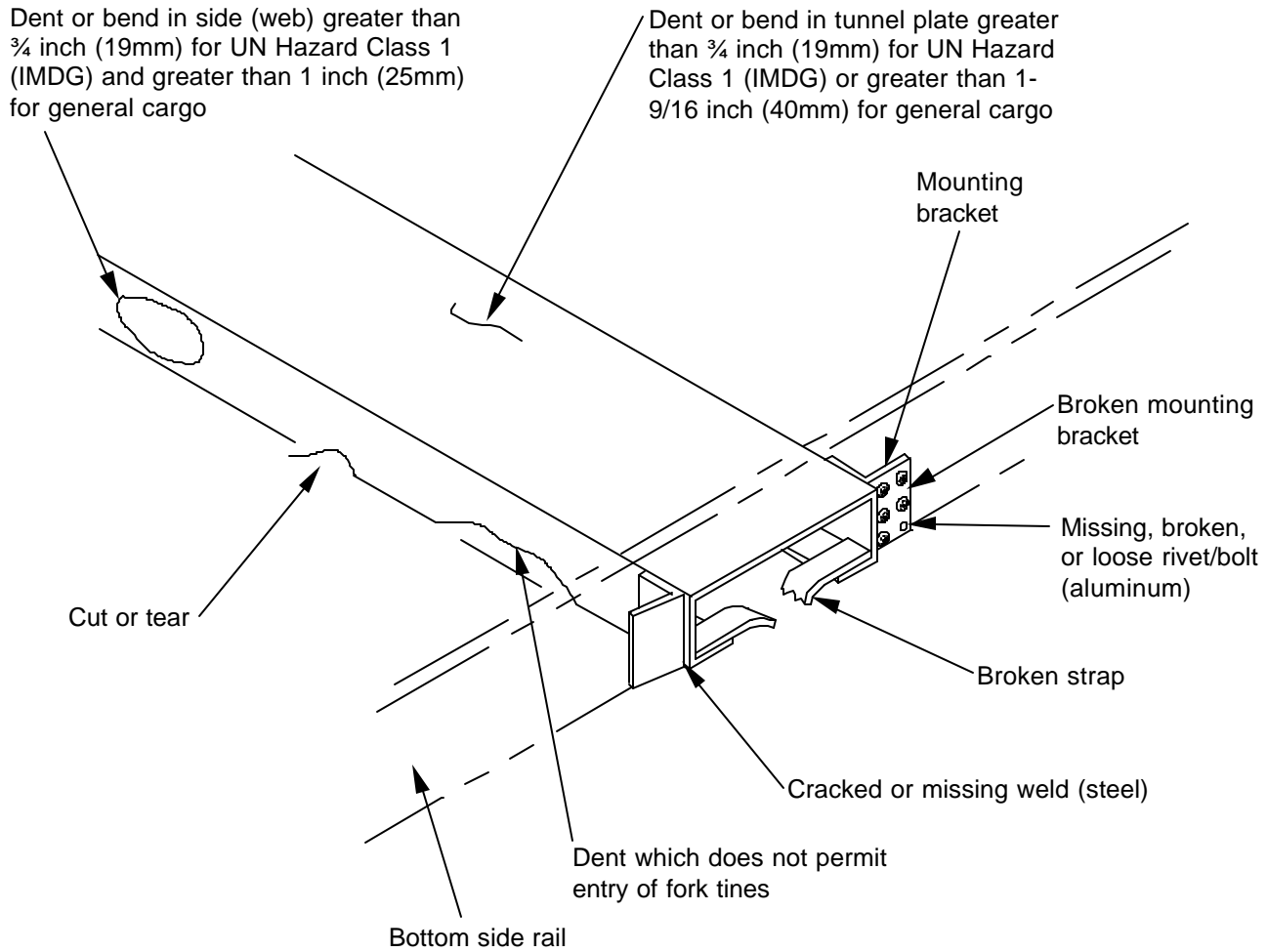


FIGURE 5.2.16 – EXAMPLES OF FORKLIFT POCKET DAMAGE

5.2.17 Special Container Hardware. Refer to Figures 5.2.17A and 5.2.17B.

- a. Collapsible Flatrack End Wall. The end wall locking hardware for collapsible type flatracks must not be seized, twisted, broken, missing or otherwise inoperative. Any twist, dent or bend that renders the folding end wall inoperable is cause for rejection.
- b. Open-Top Swinging Header. Header pins must not be seized, twisted, broken, missing, or otherwise inoperative. Any twist, dent or bend that renders the header inoperable is cause for rejection. If the container is to be used for shipping general cargo, the header may have any number of proper splices but must not have any dents or bends greater than 1-1/4 inch (32mm) in depth, regardless of length. If the container is to be used for shipping UN Hazard Class 1 (IMDG) (explosive) items, the header must not have more than one splice and must not have any dents or bends greater than 3/4 inch (19mm) in depth, regardless of length. Splices may not interfere with the operation of anti-rack hardware.

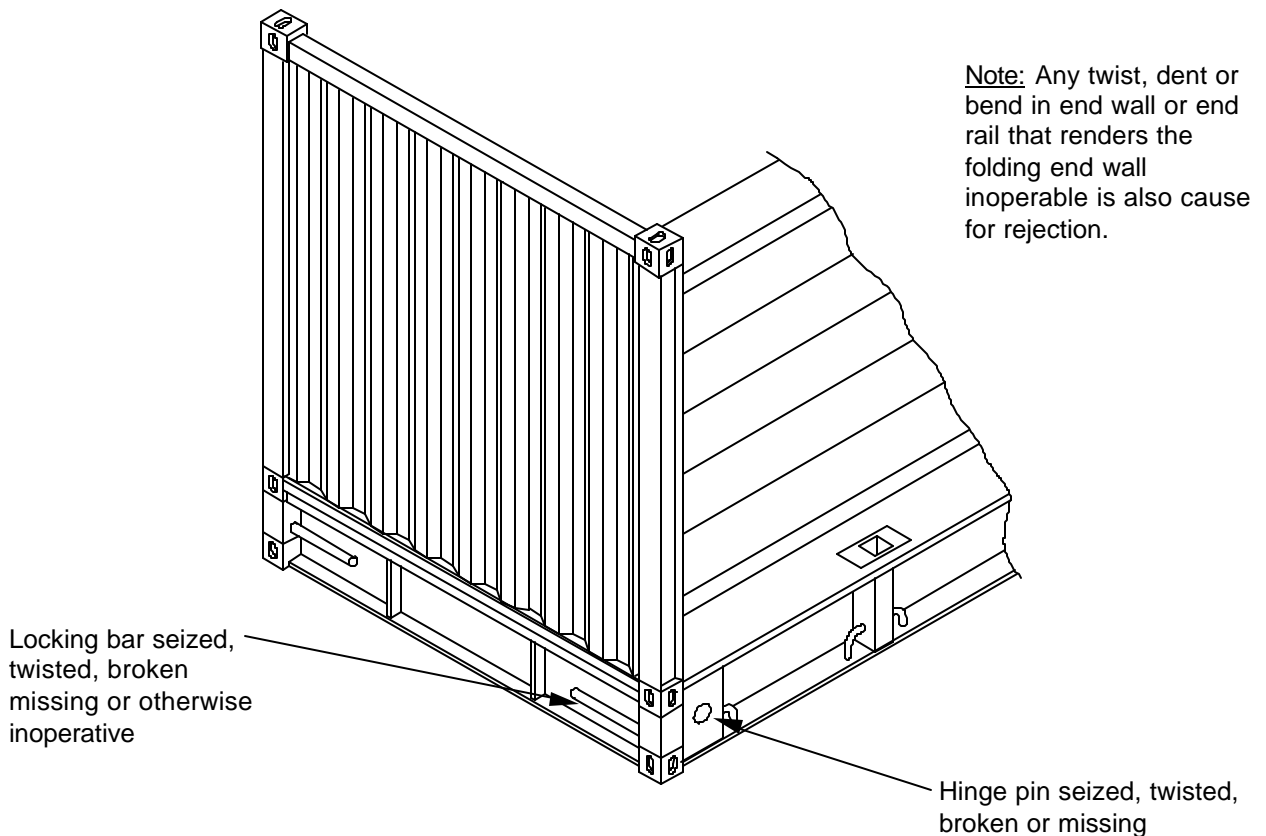


FIGURE 5.2.17A – EXAMPLES OF FLATRACK ENDWALL DAMAGE

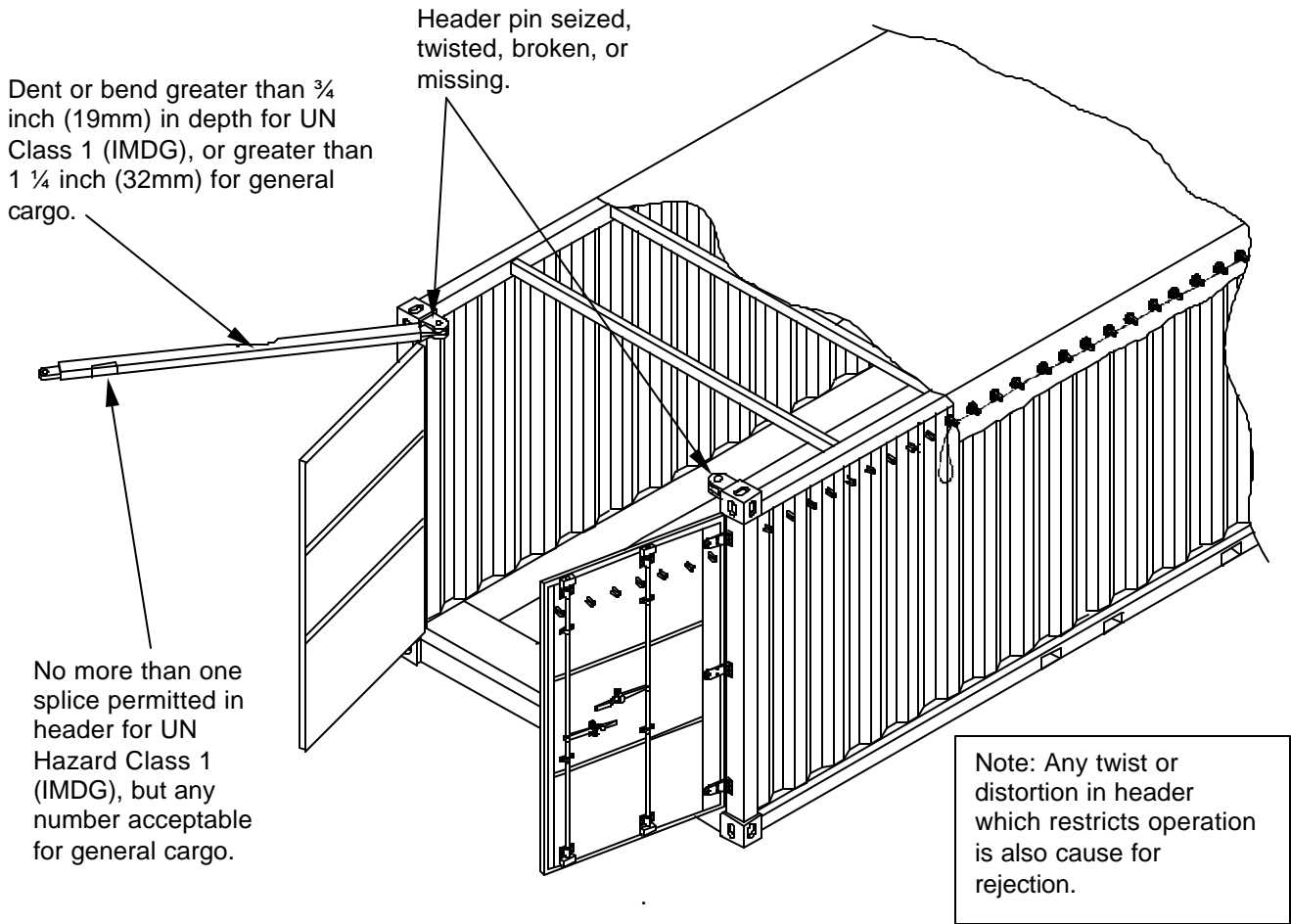


FIGURE 5.2.17B – SWINGING HEADER DAMAGE

5.3 Non-Structural Components. For purposes of this criteria, non-structural components are items such as wall, roof, and door panels or hardware that are not otherwise specifically identified as primary (main) structural components (members).

5.3.1 Serviceability of Panels. Normal wear including oxidation (rust), slight dents and scratches, and other damage that does not affect serviceability or the structural integrity of the container is permissible. Pinhole light leaks or porosity in seam welds between panels or in edge welds around perimeter of wall, or roof panels and pin hole light leaks around door panels are permissible.

5.3.2 Acceptable Patching. See Figures 5.3.2A, 5.3.2B, 5.3.4B, and 5.3.7B. Repairs (patches) in wall, roof, or door panels are permissible and may either be an overlapping lap-welded type, an overlapping buck-riveted type, or inserted butt-welded type of repair. Lap-welded patches should overlap existing panel by at least 1/2 inch (13mm). Riveted patches should overlap existing panel by at least 2 inches (50mm). Butt-welded patches should be flush fitting. All repairs on corrugated sections must be neatly made, have a similar cross sectional profile, and not affect the structural integrity of the container. All repairs, regardless of size, must be of a permanent nature and must seal against the ingress of water. Rivets or other special fasteners used for affixing patches to panels, should be of a closed or blind mandril design. Use of hollow core pop rivets for repair of steel containers must be limited to doors of MILSPEC VANs and must be caulked to prevent water seepage. There is no limit on the number of patches on a wall, roof, or door panel, provided the structural integrity of the container is not impaired. Patches must not overlap other patches.

Note: Small holes and tears in steel walls may be repaired with bead welding.

5.3.3 Side and End Wall Panels. A container is unacceptable for shipping any kind of cargo if a wall panel has any of the following deficiencies:

- a. Any hole, tear, puncture, or corrosive failure in the panel, regardless of the material of construction;
- b. Any broken weld at juncture with main structural rail or corner post;
- c. Loose or missing fastener in aluminum, sandwich, or FRP panel that is separated by less than 48 inches (1220mm) in any direction from another loose or missing fastener;
- d. Inward bulging or denting of the panel that reduces cargo space by more than 1-1/2 inches (40mm) in any direction or that impedes cargo loading;
- e. Outward bulging of the panel that extends beyond the outside surfaces of the corner fittings; or
- f. Delamination of the panel that is greater than 5 inches in diameter.

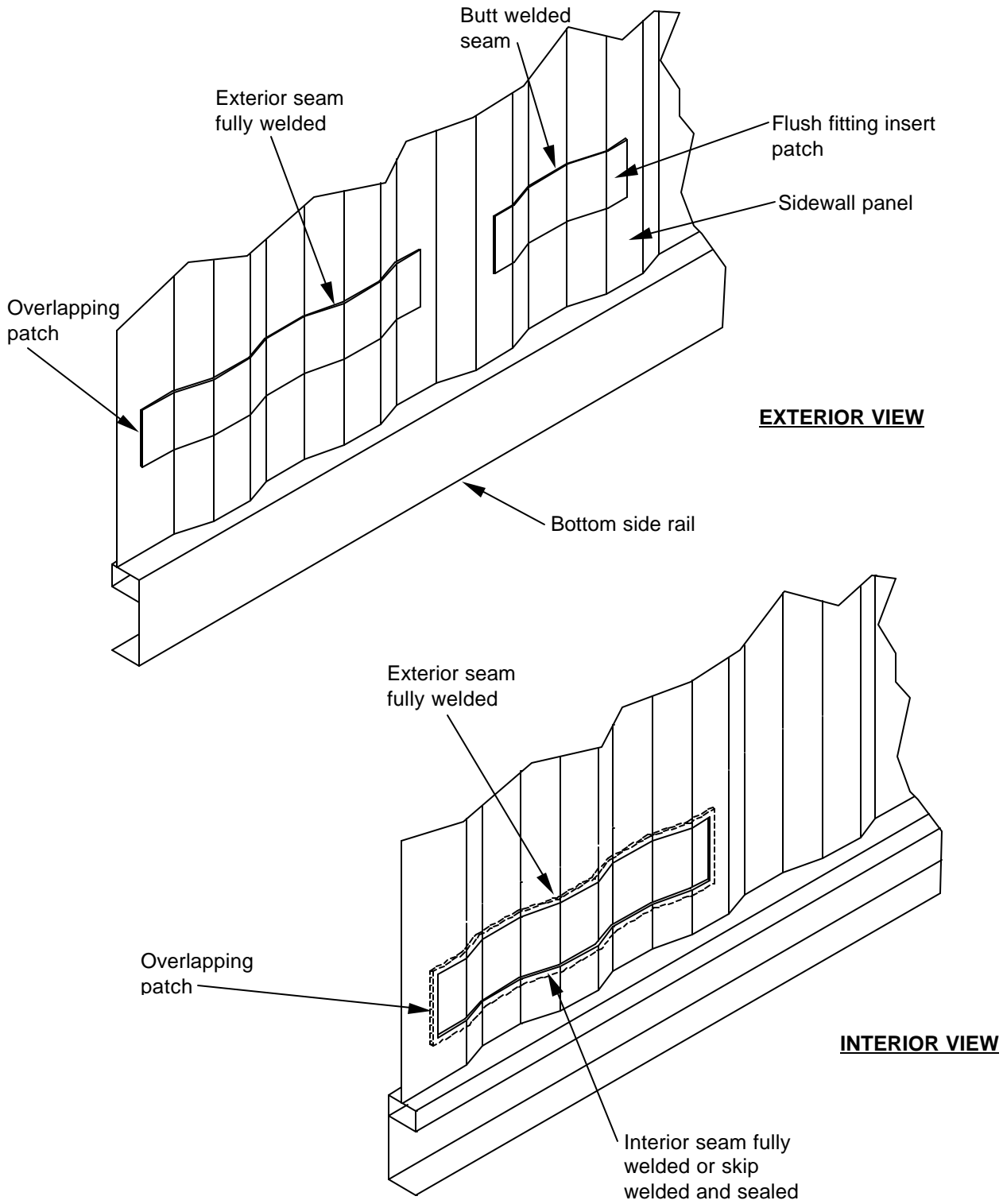


FIGURE 5.3.2A – ACCEPTABLE WALL PATCHES (STEEL PANEL)

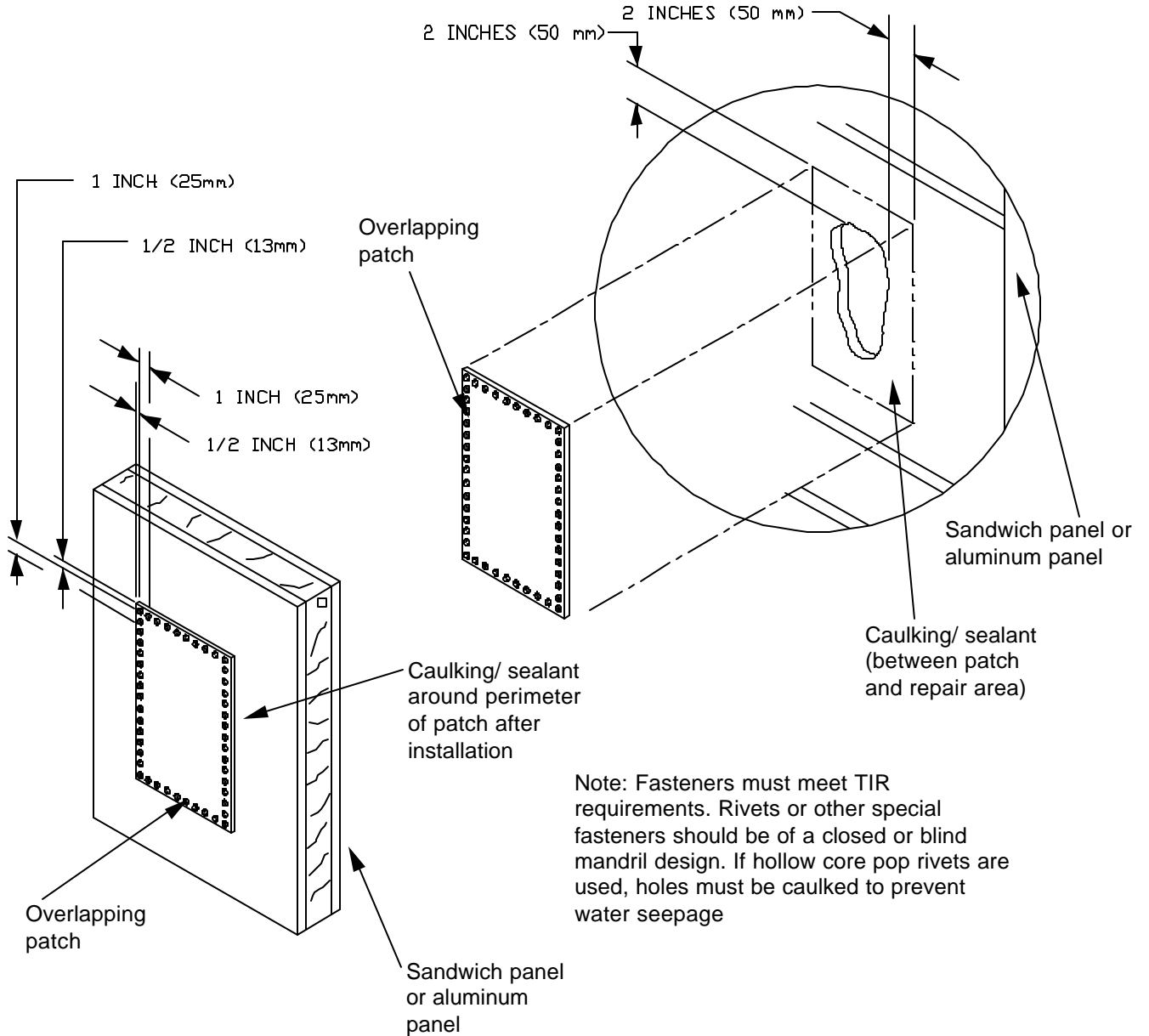


FIGURE 5.3.2B – ACCEPTABLE WALL, ROOF AND FLOOR PATCHES (SANDWICH OR ALUMINUM PANEL)

5.3.4 Closed Roof Assembly. Refer to Figures 5.3.4A and 5.3.4B. A container is unacceptable for shipping any kind of cargo if a roof assembly has any of the following deficiencies:

- a. Any hole, tear, puncture, or corrosive failure in a panel, regardless of the material of construction;
- b. Any broken weld at juncture with top rail or corner fitting;
- c. Loose or missing fastener in aluminum, sandwich or FRP panel that is separated by less than 48 inches (1220mm) in any direction from another loose or missing fastener;
- d. Inward bulging or denting of a panel that reduces cargo space by more than 1-1/2 inches (40mm) or that restricts cargo loading;
- e. Outward bulging of a panel that extends beyond the top surface of the top corner fittings;
- f. Any roof bow or beam missing, cut, broken, or has a weld or bracket torn loose from the top side rail;
- g. Delamination of the panel that is greater than 5 inches in diameter.

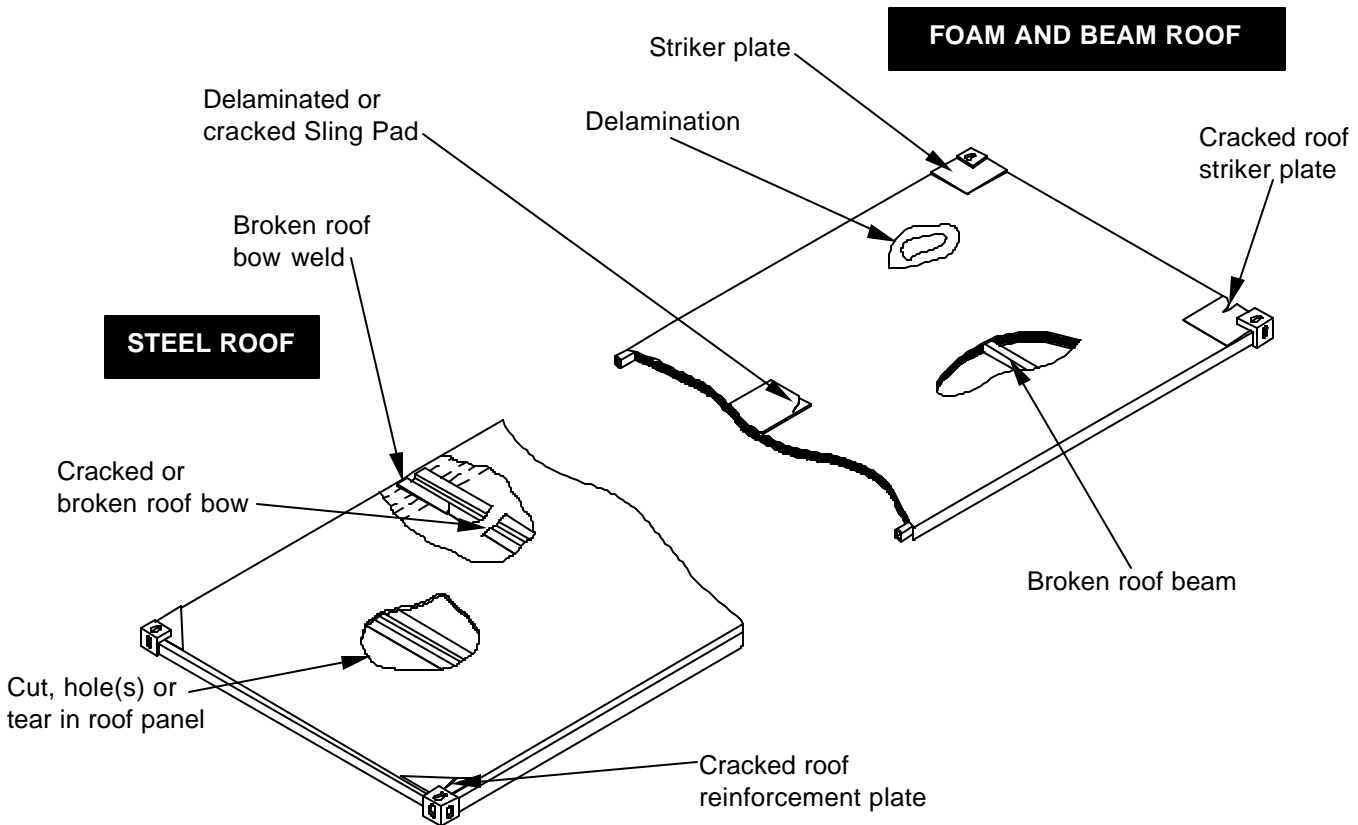


FIGURE 5.3.4A – ROOF ASSEMBLY DAMAGE

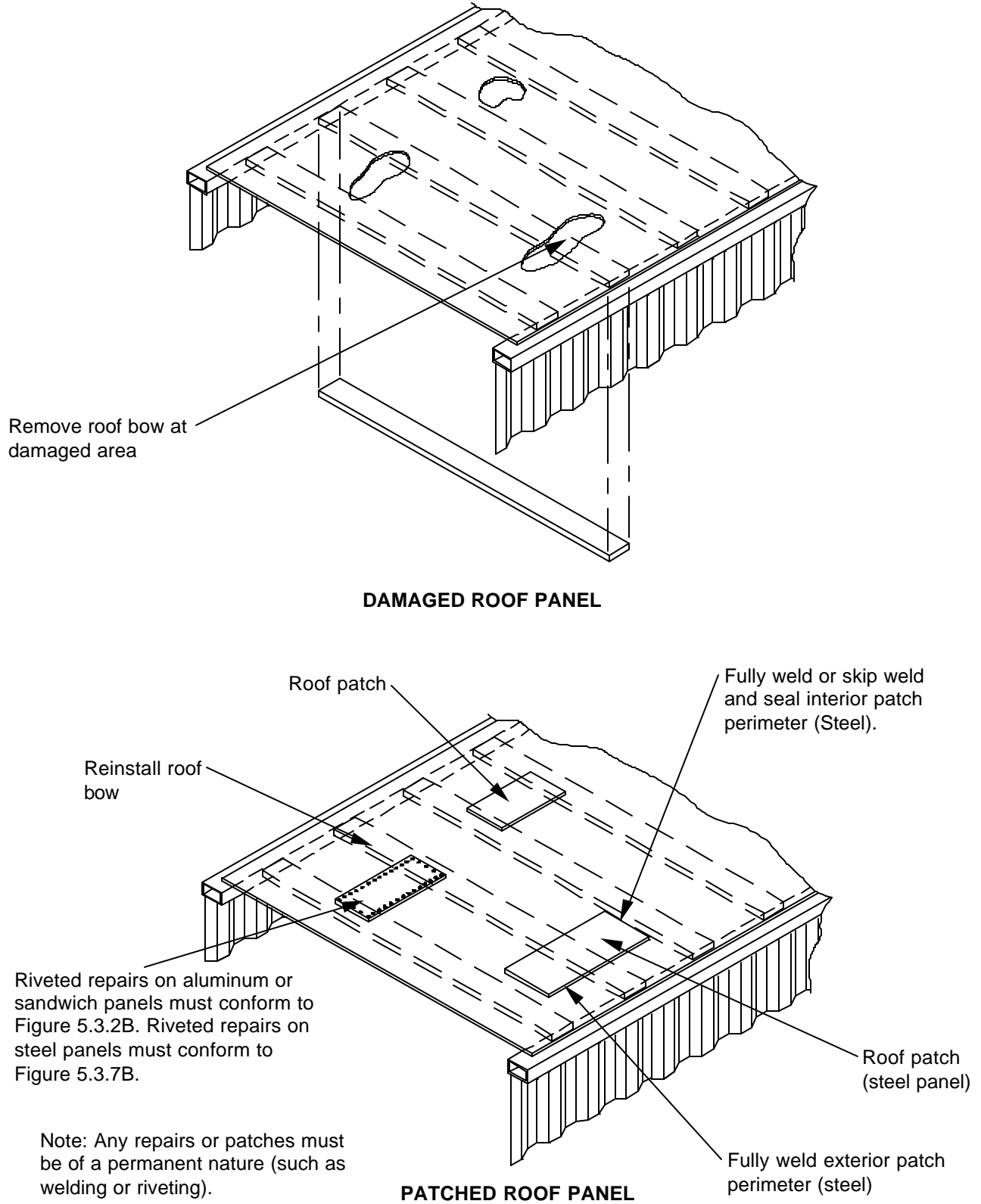


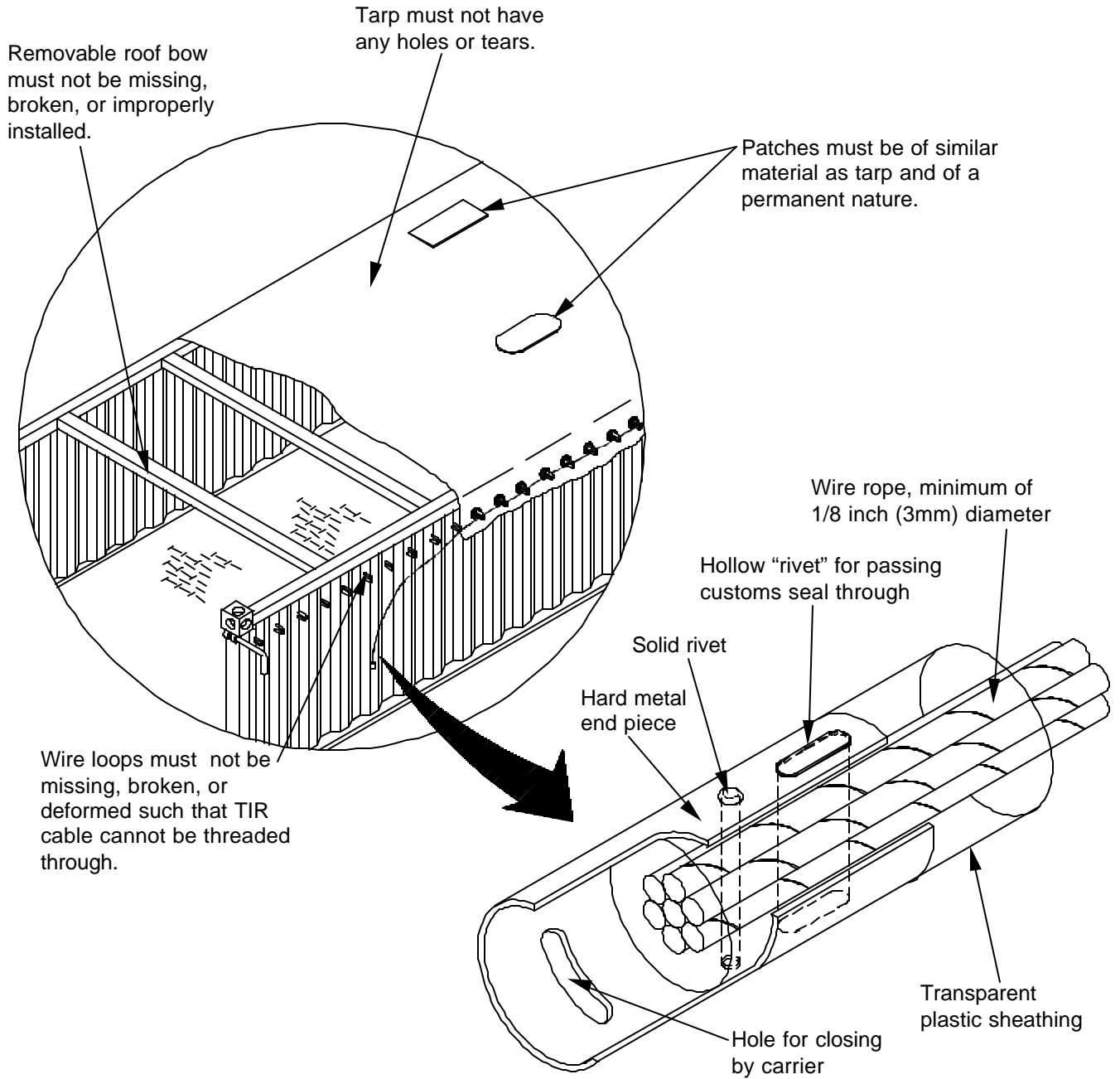
FIGURE 5.3.4B – REPAIRED ROOF ASSEMBLY

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5.3.5 Removable Cover (Tarp) Assembly. Refer to Figure 5.3.5. Removable roof bows, tarp and TIR cable are used with an open top container. They must be inspected to ensure serviceability and weather-proof integrity when installed on the container. A container is unacceptable for shipping any kind of cargo if any of the following deficiencies are evident:

- a. A roof bow is missing or is damaged and cannot be installed properly;
- b. Any hole or tear in the tarp;
- c. Tarp does not prevent seepage of water;
- d. Tarp cannot be affixed to the upper portion of the container with a TIR customs approved sealing technique;
- e. Reinforced eyelets in perimeter of tarp not fitting (nesting) correctly over corresponding loops welded on the side panels, end panels, and doors;
- f. Welded loops missing, broken, or deformed so TIR cable (plastic sheathed wire rope) cannot be threaded through all of them;
- g. TIR cable damaged beyond use; or
- h. Terminal on the end of the TIR cable unusable or missing.

5.3.6 Serviceability of Cover (Tarp) Assembly. Neatly made repairs (patches) in the tarp are permissible provided they are of similar material and seal against the penetration of water. All repairs, regardless of size, must be of a permanent nature such as a heat-sealed vinyl patch. Patches must not overlap other patches. Cracked or missing sections of the plastic sheathing on the TIR cable are acceptable provided the wire rope core is not broken and the cable can be properly installed.



TERMINAL FOR TIR CABLE

FIGURE 5.3.5 – REMOVABLE COVER (TARP) ASSEMBLY

MIL-HDBK-138B

5.3.7 General Type Door Assembly. Refer to Figures 5.3.7A, 5.3.7B, 5.3.7C, 5.3.7D and 5.3.7E. A container is unacceptable for shipping any kind of cargo if a door assembly has any of the following deficiencies:

- a. Any hole, tear, puncture, or corrosive failure in a door panel, regardless of the material of construction;
- b. Inward bulging or delamination of a door panel that reduces cargo space by more than 1-1/2 inches (40mm) or that restricts cargo loading;
- c. Outward bulging or delamination of a door panel that causes any portion of the door assembly to extend beyond the outside surfaces of the corner fittings;
- d. Any seized, twisted, broken, missing, or otherwise inoperative door hardware including hinges, hinge pins, locking bars, locking bar mounting brackets, cams, cam retainers, handles, and handle retainers;
- e. Broken or defective welds, loose or missing fasteners on anti-rack hardware;
- f. Less than two hinge assemblies per door, including bolts and hinge pins, welded or otherwise affixed in such a manner to preclude removal or dismantling of the door without leaving obvious traces;
- g. Top and bottom mounting brackets or handle retainers not of a tamper-evident design;
- h. Customs catch broken or missing;
- i. Door gasket missing, torn, or severely deformed.

5.3.8 Ramp Type Door. Refer to Figure 5.3.8. The criteria described for general type door assembly (Refer to paragraph 5.3.7) also applies to ramp type doors. All special hardware, including locking bolts, safety catches and chains must not be seized, twisted, broken, missing, or otherwise inoperative. Any twist, dent, bend or other damage that restricts proper door operation is cause for rejection.

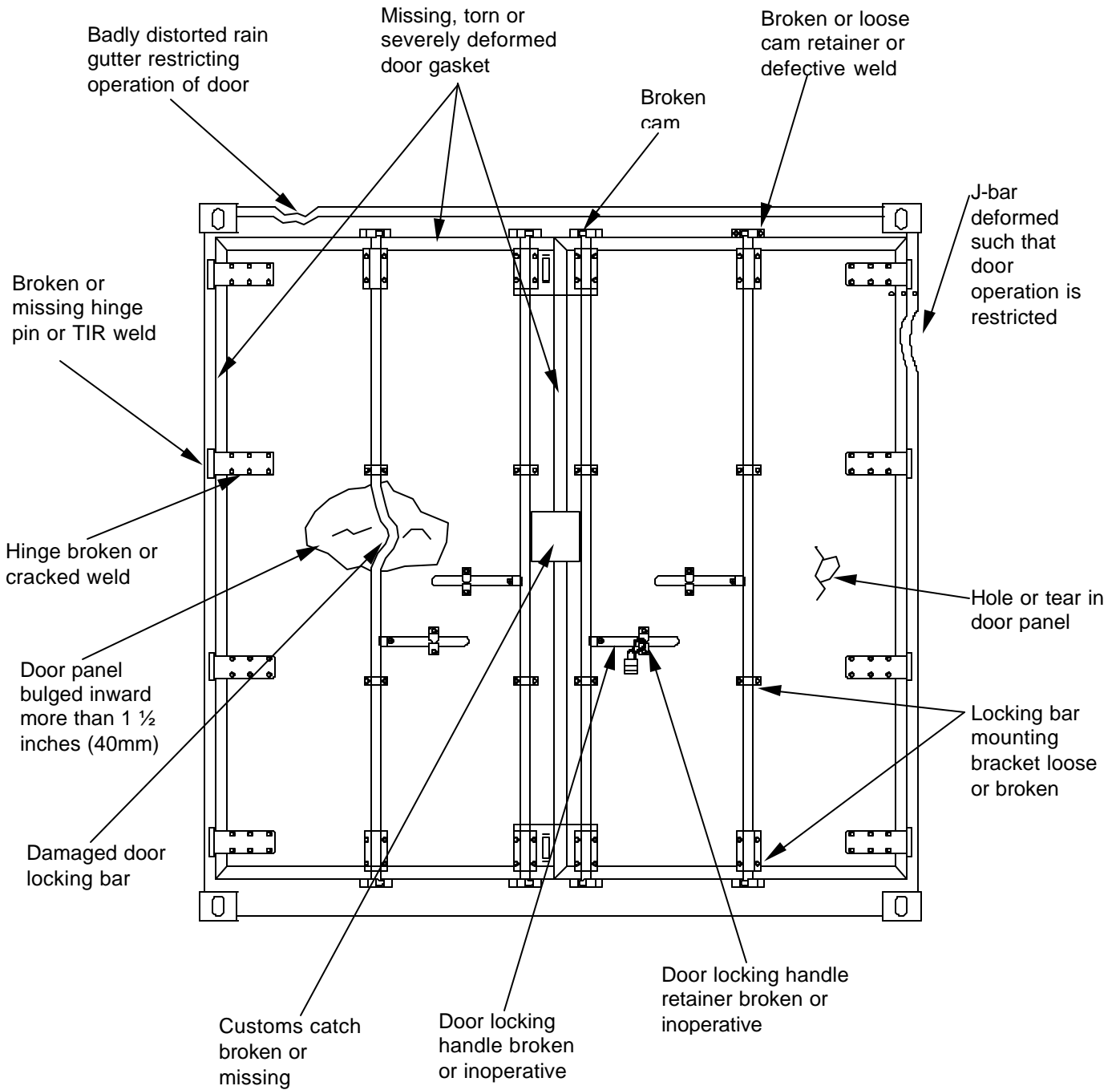


FIGURE 5.3.7A – REAR END DOOR ASSEMBLY DAMAGE

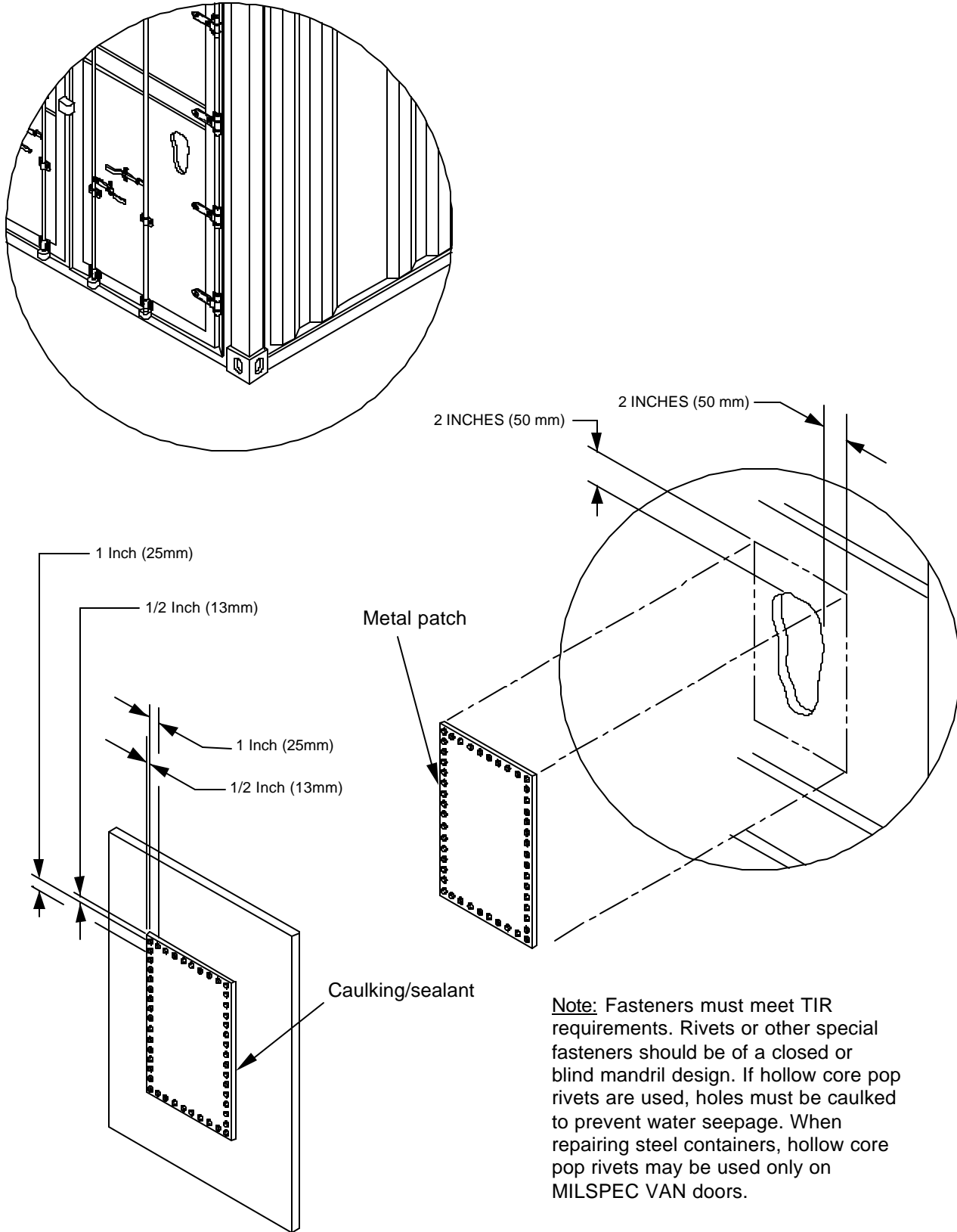


FIGURE 5.3.7B – PATCHED DOOR PANEL

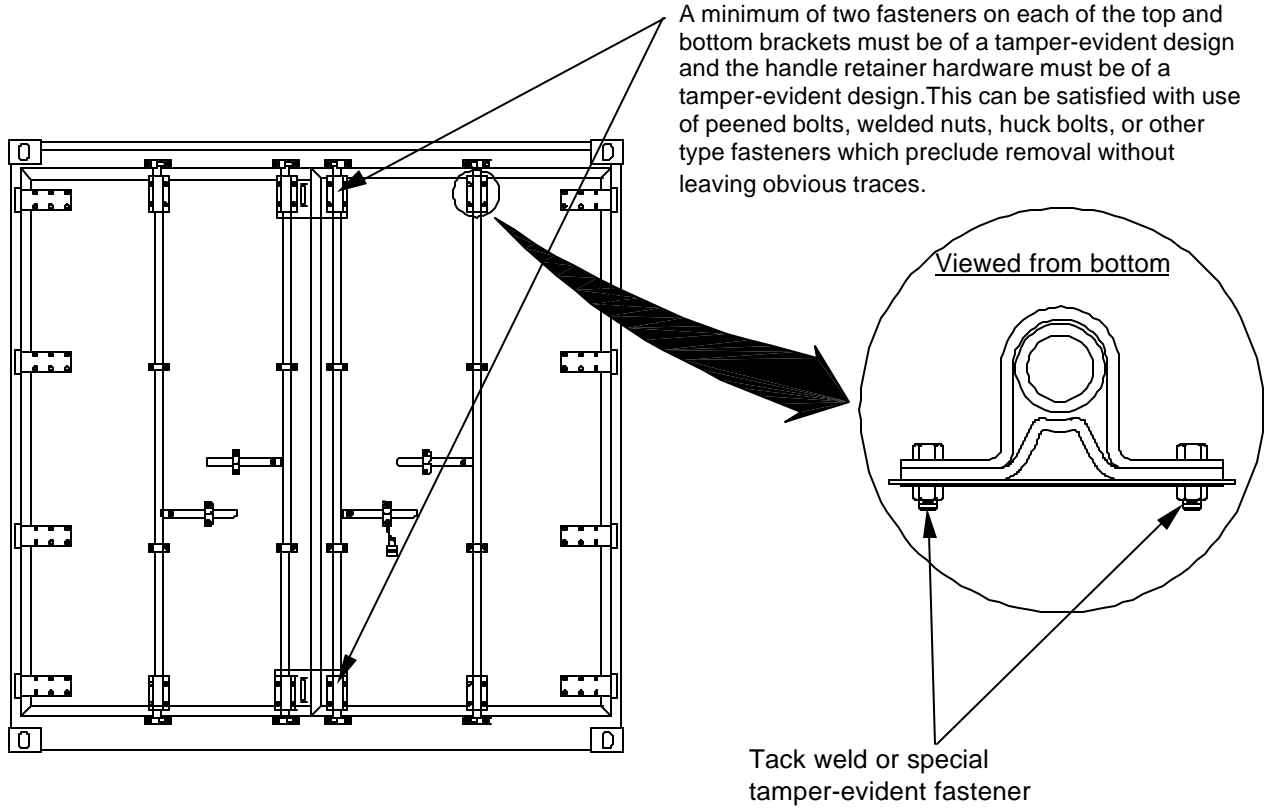


FIGURE 5.3.7C – TIR REQUIREMENTS FOR BRACKETS

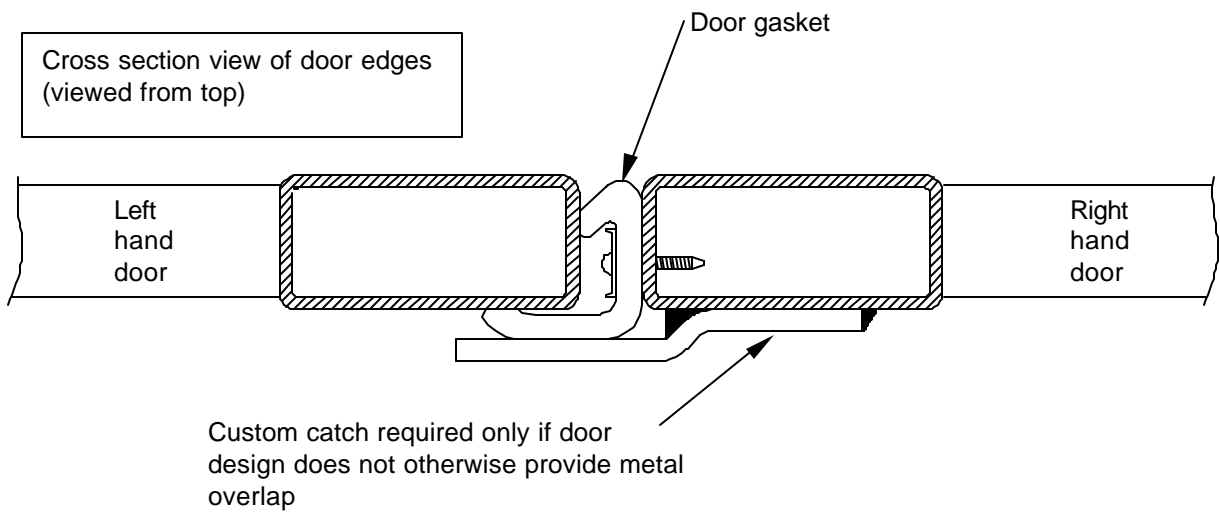
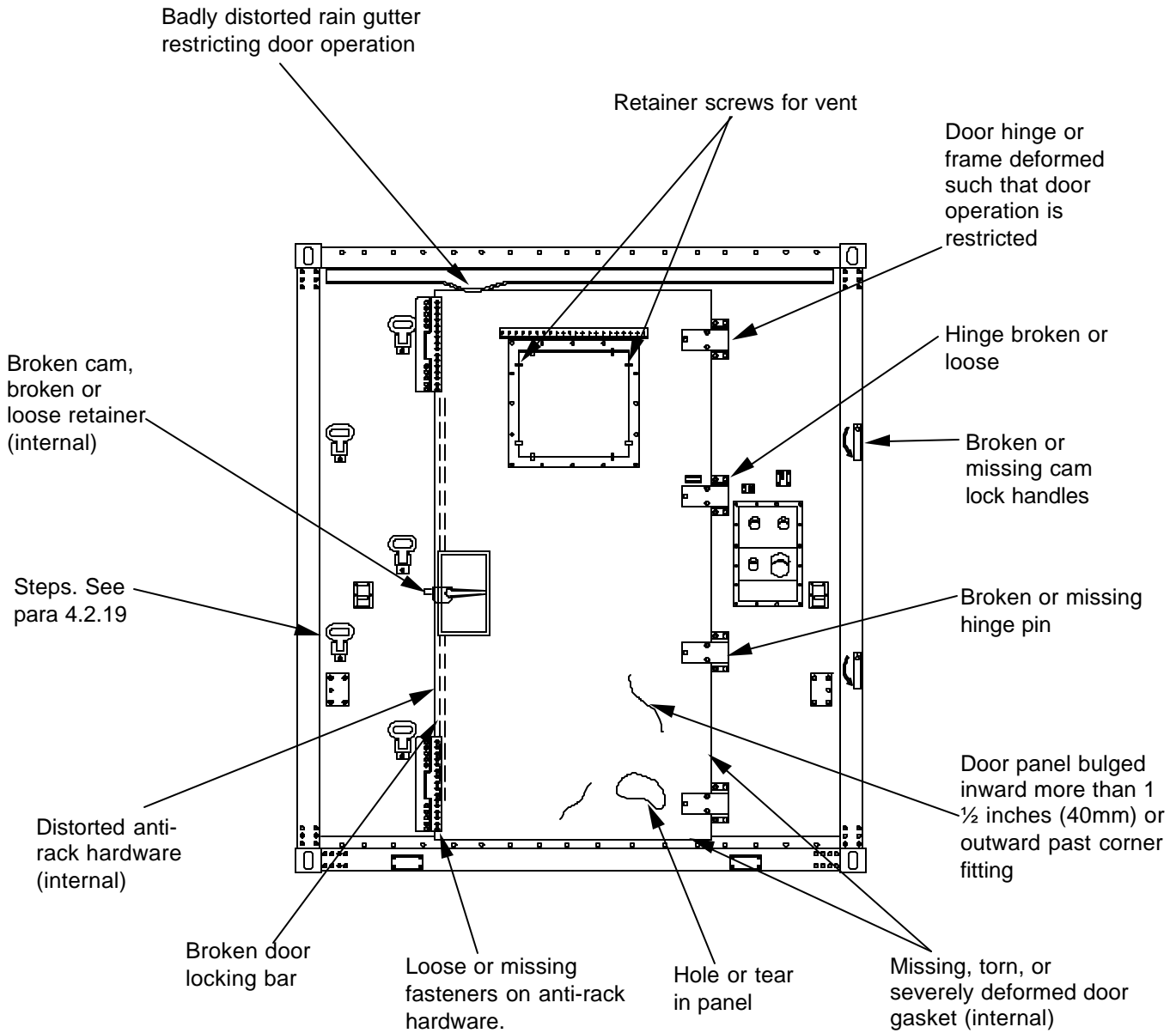


FIGURE 5.3.7D – CUSTOMS CATCH ON A STEEL DOOR



Note: For internal door locking hardware, see Figure 4.3C1 and 4.3C2

FIGURE 5.3.7E – TYPICAL ISO SHELTER DOOR ASSEMBLY DAMAGE

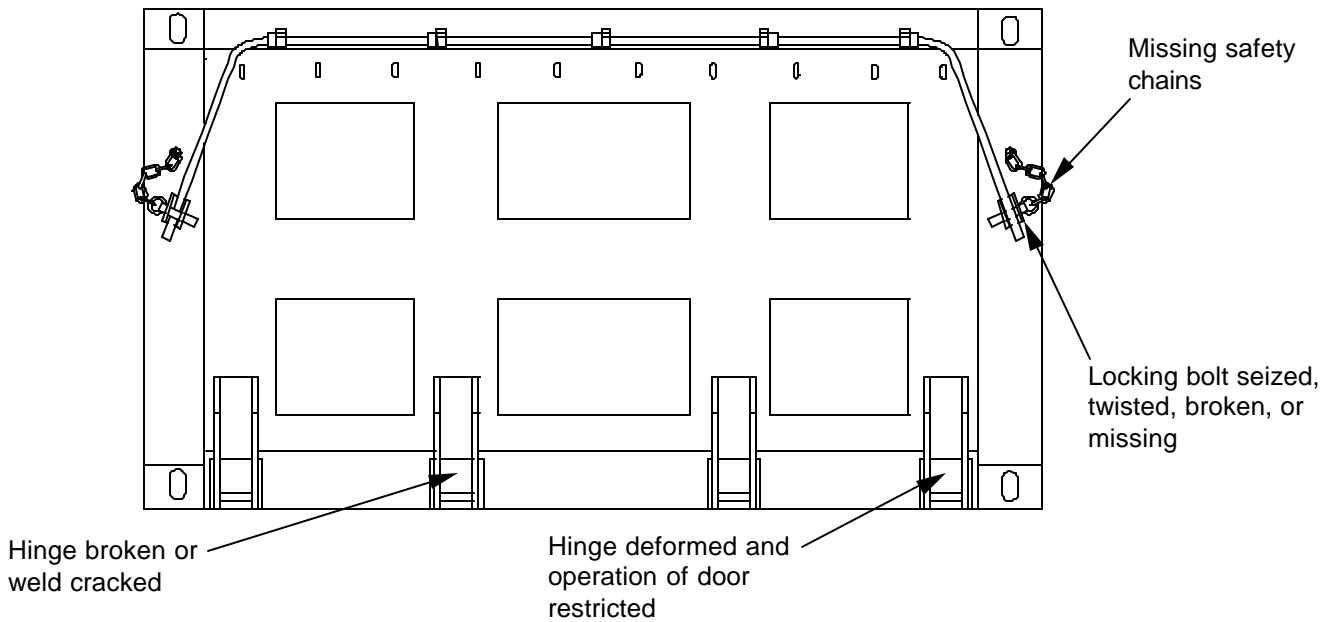
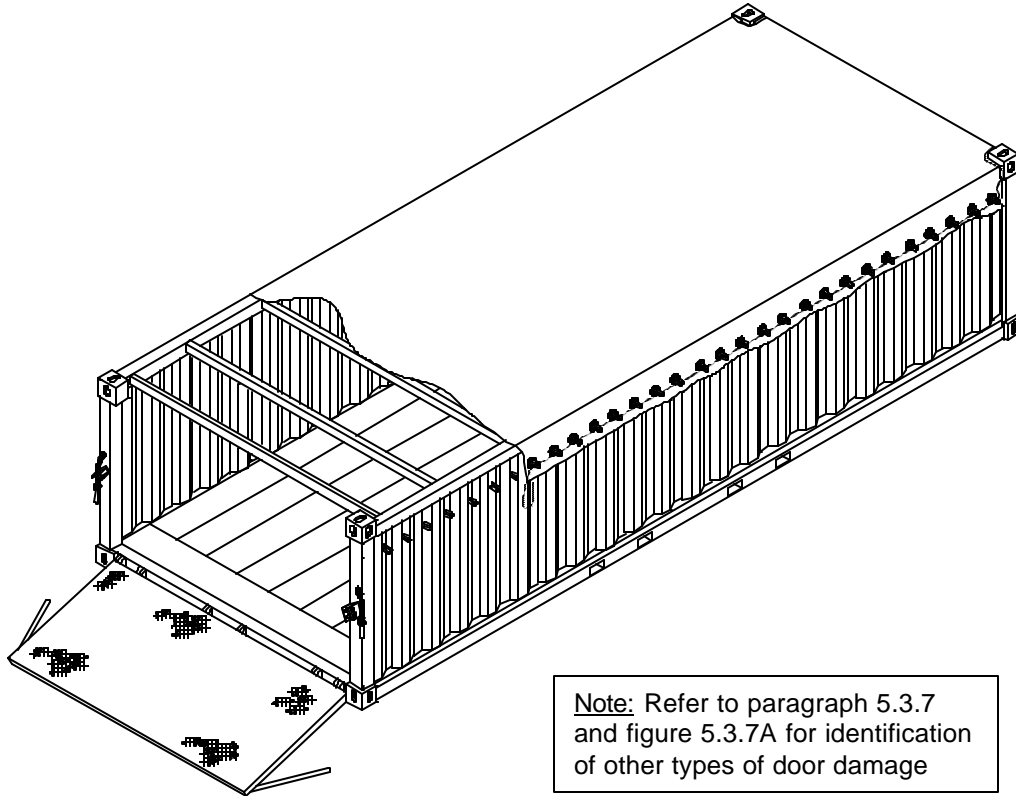


FIGURE 5.3.8 –RAMP TYPE DOOR DAMAGE

5.3.9 Cargo Restraint. Refer to Figures 5.3.9A, 5.3.9B, 5.3.9C, and 5.3.9D. The cargo restraint system or fixtures, when present and necessary for cargo securement, must be in working order. Containers without a cargo restraint system will be configured so as to provide sufficient load bearing surfaces for safe support of dunnage materials.

a. Mechanical Restraint System. The mechanical restraint system used in an end-opening container must be in working order if required for cargo securement. Horizontal or vertical rails must not be bent or distorted, must not have cracked or suspect welds, and must not have crushed or gouged slots. Horizontal or vertical rails that have crushed or gouged slots are not cause for rejection of the container as long as the damaged slots are not required for securing the cargo and the structural integrity of the rail is not otherwise impaired. Shoring beam assemblies that are broken, bent, or have an inoperable locking mechanism on either end must be rejected for use.

b. Load Bearing Surfaces. Containers without a cargo restraint system will be so configured as to provide sufficient load bearing surfaces for safe support of dunnage materials. Surfaces on the primary structure of the container such as the interior faces of the corner posts must be smooth and free of protrusions.

c. Load Retainers. Special load retainers such as a structural angle welded to each door corner post of an end-opening container must be inspected to ensure serviceability. A missing, cracked, or broken weld at the juncture between the load retainer and the container structure is unacceptable. A dent or bend in the retainer that is greater than 3/4 inch (19mm) in depth, regardless of length, is also unacceptable. Load retainer must have no cracks, breaks, cuts, tears, punctures, or corrosive failures.

d. Tiedown Provisions (Lashing Bars or Rings). Provisions or fittings used for attachment of straps or other cargo restraint devices must be in working order. Tiedown provisions that are deformed or broken are not cause for rejection of the container as long as the damaged tiedown provisions are not required for securing the cargo and the structural integrity of the container is not otherwise impaired.

e. Stanchions. A missing, cracked, or broken weld at the juncture between a stanchion (stake pocket) and the flatrack structure is unacceptable. Severe deformation of a stanchion that would restrict installation of a stake is also cause for rejection.

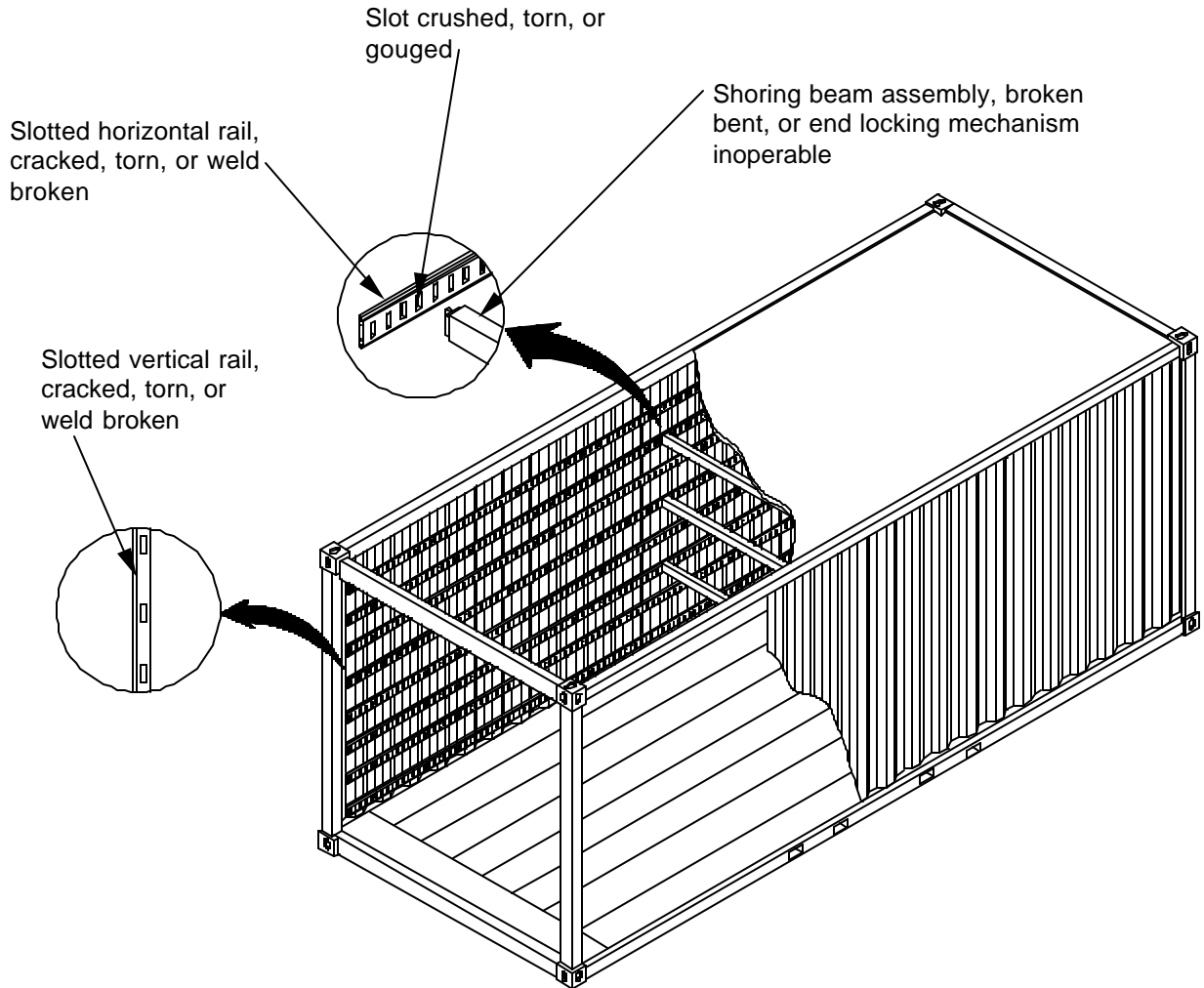


FIGURE 5.3.9A – MECHANICAL RESTRAINT SYSTEM DAMAGE

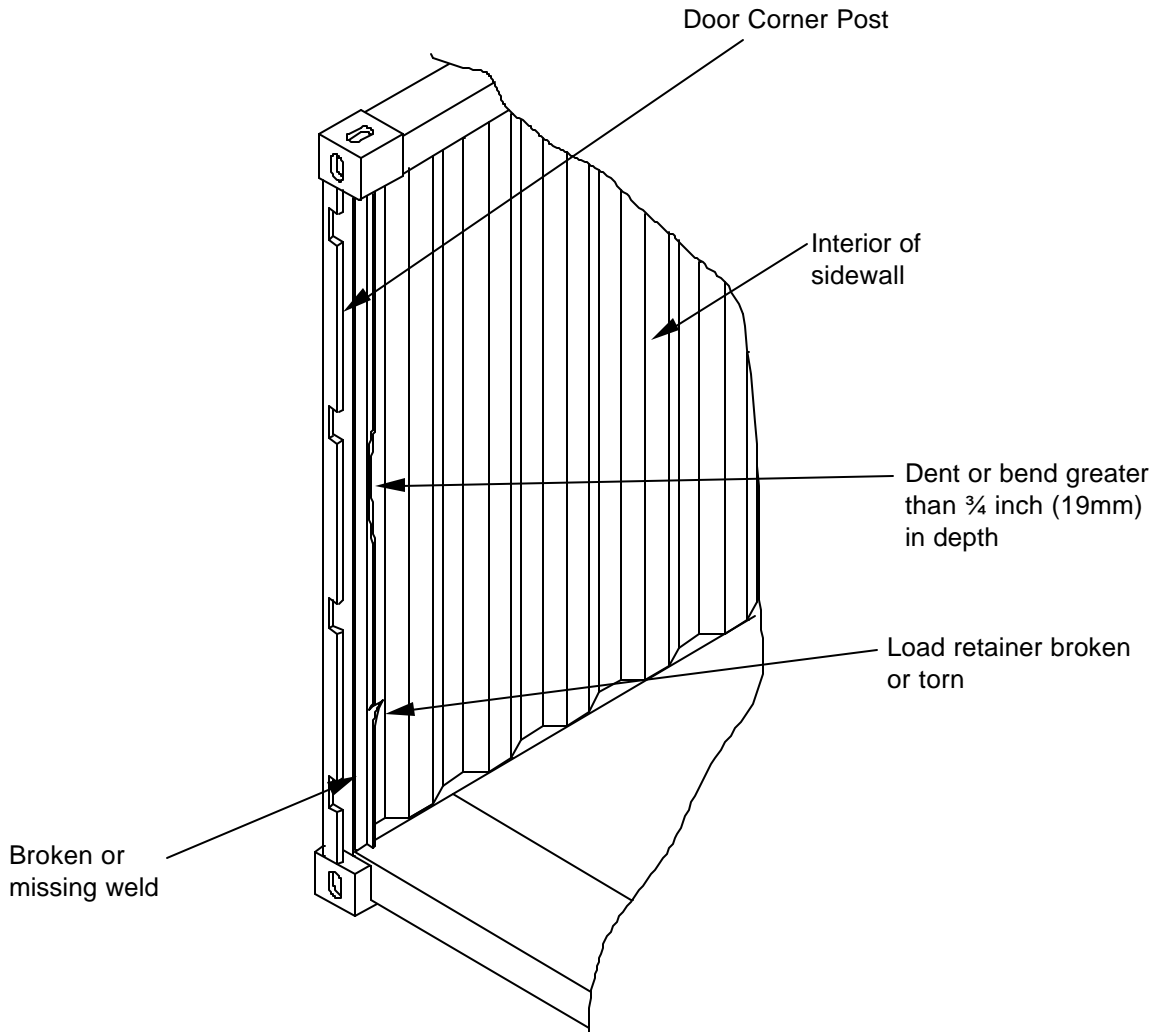


FIGURE 5.3.9B – LOAD RETAINER DAMAGE

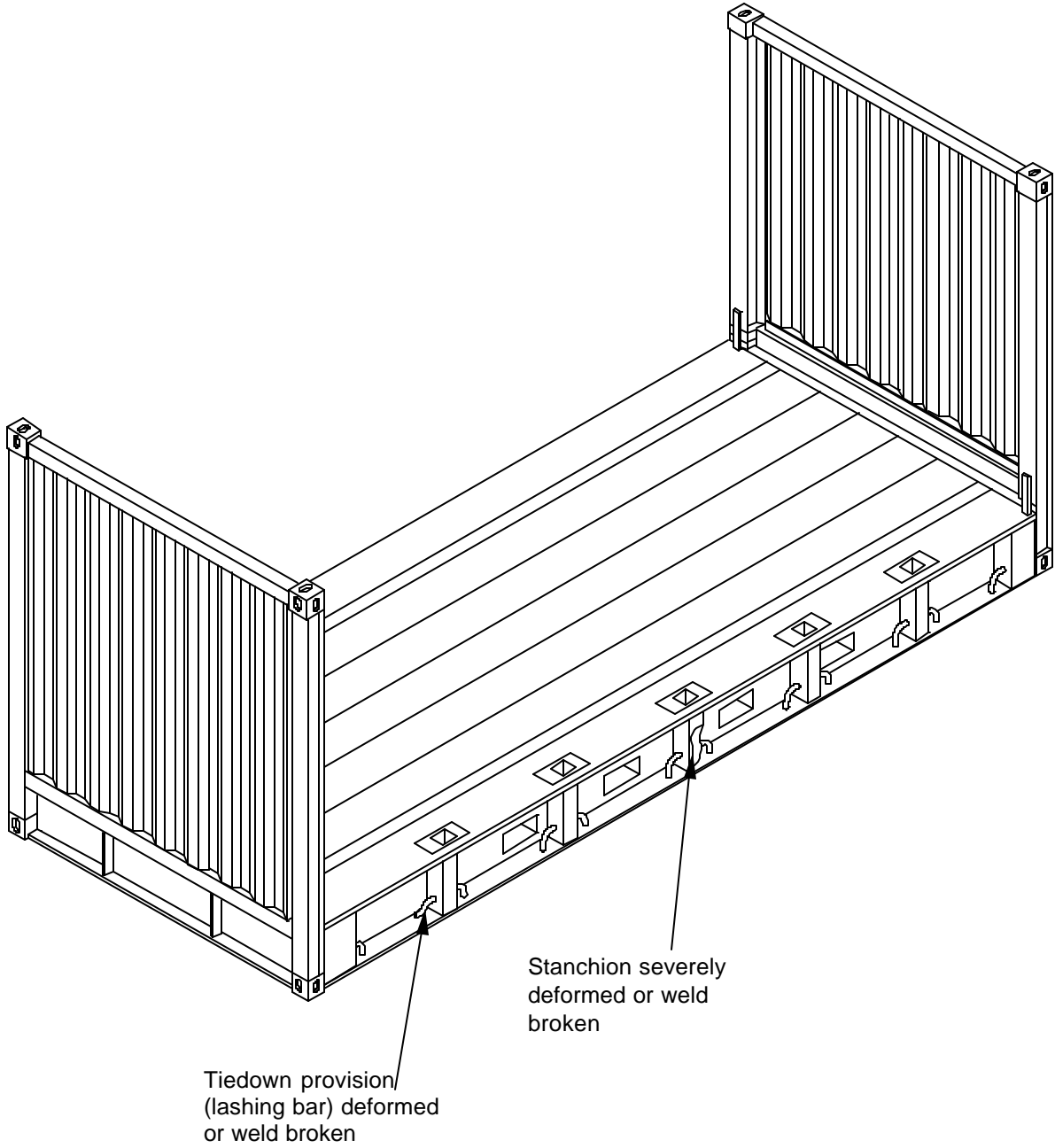


FIGURE 5.3.9C – DAMAGED FLATRACK RESTRAINT PROVISIONS

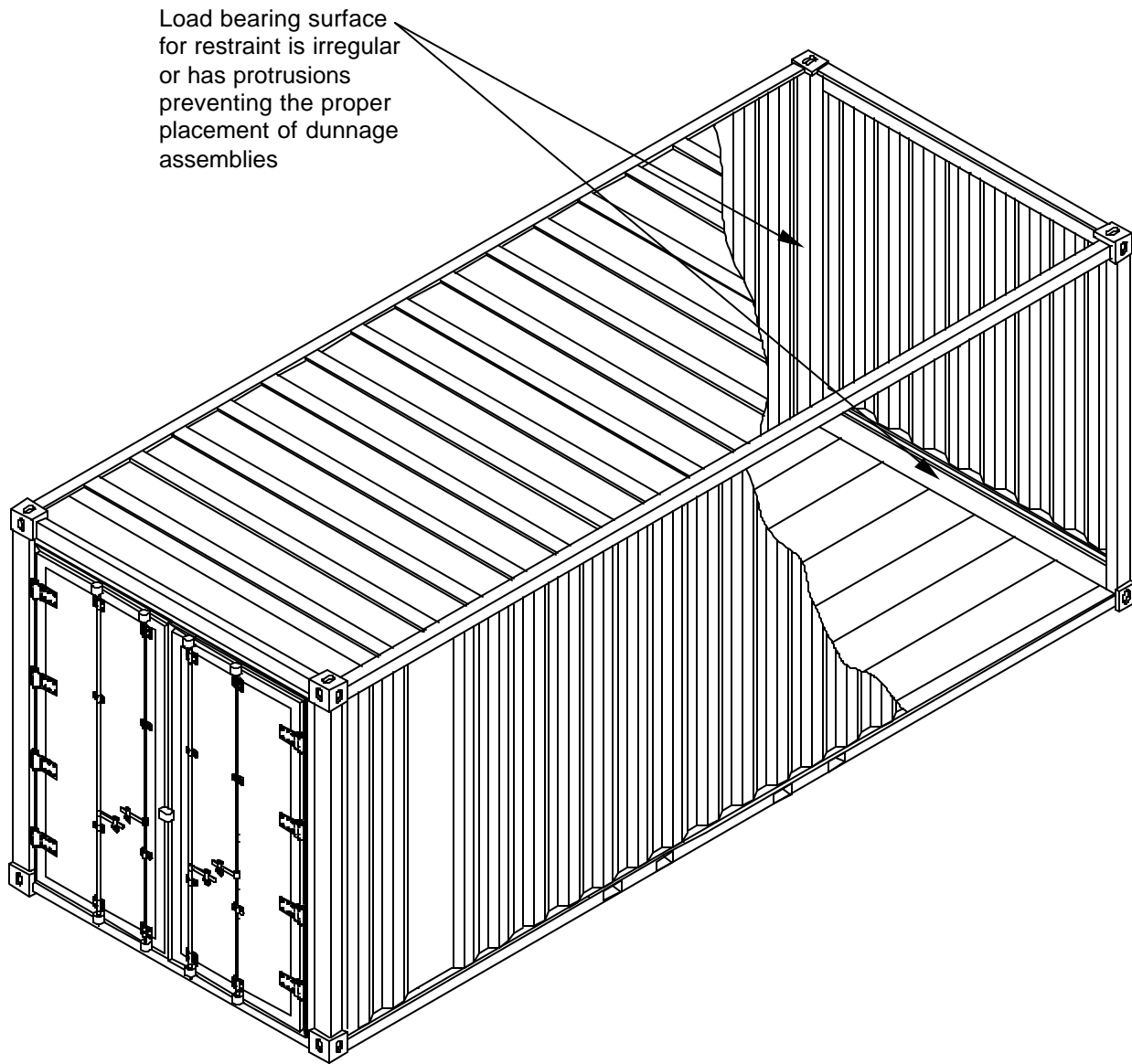


FIGURE 5.3.9D – LOAD BEARING SURFACES ON A VAN

5.3.10 Flooring. Refer to Figure 5.3.10A and 5.3.10B. A container is unacceptable for shipping any kind of cargo if the flooring has any of the following deficiencies:

- a. Any protrusion, dent or delamination above the top surface of the flooring;
- b. Any floor fastener that is not countersunk or flush with the surface of the flooring;
- c. Any loose or missing floor fastener on freight container;
- d. Floor not free of debris or residue from a previous cargo;
- e. Flooring soaked with hazardous or flammable liquid;
- f. Floor contains one or more rotted or broken boards;
- g. Floor contains one or more cracked, splintered, warped, stained, or delaminated boards that impairs either the safe loading of cargo or the structural integrity of the container;
- h. Any hole, tear, puncture, or corrosive failure.

5.3.11 Acceptable Wooden Flooring Repairs. Refer to Figure 5.3.11. Only one partial length replacement board section per container length and no more than three partial length replacement board sections throughout the entire container floor are permissible. Partial length replacement board sections must span at least four cross members and be of similar material, similar size, and configuration as the rest of the flooring. Laterally adjacent repaired sections must not have joints on the same cross member. Both ends of each joint must be adequately supported by and securely fastened to the top surface of a cross member. If the top surface (flange) of the cross member is too narrow, such as a "C" shaped type cross member, a structural angle must be added to provide an adequate support surface. The added angle must be sized to extend beneath the adjacent floor board on each side of the repaired section.

5.3.12 Acceptable Wooden Floor Gaps for Enclosed Containers. A container is unacceptable if there is any excessive gap around the perimeter of the flooring or between the floor boards. If a 1-inch wide by 1/16-inch thick feeler gage can be easily inserted "vertically" through a gap to the underside of the container, the gap is considered excessive. Narrow gaps less than 1/2-inch wide, however, are permissible if sealed with caulking. Any opening in the floor is unacceptable. An opening which will hold caulking can be caulked. Any larger openings would require floor repair.

5.3.13 Structural Integrity of Floor Structure. If the strength of the floor is in doubt, the dynamic floor weight test specified in Annex II of the International CSC should be conducted to ascertain that: the understructure will not deflect more than ¼ inch (7mm) below the bottom surfaces of the bottom corner fittings; no component will be permanently deformed; and no component or weld will fail.

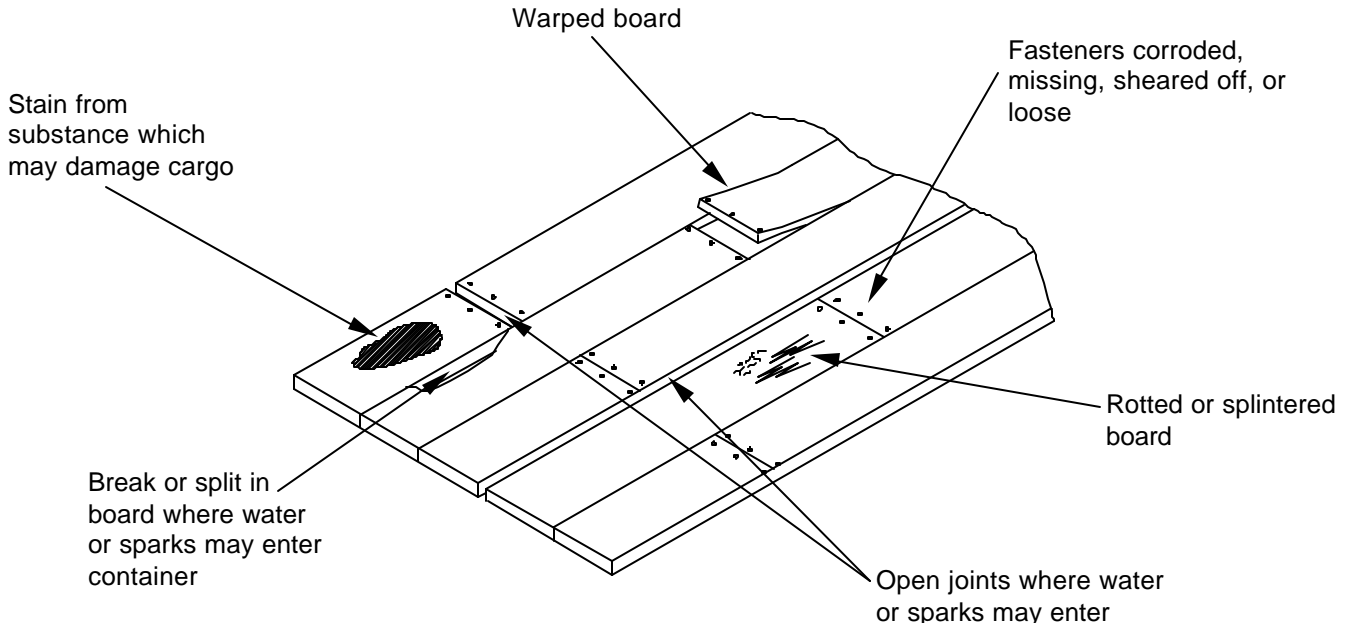


FIGURE 5.3.10A – WOODEN PLANK FLOORING DAMAGE

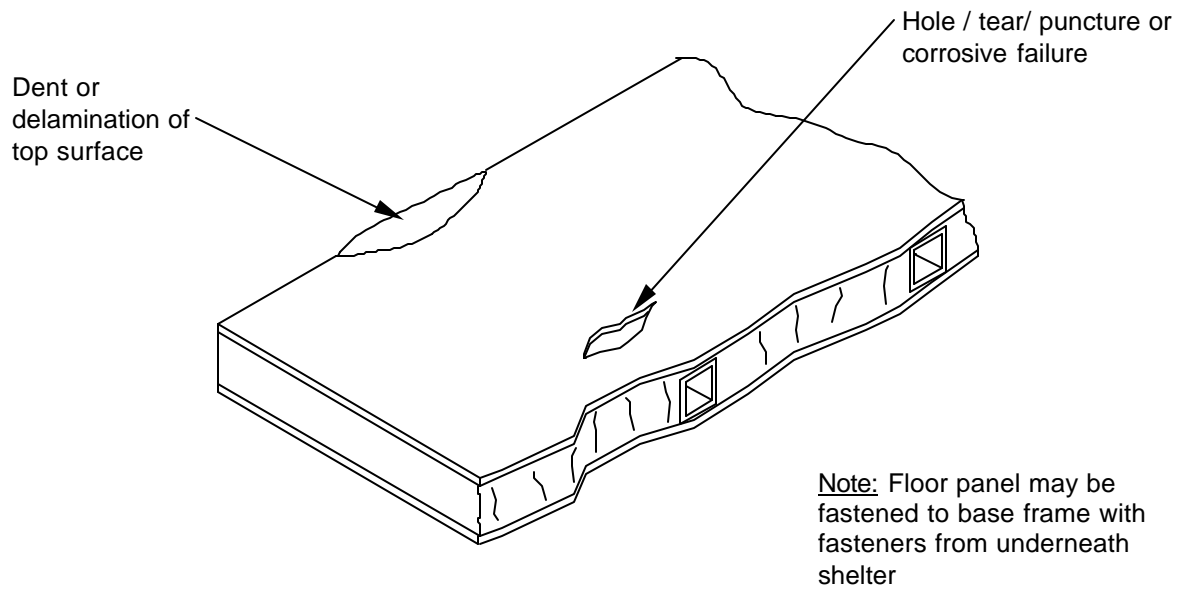
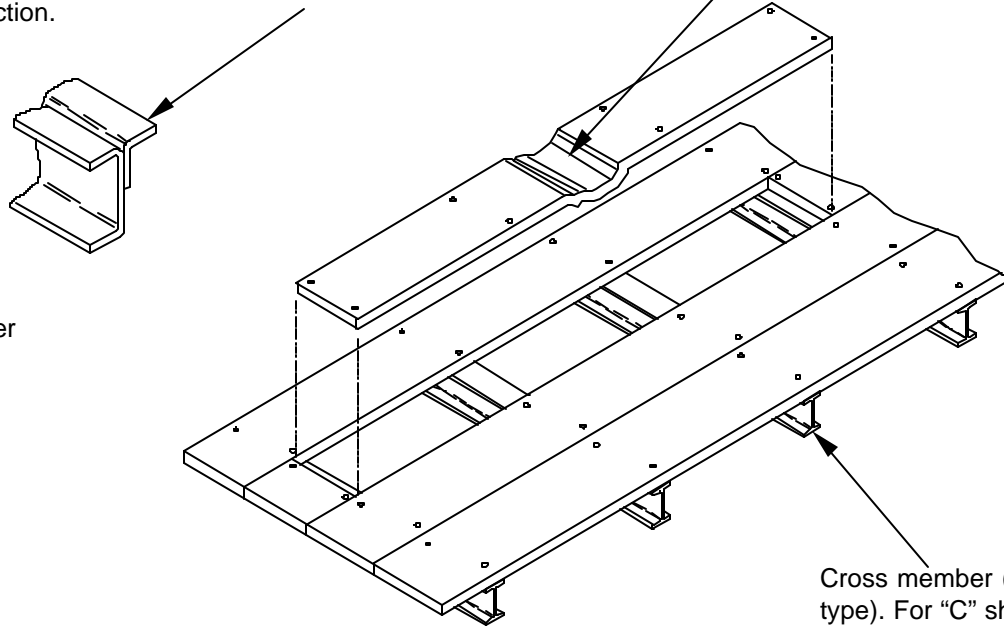


FIGURE 5.3.10B – SANDWICH PANEL FLOORING DAMAGE

Structural angle must be welded to narrow "C" shaped cross member under each end of replacement board section to provide an adequate surface for attachment. Angle must be sized to extend beyond and be attached to adjacent floor board on each side of repaired section.

Although damage may occur in a small area, the replacement board section must be sized to span at least four cross members

Cross member
("C" shape)

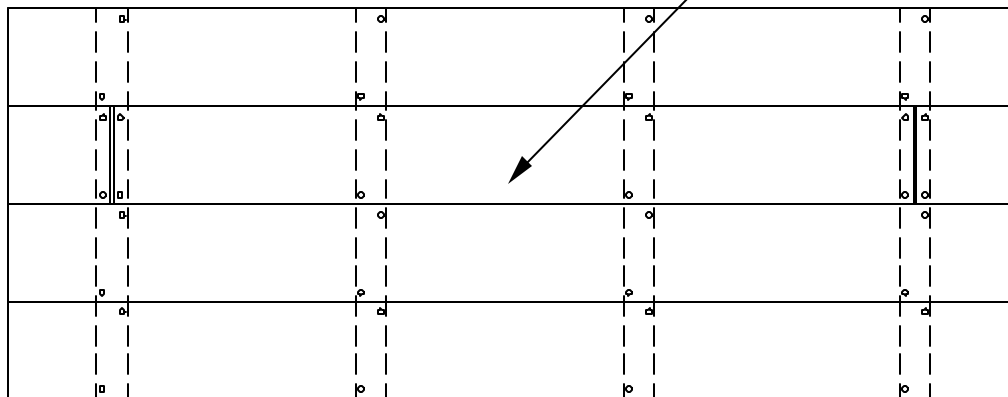


Cross member (I-beam type). For "C" shape type see detail above

REMOVAL OF DAMAGED BOARD

Note: Only one partial length replacement board section per length of container is permitted and no more than three partial length replacement board sections throughout the entire container floor are permitted. Laterally adjacent repaired sections must not have joint resting on the same cross member.

Partial length replacement board section must span at least four cross members



FINISHED REPAIR

FIGURE 5.3.11 – EXAMPLE OF FLOORING REPAIR

5.3.14 Miscellaneous Components. The following miscellaneous components affect the serviceability of a container for shipping any kind of cargo as follows:

- a. Threshold Plate. Presence of this plate is not mandatory. If present, the threshold plate must be safely fastened to the floor. Any plate damage that would impair the safe loading or unloading of cargo is cause for rejection.
- b. Lining and Lining Shield. Presence of interior wall lining is not mandatory. If present, it must be safely fastened to the walls. Surface of wall lining must be free from protrusions or any other damage that would impair the safe loading or unloading of cargo. Normal wear including dents, abrasions, and small punctures that does not affect serviceability is permissible.
- c. Ventilator. Presence of ventilator or ventilators is not mandatory. If present, each must be securely fastened to a wall panel. Diffused or reflected light passing through a ventilator is permissible but ventilator should not permit direct ingress of water. Light leak around ventilator is cause for rejection.
- d. Placard Holder. Presence of placard holder or holders is not mandatory. If present, each must be securely fastened to a wall or door panel. Damage including dents, bends, or crumpling is permissible provided placards may be properly installed elsewhere on container and the damaged holder does not preclude proper handling and securement of the container onto a vehicle or into the cell of a ship.
- e. Pop Rivets. If hollow core pop rivets are used for affixing data plates, placard holders, ventilators, etc.; any open holes through center of such pop rivets must be caulked to prevent water seepage. Hollow core pop rivets must never be used for repair of steel panels except on the MILSPEC van doors.
- f. Door Holder (Tieback). Presence of door holder or tieback is not mandatory. If present and damaged, the damaged holder must not preclude proper handling and securement of container onto a vehicle or into a ship's cell.
- g. Installed equipment. Many ISO Shelters and some containers are equipped with installed equipment fastened to the structure. Prior to acceptance of a container or a shelter an inspection of the equipment's attachment points and shipping braces/brackets must be performed to ensure all items are securely fastened to the shelter or container, to prevent movement during handling and shipment. Damage such as holes, tears, broken welds to containers walls or floors at attachment points are cause for rejection. Fasteners and threaded inserts must be inspected and loose, missing, damaged, stripped or pulled fasteners and threaded inserts must be replaced.
- h. Folding Steps. The steps must not be damaged such that they cannot be stowed properly within the ISO external dimensions. Damage to the steps is permissible so long as the damage has not resulted in damage to the wall panel (see 5.3.3), or exceeds external dimensions.

Note: Navy type ISO Shelters are equipped with 3 longitudinal skids, fastened to the undercarriage of the shelter. These skids are used to keep the shelter off the ground to allow circulation of air and prevent moisture damage. These skids are removeable and are not considered a component of the container. Therefore, they are not subject to CSC inspection.

6. CONTAINER INSPECTION PROCEDURES

6.1 Prerequisites:

6.1.1 Container Type. The container type offered for service must be of suitable size, style, and configuration for its intended use. Container size and capacity must be acceptable for the shape and weight of commodity to be shipped. Container size and configuration must be compatible with handling and transportation equipment to be utilized. Style of container must meet approval of countries involved with shipment. Style of container must provide proper degree of security required for commodity to be shipped. Container must be configured with non-metallic lining if designated to transport explosives requiring "Magazine Stowage Type A".

6.1.2 Inspector Qualifications.

a. The CSC re-inspection must be performed by certified personnel. DOD personnel may be certified by attending the AMMO-43 Intermodal Dry Cargo Container/CSC Re-inspection Course conducted by the U.S. Army Defense Ammunition Center. DOD inspectors must be re-certified every 48 months.

b. Serviceability (pre-loading) inspection need not be performed by a certified inspector but inspector must be experienced in detection of structural damage. For example, personnel are considered to be qualified if they have at one time received formal training and are experienced in the detection of structural damage.

6.1.3 Leased Container. Inspection of a commercially owned container must be conducted jointly by a Government contracted inspector and the lessor/owner's representatives before the start of the lease and again when the container is turned in. This ensures that only serviceable containers are accepted for use and the U.S. Government is only billed for damages resulting from the Government's use.

6.1.4 Judgement of Criteria. The container inspection criteria will be met through a visual examination and, except where tolerances are provided, acceptance of the container will be based on the judgement of the inspector. Any unacceptable deficiencies disclosed by the examination must be corrected before the container may be used for shipment.

6.2 Suggested Tools and Equipment:

6.2.1 Long Straight Edge. A tautly drawn wire, string, or other form of a long straight edge is needed to determine whether any portion of the container (e.g., a panel or a rail) protrudes past the outside surfaces of the corner fittings. Refer to Figure 6.2.C for typical methods of checking for protrusions.

6.2.2 Measuring Tape (Ruler). A measuring tape (ruler) is required to check dimensional tolerances and container alignment.

6.2.3 Welder's Hammer. A welder's hammer (NSN 5120-00-240-3096 or equivalent) is helpful in determining the strength of welds or steel structural components. Refer to Figure 4.6D.

6.2.4 Ladder. A ladder or other safe means for accessing the top of the container is recommended.

6.2.5 Inspection Stands. Figure 6.2A depicts the implementation of container inspection stands. Inspection stands provide a safe means for supporting the empty container to enable proper viewing of the container understructure. Full size engineering drawings that provide information for the construction of container inspection stands can be obtained by sending a request to U.S. Army Defense Ammunition Center, ATTN: SOSAC-DET, 1 C Tree Road, Bldg 35, McAlester, OK 74501; commercial (918) 420-8071, DSN 956-8071, commercial fax (918) 420-8811, DSN 956-8811; email sosac-det@dac.army.mil. Please specify drawing number AC200000210.

The container inspection stands are used in pairs to support a MILVAN or other international shipping container at an elevated level for the repair or inspection of the container's underside. The stands are set up with the support ends 15 feet apart so that the container, when on the stands, will overhang 2 to 3 feet at either end. The length of the support beam is to insure a clear view of the underside of the container without interference of the support bracing. It is intended that the containers will be resting on its side rails between the tie-together plates.

Note: DOD personnel should also refer to service specific safety guidelines about "Working Under a Suspended Load" as well as Technical Bulletin(10) 43-0142 which provides guidance for the "Safety Inspection and Testing of Devices". American National Standards Institute (ANSI) standard B30.1 for "Jacks" is also applicable.

6.2.6 Flashlight. A flashlight improves visual acuity, especially during examination of the interior or the recesses of the understructure.

6.2.7 Chalk. Marking (circling) location of defects with chalk as they are discovered facilitates preparation of inspection report and helps maintenance personnel locate areas to be repaired.

6.2.8 Feeler Gauge. Excessive gaps in flooring may be determined by use of a 1-inch wide by 1/16-inch thick feeler gauge. Any suitable strip of metal may be used. Refer to Figure 6.2B for an example of a device that functions as either a feeler gauge or a depth gauge.

6.2.9 Depth Gauge. A device with a straight edge and a point enables inspector to check depth of dents against a designated limit. Refer to Figure 6.2B for an example of a depth gauge.

6.2.10 Tap Hammer. A specially made hammer is helpful in detecting delamination in ISO shelter sandwich panels. The hammer is lightly tapped in the area of the suspected delamination. A dull, hollow sound indicates a delamination. Refer to figure 6.2D for the recommended construction of a tap hammer.

Note: A coin may also be used in lieu of the tap hammer.

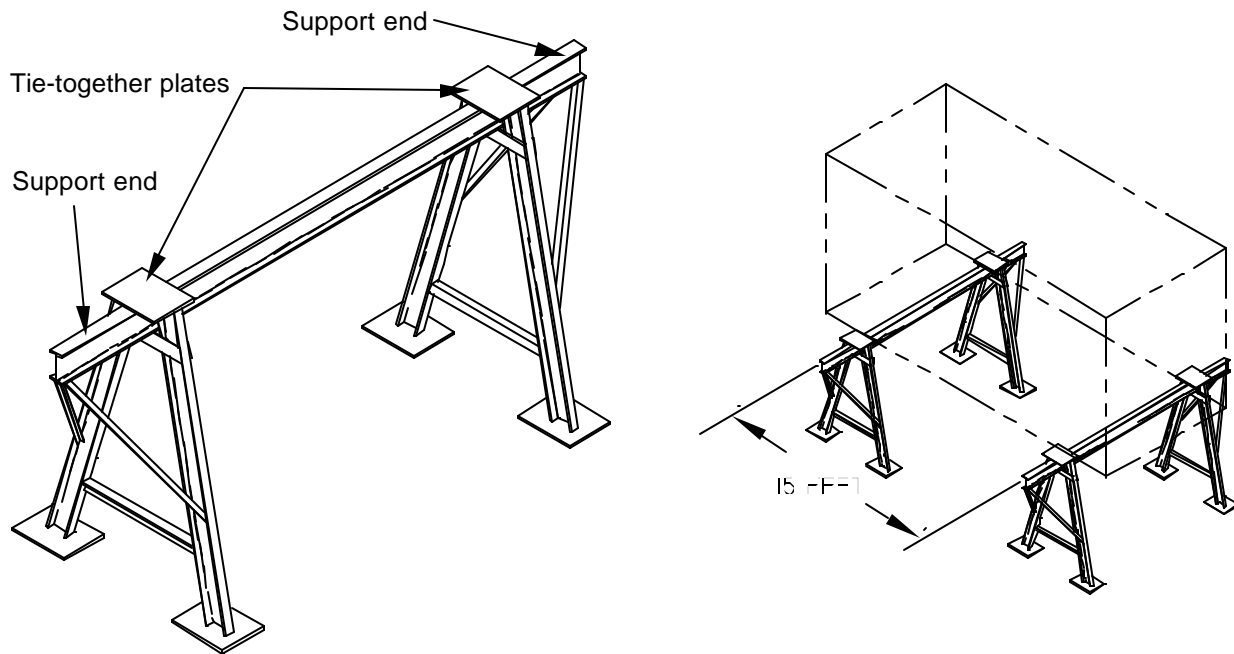


FIGURE 6.2A – CONTAINER INSPECTION STANDS

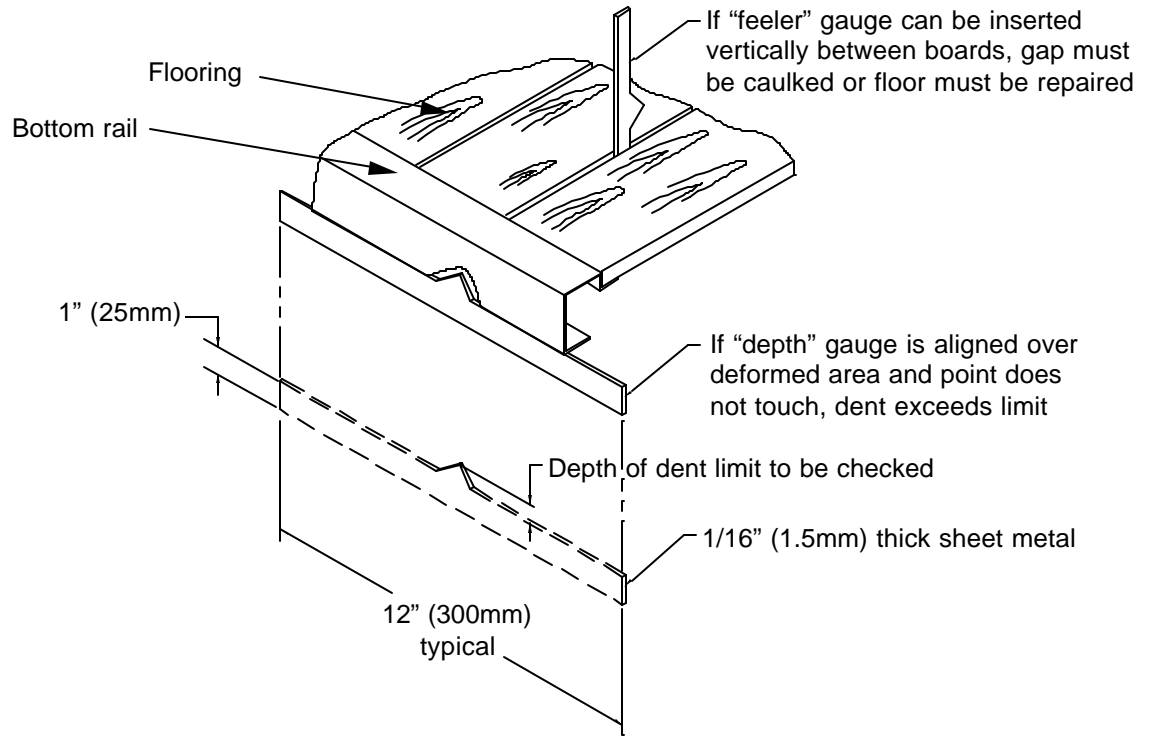


FIGURE 6.2B – COMBINATION DEPTH/ FEELER GAUGE

Corner post or rails have unacceptable protrusions if straight edge is deflected away from outside surfaces of the corner fittings. Note: A board or metal structure may be used for a straight edge if trueness of edge has first been verified

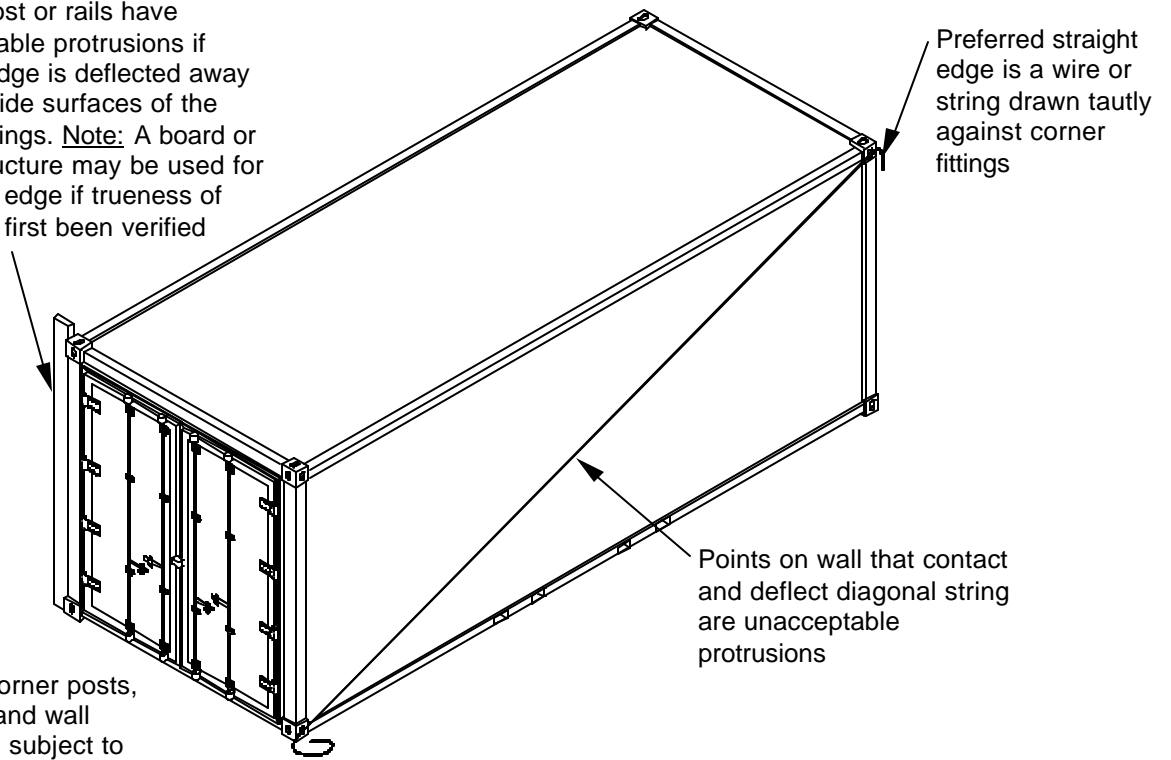


FIGURE 6.2C – CHECKING FOR PROTRUSIONS

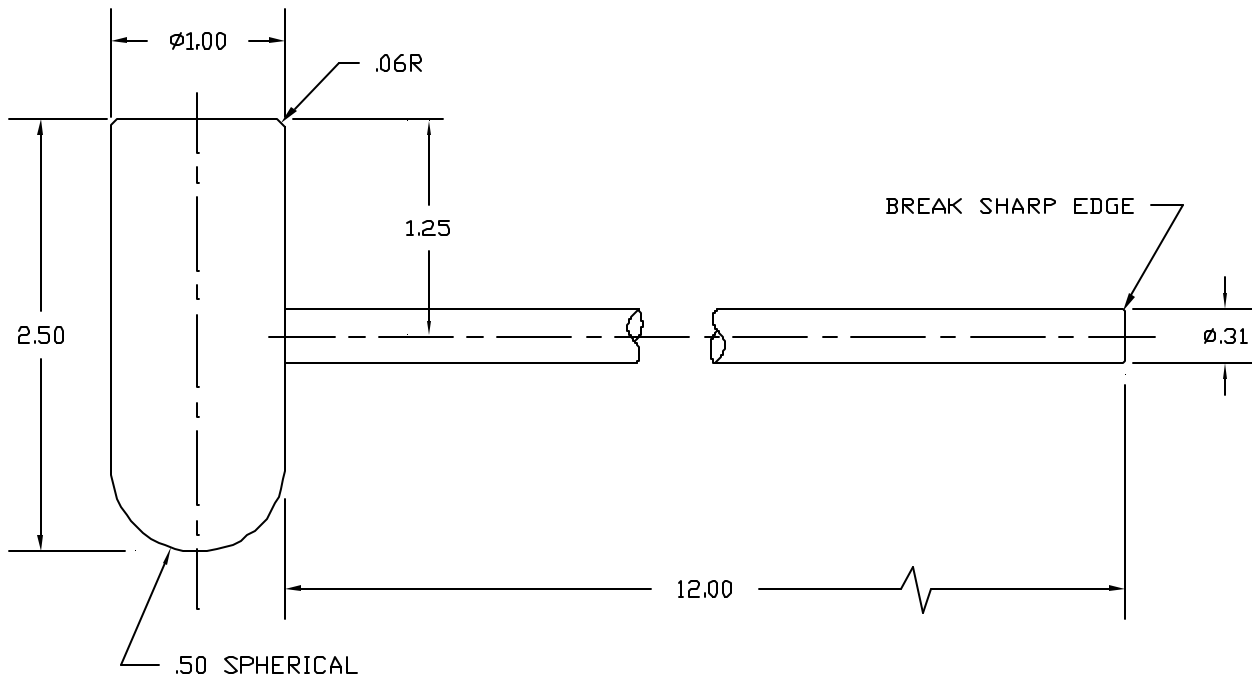


FIGURE 6.2D – TAP HAMMER

6.3 Recommended Inspection Sequence. Inspection must be performed on the container while empty. Configured freight containers and shelters may be inspected with permanently fastened equipment, i.e., cabinets, tables, shelves, racks, etc., in place. Although any sequence of inspection is permissible, the sequence of inspection contained herein is recommended and coincides with the checklists provided in this handbook. A complete examination must be performed prior to acceptance. Even if cause for rejection is identified, a complete inspection of DOD owned containers must be performed so a complete report of container condition can be provided in accordance with paragraph 6.4.4 below.

6.3.1 Markings And Data Plates. Check for ISO numbers, required weight markings and appropriate data plates. Annotate container's ISO number on inspection checklist.

6.3.2 Overall Configuration. Check for any distortion of the overall configuration great enough to preclude proper engagement of handling/lifting equipment, mounting and securing on chassis or vehicle, or insertion into the cell of a ship. If container alignment is in question, use a measuring tape to check dimensional tolerances in accordance with Figure 5.1. Using a suitable straight edge, check for any protrusions beyond the outside surfaces of the corner fittings. Refer to Figure 6.2C.

6.3.3. Door End(s) Or Side(s). Examine the door end or side of the container. Check main structural components of door frame for defects. Check condition and operation of doors and door hardware. Check ISO number for legibility and to assure it matches number annotated on inspection checklist.

6.3.4 Exterior Sides And Ends. Proceed to examine the container exterior on all remaining sides and ends for any defects on main structural components or unacceptable damage on wall panels. Check ISO number for legibility and to assure it matches number annotated on inspection checklist.

6.3.5 Roof (Exterior). Obtain access to the roof and inspect the corner fitting apertures (openings), reinforcement plates, top side and end rails, door header, and roof panels for defects. Check ISO numbers for legibility and to assure they match the number annotated on the inspection checklist.

6.3.6 Understructure. Position the container on inspection stands to enable safe viewing of the container understructure. Examine the corner fitting apertures, side and end rails, sill, cross members, and forklift tunnels for defects. Excessive dents or bends in flanges of crossmembers or rails may be mechanically straightened back within prescribed limits by use of a large pipe wrench or adjustable wrench. This straightening should, if possible, be performed as directed by the inspector as he/she sees fit. Refer to Figure 6.3.

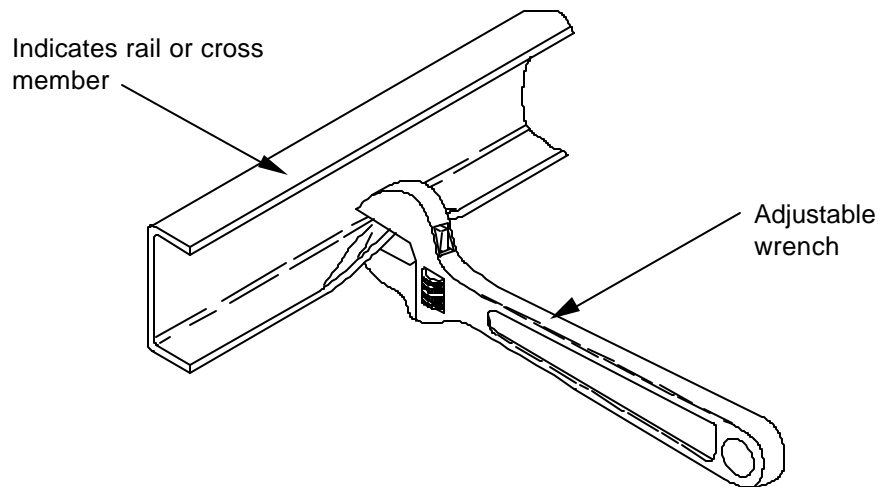


FIGURE 6.3 – STRAIGHTENING FLANGE

6.3.7 Interior. Enter the container and check condition of walls, roof and flooring. If present, also examine condition of cargo restraint system. In containers with wall linings, examine linings closely for any safety hazards. Also check for signs of water leaks since lined walls cannot be checked for light leaks. In containers or shelters with installed equipment, inspect the equipment mounting.

6.3.8 Light Leak Test. Remain in container, have assistant close the door(s), and mark areas permitting direct (not diffused) light penetration. Re-open doors and re-examine the suspect areas from both the inside and the outside to determine their affect on the structural serviceability of the container. Keep in mind that neither CSC, IMDG Code, nor 49 CFR state that light leaks are cause for rejection. A light leak test only serves as a tool to help spot certain types of defects or deficiencies. Note: a light leak check will not detect a breach in either the inner or outer skin in a sandwich panel. Causes for light leaks, therefore, are categorized into the following five types for purposes of clarifying the structural serviceability of container:

- a. A light leak through a weld joint between main structural members indicates possibility of defective weld juncture. Further inspection of joint must be conducted to ascertain if joint is defective.
- b. A light leak through a seam weld in a wall, roof, or door panel or around perimeter of such panels indicates skip or porosity in weld, or loose or missing panel attachment fasteners. This typically is a pinhole light leak and does not degrade the main structural integrity of the container. Caulking may be applied in many cases to preclude any water seepage. Caulking should, if possible, be performed as directed by the inspector as they see fit. Note: The guidance of this sub-paragraph only refers to weld seams and perimeter welding and does not refer to holes or tears in wall, roof, or door panels which must be repaired by affixing a permanent repair (patch or bead welding) to the panel.
- c. Light leaks around door gaskets indicate possibility of water seepage. If gasket is not damaged (torn, missing, or severely deformed), gasket is most likely providing same weathertight integrity as when container was manufactured. Inspector should be looking for damaged gaskets that no longer provide reasonable weather-proof integrity. A pinhole light leak is not a cause for rejection.
- d. Light leaks around floor boards indicate possibility of water seepage or entrance of sparks when transported on open frame conveyance. Only light leaks due to damaged boards or excessive gaps should be cause for rejection. Excessive gaps may be determined by use of a 1-inch wide by 1/16-inch thick feeler gauge. If the feeler gauge can be easily inserted "vertically" through the gap to the underside of the container, the gap is considered excessive. Caulking may be used to seal narrow gaps (i.e., less than 1/2-inch wide). Wider gaps must be repaired by replacing deficient boards or panels with similar materials.
- e. Diffused (reflected) light through components such as ventilators or lashing rings is not cause for rejection. Any indication of a steady penetration of water or lack of reasonable weather-proof integrity will be the only cause for rejection.

6.3.9 Pre-Loading Inspection vs. CSC Reinspection.

- a. A container is unacceptable for loading with any type of cargo if the DD Form 2282 decal has expired or indicates it will expire within 60 days. At this time, a CSC reinspection must be performed and the container certified as acceptable by a certified inspector before the container may be used. Only certified inspectors will apply new DD Form 2282 decals.
- b. If the container is to be stuffed and the DD Form 2282 decal is current, a container remains unacceptable for loading until a preload inspection is first performed. The pre-loading or serviceability inspection is to assure that there has been no damage to the container since the decal was applied. The pre-loading inspection need not be performed by a certified inspector, however, person performing inspection must be experienced in detection of structural damage. For example: A person is considered to be fully qualified if they have at one time received formal training and are experienced in the detection of structural damage.

c. NOTE: Whether performing a CSC inspection or a pre-loading inspection, a complete inspection will be performed using the criteria in Section 5 of this MIL-HDBK.

6.4 Documents.

6.4.1 Inspection Checklist. A container inspection checklist must be used to ensure complete examination and to identify level of acceptance or reason(s) for rejection. Appendix A contains recommended checklists for containers described in this handbook, i.e. End-Opening, Side Opening, Open Top, Flatrack, DEPMED Container and ISO Shelters. All deficiencies found during inspection should be clearly annotated on the checklist and acceptance or rejection must be indicated. Level of acceptance should be annotated as either "Serviceable for IMDG (UN Hazard Class 1)" or "serviceable for General Cargo (Non-IMDG only)". Be sure to sign and date the checklist. Ensure DD Form 2282 decal on container is appropriate. Forward a copy of the proper inspection report to the appropriate container control office.

6.4.2 DD Form 2282 Decal. After a CSC reinspection is performed by a certified inspector and the container is found acceptable, the inspector will apply a DD Form 2282 decal to the CSC Safety Approval Plate. Decals are issued by the Intermodal Equipment Division (IED) at the following address: Commander, HQ Military Traffic Management Command, ATTN: MTOP-JE, Container Management Team (CMT), 200 Stovall St, Alexandria, VA 22332. Specific requirements for applying the decals are as follows:

- a. Newly Manufactured Container. The decal is not required on a new container since the first CSC re-inspection due date is already inscribed on the CSC plate. The first CSC re-inspection due date assigned to a newly manufactured container provides a maximum interval of 5 years.
- b. Subsequent to Repair. Each subsequent CSC examination remains current for a maximum interval of 30 months. A new decal is not mandatory following minor (organizational level – under \$300) repairs as long as the existing DD Form 2282 decal has not expired or is not due to expire within 60 days. A complete CSC reinspection and application of a new decal is required after depot level maintenance is performed (i.e., repairs costing over \$300.). The new decal will indicate a CSC reinspection due date (month and year) at 30 months from the month of current inspection and acceptance.
- c. Serviceable for General Cargo. Containers not meeting serviceability requirements prescribed for the shipment of UN Hazard Class 1 (IMDG) explosive materials, but still complying with basic criteria for shelters and general cargoes, will be marked with DD Form 2282 decal displaying only "NON-IMDG" portion of the decal. Refer to Figure 6.4. Marking a container in this manner indicates container is only acceptable for shipment of general cargoes and cannot be used for UN Hazard Class 1 (IMDG) (explosive) items.
- d. Serviceable for UN Hazard Class 1 (IMDG). Containers complying with basic criteria for general cargoes and meeting all the serviceability requirements prescribed for the shipment of UN Hazard Class 1 (IMDG)(explosive) materials, will be marked with a DD Form 2282 decal displaying both "IMDG" portion and "NON-IMDG" portion of the decal. Refer to Figure 6.4. Marking a container in this manner indicates container is acceptable for shipment of all items including ammunition and explosives.

6.4.3 UN Hazard Class 1 (IMDG) Declaration. All container shipments of UN Hazard Class 1 (IMDG) (explosive) materials except those in Division 1.4 being transported partially or totally by vessel, must be accompanied by a certificate declaring that the freight container is structurally serviceable as defined in 49 CFR paragraph 176.172 and loaded in accordance with IMDG Code paragraph 5.4.2.1. The recommended format for this certificate is in Appendix B and may be photocopied for use. Alternatively, local installations may electronically generate their own forms provided the format is similar and all information required per 49 CFR and IMDG Code is clearly described on the certificate.

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6.4.4 Inspection Report. Inspection of DOD owned containers or containers under the maintenance purview of the DOD must also be reported on the proper Service form such as the DA Form 2404, "Equipment Inspection and Maintenance Worksheet". A copy of the inspection report must be completed and forwarded to the Container Control Office of the owning Service. Inspection reports (DA Form 2404) for containers in the CADS (Containerized Ammunition Distribution System) fleet must be sent to the Intermodal Equipment Division, Container Management Team (IED) at the following address: Commander, HQ Military Traffic Management Command, ATTN: MTOP-JE, Container Management Team (CMT), 200 Stovall St, Alexandria, VA 22332.

NOTE: Centralized control of this documentation is important since the law (49 CFR, Para 452.3(b)) requires that the most recent container inspection report be maintained and made available to the Coast Guard upon request.

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- Notes: 1. To improve clarity, decals are shown larger than actual size.
- 2. Decals are to be removed completely from containers failing the applicable inspection criteria

Decal with top "IMDG" portion remaining indicates container is serviceable for shipment of all items including UN Hazard Class 1 (IMDG) items (ammunition and explosives).

Decal with top "IMDG" portion removed (or cut off) indicates container is only serviceable for shipment of general cargoes and cannot be used for UN Hazard Class 1 (IMDG) items.

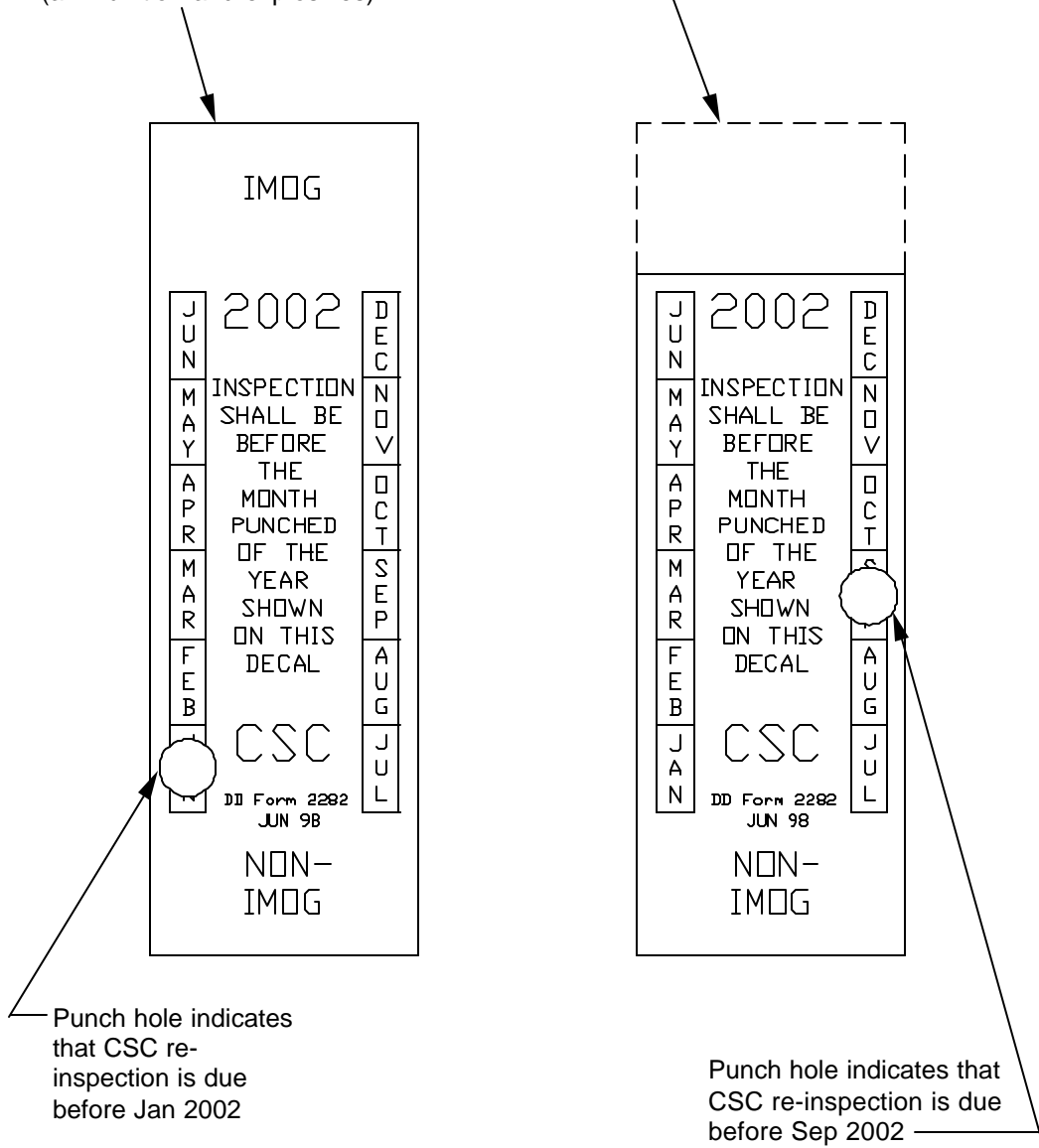


FIGURE 6.4 – DD FORM 2282 DECAL

7. NOTES

7.1 Subject Term (Key Word) Listing.

Anti-rack Hardware
Bottom End Rail
Bottom Side Rail
Corner Fitting
Corner Post
Cross Member
CSC
Door Header
Door Sill
Flooring
Forklift Pocket
Forklift Pocket Strap
Front End Frame
Gooseneck Tunnel
IMDG
ISO
Load Bearing Surface
Mechanical Restraint System
MILVAN
Non IMDG
Rear End Frame
Reinspection Decals
Top End Rail
Top Side Rail
Understructure

7.2 Changes From Previous Issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

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APPENDIX A

A number of inspection checklists are included in this appendix as detailed in Table 1 below.

Table 1. Inspection Checklists

Inspection Checklist	Container Type
1	End-opening vans
2	Side-opening vans
3	Open-top vans
4	Flatracks
5	ISO Shelters
6	Mobile Facilities

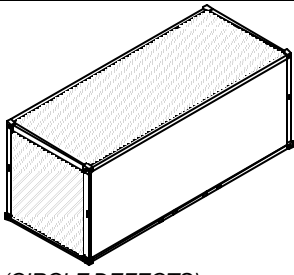
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ISO CONTAINER INSPECTION CHECKLIST

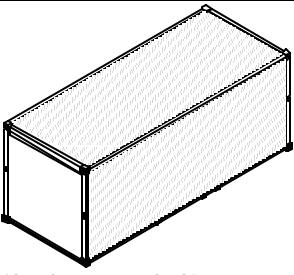
ISO Number:		Date of Inspection:	
Type of Container: END-OPENING VAN	(Circle One) Pass Fail	(Circle One) IMDG & non IMDG non IMDG ONLY	New Decal Installed New Expiration Date Month Year
Installation/Activity:		Inspected By:	

EXTERIOR

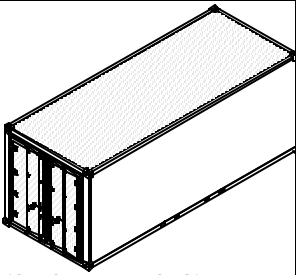
DOORS			ROADSIDE			FRONT			CURBSIDE		
Component	Defects		Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC		Minor	CSC
CSC PLATE			ISO NUMBER			ISO NUMBER			ISO NUMBER		
STENCILS			CORNER FITTINGS			CORNER FITTINGS			CORNER FITTINGS		
ISO NUMBERS			CORNER POSTS			CORNER POSTS			CORNER POSTS		
CORNER POSTS			TOP SIDE RAIL			TOP END RAIL			TOP SIDE RAIL		
CORNER FITTINGS			BOTTOM SIDE RAIL			BOTTOM END RAIL			BOTTOM SIDE RAIL		
DOOR HEADER			FORKLIFT POCKETS			PANEL			FORKLIFT POCKETS		
DOOR SILL			PANEL			PLACARD HOLDER			PANEL		
DOOR PANELS			PLACARD HOLDER						PLACARD HOLDER		
DOOR LINING											
DOOR GASKETS											
RODS											
ROD RETAINERS											
CAMS											
CAM RETAINERS											
J-BARS											
RAIN GUTTERING											
PLACARD HOLDER											



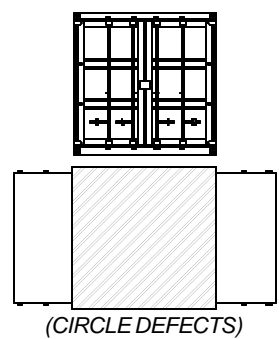
(CIRCLE DEFECTS)



(CIRCLE DEFECTS)



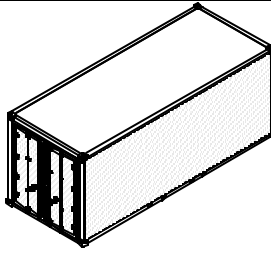
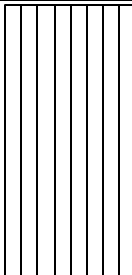
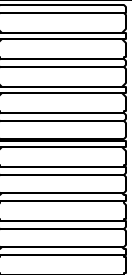
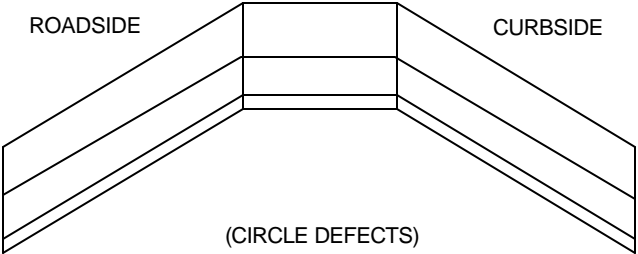
(CIRCLE DEFECTS)



(CIRCLE DEFECTS)

REMARKS:

ISO CONTAINER INSPECTION CHECKLIST

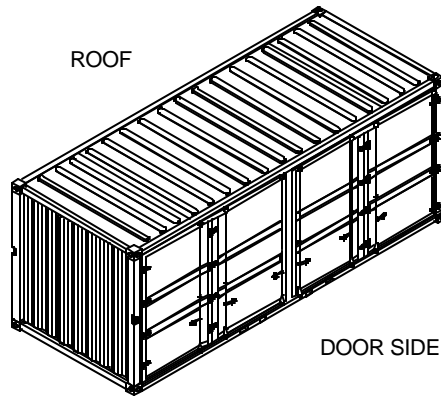
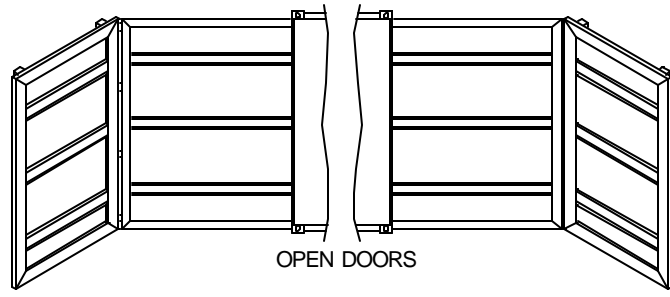
ISO Number:					END-OPENING VAN (continued)						
EXTERIOR					INTERIOR						
ROOF			BOTTOM		FLOOR			ROOF			
Component	Defects		Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC		Minor	CSC
ISO NUMBERS			CORNER FITTINGS			FLOORING			ROOF PANEL		
CORNER FITTINGS			BOTTOM END RAIL			FLOOR FASTENERS			ROOF BOWS		
TOP END RAIL			BOTTOM SIDE RAILS			THRESHOLD PLATE			LIGHT LEAKS		
DOOR HEADER			DOOR SILL			TIE-DOWN DEVICES					
TOP SIDE RAILS			CROSSMEMBERS			LIGHT LEAKS					
ROOF PANEL			FORKLIFT TUNNELS								
 <p>(CIRCLE DEFECTS)</p>			FRONT					FRONT			
			REAR					REAR			
			(CIRCLE DEFECTS)					(CIRCLE DEFECTS)			
INTERIOR					REMARKS						
ROADSIDE		FRONT								CURBSIDE	
Component	Defects		Component	Defects		Component	Defects				
	Minor	CSC		Minor	CSC		Minor	CSC			
PLYWOOD LINING			PLYWOOD LINING			PLYWOOD LINING					
KICK PLATE			KICK PLATE			KICKPLATE					
VERTICAL RAIL			LOAD BEARING SURFACES			VERTICAL RAIL					
HORIZONTAL RAIL			LIGHT LEAKS			HORIZONTAL RAIL					
LIGHT LEAK						LIGHT LEAK					
 <p>(CIRCLE DEFECTS)</p>											

ISO CONTAINER INSPECTION CHECKLIST

ISO Number:		Date of Inspection:	
Type of Container: SIDE-OPENING VAN	(Circle One) Pass	(Circle One) IMDG & non IMDG	New Decal Installed New Expiration Date
	Fail	non IMDG ONLY	Month Year
Installation/Activity:		Inspected By:	

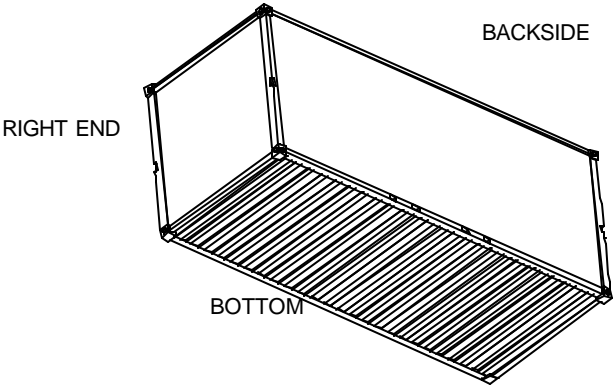
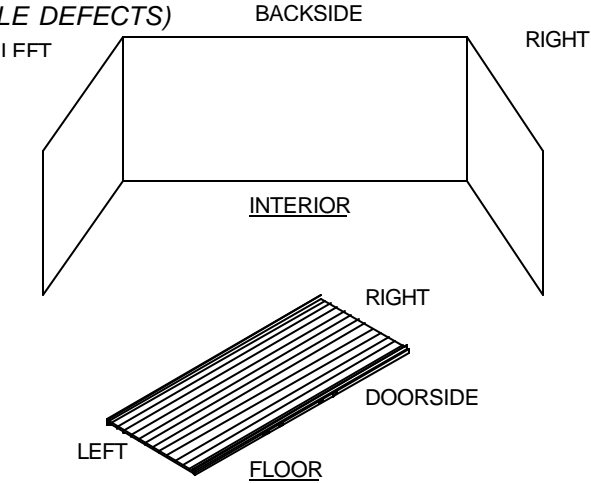
DOORS			LEFT END			EXTERIOR ROOF		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
CSC PLATE			ISO NUMBER			ISO NUMBERS		
STENCILS			TOP END RAIL			TOP SIDE RAILS		
ISO NUMBERS			BOTTOM END RAIL			TOP END RAILS		
CORNER POSTS			CORNER POSTS			CORNER FITTINGS		
CORNER FITTINGS			CORNER FITTINGS			ROOF PANEL		
TOP SIDE RAIL			PANEL					
BOTTOM SIDE RAIL			PLACARD HOLDER					
DOOR PANELS								
ROD RETAINERS								
CAMS								
CAM RETAINERS								
HANDLES								
HANDLE RETAINERS								
J-BARS								
PLACARD HOLDER								

(CIRCLE DEFECTS)



REMARKS:

ISO CONTAINER INSPECTION CHECKLIST

ISO Number:				SIDE-OPENING VAN (continued)				
RIGHT END			BOTTOM			BACKSIDE		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
ISO NUMBER			CORNER FITTINGS			ISO NUMBER		
TOP END RAIL			BOTTOM END RAILS			TOP SIDE RAIL		
BOTTOM END RAIL			BOTTOM SIDE RAILS			BOTTOM SIDE RAIL		
CORNER POSTS			CROSSMEMBERS			FORKLIFT POCKETS		
CORNER FITTINGS			FORKLIFT TUNNELS			CORNER POSTS		
PANEL						CORNER FITTINGS		
PLACARD HOLDER						PANEL		
						PLACARD HOLDER		
(CIRCLE DEFECTS)						REMARKS:		
								
INTERIOR								
COMPONENT	DEFECTS		COMPONENT	DEFECTS				
	Minor	CSC		MINOR	CSC			
FLOORING			WALL PANELS					
FLOOR FASTENERS			LOAD-BEARING SURFACES					
ROOF PANEL			TIE-DOWN DEVICES					
ROOF BOWS			LIGHT LEAKS					
(CIRCLE DEFECTS)						REMARKS:		
								

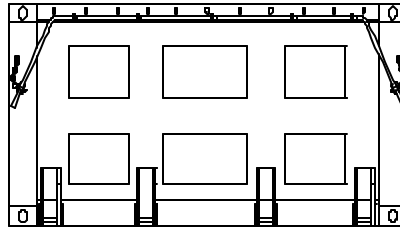
ISO CONTAINER INSPECTION CHECKLIST

ISO Number:		Date of Inspection:	
Type of Container: OPEN TOP CONTAINER	(Circle One) Pass Fail	(Circle One) IMDG & non IMDG non IMDG ONLY	New Decal Installed New Expiration Date Month Year
Installation/Activity:		Inspected By:	

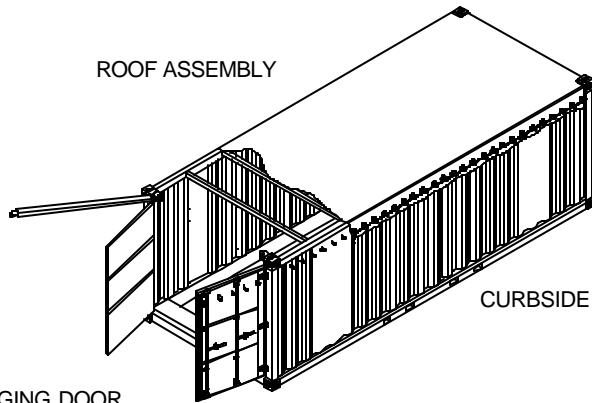
DOORS			CURBSIDE			ROOF ASSEMBLY		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
SAFETY APPROVAL PLATS			ISO NUMBER			CORNER FITTINGS		
STENCILS			CORNER FITTINGS			TOP END RAIL		
ISO NUMBERS			CORNER POSTS			TOP SIDE RAIL		
CORNER FITTINGS			TOP SIDE RAIL			ROOF BOWS		
CORNER POSTS			BOTTOM SIDE RAIL			TARP		
SWINGING HEADER			FORKLIFT POCKETS			TIR CABLE		
SWINGING HEADER HARDWARE			PANEL					
SAFETY CHAINS			METAL LOOPS					
DOOR SILL			PLACARD HOLDER					
DOOR PANELS								
RODS								
ROD PANELS								
CAMS								
CAM RETAINERS								
DOOR GASKETS								
J-BAR								
METAL LOOPS								
PLACARD HOLDERS								

(CIRCLE DEFECTS)

RAMP TYPE DOOR



ROOF ASSEMBLY

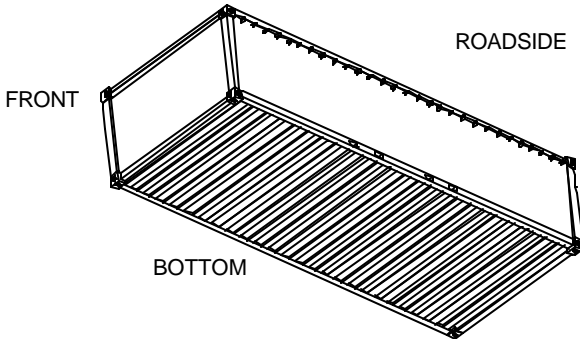
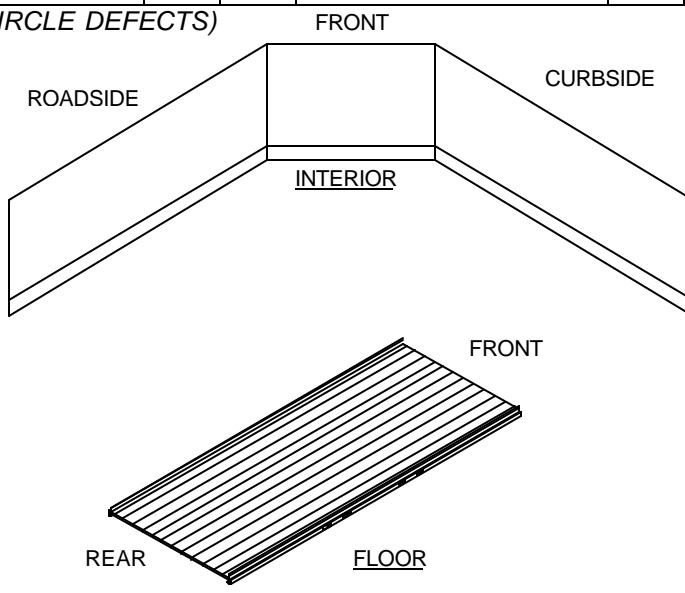


SWINGING DOOR

CURBSIDE

REMARKS:

ISO CONTAINER INSPECTION CHECKLIST

ISO Number:					OPEN TOP CONTAINER (continued)						
FRONT			ROADSIDE			BOTTOM					
Component		Defects		Component		Defects		Component		Defects	
		Minor	CSC			Minor	CSC			Minor	CSC
ISO NUMBER				ISO NUMBER				CORNER FITTINGS			
CORNER FITTINGS				CORNER FITTINGS				BOTTOM SIDE RAIL			
CORNER POSTS				CORNER POSTS				BOTTOM END RAIL			
TOP END RAIL				TOP SIDE RAIL				DOOR SILL			
BOTTOM END RAIL				BOTTOM SIDE RAIL				CROSS MEMBER			
PANEL				FORKLIFT POCKETS				FORKLIFT TUNEL			
METAL LOOPS				PANEL				FLOORING			
PLACARD HOLDER				METAL LOOPS							
				PLACARD HOLDER							
(CIRCLE DEFECTS)										REMARKS	
											
INTERIOR											
Component			Defects		Component			Defects			
			Minor	CSC				Minor	CSC		
FLOORING					WALL PANEL						
FLOOR FASTENERS					LOAD-BEARING SURFACE						
					LIGHT LEAKS						
(CIRCLE DEFECTS)											
											

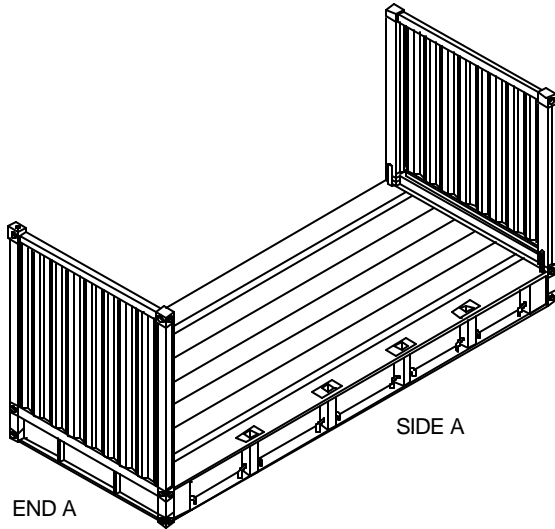
ISO CONTAINER INSPECTION CHECKLIST

ISO Number:		Date of Inspection:	
Type of Container: FLATRACK	(Circle One) Pass Fail	(Circle One) IMDG & non IMDG non IMDG ONLY	New Decal Installed New Expiration Date Month Year
Installation/Activity:		Inspected By:	

END A			SIDE A		
Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC
SAFETY APPROVAL PLATE			SIDE RAIL		
ISO NUMBERS			STANCHIONS		
STENCILS			TIE DOWN PROVISIONS		
CORNER FITTINGS			FORKLIFT POCKETS		
CORNER POSTS					
TOP END RAIL					
PANEL					
WALL POSTS					
LOCKING HARDWARE					

(CIRCLE DEFECTS)

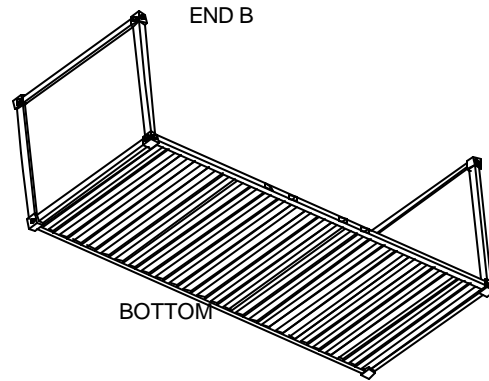
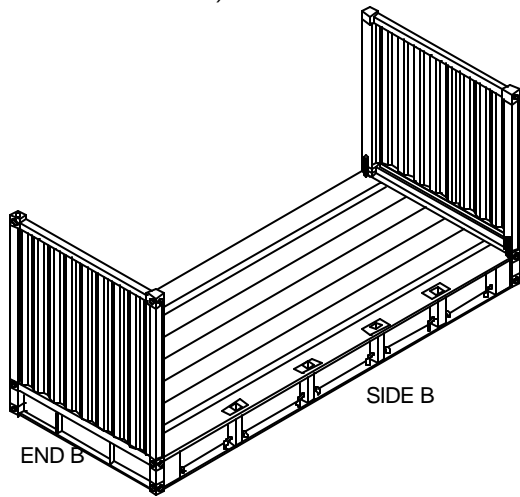
REMARKS:



ISO CONTAINER INSPECTION CHECKLIST

ISO Number:				FLATRACK (continued)				
END B			SIDE B			BOTTOM		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
CORNER FITTINGS			SIDE RAIL			CORNER FITTINGS		
CORNER POSTS			FORKLIFT POCKETS			BOTTOM SIDE RAILS		
TOP END RAIL			STANCHIONS			BOTTOM END RAILS		
BOTTOM END RAIL			TIE DOWN PROVISIONS			CROSSMEMBERS		
PANEL						FORKLIFT TUNNELS		
WALL POSTS								
LOCKING HARDWARE								

(CIRCLE DEFECTS)



CARGO SPACE

Component	Defects	
	Minor	CSC
FLOORING		
FLOOR FASTENERS		

REMARKS

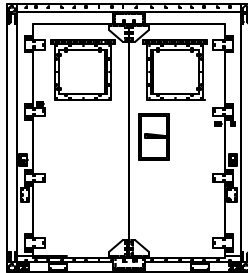
ISO CONTAINER INSPECTION CHECKLIST

ISO Number:		Date of Inspection:	
Type of Container: ISO TACTICAL SHELTER	Inspect this container to non IMDG standards only.	(Circle One) Pass Fail	New Decal Installed New Expiration Date Month Year
Installation/Activity:		Inspected By:	

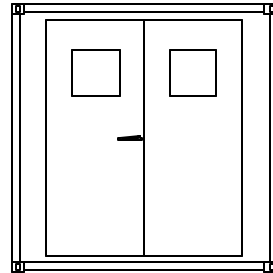
DOORS/ENDS			ROADSIDE			BOTTOM		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
SAFETY APPROVAL PLATE			ISO NUMBER			CORNER FITTINGS		
STENCILS			CORNER FITTINGS			FRONT DOOR SILL		
ISO NUMBERS			CORNER POSTS			REAR DOOR SILL		
CORNER FITTINGS			TOP SIDE RAIL			BOTTOM SIDE RAILS		
CORNER POSTS			BOTTOM SIDE RAIL			CROSSMEMBERS		
CAM LOCKS FOR SIDE PANELS			FORKLIFT POCKETS			FORKLIFT TUNNELS		
DOOR HEADER			PANEL					
DOOR SILL								
HINGES								
RODS								
ROD RETAINERS								
CAMS								
CAM RETAINERS								
HANDLES								
HANDLE RETAINERS								
DOOR GASKETS								
FOLDING STEPS								

(CIRCLE DEFECTS)

RFAR DOORS

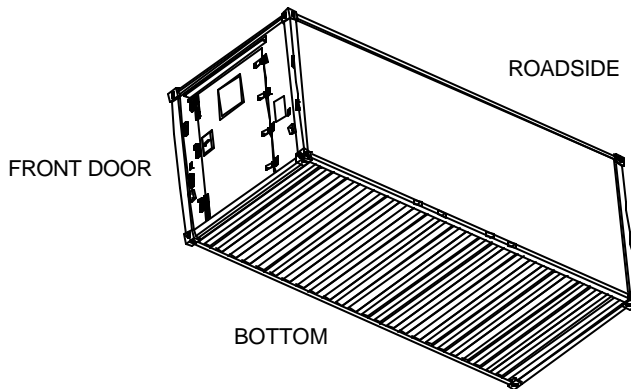


EXTERIOR



INTERIOR

REMARKS:



FRONT DOOR

ROADSIDE

BOTTOM

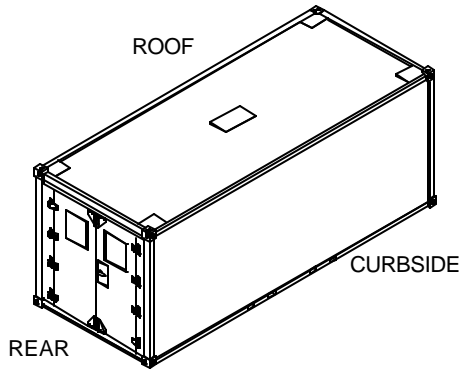
ISO CONTAINER INSPECTION CHECKLIST

ISO Number:	ISO TACTICAL SHELTER (continued)
-------------	---

EXTERIOR	INTERIOR
-----------------	-----------------

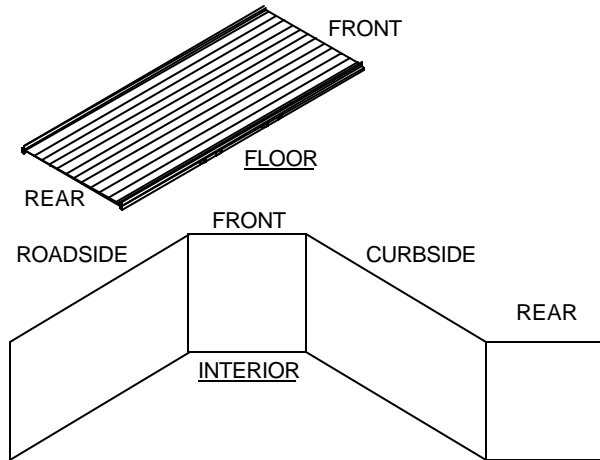
CURBSIDE			ROOF			REMARKS:
Component	Defects		Component	Defects		
	Minor	CSC		Minor	CSC	
ISO NUMBER			ISO NUMBER			
CORNER FITTINGS			CORNER FITTINGS			
CORNER POSTS			REAR DOOR HEADER			
TOP SIDE RAIL			FRONT DOOR HEADER			
BOTTOM SIDE RAIL			TOP SIDE RAILS			
FORKLIFT POCKETS			PANEL			
PANEL			STRIKER PLATES			
			SLING PAD			

(CIRCLE DEFECTS)



INTERIOR					
Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC
FLOORING			DOOR LININGS		
FLOOR FASTENERS			INNER DOOR HANDLES		
WALL PANELS			LIGHT LEAKS		
ROOF PANEL					

(CIRCLE DEFECTS)



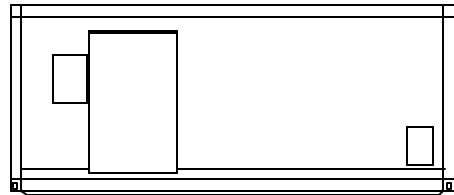
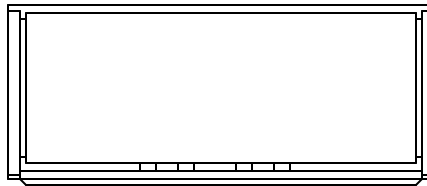
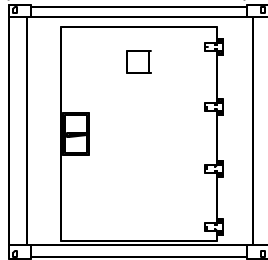
ISO CONTAINER INSPECTION CHECKLIST

ISO Number:		Date of Inspection:	
Type of Container: MOBILE FACILITIES	Inspect this container to non IMDG standards only.	(Circle One) Pass Fail	New Decal Installed New Expiration Date Month Year
Installation/Activity:		Inspected By:	

Power input connections are located on the front end of the MF. The ECU and CSC plate are located on the left side of a standard satellite MF.

FRONT			RIGHT SIDE			LEFT SIDE		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
ISO CORNER			ISO CORNER			ISO CORNER		
CORNER POSTS			CORNER POST			CORNER POST		
TOP END RAIL			TOP SIDE RAIL			TOP SIDE RAIL		
BOTTOM END RAIL			BOTTOM SIDE RAIL			BOTTOM SIDE RAIL		
RIVETS			RIVETS			RAIL		
MF SKIN			MF SKIN			MF SKIN		
DOOR/PLUGS			DOOR/PLUGS			DOOR/PLUGS		
STENCIL			STENCIL			STENCIL		
			FORKLIFT POCKETS			FORKLIFT POCKETS		
						CSC PLATE		

(CIRCLE DEFECTS)



(1) MAF MCN: _____
REMARKS

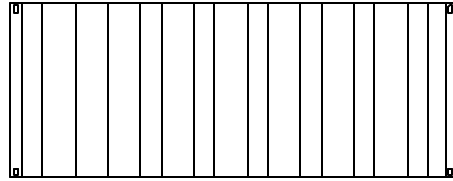
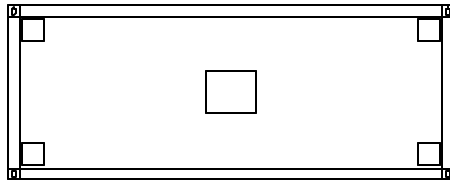
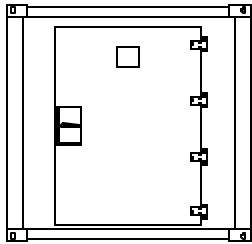
ISO CONTAINER INSPECTION CHECKLIST

ISO Number:	TEC	MOBILE FACILITIES (continued)
-------------	-----	--------------------------------------

Power input connections are located on the front end of the MF. The ECU and CSC plate are located on the left side of a standard satellite MF.

REAR			TOP			BOTTOM		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
ISO CORNER			ISO CORNER			ISO CORNER		
CORNER POSTS			TOP RAIL, FRONT			CROSS MEMBERS		
TOP END RAIL			TOP RAIL, REAR			FORKLIFT POCKETS		
BOTTOM END RAIL			TOP SIDE RAIL, LEFT			BOTTOM SIDE RAIL, LEFT		
RIVETS			TOP SIDE RAIL, RIGHT			BOTTOM SIDE RAIL, RIGHT		
MF SKIN			RIVETS			BOTTOM END RAIL, FRONT		
DOOR/PLUGS			MF SKIN			BOTTOM END RAIL, REAR		
STENCIL			DOUBLER PLATES			FLOOR		
			SLING PAD					

(CIRCLE DEFECTS)



REMARKS

ISO CONTAINER INSPECTION CHECKLIST

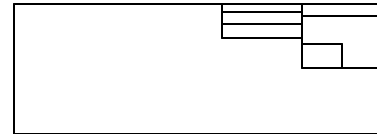
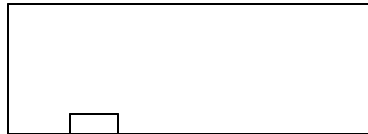
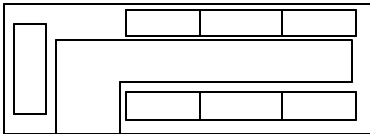
ISO Number:	TEC	MOBILE FACILITIES (continued)
-------------	-----	--

Power input connections are located on the front end of the MF. The ECU and CSC plate are located on the left side of a standard satellite MF.

INTERIOR

CEILING			FLOOR			WALLS		
Component	Defects		Component	Defects		Component	Defects	
	Minor	CSC		Minor	CSC		Minor	CSC
SKIN			MATTING			SKIN		
LIGHT LEAKS			RIVNUTS			ELEC. RACEWAYS		
			ECU RAILS			RAILS		
LIGHTS						MOLES		
AIR DUCT						CIRCUIT BREAKER BOX		
						ECU PLENUM		

(CIRCLE DEFECTS)



DOORS			FRONT	BACK	RIGHT SIDE
Component	Defects				
	Minor	CSC			
SKIN					
LIGHT LEAKS					
HANDLE					
EMERG THUMB SCREW					
BOLTS					
HARDWARE					

REMARKS:

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APPENDIX B

UN CLASS 1 DECLARATION						
SHIPPER (CONSIGNOR):			ISO OWNER CODE AND SERIAL NUMBER:			
DESTINATION (CONSIGNEE):			CSC RE-INSPECTION DUE:			
TRANSPORTER (CARRIER):			STYLE OF CONTAINER:			
			End Opening _____ Side Opening _____ Open-Top _____ Flatrack _____			
CARGO DESCRIPTION (DODIC, NSN, AND NOMENCLATURE) AND QUANTITY (ITEMS, BOXES, AND PALLETS)	PROPER SHIPPING NAME	UNO SERIAL NUMBER	UN HAZARD CLASS AND DIVISION	STORAGE COMPATIBILITY GROUP	LOADING WEIGHT (LBS)	NET EXPLOSIVE WEIGHT (LBS)
DECLARATION: This container has been examined and is considered to be structurally serviceable as set forth within Title 49 of the United States Code of Federal Regulations (CFR) part 176.172. Loading of this container has been carried out in accordance with International Maritime Dangerous Goods (IMDG) Code paragraphs 5.4.2.1. The contents are fully and accurately described above; are properly packaged, marked and labeled; are in all respects in proper condition; and are properly positioned and secured for transport according to the applicable international and national government regulations. Appropriate placards are securely affixed to all four exterior surfaces (sides and ends) of the container.						
INSPECTOR (EXAMINER):			SECURITY SEAL NUMBER:			
Signature: _____			LOCATION (INSTALLATION):			
Printed Name: _____						
Job Title: _____						
			DATE:			

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Marine Corps - MC
DLA - DH

Preparing activity:

Army - AR

Agent:

US Army Defense Ammunition
Center

(Project 8115-0612)

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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-HDBK-138B	2. DOCUMENT DATE (YYMMDD) 1 January 2002
3. DOCUMENT TITLE Guide to Container Inspection for Commercial and Military Intermodal Containers		
4. NATURE OF CHANGE (<i>Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.</i>)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
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c. ADDRESS (<i>Include Zip Code</i>)	d. TELEPHONE (<i>Include Area Code</i>) (1) Commercial (2) AUTOVON (<i>if applicable</i>)	7. DATE SUBMITTED (YYMMDD)
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