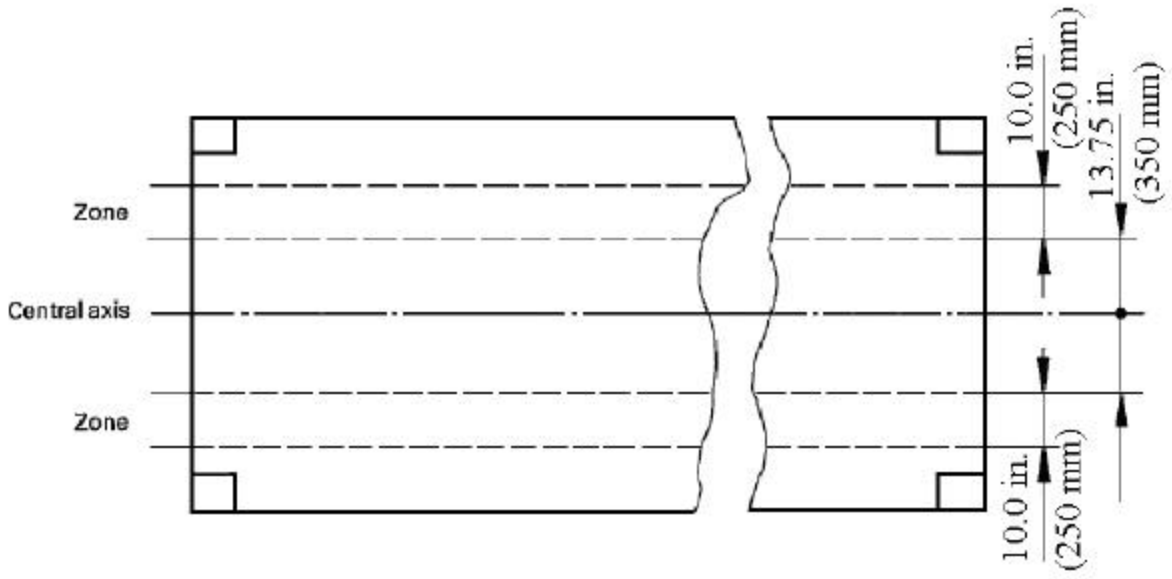


Figure F-1. Load Transfer Zones, ISO 1496-1

F3.4.10.2 Tactical vehicle transport. In addition to the ISO corner fittings, each end of the shelter shall be provided with upper and lower transport dolly fittings identical to those specified in the TDP. When fully loaded the container shall have the durability to withstand being transported by truck, trailer, or dolly over a variety of surfaces including 30% on primary roads, 65% on secondary roads, and 5% on open cross-country. The surfaces traversed shall include various states of disrepair that may be encountered worldwide, including bumps, cobblestone, and washboard. During or following the travel, there shall be no damage to, or displacement of, any component, accessory, part, or other item installed in or on the container and no evidence of damage to the container. Maximum safe speed for the surface and conditions shall be maintained; not to exceed 55 mph (89 kph) on primary roads, 45 mph (72 kph) on secondary roads, and 15 mph (24 kph) for travel cross-country.

F3.4.11 Transport handling.

F3.4.11.1 Drop. The container, with a uniformly distributed payload anchored to the floor such that the gross weight equals 15,000 lb (6875 kg), shall withstand flat and rotational drops of 6 in. (150mm) onto a level concrete surface without structural damage or loss of serviceability. (Reference ASTM E 1925)

F3.4.11.2 Overhead lift.

F3.4.11.2.1 Upper fittings. The container, with the generator and ECU installed and a uniformly distributed payload anchored to the cargo floor such that the gross weight equals 48,000 lb (22,000 kg) (3.2 G by 15,000 lbs (6875 kg)), shall withstand overhead lift by a four-cable sling attached to its top corner fittings without suffering structural damage or loss of serviceability. NOTE: This requirement supersedes the normal criteria for overhead lift by crane using the top corner fittings. (Reference ASTM E 1925)

F3.4.11.2.2 Lower fittings. The container, with the generator and ECU installed and a uniformly

distributed payload placed on the cargo floor such that the gross weight equals 48,000 lb (22.000 kg) (3.2 G by 15,000 lbs (6875 kg)), shall withstand overhead lift by a four-cable sling attached to its bottom corner fittings without suffering structural damage or loss of serviceability. (Reference ASTM E 1925)

F3.4.11.3 Fork lift pockets. Fork lift pockets shall be provided both for handling containers in the loaded or unloaded condition (outer pockets) and for empty handling only (inner pockets). The fork lift pockets shall meet the dimensional requirements specified in Figure F-11 and shall pass completely through the base structure of the container so that lifting devices may be inserted from either side. (Reference ASTM 1976 and ISO 1496-1)

F3.4.11.3.1 Outer pockets. The container, with the generator and ECU installed and a uniformly distributed payload anchored to the cargo floor such that the gross weight equals 24,000 lb (11,000 kg) (1.6 G by 15,000 lbs (6875 kg)), shall withstand overhead lift by two horizontal bars, each centered in one of the outer fork lift pockets and projecting 72 in (1.83 m) into its pocket as measured from the outside face of the container, without suffering structural damage or loss of serviceability. (Reference ISO 1496-1)

F3.4.11.3.2 Inner pockets. The container, with the generator and ECU installed and a uniformly distributed payload anchored to the cargo floor such that the gross weight equals 9375 lb (4260 kg) (0.625 G by 15,000 lbs (6875 kg)), shall withstand overhead lift by two horizontal bars, each centered in one of the inner fork lift pockets and projecting 72 in (1.83 m) into its pocket as measured from the outside face of the container, without suffering structural damage or loss of serviceability. (Reference ISO 1496-1)

F3.4.11.4 Impact resistance. All floor and roof panels shall be capable of withstanding blows equivalent to those imparted by a 70 lb (30 kg) steel cylinder 3 in. (80 mm) in diameter with a hemispherical end, dropped from a height of 30 in. (800 mm). All other panels shall be capable of withstanding blows equal to those imparted by the same steel cylinder dropped from a height of 16 in. (410 mm). Impact shall not result in any of the following: rupture of the skin on either side; delamination of impacted skin from the core or crushing or collapsing of the core outside a 3.12 in. (90 mm) radius from the center of impact; core shear failure outside a five inch radius from the center of impact; or any delamination of the opposite skin from the core. (Reference ASTM E 1925)

F3.4.11.5 Floor loading capability. The container floor shall be rated to support a uniform load of 80 lb/ft^2 (390 kg/m^2). The container floor shall also be rated to support a concentrated loads of 2,000 lb (910 kg) over a 4 ft^2 (0.4 m^2) area at the center of the floor, and to support point loads of 125 lb/in^2 (57 $kg/650\ mm^2$). The loads shall not cause any permanent deformation of the floors or any deflection that interferes with operation of the shelter under any of the operational or transport conditions specified herein. (Reference ASTM E 1925)

F3.4.11.6 Roof loading capability. The roof shall withstand a snow load of 40 lb/ft^2 (200 kg/m^2) and a personnel load of 660 lb (300 kg) static over 2 ft^2 (0.2 m^2). (Reference ASTM E 1925)

~~F3.4.12 Lashing. The containers shall be capable of being restrained against and withstanding forces~~

~~imposed by carriers having cargo tie-down provisions other than ISO locks. For transport under such conditions, the container top corner fittings will be used as tie-down provisions, and shall be capable of withstanding the forces in Table F2 without sustaining permanent deformation or other damage to themselves or to the container as a whole. The ultimate load limits for each corner fitting and its attached structure shall be not less than those in Table F3. (Reference MIL-STD-209)~~

~~DESIGN LOAD LIMITS~~		
~~Longitudinal~~	~~Lateral~~	~~Vertical (downward)~~
~~30,000 lbs (133 kN)~~	~~11,250 lbs (50 kN)~~	~~7,500 lbs (33 kN)~~

~~Table F2. Tie-down rated loads~~

~~ULTIMATE LOADS~~		
~~Longitudinal~~	~~Lateral~~	~~Vertical (downward)~~
~~45,000 lbs (200 kN)~~	~~16,875 lbs (75 kN)~~	~~11,250 lbs (50 kN)~~

~~Table F3. Tie-down ultimate loads~~

F3.5 Inputs and interfaces.

F3.5.1 Electrical power.

F3.5.1.1 External power. The shelter shall be provided with an externally accessible power input connector capable of accepting 240 volt, 3-phase, 60 Hz AC power via an Army power cable assembly. The cable requires a mating 100 Amp receptacle consisting of: a wall-mounting receptacle with coupling ring conforming to MIL-C-22992, Class L, Style P comprised of a MS90558 C 44 5 shell, with an MS14055 insert having insert arrangement 44-12, along with a MS90564 44 C weather-tight cover. The shelter shall be supplied with a service box with a capacity of at least 100 amps.

F3.5.1.2 Internal power. The shelter shall incorporate provisions for permanently mounting a generator in the front end of the shelter (opposite the personnel door) and connecting it to the shelter electrical system. The generator will consist of an Army Standard Skid-mounted Diesel-Engine-Driven 10 kW 60 Hz Tactically Quiet Generator Set, Model MEP-803A. The MEP-803A is 62” long by 32” in wide by 37” in high (1575 mm x 813 mm x 940 mm), and weighs 1,182 lbs (536 kg). All mechanical and electrical interfaces for mounting and operating the unit shall be provided. A door, panel, or other cover(s) for the generator shall be provided to assure shelter meets all battlefield survivability requirements with the generator installed (see f3.6.2 through f3.6.2.3). The design may incorporate slides, a roller tray, or similar measures as needed to extend the generator from inside the shelter for operation and/or maintenance (Reference TM 9-6115-642-10), and retract the generator inside the shelter walls for storage, transport, and NBC survivability.

F3.5.2 Human interface. The shelter shall be suitable for setup, operation, and maintenance by the majority of U.S. Army personnel, from the fifth percentile female to the ninety-fifth percentile male. Basic U.S. Army anthropometrics charts and applicable DOD human engineering guidelines are provided in Appendix D. (For further information the contractor may refer to MIL-STD-1472)

F3.5.2.1 Protective clothing. The shelter shall be operable and maintainable by personnel wearing heavy gloves and clothing suitable for cold weather (also see paragraph f3.6.2.3).

F3.5.2.2 Illumination level. The shelter visible spectrum interior lights shall provide general task illumination of at least 50 foot-candles (540 Lux), measured at thirty inches above the shelter floor. Light shall be so distributed as to minimize glare and specular reflection. The interior surfaces of the shelter shall approximate Semi-gloss Green 24533 or Semi-Gloss White 27875 of FED-STD-595.

F3.5.2.3 Working environment. The shelter shall incorporate provisions for permanently mounting an ECU. The ECU will consist of an Army Standard Compact Horizontal Air Conditioner, 36,000 BTU/hr, 208 Volt, 3-phase, 60 Hz. The ECU is 35" long by 38" wide by 27" high (889 mm x 965 mm x 686 mm), and weighs 398 lbs (181 kg). All mechanical and electrical interfaces for mounting and operating the unit shall be provided. A door, panel, or other required cover(s) for the ECU shall be provided to assure shelter meets all battlefield survivability requirements with the environmental control unit installed (see f3.6.2 through f3.6.2.3). The design may incorporate slides, a roller tray or similar measures as needed to extend the ECU from the shelter for operation and/or maintenance (Reference TM 9-4120-425-14&P), and retract the ECU inside the shelter walls for storage, transport, and NBC survivability.

F3.5.2.4 Door opening. To provide for ease of entrance and egress while moving or carrying heavy, bulky items, the shelter shall have at least one personnel door that is at least 76 in (1930 mm) high and 48 in (1220 mm) wide. (Reference ASTM E 1925)

F3.5.3 Plates and labels. All identification, warning, and instruction plates and labels shall be permanently affixed to the shelter. They shall be resistant to deterioration caused by heat, cold, solar radiation, water, and petroleum products to the extent that they will remain intact and readily legible for the expected economic life of the shelter. Marking shall be accomplished in a manner that does not adversely affect the life and utility of the shelter. All plates and labels shall be printed in the English language, and may be supplemented by graphical symbols. (Reference MIL-STD-129)

F3.5.3.1 Hazard identification. Unguarded physical hazards (see paragraph F3.7.1) shall be identified. Product safety signs and labels shall conform to ANSI Z535.4.

F3.5.4 Communications. The shelter shall be provided with a general-purpose tactical communications signal entry panel (SEP) allowing data and voice connections for Global Combat Support System – Army (GCSS-A). The panel exterior shall provide telephonic connectors consisting of: Two A-A-59559 Type I binding posts, two A-A-59559 Type II binding posts, and one Federal Communications Commission (FCC) RJ-11 plug. It shall also provide LAN connectors consisting of: one female Bayonet Neill Concelman (BNC) connector for RG-58 coaxial cable (for 10Base2 Thinnet); one RS-232 female DB9 connector for serial communications; and one FCC RJ-45 plug (for 10BaseT and

100BaseTX fast Ethernet). The RJ-11, DB9, and RJ-45 plugs shall be provided with weather-tight covers capable of maintaining a weather-tight seal with or without a cable attached to the plug. The connectors shall be wired to pass signals through the wall to like connectors on an interior panel (i.e. post-to-post, plug-to-plug, female BNC-to-female BNC), using standard pin assignments.

F3.6 Environment.

F3.6.1 Environmental protection. The shelter must provide containment measures for coolant, fuel, petroleum, oils, and lubricants in the mounting provisions for the generator.

F3.6.2 Survivability. The shelter must be survivable in the battlefield environment.

F3.6.2.1 Protective coloration. For concealment, the exterior of the shelter must be provided with a color scheme that will blend in with the operational environment. Camouflage patterns must be supplied by the Army, and cannot be made available for new designs before the First Article has been approved. Unless and until otherwise specified by the contract, the exterior of the mobile shelter shall be a color approximating "Lusterless Forest Green," chip 34083 of FED-STD-595.

F3.6.2.2 Blackout conditions. While in its operational configuration with the personnel entryway(s) closed, the shelter shall be light tight. None of the light generated when the interior lights of the shelter are illuminated shall be visible from any point outside the shelter. The personnel entryway(s) shall be provided with an interlock that opens the electrical circuit(s) for the interior lights so that the white lights are completely extinguished and replaced with NVD-safe lighting before the light-tight seal of the entryway is broken. The interlock feature shall be provided with a switch or other mechanism permitting it to be deactivated when not needed.

F3.6.2.3 Nuclear, Biological, and Chemical Contamination Survivability. The exterior of the shelter shall be nuclear, biological and chemical (NBC) contamination survivable. It shall be decontaminable to negligible risk levels using standard Army decontamination procedures through five contamination/decontamination cycles without loss of seal integrity or replacement of the Chemical Agent Resistant Coating (CARC, see paragraph 3.9.5). The shelter interior need not be NBC contamination survivable. (This is a military–unique requirement.)

a) The presence of open seams, crevices, grooves, cavities, hinges, and other catch points in the shelter exterior shall be minimized to the extent practical.

b) In both its operational and transport configurations, the shelter design shall provide ready means for one person to close all vents, drains, and other openings and render the shelter vapor-tight within fifteen minutes without the use of tools.

c) The materials used in construction of the shelter shall not absorb biological or chemical agents, and shall not be damaged by the steam, solvents, and strong bleaching agents used for decontamination.

d) If suitable non-absorbent materials for caulk, gaskets, seals, and other necessary elastomers are impractical, uneconomical, or unavailable, the elastomers shall be installed in a form designed for easy removal and replacement as part of the decontamination procedure.

e) Electrical components (switches, light fixtures, junction boxes, outlets, conduit, etc.) shall be of the sealed, weather-tight variety.

f) Although the shelter is not intended for operation in a contaminated environment, circumstances may require use of contaminated equipment until replacements can be obtained; therefore the shelter must be operable and maintainable by personnel in MOPP IV gear.

g) For DOD guidelines on designing to minimize contamination and to facilitate decontamination of military vehicles and other equipment, the contractor may refer to MIL-HDBK-784.

F3.6.3 Operational environment. The shelter shall operate in climatic design types hot, basic, and cold as defined by MIL-STD-810. It must be operable under all adverse weather conditions of these climatic design types.

F3.6.3.1 Operating temperatures. The shelter shall be operable when conditioned to air temperatures from -25 °F to +120 ºF (-31 ºC to 49 ºC) inclusive.

F3.6.3.2 Differential temperature. The shelter roof, floor, and side and end panels shall be capable of withstanding the effects of interior-to-exterior temperature differentials created by the ECU throughout the operating temperature range of the shelter, including the effects of direct solar heating as well as the ambient external air temperature. The maximum expected differential would occur on the roof panel, which in hot climates may attain an exterior skin temperature of 205 ºF (96 ºC) while the shelter interior is maintained at 85 ºF (29 ºC) by the ECU. The panels shall sustain the temperature differential without delaminating or permanently deforming. (Reference ASTM 1925)

F3.6.4 Storage environment. The shelter shall withstand outdoor storage in climatic design types hot, basic, and cold as defined by MIL-STD-810 without sustaining damage. The shelter will be stored with all panels and doors closed. The shelter shall withstand storage in all air temperatures from -50 ºF to +160 ºF (-46 ºC to 71 ºC), inclusive.

F3.6.5 Weathertightness. With doors closed in the operational mode and doors and panels closed in the transport mode, the shelter shall be watertight without the need for additional external sealing, calking, taping, etc. Weather seals shall be designed to be an integral part of the shelter, and to be readily replaced by the user in the field without the use of special tools. (Reference ASTM 1925)

F3.6.6 Heat transfer. The shelter shall have an overall heat transfer coefficient less than or equal to 0.35 Btu/(h(ft^2)(°F)) (2.2W/(m^2(°K)). (Reference ASTM 1925)

F3.6.7 Fungus and moisture. The shelter electrical circuits and other integral parts shall be composed of inherently fungus and moisture resistant materials, or shall be protected from fungus and moisture damage by protective coating(s) or hermetic seal(s). All gaskets, electric cable covers and other elastomer parts that are exposed to air shall be fungus resistant.

F3.6.8 Ozone. All gaskets, electric cable covers and other elastomer parts exposed to air shall be ozone resistant.

F3.6.9 Marine environment. The shelter shall be resistant to a salt fog environment. There shall be no

evidence of corrosion or degradation to any part of the shelter (including fasteners, jacks, and seals) after two cycles of 24 hours of salt fog exposure followed by 24 hours of drying.

F3.6.10 Desert environment. The external moving parts of the shelter shall be designed to resist the effects of blowing sand at a relative humidity of 23 % or less.

F3.7 Safety. The shelter, with and without the generator and ECU installed, shall not present any uncontrolled safety or health hazards throughout the life cycle of the system. The shelter shall incorporate the following features to assure safe operation.

F3.7.1 Physical hazard control. Mechanical guards, electrical insulation, thermal insulation, and other safety devices shall be provided to protect operators and maintenance personnel from inadvertent contact with electrically energized parts, high temperature surfaces, and other physical hazards (see Appendix D). The safety devices shall not interfere with operation of the shelter. Exposed sharp corners and sharp edges on shelter parts shall be eliminated if they serve no functional purpose. Hazards that cannot be eliminated, cannot be controlled by equipment placement, and cannot be controlled by protective devices shall be identified to the user by printed warnings or cautions.

F3.7.2 Physical strain control. The physical exertion required to set up the shelter for operation in the field and to prepare it for ground transport shall not exceed safe limits for the target population.

F3.7.3 Electrical ground. All electrical circuits incorporated in the shelter shall be electrically grounded to the shelter frame and to the power source ground through the electrical input cable. All electrical power outlets shall be provided with Ground Fault Circuit Interruption (GFCI) protection. A ¼-inch diameter grounding stud and captive wing nut shall be provided on the shelter exterior in a clearly marked location. When the shelter is set up for operation, the grounding stud location shall permit it to be connected to an earth ground with a grounding wire not more than six feet long. A grounding rod conforming to Commercial Item Description A-A-55804, Type III, Class B, along with a slide hammer for ground rod installation shall be provided as Basic Issue Items (BIIs) with each shelter. There shall be a dedicated storage location for the grounding rod and slide hammer inside the shelter.

F3.7.4 Steps. To provide access to the shelter roof for helicopter sling load operations, folding steps or other means of safe access to the roof shall be provided.

F3.7.5 Tread surfaces. The shelter floor, steps, and other walking or standing surfaces, including the shelter roof, shall be provided with non-slip surfaces.

F3.7.6 Anti-Entrapment Measures. The shelter shall be provided with anti-entrapment measures to prevent personnel from being locked inside, e.g. an escape hatch that can be opened only from the inside, and locking and latching mechanisms on the door(s) that permit a locked door to be opened from the inside.

F3.7.7 Toxic materials. The shelter shall be constructed of materials that, in their cured, dried, or other final processed state, do not present a health hazard to personnel during transportation, operation, or maintenance of the shelter. Exposure of the shelter to temperatures of 160 ºF for extended periods shall not result in accumulation of toxic vapors inside the shelter that exceed the National Institute of Safety

and Health (NIOSH) Threshold Limit Values for the substances present.

F3.7.8 Fire resistance. The shelter panels shall be fabricated of fire resistant, self-extinguishing materials.

F3.8 Economic life. The shelter shall have a projected economic life of not less than fifteen years under the service conditions described herein.

F3.9 Reliability/Maintainability. The design of the shelter shall provide a Mission Capable Status rate of 90% with 80% confidence.

F3.10 Ease of maintenance.

F3.10.1 Access. It shall be possible for the majority of Army personnel to perform preventative maintenance on the shelter, the generator and the ECU without dismounting the generator or ECU from the shelter, and without removing or disassembling any part of the shelter (see Appendix D).

F3.10.2 Latches. All latches utilized for erection and closing of the shelter shall be properly adjusted before the shelter is offered for acceptance by the Government.

F3.10.3 Fastening devices. Screws, pins, bolts, and similar parts shall be installed with means for preventing loss of tightness. The methods for preventing loss of tightness shall be according to accepted engineering standards and practices. No such parts subject to removal or adjustment shall be swaged, staked, or otherwise deformed.

F3.10.4 Cleaning. The shelter shall be washable inside and out. Any features within the shelter that could become collection points for water shall be provided with drains.

F3.10.5 Protective finish. Metal parts shall be plated or painted to protect them from corrosion. Cleaning, treating, and painting of the shelter shall conform to the requirements of MIL-STD-171, finish 7.3.1 plus 20.24 (Chemical Agent Resistant Coating (CARC)) for aluminum, and finish 5.1.1 plus 20.24 for ferrous metals.

F4. VERIFICATION

F4.1 General provisions. The inspections (examinations and tests) herein shall be performed to determine whether the item conforms to Section 3 of this specification.

F4.1.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.2)

b. Conformance inspection (see 4.3)

F4.1.2 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified herein.

F4.2 First article inspection.

F4.2.1 Submission. The contractor shall submit a first article sample as designated by the Contracting Officer for evaluation in accordance with the specified verification methods of Table F4. The first article inspection shall consist of a minimum of 1 complete shelter.

F4.2.2 Inspections to be performed. As determined by the Government, the first article assemblies, components and test specimens may be subjected to any or all of the verification methods specified (see Table F4). Unless otherwise specified all the inspections shall be performed.

TABLE F4. Requirement/verification matrix

Verification Methods
N - Not Applicable
1 - Analysis
2 - Demonstration
3 - Examination
4 – Test (F = First Article only)

Verification Class
A = First Article
B = Conformance

Title	Section 3 Requirement	Verification Method					Verification Class		Section 4 Requirement
		N	1	2	3	4	A	B	
Locks	F3.4.1.1				X		X	X	F4.5.1.1
Anti-tampering measures	F3.4.1.2				X		X		F4.5.1.2
Loss and damage prevention	F3.4.1.3				X		X		F4.5.1.3
Door static load	F3.4.1.3.1					X	X		F4.5.1.3.1
Wind gust load	F3.4.1.3.2					X	X		F4.5.1.3.2
Electrical outlets	F3.4.2				X		X		F4.5.2
Lighting	F3.4.3				X		X	X	F4.5.3
Erecting and striking	F3.4.4			X			X		F4.5.4

Panel flatness	F3.4.5.1				X		X	X	F4.5.5.1
Panel bonding	F3.4.5.2				X		X	X	F4.5.5.2
Safety Certification	F3.4.6.1				X		X		F4.5.6.1
Overall dimensions	F3.4.6.2				X		X		F4.5.6.2
Tare mass	F3.4.6.3				X		X		F4.6.3
Gross mass rating	F3.4.6.4				X		X		F4.6.4
Corner fittings	F3.4.6.5				X		X		F4.5.6.5
Decompression vent	F3.4.7.1.1				X		X		F4.5.7.1.1
Flight maneuver forces	F3.4.7.1.2		X				X		F4.5.7.1.2
Transport provision identification	F3.4.7.2				X		X	X	F4.5.7.2
Helicopter external lift	F3.4.7.3		X				X		F4.5.7.3
Base Strength	F3.4.8.1					X	X		F4.5.8.1
Stacking capability	F3.4.8.2					X	X		F4.5.8.2
Side walls	F3.4.8.3.1					X	X		F4.5.8.3.1
End walls	F3.4.8.3.2					X	X		F4.5.8.3.2
Transverse rigidity	F3.4.8.4					X	X		F4.5.8.4
Longitudinal rigidity	F3.4.8.5					X	X		F4.5.8.5
ISO lock rail car restraint capability	F3.4.9.1					X	X		F4.5.9.1
Standard flatcar restraint capability	F3.4.9.2					X	X		F4.5.9.2
Load transfer area	F3.4.10.1				X		X		F4.5.10.1
Tactical vehicle transport	F3.4.10.2					X	X		F4.5.10.2
Drop	F3.4.11.1					X	X		F4.5.11.1 through F4.5.11.1.2
External Air Transport (EAT) lift	F3.4.11.2.1		X				X		F4.5.11.2.1 through F4.5.11.2.1.2
Overhead lift by crane	F3.4.11.2.2		X				X		F4.5.11.2.2through F4.5.11.2.2.2
Fork lift pockets	F3.4.11.3					X	X		F4.5.11.3
Outer pockets	F3.4.11.3.1					X	X		F4.5.11.3.1
Inner pockets	F3.4.11.3.2					X	X		F4.5.11.3.2
Impact resistance	F3.4.11.4					X	X		F4.5.11.4
Floor loading capability	F3.4.11.5					X	X		F4.5.11.5
Roof loading capability	F3.4.11.6					X	X		F4.5.11.6
~~Lashing~~	~~F3.4.12~~		~~X~~				~~X~~		~~F4.5.12 through F4.5.12.2~~
External power	F3.5.1.1				X		X		F4.6.1.1
Internal power	F3.5.1.2				X		X		F4.6.1.2

Human interface	F3.5.2				X		X		F4.6.2
Protective clothing	F3.5.2.1			X			X		F4.6.2.1
Illumination level	F3.5.2.2				X		X		F4.6.2.2
Working environment.	F3.5.2.3			X			X		F4.6.2.3
Door opening	F3.5.2.4				X		X		F4.6.2.4
Plates and labels	F3.5.3				X		X		F4.6.3
Hazard identification	F3.5.3.3				X		X	X	F4.6.3.3
Communications	F3.5.4				X		X		F4.6.4
Environmental protection	F3.6.1				X		X		F4.7.1
Protective coloration	F3.6.2.1				X		X	X	F4.7.2.1
Blackout conditions	F3.6.2.2					X	X	X	F4.7.2.2
Nuclear, Biological, and Chemical Contamination Survivability	F3.6.2.3		X				X		F4.7.2.3
Operating temperatures	F3.6.3.1					X	X		F4.7.3.1.1 & F4.7.3.1.2
Differential temperature	F3.6.3.2					X	X		F4.7.3.2
Storage environment	F3.6.4.					X	X		F4.7.4.1 & F4.7.4.2
Weathertightness	F3.6.5					X	X	X	F4.7.5
Heat transfer	F3.6.6					X	X		F4.7.6
Fungus and moisture	F3.6.7				X		X		F4.7.7
Ozone	F3.6.8				X		X		F4.7.8
Marine environment	F3.6.9					X	X		F4.7.9
Desert environment	F3.6.10					X	X		F4.7.10
Physical hazard control	F3.7.1				X		X	X	F4.8.1
Physical strain control	F3.7.2			X			X		F4.8.2
Electrical ground	F3.7.3				X		X	X	F4.8.3
Steps	F3.7.4				X		X	X	F4.8.4
Tread surfaces	F3.7.5				X		X	X	F4.8.5
Anti-Entrapment	F3.7.6				X		X	X	F4.8.6
Toxic materials	F3.7.7		X				X		F4.8.7
Fire resistance	F3.7.8					X	X		F4.8.8
Economic life	F3.8		X				X		F4.9
Reliability/Maintainability	F3.9		X				X		F4.10
Access	F3.10.1			X			X		F4.11.1
Latches	F3.10.2			X			X	X	F4.11.2
Fastening devices	F3.10.3				X		X		F4.11.3
Cleaning	F3.10.4				X		X		F4.11.4
Protective finish	F3.10.5				X		X	X	F4.11.5

F4.2.3 Rejection. If any test assembly, test specimen or test component fails to comply with any of the applicable requirements, the first article sample shall be rejected. The Government reserves the right to terminate inspection upon any failure of a test assembly, specimen or component to comply with any of the requirements.

F4.3 Conformance inspection.

F4.3.1 Compliance. Conformance inspections shall be applied to production units being offered for acceptance under the contract. These inspections shall include all verifications listed in Table F4.

F4.3.2 Inspection lot formation. Lot formation shall be in accordance with Section 4 of MIL-STD-1916.

F4.3.3 Sampling plan determination. Conformance verification methods are specified in Table F4. When required by contract or cited herein, attribute sampling inspections shall be conducted in accordance with MIL-STD-1916 using verification level I.

F4.3.4 Rejection. Failure of any unit to pass any verification shall be cause for rejection of the unit.

F4.4 Preparation. Prepare the shelter for testing by performing normal service, lubrication, and adjustment as recommended by the manufacturer. This specifically includes the use of lubricants tailored for the temperature conditions encountered in each test.

F4.5 Tests and inspections.

F4.5.1 Physical security.

F4.5.1.1 Locks. Verify that the locking of the shelter is accomplished with padlock(s), and that the hasp and staple or other locking devices incorporated in the shelter accept key-operated, tumbler-type padlocks conforming to CID A-A-1927, Type I, Size B, which have shackles with a diameter of 0.343 ±0.040 inch.

F4.5.1.2 Anti-tampering measures. When prepared for transport and storage, verify that the padlocks on the shelter are plainly visible on the shelter exterior and that it is not be possible to use or remove any of the equipment stored in the shelter without either removing the locks or visibly damaging the shelter.

F4.5.1.3 Loss and damage prevention. Verify that all doors, panels, and other covers for openings in the shelter are permanently affixed to the shelter.

F4.5.1.3.1 Door static load. Each vertically hinged door shall have a 200-lb (90-kg) downward load applied at the edge opposite from the hinge pivot with door open to 90°. The load shall be removed and the door examined after 30 minutes. Evidence of unbonded or delaminated components, fracture or permanent deformation of hardware, and binding of the door shall each be cause for rejection.

F4.5.1.3.2 Wind gust load. A wind gust load test shall be performed with the door(s) in the open position(s), held by the doorstop device(s). A fixture shall be attached to the midpoint of the locking edge of the door that shall permit application of the following horizontal forces, using free running pulleys

to transmit the forces from weights and a 1/4-in (6-mm) diameter steel cable (the shelter and pulley frames shall be rigidly held in place): a) A static load equal to 10 lb/ft^2 (49 kg/m^2) (i.e. 10 lb times door area in square feet). b) A dynamic load of 50 ft-lb (222 N) provided by a 50 lb (20 kg) weight dropped five times from a height of 12 in (300 mm). This test shall be performed from both sides of the open door. Evidence of unbonded or delaminated components, fracture or permanent deformation of hardware, and binding of the door shall each be cause for rejection.

F4.5.2 Electrical outlets. Verify that branch circuits and NEMA 5-15R power outlets are provided both inside and outside the shelter. Verify that there are branch circuits with suitable amperage capacities and overload protection contained within the shelter. Also verify that there are NEMA 15-R electrical outlets on both ends of the shelter exterior, and that the exterior electrical outlets are weather tight.

F4.5.3 Lighting. Verify the shelter of the shelter provides permanently mounted 110 volt AC interior lighting and NVD safe light. Verify that two removable 60-watt white light fixtures are provided with the shelter, along with mounting brackets for the lights near the personnel door and the generator.

F4.5.4 Erecting and striking. Verify that the shelter is provided with screw jacks or other leveling devices. The shelter shall be erected and leveled on a firm surface having a 24 in. (610 mm) differential in grade to the diagonal dimension of the shelter floor. The shelter shall then be struck and returned to transport mode. Failure to bring the shelter to level and failure to accomplish either erection or striking of the shelter within two man-hours shall each be cause for rejection.

F4.5.5 Workmanship.

F4.5.5.1 Panel flatness. The flatness of each panel shall be inspected using two 48-in. (1200-mm) long straight edges that are flat within 0.005-in. (0.1-mm) total. Two 0.125 in (3-mm) shims shall be used along the one straight edge, located at the extremes of the edge. One 0.125 in (3-mm) shim shall be used along the other straight edge, located at the center of the edge. GO/NO-GO measurements will be taken in both horizontal and vertical directions on the interior and exterior of the shelter panels. Panels found to be bowed or cupped more than 0.125 in. (3 mm) per each 4-ft (1.3-m) length measured across the shelter walls both horizontally and vertically shall be rejected.

F4.5.5.2 Panel delamination. Inspect each laminated panel for unbonded/delaminated areas by either a "tapping" test or other government-approved nondestructive test method to ensure that the panel layers are completely bonded and free of delaminations. Perform the tapping test with a soft face mallet of sufficient hardness to produce a distinct tapping noise when struck against the panel surface without denting the panel or marring the panel finish. Tap test the panel in each 6 by 6-in. (150 by 150-mm) square of panel surface area. A change in the sound the panel makes when struck is indicative of an unbonded or delaminated area. Subject to approval by the government, the manufacturer may choose to use a nondestructive method other than the tapping test for each bonded panel. An engineering report substantiating the validity of the optional nondestructive testing method must be submitted to the government for approval. Any delaminated area on any panel shall be cause for rejection.

F4.5.6 Transportability.

F4.5.6.1 Safety certification. Verify that the contractor has documentary evidence that the containers

have been certified safe by the Coast Guard or other authorized Approval Authority as required by Code of Federal Regulations (CFR) 49, Parts 450 through 453.

F4.5.6.2 Overall dimensions. Measure the shelter and verify that the overall exterior dimensions of the containers conform to those of ISO 668 general-purpose freight containers designated 1C, as shown in Table F1. Verify that no part of the container, including padlocks, extends beyond the planes defined by the outer surfaces of the corner fittings.

F4.5.6.3 Tare mass. Verify that the shelter has been weighed on a certified scale, and that the weight of the empty container (as delivered) does not exceed 4,500 lbs.

F4.5.6.4 Gross mass rating. Verify that the contractor certifies the container is designed for a maximum combined weight of container and cargo of at least 15,000 lbs. (Certification is dependant on conformance to the requirements contained herein.)

F4.5.6.5 Corner fittings. Verify the containers are equipped with corner fittings, and measure them to verify that they conform to ISO 1161 (See Figures F-6 through F-9) Measure the distances between the corner fittings and verify that they conform to ISO 668 (See Figure F-10). Verify that the upper faces of the top corner fittings protrude above the top of the rest of the container by minimum of ¼" (6 mm) and that the lower faces of the bottom corner fittings protrude below the bottom of the container by a minimum of 7/16" (11 mm). (Reference ISO 1496-1)

F4.5.7 Air transport.

F4.5.7.1 Cargo aircraft.

F4.5.7.1.1 Decompression vent. Verify that the total area of the container vent opening(s) at the narrowest point is at least 24 in^2 (154.8 cm^2). Verify that the vent(s) is unlikely to be blocked or reduced by cargo load shift.

F4.5.7.1.2 Flight maneuver forces. Verify that the contractor has provided a recommended tie-down pattern for fastening the containers to the pallet tie-down rings with CGU-1/B tie down devices. Verify that the contractor has documented, certified, engineering analysis or test results showing that, when attached to the pallets using the contractor's recommended tie-down pattern, the containers, loaded to their rated gross weight with all cargo tied down to the container floor and the generator and ECU installed, will remain on the pallets, and have the mechanical strength to meet the criteria specified in MIL-HDBK-1791without suffering permanent deformation or other damage.

F4.5.7.2 Transport provision identification. Verify that all lifting provisions, tie down provisions, and center of gravity are identified and labeled in accordance with MIL-STD-129.

F4.5.7.3 Helicopter external lift. Verify that the container, with generator and ECU installed and loaded to its rated capacity, has been certified suitable for EAT by CH-47 and larger cargo helicopters in accordance with MIL-STD-913, either through analysis or flight test.

F4.5.8 Marine transport.

F4.5.8.1 Base Strength. The container shall be placed on four level 1 in (25.4 mm) thick steel pads,

one under each bottom corner fitting. The pads shall be centralized under the fittings, and shall be substantially of the same plan dimensions as the fittings. The ECU and generator shall then be installed in the container, and a load uniformly distributed over the container floor in such a way that the combined mass of the container and the test load is equal to 27,000 lbs (12,247 Kg). The distance between the bottom of the side rail and the upper surfaces of the pads shall be measured along each side. Deflection of either side more than 8mm below the plane of the pad tops shall be cause for rejection.

F4.5.8.2 Stacking capability. The container shall be placed on four level pads, one under each bottom corner fitting. The pads shall be centralized under the fittings, and shall be substantially of the same plan dimensions as the fittings. The container, with ECU and generator installed, shall have a load uniformly distributed over the floor in such a way that the combined mass of the container and the test load is equal to 27,000 lbs (12,247 Kg). The container shall be subjected to vertical forces, either 381,275 lbf (1,696 kN) applied to all four corner fittings simultaneously or 190,367 lbf (848 kN) applied to each pair of end fittings. The forces shall be applied through a test fixture equipped with ISO corner fittings, or equivalent fittings that have imprints of the same geometry (i.e. with the same external dimensions, chamfered aperture and rounded edges) as the bottom face of the bottom corner fittings. If equivalent fittings are used, they shall be designed to produce the same effect on the container under the test loads as when corner fittings are used. In all cases, the forces shall be applied in such a manner that rotation of the planes through which the forces are applied and on which the container is supported is minimized. Each corner fitting or equivalent test fitting shall be offset in the same direction by 1 in (25.4 mm) laterally and 1.5 in (38 mm) longitudinally. Following the test, the container shall be examined, and the dimensions between the corner fittings re-measured. Permanent deformation or other damage that renders the container unsuitable for use or failure of the corner fitting locations to conform to ISO 668 (See Figure F-10) following the test shall each be cause for rejection.

F4.5.8.3 Panel strength.

F4.5.8.3.1 Side walls. Subject each side wall of the shelter in its container mode to an internal uniformly distributed load of 5820 lb (2640 kg) applied separately and arranged to allow free deflection of the wall. Apply the loads for not less than 5 minutes. Permanent deformation or other damage that renders the container unsuitable for use or failure of the corner fitting locations to conform to ISO 668 (See Figure F-10) following the test shall each be cause for rejection.

F4.5.8.3.2 End walls. Subject each end wall of the shelter in its container mode to an internal, uniformly distributed load of 3880 lb (1760 kg), applied separately and arranged to allow free deflection of the wall. Apply the loads for not less than 5 minutes. Permanent deformation or other damage that renders the container unsuitable for use or failure of the corner fitting locations to conform to ISO 668 (See Figure F-10) following the test shall each be cause for rejection.

F4.5.8.4 Transverse rigidity. The container in tare condition shall be placed on four level supports, one under each corner fitting, and shall be restrained against lateral and vertical movement by means of anchor devices acting through the bottom apertures of the bottom corner fittings. Lateral restraint shall be provided only at a bottom corner fitting diagonally opposite to and in the same end frame as a top

corner fitting to which force is applied. When testing the two end frames separately, vertical restraint shall be applied only at the end frame under test. The distances between the diagonally opposite corners on each end shall be measured. Forces of 33,720 lbf (150 kN) shall be applied either separately or simultaneously to each of the top fittings on one side of the container in lines parallel both to the base and to the planes of the ends of the container. The forces shall be applied first towards and then away from the top corner fittings. If an end is not essentially symmetrical about its own vertical centerline, both sides of that end shall be tested. While the full transverse force is applied, the distances between the diagonally opposite corners on the end under test shall again be measured. Sideways deflection of the top of the container end frame with respect to the bottom of the container end frame at the times it is subjected to the full transverse force which causes the sum of the changes in the length of the diagonals to exceed 2.36 in (60 mm) shall be cause for rejection. Following the test, the container shall be examined, and the dimensions between the corner fittings re-measured. Permanent deformation or other damage that renders the container unsuitable for use, or failure of the corner fitting locations to conform to ISO 668 (See Figure F-10), shall also be cause for rejection.

F4.5.8.5 Longitudinal forces. The container in tare condition shall be placed on four level supports, one under each corner fitting, and shall be restrained against longitudinal and vertical movement by means of anchor devices acting through the bottom apertures of the bottom corner fittings. Longitudinal restraint shall be provided only at a bottom corner fitting diagonally opposite to and in the same side structure as a top corner fitting to which force is applied. The distances between the diagonally opposite corners on each side shall be measured. Forces of 75 kN shall be applied either separately or simultaneously to each of the top corner fittings on one end of the container in lines parallel both to the base of the container and to the planes of the sides of the container. The forces shall be applied first towards and then away from the top corner fitting. If a side is not essentially symmetrical about its own vertical centerline, both ends of that side shall be tested. While the full transverse force is applied, the distances between the diagonally opposite corners on the end under test shall again be measured. Sideways deflection of the top of the container side structure with respect to the bottom of the container side structure at the times it is subjected to the full transverse force which causes the sum of the changes in the length of the diagonals to exceed 1.0 in (25 mm) shall be cause for rejection. Following the test, the container shall be examined, and the dimensions between the corner fittings re-measured. Permanent deformation or other damage that renders the container unsuitable for use, or failure of the corner fitting locations to conform to ISO 668 (See Figure F-10), shall also be cause for rejection.

F4.5.9 Rail transport.

F4.5.9.1 ISO lock rail car restraint capability. The container, with ECU and generator installed, shall have a load uniformly distributed over the cargo floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to 15,000 lbs (6875 kg), and it shall be secured longitudinally to rigid anchor points through the bottom apertures of the bottom corner fittings at one end of the container. A force of 30,000 lbs shall be applied horizontally to the container through the bottom apertures of the other bottom corner fittings, first towards and then away from the anchor points. Following the test, the container shall be examined, and the dimensions between the corner fittings re-measured. Permanent deformation or other damage that renders the container unsuitable for use or

failure of the corner fitting locations to conform to ISO 668 (See Figure F-10) shall each be cause for rejection.

F4.5.9.2 Standard flatcar restraint capability. The container, with ECU and generator installed, shall have a load uniformly distributed over the cargo floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to 15,000 lbs (6875 kg). The container shall then be tested in accordance with MIL-STD-810, Method 516.4, Procedure VIII - Rail Impact. Binding of any door or panel; dislodgment of or damage to any stored item; damage to any part of the shelter; or failure of the corner fitting locations to conform to ISO 668 (See Figure F-10) following the test shall each be cause for rejection.

F4.5.10 Motor vehicle transport.

F4.5.10.1 Load transfer area. Verify that the intermediate transverse support members of the container base are all spaced at 39 in (1,000 mm) apart or less.

F4.5.10.2 Tactical vehicle transport. Verify that each end of the container is provided with upper and lower transport dolly fittings identical to those specified in the TDP. The container, with ECU and generator installed, shall have a load uniformly distributed over the cargo floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to 15,000 lbs (6875 kg). Transport the container over a mission/field support test track that simulates in-service conditions as follows: 600 miles on a Secondary Road course of native soil composition, 50 miles on a moderately rough Cross Country course of native loam with quarry spall composition and 50 miles on a Belgian Block course. In addition, 5 laps around a segmented Road Shock and Vibration Course consisting of 2-inch Washboard, 2 to 4 inch Radial Washboard, 3-inch Spaced Bump and a 6-inch Washboard shall be required. Maximum safe speed for the surface and conditions shall be maintained; not to exceed 35 mph on secondary roads, 15 mph for travel cross-country, and 15 mph for Belgian Block course. Speeds for the Road Shock and Vibration course shall vary between 2-10 mph. Following the test, the container shall be examined, and the dimensions between the corner fittings re-measured. Permanent deformation or other damage that renders the container unsuitable for use, and failure of the corner fitting locations to conform to ISO 668 (See Figure F-10) following the test, shall each be cause for rejection. Any damage to, or displacement of, any component, accessory, part, or tool installed in or on the container, or the failure of any item of equipment in the container to function properly upon completion of the test shall also be cause for rejection.

F4.5.11 Transport handling.

F4.5.11.1 Drop. The container, with ECU and generator installed, shall have a load uniformly distributed over the cargo floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to 15,000 lbs (6875 kg). The container shall be subjected to a series of drops of 6 in. (150 mm) onto a level concrete type surface utilizing a quick release hook that ensures that the shelter falls freely the full 6 in (150 mm). Any evidence of splits or tears on the bottom, permanent deformation, buckling, delamination of any panel, structural damage to any part of the shelter, doors or panels not operating properly, and failure of the corner fitting locations to conform to

ISO 668 (See Figure F-10) following any drop shall each be cause for rejection.

F4.5.11.1.1 Flat Drop. Lift the shelter 6 in. (150 mm) using a four cable sling and allow the shelter to fall freely so that the bottom impacts onto a hard concrete surface.

F4.5.11.1.2 Rotational Drop. Place a 4 in. (100 mm) high (nominal) board under the ISO fittings at one edge of the shelter. Lift the opposite edge of the shelter 6 + 14 in. (160 mm) from the ground. Take measurements from the outer edge of the ISO fittings at the two raised corners of the shelter. The range of the two measurements shall not exceed 1/4 in. (6 mm). Release the shelter and allow it to fall freely such that the ISO fittings impact onto a hard concrete surface. After all four rotational drops, the requirements of 5.12 shall be met.

F4.5.11.2 Overhead lift. All lifting provisions shall be analyzed using Computer Aided Engineering (CAE) structural analysis tools prior to any testing. Either the contractor or the government will perform this analysis. In cases where the structural analysis indicates that the provisions will clearly pass the test, actual physical testing will not be necessary. In cases where the structural analysis indicates that the provisions will clearly fail the test, a redesign of the provisions will be recommended to the contractor. If the structural analysis indicates that the provisions will marginally pass or fail the test, redesign or testing will be recommended to the contractor. The appropriate Government service transportability agent shall make the decision on using analysis results in lieu of actual physical testing. Whenever possible, such decisions will seek to reduce the overall cost impact based on sound risk/benefit analyses. If testing is required, all lifting provisions shall be tested attached to the container. For test purposes, only wire rope, wire rope with a thimble loop, or a chain attached to the provision shall be used. Textile straps, such as nylon and polyester (Dacron) and synthetic ropes, shall not be used. The loads applied during testing shall not be less than the design limit load requirement and not more than 10 percent in excess.

F4.5.11.2.1 External Air Transport (EAT) Lift. Prior to testing, the contractor shall provide detailed drawings of the container, and any three-dimensional Computer-Aided Design/Computer-Aided Engineering (3D CAD/CAE) models they have developed of the container, its lifting provisions, and their supporting structure. The government will use this information to perform a CAE structural analysis to help identify potential design deficiencies in the provisions and surrounding structure. In lieu of providing this information, the contractor can provide the results of their own CAE structural analysis.

F4.5.11.2.1.1 Analysis. The CAE structural analysis shall meet the following requirements:

a) A static pull to the required 16,971 lb (7698 kg) per lift provision design limit load shall be simulated on all four upper lift provisions.

b) The angle the simulated static pull shall duplicate a sling angle of 45º as shown in Figure F-2.

c) Failure is defined as any stress level determined by the analysis to exceed the yield strength of the lift provision material.

d) If the structural analysis indicates that the provisions have the strength to withstand the loads applied to it, actual physical test will not be required. The appropriate Government service transportability agent will make this determination.

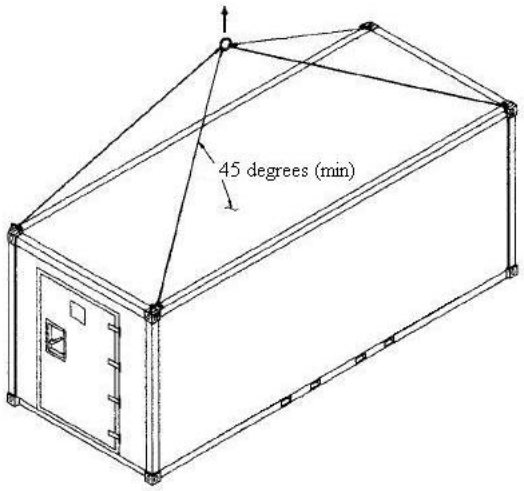


Figure F-2. Single-point Top Lift

F4.5.11.2.1.2 Test. Physical testing, if required, shall meet the following requirements:

a) The container with generator and ECU shall be prepared such that the total weight is 48,000 lbs (21,772 kg). The payload may be in any convenient form that may be uniformly distributed over the floor. If solid weights are used, the floor will be protected from sharp objects by 1/2 to 3/4-in. (13 to 19-mm) thick plywood covering the floor. (The shelter must be located on a flat, solid surface while the loads are installed.) All doors and panels shall be closed and secured.

b) Connect a four-legged sling to the upper ISO fittings maintaining a 45° minimum angle with the roof (see Figure F-2). Lift the container from the ground and allow it to remain suspended for 5 minutes.

c) Slowly lower the container to the ground and inspect for signs of damage.

d) If the CAE evaluation shows that the provisions may fail under two-point lift, an additional test using an 8-foot by 20-foot container spreader bar, or equivalent, shall be performed.

e) Remove the payload, erect the container and thoroughly inspect the container for damage.

f) Failure is defined as any visible permanent deformation, yielding, or bending of the lifting provision or other structural component. A possible failure indication during the initial material analysis shall be justification to use more detailed analysis and testing methods (for example, calibrated measurements, finite element analysis, magnetic particle inspection, X-ray, fatigue testing, ultimate testing, and so forth). Any evidence of cracks in welds, unbonded components, or loosening of structural components shall also constitute failure of this test.

g) The contractor shall provide a material analysis showing the ultimate load is not less than 1.5 times the required design limit load for the lift provisions.

F4.5.11.2.2 Crane. Prior to testing, the contractor shall provide detailed drawings of the container, and

any three-dimensional Computer-Aided Design/Computer-Aided Engineering (3D CAD/CAE) models they have developed of the container, its lifting provisions, and their supporting structure. The government will use this information to perform a CAE structural analysis to help identify potential design deficiencies in the provisions and surrounding structure. In lieu of providing this information, the contractor can provide the results of their own CAE structural analysis.

F4.5.11.2.2.1 Analysis. The CAE structural analysis shall meet the following requirements:

a) A static pull to the required 12,198 lb (5,533 kg) per lift provision design limit load shall be simulated on all four lower lift provisions.

b) The angle the simulated static pull shall duplicate a sling angle of 45º as shown in Figure F-3.

c) A vertical static pull of 8,625 lb (3912 kg) per lift provision shall be simulated on all four lower lift provisions to simulate lift with an 8-foot by 20-foot container spreader bar.

d)) Failure is defined as any stress level determined by the analysis to exceed the yield strength of the lift provision material.

e) If the structural analysis indicates that the provisions have the strength to withstand the loads applied to it, actual physical test will not be required. The appropriate Government service transportability agent will make this determination.

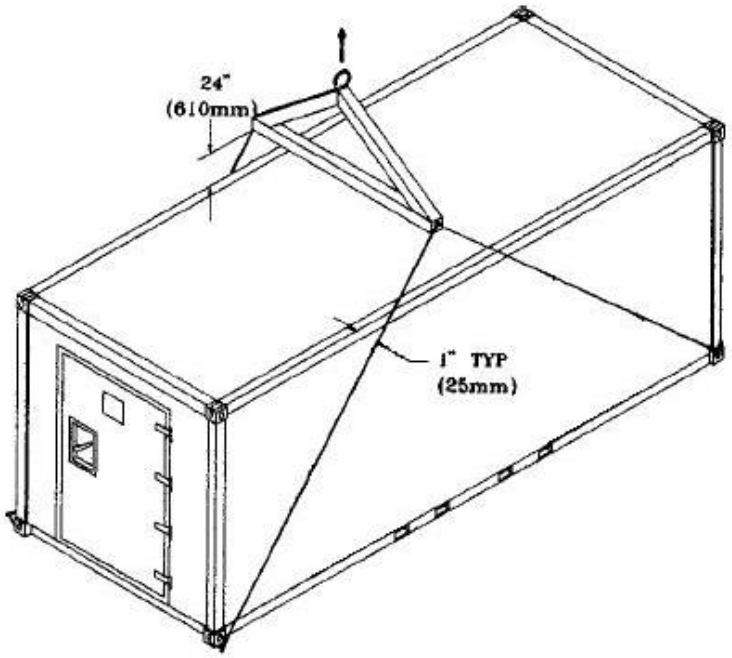


Figure F-3. Bottom Lift by Crane

F4.5.11.2.2.2 Test. Physical testing, if required, shall meet the following requirements:

a) The container with generator and ECU shall be prepared such that the total weight is 34,500 lbs (15,649 kg). The payload may be in any convenient form that may be uniformly distributed over the floor. If solid weights are used, the floor will be protected from sharp objects by 1/2 to 3/4-in. (13 to 19-mm) thick plywood covering the floor. (The shelter must be located on a flat, solid surface while the loads are installed.) All doors and panels shall be closed and secured.

b) Connect a two-point spreader bar to the lower ISO fittings maintaining a 45° minimum angle with the roof (see Figure F-3). Lift the container from the ground and allow it to remain suspended for 5 minutes.

c) Slowly lower the container to the ground and inspect for signs of damage.

d) If the CAE evaluation shows that the provisions may fail when lifted by a four-point spreader bar, an additional test using an 8-foot by 20-foot container spreader bar, or equivalent, shall be performed.

e) Remove the payload, erect the container and thoroughly inspect the container for damage.

f) Failure is defined as any visible permanent deformation, yielding, or bending of the lifting provision or other structural component. A possible failure indication during the initial material analysis shall be justification to use more detailed analysis and testing methods (for example, calibrated measurements, finite element analysis, magnetic particle inspection, X-ray, fatigue testing, ultimate testing, and so forth). Any evidence of cracks in welds, unbonded components, or loosening of structural components shall also constitute failure of this test.

g) The contractor shall provide a material analysis showing the ultimate load is not less than 1.5 times the required design limit load for the provisions.

F4.5.11.3 Fork lift. Verify that the container has fork lift pockets, and measure them for conformance. Absence of one or both sets of pockets, any pocket that does not pass completely through the container base, or any pocket that does not meet the minimum dimensional requirements of Appendix B shall each be cause for rejection.

F4.5.11.3.1 Outer Pockets. The container, with ECU and generator installed, shall have a load uniformly distributed over the cargo floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to 24,000 lbs (10,886 kg). The container shall be supported on two horizontal bars, each 8 in (200 mm) wide, projecting 72 ±1/8 in (1,828 mm ± 3 mm) into the outer forklift pockets, measured from the outside face of the side of the container. The bars shall be centered within the pockets. The container shall be supported for 5 min and then lowered to the ground.

F4.5.11.3.2 Inner pockets. The container, with ECU and generator installed, shall have a load uniformly distributed over the cargo floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to 9,375 lbs (4252 kg). The container shall be supported on two horizontal bars, each 8 in (200 mm) wide, projecting 72 ±1/8 in (1,828 mm ± 3 mm) into the inner forklift pockets, measured from the outside face of the side of the container. The bars shall be centered within the pockets. The container shall be supported for 5 min and then lowered to the ground.

F4.5.11.4 Impact resistance. Specimens of the container floor and roof panel material 24-in. (610-mm) square shall each be subjected a blow from a 70-lb (30-kg) steel cylinder 3 in. (80 mm) in diameter with a hemispherical end, dropped from a height of 30 in. (800 mm). The cylinder shall be oriented and dropped vertically so that the center of the hemispherical end of the cylinder strikes the center of the specimen on a horizontal plane. The cylinder shall not be permitted to re-impact the specimen after the first impact. A specimen(s) of the container side wall and end wall panel material shall be subjected to a blow from the same steel cylinder dropped from a height of 16 in. (410 mm). The panel specimens shall be fabricated in accordance with Figure F-4. The specimens shall contain only one continuous piece of core material. The specimen s shall be supported along each of their four edges by a framework backed by concrete. The framework shall be made of four pieces of 2 by 4-in. (50 x 100-mm) nominal softwood lumber. The frame shall be rigidly bolted together to form a square 24 in. (610 mm) on a side (outside dimensions) and 4-in. (100-mm) nominal high. The frame shall rest on the 24-in. (610-mm) nominal wide face. Each specimen shall be bolted to the frame with two 1/4-in. (6-mm) diameter bolts per edge. Care should be taken that the appropriate surface of the specimen faces the impact: exterior surfaces for the roof, side wall and end wall specimens, and the interior surface for the floor specimen. The bolts shall be tightened against the specimen and then backed off so that there is a gap of 0.010-in. (0.3-mm) nominal between the bolt head and the panel. The specimen shall be cross-sectioned through the impact area and visually examined. Rupture of the impacted or opposite skin; delamination of the opposite skin; delamination of the impacted skin from the core, crushing of the core, or collapsing of the core beyond a 3-in. (80-mm) radius (3.12 in. (90 mm) radius for the floor panel) from the center of impact; and core shear failure outside a 5-inch (127 mm) radius from the center of impact shall each be cause for rejection.

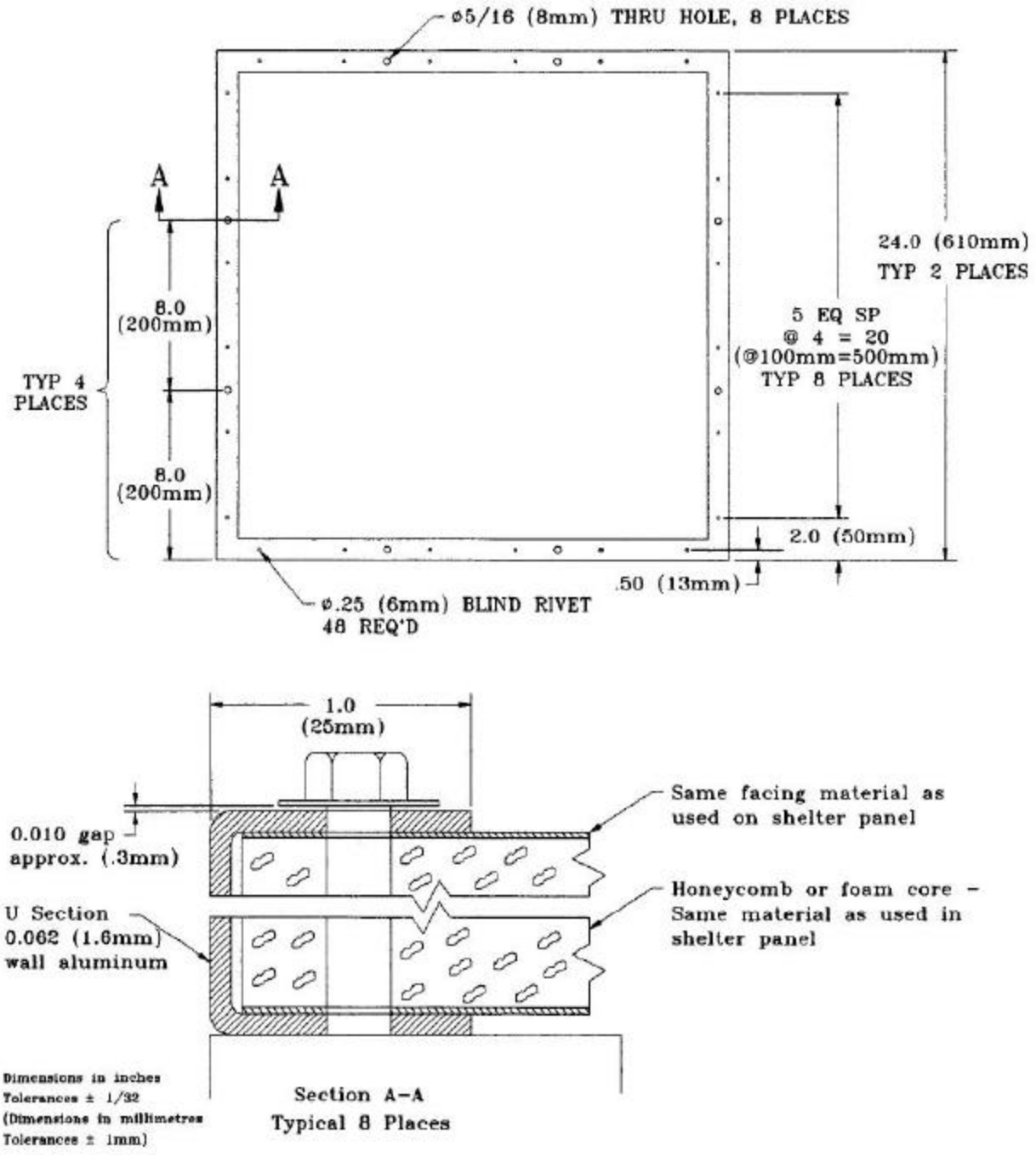


Figure F-4. Panel Impact Resistance Samples

F4.5.11.5 Floor loads. The container cargo floor shall be uniformly loaded to 80 lb/ft^2 (390 kg/m^2) for at least 30 minutes Prior to removal of the uniform load, all doors and removable panels shall be operated to ensure that no interference exists between components. The uniform load shall then be removed and a concentrated 2,000-lb (900 kg) load shall be applied over a 4 ft^2 (0.4 m^2) area centered on the floor and left in position for at least 30 minutes Prior to removal of the concentrated load, all

doors and removable panels shall be operated to ensure that no interference exists between the components. The concentrated load shall then be removed and a point load of 125 lb (57 kg) balanced atop a 1 in^2 (650 mm^2) block shall be applied for at least 5 minutes to the center of the floor. A thorough inspection of the container shall be made after each test. Evidence of structural damage, panel delamination, or permanent deformation shall each be cause for rejection.

F4.5.11.6 Roof loads. The container shall subjected to a uniform loading of 40 lb/ft^2 (200 kg/m^2) over the roof surface. After removal of the uniform load, a 660 lb (300 kg) load shall be placed over 2 ft^2 (0.2 m^2) at the center of the roof. Each load shall be applied for at least of 5 minutes. The container will be visually inspected during and after each test. Evidence of permanent deformation, structural damage, panel delamination, or broken seals shall each be cause for rejection.

~~F4.5.12 Lashing. Prior to testing, the contractor shall provide detailed drawings of the container, and any three-dimensional Computer-Aided Design/Computer-Aided Engineering (3D CAD/CAE) models they have developed of the container, its tiedown provisions, and their supporting structure. The government will use this information to perform a CAE structural analysis to help identify potential design deficiencies in the provisions and surrounding structure. In lieu of providing this information, the contractor can provide the results of their own CAE structural analysis.~~

~~F4.5.12.1 Analysis. The CAE structural analysis shall meet the following requirements:~~

~~a) A simulated static pull to the required design limit load shall be performed on each of the tiedown provisions (the upper corner blocks).~~

~~b) The directional loads of the simulated static pull shall be 30,000 lbs (13,608 kg) longitudinal, away from the container; 11,250 lbs (5,103 kg) transverse, away from the container; and 7,500 lbs (3,402 kg) vertically downward.~~

~~c) The load applied in the longitudinal, vertical and transverse directions shall be applied statically and independently, and shall be not less than the specified design limit load in each direction.~~

~~d) Failure is defined as any stress level determined by the analysis to exceed the yield strength of the tiedown provision material.~~

~~e) If the structural analysis indicates that the tiedown provisions have the strength to withstand the loads applied to them, actual physical testing will not be required. The appropriate government transportability agent will make this determination.~~

~~F4.5.12.2 Test. Actual physical testing, if required, shall meet the following requirements:~~

~~a) A static independent pull to the specified design limit load shall be conducted on all tiedown provisions; however, all provisions do not have to be tested at the same time.~~

~~b) Loads applied to each provision shall be measured with an appropriate measuring device, such as a load cell or dynamometer.~~

~~c) The points used to apply the load to the equipment shall be located so they do not interfere with or reduce the loading on the structural member next to the tiedown provisions.~~

~~d) Loads applied in the longitudinal, vertical, and transverse directions shall be applied statically and independently for not less than 6.0 seconds and shall be not less than the required design limit load in each direction.~~

~~e) Failure is defined as any visible permanent deformation, yielding, or bending to the tiedown provision or other structural component. A possible failure indication during the initial material analysis shall be justification to use more detailed analysis and testing methods (for example, calibrated measurements, finite element analysis, magnetic particle inspection, X-ray, fatigue testing, ultimate testing, and so forth). Cracks in welds will constitute test failure.~~

~~f) The contractor shall provide a material analysis showing the ultimate load is not less than 1.5 times the required design limit load for the provisions.~~

F4.6 Interfaces.

F4.6.1 Electrical power.

F4.6.1.1 External power. Verify the shelter is provided with an externally accessible power input connector capable of accepting 100 Amp, 240 volt, 3-phase, 60 Hz AC receptacle consisting of: a wall-mounting receptacle with coupling ring conforming to MIL-C-22992, Class L, Style P comprised of a MS90558 C 44 5 shell, with an MS14055 insert having insert arrangement 44-12, along with a MS90564 44 C weather-tight cover. Also verify the shelter is supplied with a service box with a capacity of at least 100 amps.

F4.6.1.2 Internal power. Verify the shelter incorporates provisions for permanently mounting a generator in the front end of the shelter (opposite the personnel door) and connecting it to the shelter electrical system. Verify that all mechanical and electrical interfaces for mounting and operating a 62" long by 32" in wide by 37" in high (1575 mm x 813 mm x 940 mm) generator weighing 1,182 lbs (536 kg) are provided. Verify that the mounting provisions provide adequate access for operation and maintenance (Reference TM 9-6115-642-10), and have a sufficient load rating to bear the weight of the generator. Verify that the generator retracts inside the shelter walls and has a protective door or panel for storage, transport, and NBC survivability.

F4.6.2 Human interface. Verify the shelter complies with the guidelines of Appendix D.

F4.6.2.1 Protective clothing. Verify the shelter can be set up for operation by troops wearing heavy gloves and winter gear.

F4.6.2.2 Illumination level. With the interior lights of the shelter turned on and the shelter door(s) closed, measure the light intensity thirty inches above the shelter floor, with an luminance meter. Confirm there is at least fifty (50) foot-candles of illumination, and that glare and specular reflection are visually tolerable. Using the color samples of FED-STD-595, verify the interior surfaces of the shelter approximate Semi-gloss Green 24533 or Semi-Gloss White 27875.

F4.6.2.3 Working environment. Verify the shelter incorporates provisions for permanently mounting a 35" long by 38" wide by 27" high (889 mm x 965 mm x 686 mm) ECU weighing 398 lbs (181 kg).

Verify that all mechanical and electrical interfaces for mounting and operating the unit are provided, including a 208 Volt, 3-phase, 60 Hz circuit rated for at least 35 amps. Verify that the mounting provisions provide adequate access for operation and maintenance (Reference TM 9-4120-425-14&P), and have a sufficient load rating to bear the weight of the ECU. Verify that the ECU retracts inside the shelter walls and has a protective door or panel for storage, transport, and NBC survivability.

F4.6.2.4 Door opening. Verify that the shelter has at least one personnel door that is at least 76 in (1930 mm) high and 48 in (1220 mm) wide.

F4.6.3 Plates and labels. Examine all plates and labels affixed to the shelter. Affirm that the US English language is used. Examine all plate and label material specification sheets, including marking, engraving techniques. Verify that they are resistant to all environmental elements and petroleum products and will remain legible for 15 years.

F4.6.3.1 Hazard identification. In an operational mode, examine the shelter for all unguarded physical hazards and verify that all are properly identified and labeled in accordance with ANSI Z535.4.

F4.6.4 Communications. Verify the shelter is provided with a general-purpose tactical communications pass-through panel providing four binding posts, one RJ-11 plug, one female Bayonet Neill Concelman (BNC) connector for RG-58 coaxial cable, one RJ-45 plug, and one DB9 connector. Verify that the RJ-11, DB9, and RJ-45 plugs have weather-tight covers. Verify the interior panel mirrors the exterior panel, and that proper pin-to-pin connections have been made.

F4.7 Environment.

F4.7.1 Environmental protection. Verify the shelter includes spill containment measures for the generator coolant, fuel, solvent, petroleum, oils, and lubricants.

F4.7.2 Battlefield survivability.

F4.7.2.1 Protective coloration. Verify that the exterior of the shelter is a color approximating "Lusterless Forest Green," chip 34083 of FED-STD 595, unless otherwise specified by the Procurement Contracting Officer.

F4.7.2.2 Blackout conditions. With the shelter in its operational configuration, the personnel entryway(s) closed and the interior lights on, visually verify the shelter is light tight. No light, generated when the interior lights of the shelter are illuminated, may be visible from any point outside the shelter when the shelter is surrounded by darkness in a lightless room. Verify the personnel entryway(s) have an interlock that opens the electrical circuit(s) for the interior lights, so that the lights are completely extinguished before the light-tight seal of the entryway is broken. Verify the interlock feature can be deactivated when not needed.

F4.7.2.3 Nuclear, Biological, and Chemical Contamination Survivability. Verify that documentation certifying exterior of the shelter can be decontaminated to negligible risk levels, using standard Army decontamination procedures. Also verify that the shelter is capable of withstanding the materiel damaging effects of NBC contaminants and decontaminants through five contamination/decontamination cycles, without sustaining damage that renders it unserviceable. Documentation shall consist of an

analysis from Dugway Proving Ground. An unfavorable report from Dugway shall be cause for rejection, pending corrective action by the contractor. If corrective action is technically or economically impractical, an unfavorable report from Dugway shall be cause for rejection; subject to approval of a waiver by the DA Nuclear and Chemical Survivability Committee Secretariat.

F4.7.3 Operational environment.

F4.7.3.1 Operating temperatures.

F4.7.3.1.1 High temperature operation. The shelter shall be tested in accordance with MIL-STD-810, Method 505.3, Procedure I. Temperature/solar radiation cycling shall be in accordance with Table 505.3-I. The number of Hot-Dry cycles shall be three. Every hour, all panels and doors shall be opened and closed at least once. Binding of the shelter doors or panels and deterioration of any shelter materials shall each be cause for rejection.

F4.7.3.1.2 Low temperature operation. The shelter shall be tested in accordance with MIL-STD-810, Method 502.3, Procedures II and III. The shelter shall be placed in an environment with an ambient temperature of -25°F, or lower, for at least 72 hours. The shelter shall be maintained at a temperature of -25°F, or less, for the duration of the test. The test duration shall be not less than 4 hours. Every hour, all panels and doors shall be opened and closed at least once. Cracking, crazing, embrittlement, or other damage to the shelter materials and binding of any door, panel, or other part of the shelter shall each be cause for rejection.

F4.7.3.2 Differential temperature. A simulated solar load sufficient to raise the outer skin temperature to 205°F (96°C) shall be applied uniformly to the shelter roof. A uniform temperature should be attained gradually within 4 hours and shall be maintained for an additional 4 hours. As a minimum, one thermocouple per 10 ft^2 ($1m^2$) of roof shall be uniformly distributed on the entire area of the roof. All of the thermocouples should read 205 ± 15°F (96 ± 8°C) throughout the 4-hour period that the solar load shall be maintained. During this test, the ambient temperature within the RWRS shall be maintained at a maximum of 85°F (29°C). Upon completion of the test, the temperatures of the roof panel interior and exterior shall be allowed to equalize before the roof panel is examined for cupping, bowing, and delamination in accordance with paragraphs 4.5.5.1 and 4.5.5.2. Any evidence of delamination, and cupping or bowing exceeding the specified limits shall each be cause for rejection.

F4.7.4 Storage environment.

F4.7.4.1 High temperature storage. The shelter shall be tested in accordance with MIL-STD-810, Method 501.3, Procedure I B Storage. Temperature cycling shall be in accordance with Table 501.3-I, Induced Conditions, number of cycles 7. Damage to the shelter materials or binding of any door, panel, or other part of the shelter shall be cause for rejection.

F4.7.4.2 Low temperature storage. The shelter shall be tested in accordance with MIL-STD-810, Method 502.3, Procedure I. The shelter shall be placed in an environment with an ambient temperature not greater than -50°F for at least 72 hours. After completion of the conditioning period, examine the shelter for cracking, crazing, embrittlement, or other damage, which shall be cause for rejection. The binding of any door, panel, or other part of the shelter shall also be cause for rejection.

F4.7.5 Weathertightness. A stream of water shall be applied on all exterior joints and seams of the container from a nozzle of 0.5 in (12.5 mm) inside diameter, at a pressure of about ~~14.5~~ 40 psi (~~100~~ 276 kPa) ~~(corresponding to a head of about 32.8 ft (10 m) of water)~~ on the upstream side of the nozzle. The nozzle shall be held at a distance of 5 ft (1.5 m) from the container under test, and the stream shall be traversed at a speed of 4 in/s (100 mm/s). Procedures involving the use of several nozzles are acceptable provided that each joint or seam is subjected to water loading no less than would be given by a single nozzle. The test shall be conducted in the operational mode with the personnel door closed, and in the transport mode with all items in their storage locations and all container doors and panels closed and locked. Immediately following the test open all doors and panels and examine for any evidence of water. Presence of water in inside the cargo area shall be cause for rejection.

F4.7.6 Heat transfer. The shelter shall be erected inside a chamber with an automatic control system for maintaining a constant minimum temperature of –25°F (–32°C) when the temperature inside the shelter is maintained at 75°F (23°C). The volume of the test chamber shall be such that the bulk of the shelter will not interfere with the generation and maintenance of test conditions. The minimum distance from any shelter panel to adjacent chamber wall shall be 24 in. (610 mm). The generator compartment shall be open, with external air circulating within it; and the ECU panel shall be open with the ECU in operating position. The conditioned airflow shall be suitably baffled to provide free circulation between the shelter and the chamber walls and ceiling and to provide uniform airflow around the shelter with the maximum velocity on the shelter surface of 5 mph (8 km/h). The chamber temperature shall be measured by placing one thermocouple 6 in. (150 mm) away from each corner fitting, and one thermocouple centrally located 6 in. (150 mm) away from each wall and ceiling panel, and one centrally located within the generator compartment. Internal temperature shall be measured with a total of 16 thermocouples, with each located 6 in. (150 mm) away from the panel surface, each shielded from the heat source and positioned as shown in Figure F-5. An electrical resistance heat source, with sufficient power to maintain a stabilized temperature of not less than 100°F (56°C) above the outside temperature, shall be used. A heater providing air discharge radially in a 360° pattern, with adjustable louvers around the circumference and discharge louvers in the top, is the preferred item for providing uniform heat. Additional fans may be used to ensure that the difference between any two thermocouples is a maximum of 5°F (3°C), thereby providing a uniform temperature within the shelter. Also, the heater resistance elements shall be completely shielded from any interior shelter surfaces. Temperature conditions shall be considered stable when, for 30 min, internal thermocouple readings remain within 5°F (3°C) of one another while the average external temperature remains at –25° ± 5°F (–32 ± 3°C) and the average internal temperature remains a minimum of 100°F (56°C) above the average external temperature. Thermocouple readings shall be recorded every 15 min. After the temperature conditions have stabilized and while maintaining stability, the electrical power to the internal apparatus shall also be recorded every 15 min during which time the power shall not be changed and all apparatus shall operate continuously. Four sets of power readings shall be recorded with an allowable variation of 5 %. The overall coefficient of heat transfer shall be calculated using the average internal and external temperatures, amount of electrical power consumed, and nominal internal surface area.

$$U = \frac{\text{total power consumed– Btu/hr (watts)}}{SA \times \Delta T}$$

where:

SA = Nominal inside surface area - ft^2 (m^2), and
ΔT = Temperature Difference - °F (°K).

The calculated values of the overall heat transfer coefficient shall then be averaged to determine the final average value for the overall heat transfer coefficient. Test results showing the shelter has an overall heat transfer coefficient greater than 0.35 Btu/(h(ft^2)(°F)) (2.2W/(m^2(°K)) shall be cause for rejection.

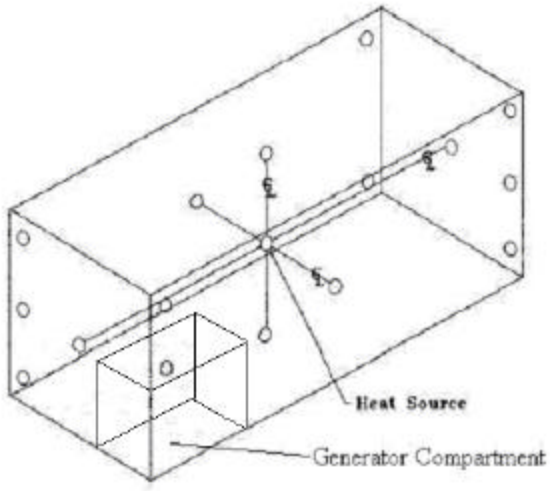


Figure F-5. Interior Thermocouple Placement

F4.7.7 Fungus and moisture. Examine the material specifications of all materials used in the shelter, especially electrical circuits and related components; and verify that all seals, gaskets, cable covers and other elastomer parts are fungi and moisture resistant. Absence of certification that any material used in the shelter is fungus and moisture resistant shall be cause for rejection.

F4.7.8 Ozone. Examine the material specifications of all gaskets, electric cable covers, and other elastomer parts exposed to the atmosphere. Verify that all materials used in the shelter are ozone resistant. Absence of certification that any elastomer used in the shelter is ozone resistant shall be cause for rejection.

F4.7.9 Marine environment. The exterior of the shelter in its operational mode shall be tested for corrosion resistance in accordance with MIL-STD-810, Method 509. The shelter shall be thoroughly examined following the test. Evidence of corrosion due to electrochemical reaction between parts fabricated of dissimilar metals; clogging or binding of moving parts such as doors, latches, leveling jacks, and connector covers; and blistering of protective coatings due to corrosion shall each be cause for

rejection.

F4.7.10 Desert environment. The exterior of the shelter shall be tested in accordance with MIL-STD-810, Method 510, Procedure II, using the following parameters: test temperature 120 °F (49 °C; relative humidity less than 23%; air velocity 1750 ± 250 ft/min (8.9 ± 1.3 m/sec); sand composition at least 95% silica (SiO_2) by weight; sand concentration 1.32 x 10^{-4} lb/ft^3 (2.19 g/m^3); shelter in the operational mode with ECU and generator in their operating positions, exposure time 90 minutes per shelter end and side; and sand removal by broom, hand brush, and 30 psig (207 kP) compressed air. Sand particle size shall be: 90% ±2% passing a 150 µm mesh screen, 98% ±2% passing a 500 µm screen, and 100% passing a 1000 µm screen. Following exposure to the blowing sand, clinging and accumulated sand shall be removed from the shelter exterior and generator compartment, and the shelter opened and examined. Presence of sand in the shelter cargo area; interference between mating parts; and binding of any latch, hinge, door, slide, panel, or other moveable part of the shelter shall each be cause for rejection.

F4.8 Safety.

F4.8.1 Physical hazard control. Examine the shelter and confirm all moving parts, electrically energized parts, and high temperature surfaces are provided with guards, covers, or insulation to protect personnel from inadvertent contact. Also, confirm that safety guards, covers, and insulation do not interfere with the operation of the shelter. Verify that any physical hazard that cannot use protective devices is identified, by type, with a plainly visible warning sign. Presence of unnecessary or unidentified hazards shall each be cause for rejection.

F4.8.2 Physical strain control. Verify the physical exertion required when erecting the shelter for operation in the field, and when striking it for ground transport does not exceed safe limits for the target population (see Appendix D). Any step in the erection or striking sequence requiring exertion exceeding the capabilities of a 5th female soldier shall be cause for rejection.

F4.8.3 Electrical ground. Verify that all electrical circuits incorporated in the shelter are electrically grounded to the shelter frame, and to the power source ground through the electrical input cable. Also verify that all AC electrical power circuits have a Ground Fault Circuit Interruption (GFCI) device(s). Verify that ¼-inch diameter grounding stud and wing nut are provided on the shelter exterior, in a clearly marked location, and that the grounding stud location permits it to be connected to an earth ground, with a grounding wire not more than six-feet long. Verify that a grounding rod kit is provided with the shelter, and that there is a dedicated storage location for the grounding rod kit, inside the shelter near the grounding stud location. Absence of a required ground, absence of GFCI protection for any circuit; absence of an exterior grounding stud, and absence of the required grounding kit shall each be cause for rejection.

F4.8.4 Steps. Verify that safe access to the shelter roof is provided that conforms to the guidelines of Appendix D. Absence of access conforming to Appendix D shall be cause for rejection.

F4.8.5 Tread surfaces. Verify the shelter floor, stair treads, and roof all have non-slip surfaces. Absence of non-slip surfaces in these areas shall be cause for rejection.

F4.8.6 Anti-Entrapment Measures. Verify that the shelter is provided with anti-entrapment measures to prevent personnel from being locked inside, i.e. an escape hatch that can be opened only from the inside, and/or locking and latching mechanisms on the personnel door that permits a locked door to be opened from the inside. Absence of anti-entrapment measures shall be cause for rejection.

F4.8.7 Toxic materials. Examine the material specifications for the shelter components and verify that in their cured, dried, or other final processed state they do not emit toxic vapors over time or otherwise present a health hazard to personnel during transportation, operation, or maintenance of the shelter. If any of the shelter materials do emit toxic vapors, the air inside the shelter following the high-temperature storage test shall be sampled and tested in accordance with the NIOSH-approved procedures for the material in question. Shelter materials that produce an accumulation of toxic vapors inside the shelter that exceed the NIOSH Threshold Limit Values for the substances present shall be cause for rejection.

F4.8.8 Fire resistance. Two specimens of a production panel 12 by 12 in. (300 by 300 mm) shall be tested for flammability. The specimens shall be prepared and tested in the following manner:

a) Drill a 1/4-in. (6 mm) hole in the center of the panel through both skins.

b) Using a 1-in. (25 mm) diameter hole saw with a 1/4-in (6 mm) pilot, remove the skin only on each side within a 1-in (25 mm) diameter area.

c) Mount the panel in any appropriate holding fixture in a horizontal position.

d) Adjust the height of the panel so that the lower skin is approximately 2-12 in. (64 mm) above the top of a standard barrel Bunsen burner.

e) Adjust the flame height to approximately 5 in (125 mm) with an inner core of approximately 3 in (75 mm).

f) Apply the flame to the center of the hole in the skin, impinging on the core, for 30 seconds.

j) At the end of the 30-second period, remove the flame and record the time, in seconds, for burning or glowing to cease, if ignition occurs.

Failure of the specimen to be self-extinguishing within 30 seconds if ignition occurs and evidence of degradation (charring) of material outside a 1.25-in (32-mm) radius from the center point of the drilled hole shall each be cause for rejection.

F4.9 Economic life. The contractor shall provide a report detailing the projected economic life of the shelter is at least fifteen years. The projection may be made based on historical data regarding the economic life of items having similar design and manufacture, test data, or a combination thereof. Lack of supportive objective evidence in the report shall be cause for rejection.

F4.10 Reliability/Maintainability. The contractor shall provide an analysis demonstrating 80% confidence the shelter will have a Mission Capable status 90% of the time. The projection may be made based on historical data regarding the reliability and maintainability of items having similar design and manufacture, test data, or a combination thereof. Lack of supportive objective evidence in the report shall be cause for rejection.

F4.11 Ease of maintenance.

F4.11.1 Access. Using operators meeting the anthropometrical requirements of Appendix C, demonstrate that all routine preventative maintenance tasks can be performed without removing or disassembling any part of the shelter.

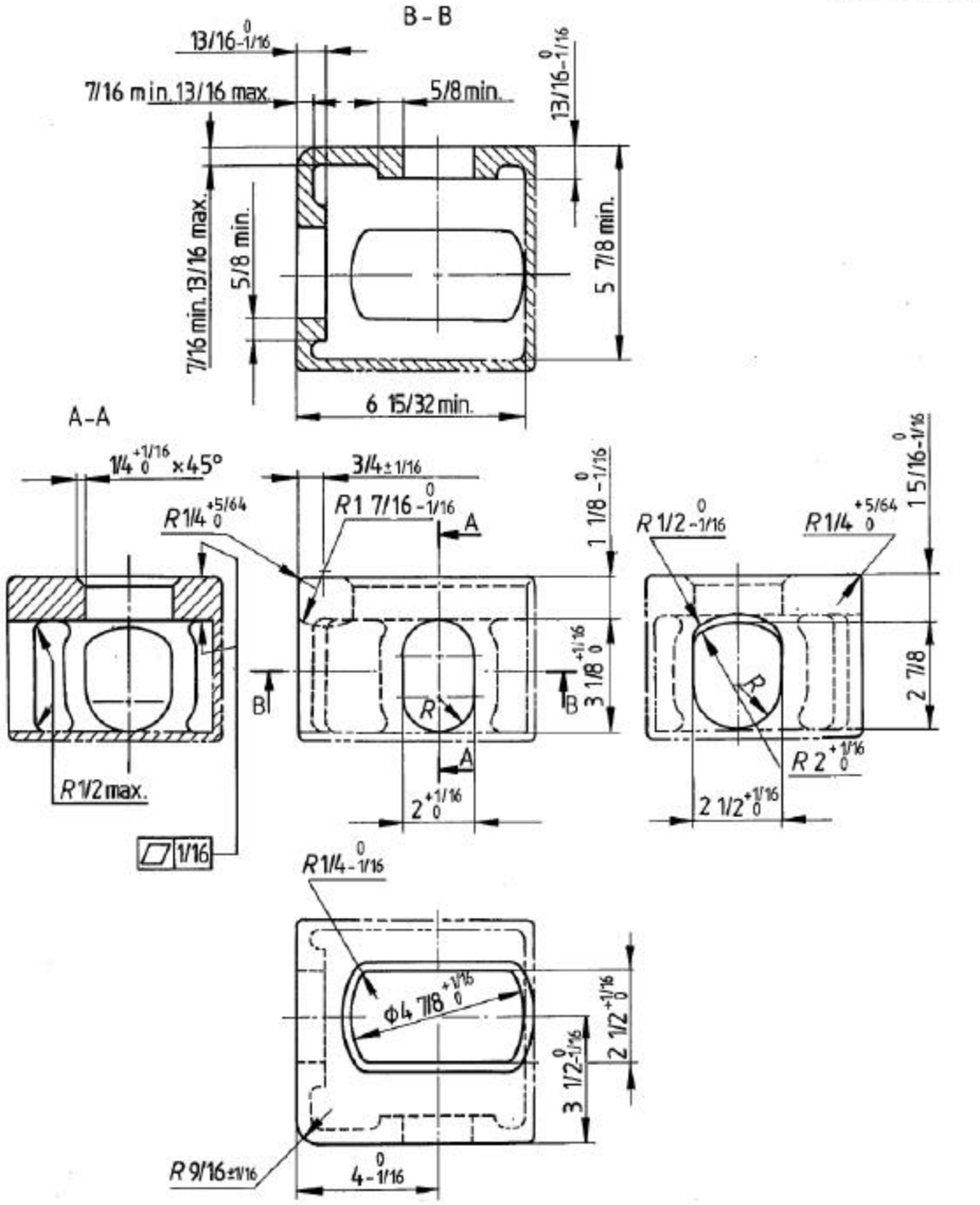
F4.11.2 Latches. Manually operate all latches on the shelter door(s) and removable panel(s) and verify that they are properly adjusted.

F4.11.3 Fastening devices. Examine all removable fasteners on the shelter and verify that all use some means of keeping tightness and none are staked, swaged, or otherwise deformed.

F4.11.4 Cleaning. Within the shelter locate all points that may become collection points for cleaning fluid and verify each has a drain port.

F4.11.5 Protective finish. Confirm that all metal parts of the shelter have a protective finish in accordance with MIL-STD-171, finish 7.3.1 plus 20.24 (CARC) for aluminum and finish 5.1.1 plus 20.24 for ferrous metals.

Dimensions in inches



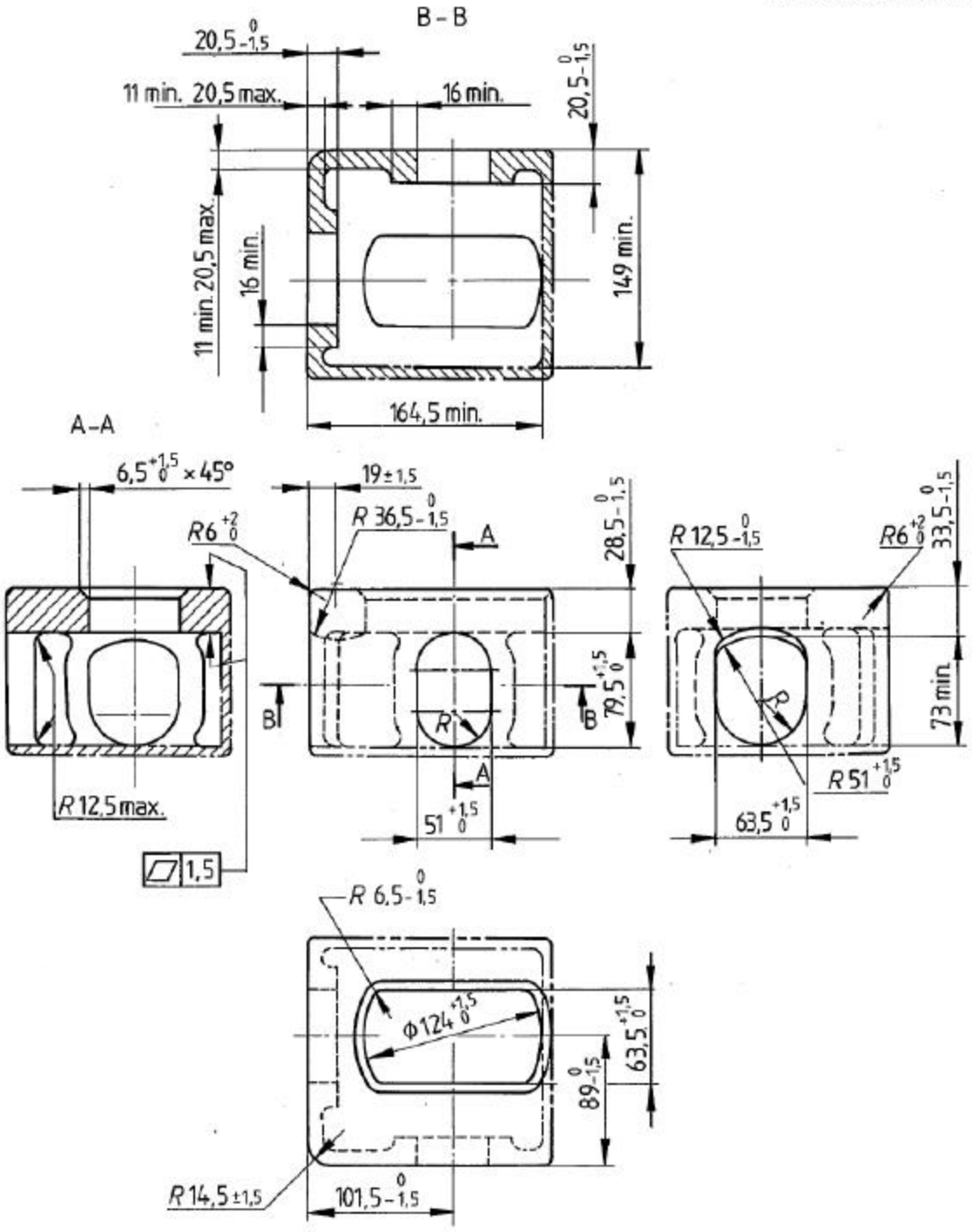
NOTES

1 Solid and broken lines (— and ---) show surfaces and contours which shall be physically duplicated in the fitting.

2 Phantom lines (— ·· — ·· —) show optional walls, which may be used to develop a box-shaped fitting.

FIGURE F-6. Top Corner Fitting Dimensions (Inches), ISO 1161

[Dimensions in millimetres]



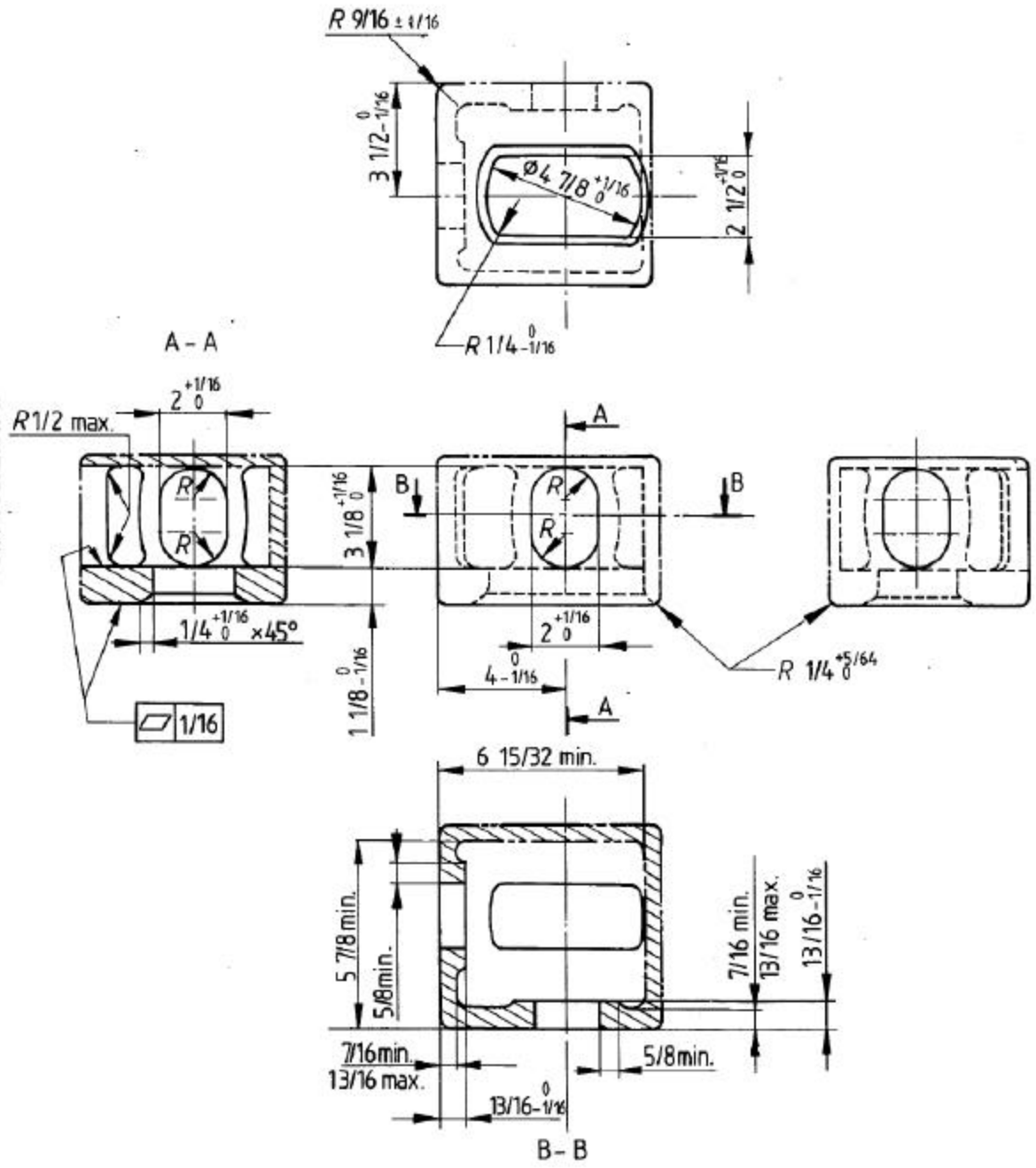
NOTES

1 Solid and broken lines (— and ---) show surfaces and contours which shall be physically duplicated in the fitting.

2 Phantom lines (— · — · —) show optional walls, which may be used to develop a box-shaped fitting.

Figure F-7. Top Corner Fitting Dimensions (mm), ISO 1161

[Dimensions in inches]



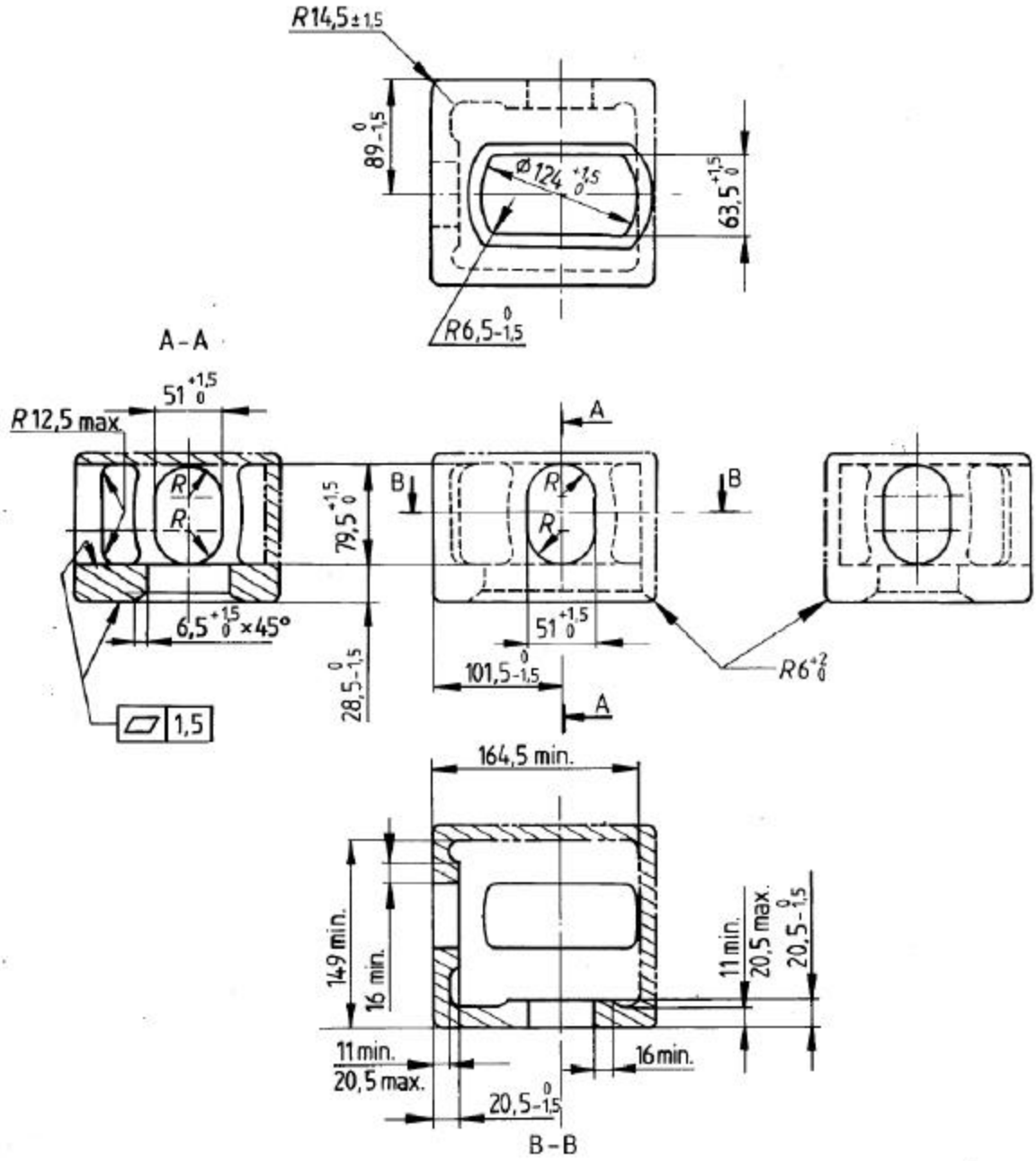
NOTES

1 Solid and broken lines (— and ---) show surfaces and contours which shall be physically duplicated in the fitting.

2 Phantom lines (— · — · —) show optional walls, which may be used to develop a box-shaped fitting.

Figure F-8. Bottom Corner Fitting Dimensions (Inches), ISO 1161

[Dimensions in millimetres]

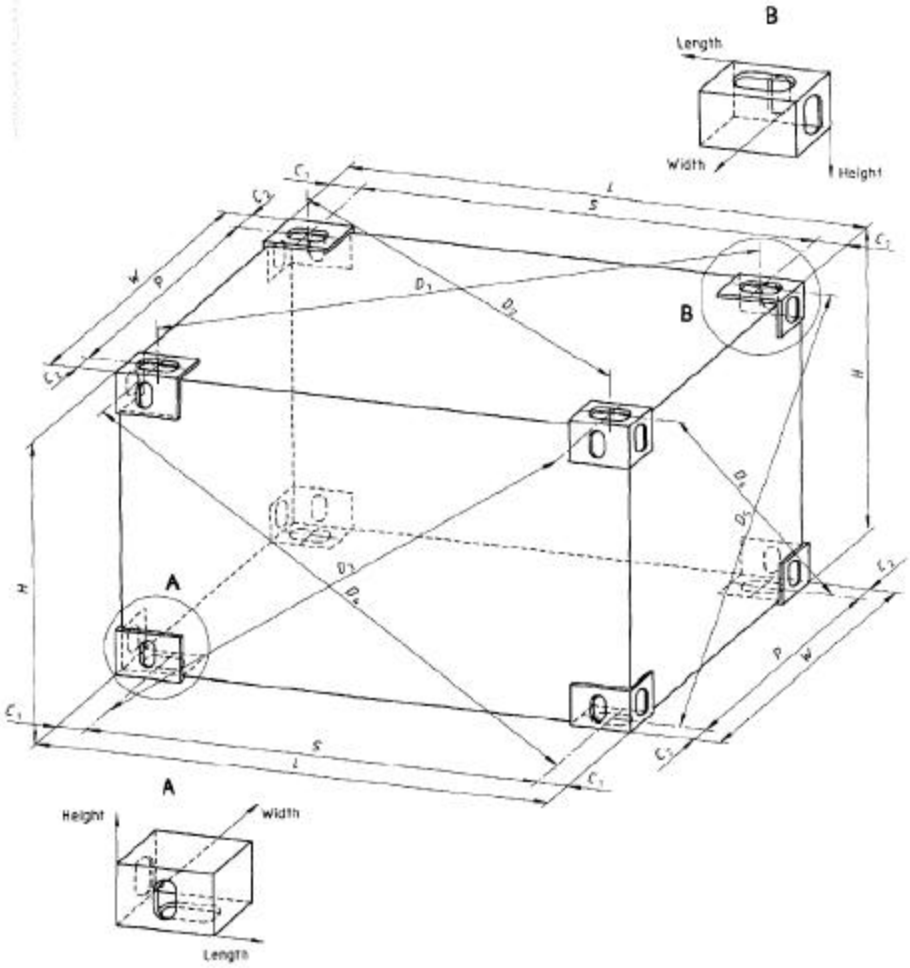


NOTES

1 Solid and broken lines (— and ---) show surfaces and contours which shall be physically duplicated in the fitting.

2 Phantom lines (— · — · —) show optional walls, which may be used to develop a box-shaped fitting.

Figure F-9. Bottom Corner Fitting Dimensions (mm), ISO 1161



C_1 Corner fitting measurement 101,5 mm $^{0}_{-1,5}$ mm (4 in $^{0}_{-1/16}$ in)
C_2 Corner fitting measurement 89 mm $^{0}_{-1,5}$ mm (3 1/2 in $^{0}_{-1/16}$ in)
D Distance between centres of apertures, or projected reference points therefrom, of diagonally opposite corner fittings, resulting in six measurements: D_1, D_2, D_3, D_4, D_5 and D_6
H Overall height
L External length of the container
P Width between centres of apertures in corner fittings
S Length between centres of apertures in corner fittings
W External width of the container

NOTE — Dimensions L, H and W are measured along the appropriate edges.

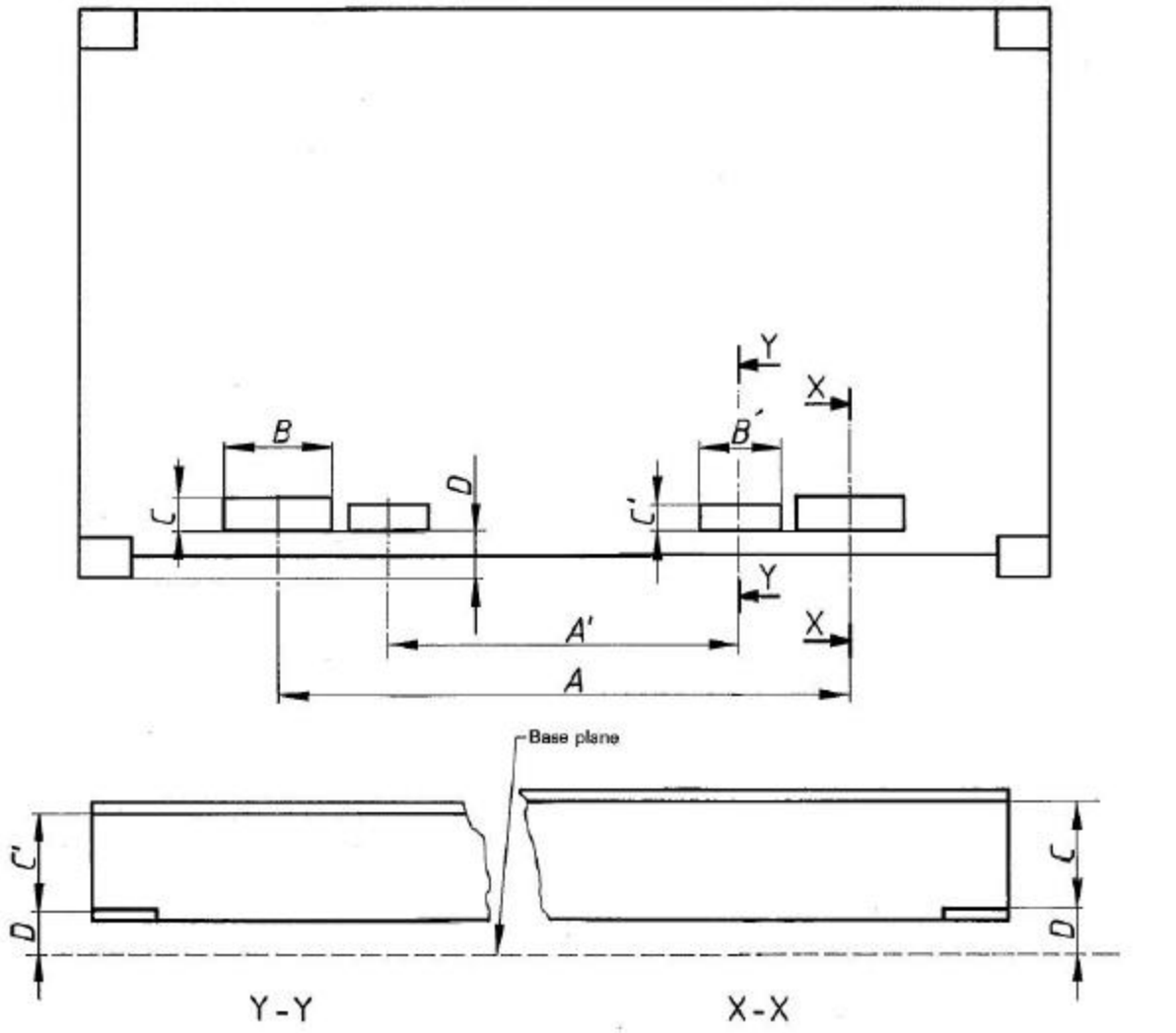
Freight container designation	S (ref.)			P (ref.)			K_1 max. 1)		K_2 max. 2)	
	mm	ft	in	mm	ft	in	mm	in	mm	in
1C	5 853	19	2 7/16	2 259	7	4 31/32	13	1/2	10	3/8

NOTE — Attention of manufacturers is drawn to the vital importance of accurately maintaining the reference dimensions of S and P (see figure). The tolerances to be applied to S and P are governed by the tolerances shown for the overall length and width in this International Standard and in ISO 1161.

1) K_1 is the difference between D_1 and D_2 or between D_3 and D_4; therefore $K_1 = |D_1 - D_2|$ or $K_1 = |D_3 - D_4|$.

2) K_2 is the difference between D_5 and D_6; therefore $K_2 = |D_5 - D_6|$.

Figure F-10, Corner Fitting Location Dimensions, ISO 668



Container	Dimensions													
	Fork-lift pockets for loaded and unloaded containers								Fork-lift pockets for unloaded containers only					
	mm				in				mm			in		
	A	*B*	*C*	*D*	*A*	*B*	*C*	*D*	*A'*	*B'*	*C'*	*A'*	*B'*	*C'*
1C	2 050 ± 50	355 min.	115 min.	20 min.	81 ± 2	14 min.	4 1/2 min.	0,8 min.	900 ± 50	305 min.	102 min.	35 1/2 ± 2	12 min.	4 min.
NOTE — *C* = Clear opening														

Figure F-11. Fork Lift Pocket Dimensions