INCH-POUND

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PERFORMANCE SPECIFICATION

ARMY STANDARD FAMILY OF RIGID WALL SHELTERS EXPANDABLE/NON-EXPANDABLE VARIANT

This specification is approved for use by all Departments and Agencies of the Department of Defense.

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1. SCOPE

1.1. Scope. This specification covers the design, performance, environmental, and safety requirements of shelters contained within the Army Standard Family of Rigid Wall Shelters (ASF-RWS) Expandable/Non-Expandable variant. The ASF-RWS includes two other variants, but this specification pertains only to the Expandable/Non-Expandable variant.

1.2. Classification. The Expandable/Non-Expandable variant of the ASF-RWS is comprised of several sizes, types, and classes of shelters, each heretofore referred to as "the shelter".

1.2.1. Sizes. The sizes of shelters within the Expandable/Non-Expandable variant are as follows:

Size I – 20-foot long (commonly known as a 20-foot ISO)

Size II – 10-foot long (commonly known as a BICON)

Size III – 6.6-foot long (commonly known as a TRICON)

1.2.2. Types. The types of shelters within the Expandable/Non-Expandable variant are as follows:

Type A – Non-expandable

Type B – One-side expandable

Type C – Two-side expandable

1.2.3. Classes. Unique classes of shelters within the Expandable/Non-Expandable variant are as follows (shelters not designated with a class can be assumed to be of standard design and performance):

Class B – Basic

Class C – Chemical and biological (CB) hardened class

Class E – Electromagnetic interference (EMI) shielded class

Class H – Heavy class (and hook bar equipped)

Class M – Medical class

2. APPLICABLE DOCUMENTS

2.1. General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents in other sections of this specification or recommended for additional information or as examples. While every effort has been made to

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ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2. Government documents. The following drawings, specifications, standards, and other publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

5-4-9755 – Natick Research, Development and Engineering Center (NRDEC) Drawing, Tent, Extendable, Modular, Personnel (TEMPER), Interface Control Drawing

(Copies of this document are available through Product Manager Force Sustainment Systems, ATTN: SFAE-CSS-E2-F, U.S. Army Natick Soldier Systems Center, Natick, MA 01760.)

ECBC-TR-849 – Test Standard for Wind-Driven Challenge Testing of Pressurized Collective Protection Systems

(Copies of this document are available through Director, Edgewood Chemical Biological Center, ATTN: RDCB-DRF-T, Aberdeen Proving Ground, MD 21010.)

FM 3-11.5 – CBRN Decontamination – Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination

(Copies of this document are available online at https://www.us.army.mil or https://www.train.army.mil.)

MIL-DTL-22992 – Detail Specification, Connectors, Plugs and Receptacles, Electrical, Waterproof, Quick Disconnect, Heavy Duty Type

MIL-DTL-53039 – Detail Specification, Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant

MIL-STD-129 – Military Marking for Shipment and Storage

MIL-STD-130 – Identification Marking of U.S. Military Property

MIL-STD-209 – Interface Standard for Lifting and Tiedown Provisions

MIL-STD-810 – Test Method Standard for Environmental Engineering Considerations and Laboratory Tests

MIL-STD-913 – Design Criteria Standard, Requirements for the Certification of Sling Loaded Military Equipment for External Transportation by Department of Defense Helicopters

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MIL-STD-1366 – Interface Standard for Transportability Criteria

MIL-STD-1408 – Interface Standard, Air Conditioners, Improved Family of Military Air Conditioners, General Application Characteristics

MIL-STD-1472 – Design Criteria Standard Human Engineering

MIL-T-704 – Military Specification, Treatment and Painting of Materiel

A-A-59166 – Coating Compound, Nonslip (for Walkways)

STANAG 2413 – Demountable Load Carrying Platforms (DLCP/Flatracks)

(Copies of these documents are available online at https://quicksearch.dla.mil.)

2.3. Non-government documents. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

ASTM E413 – Classification for Rating Sound Insulation

ASTM E1851 – Standard Test Method for Electromagnetic Shielding Effectiveness of Durable Rigid Wall Relocatable Structures

(Copies of these documents are available online at https://www.astm.org.)

ISO 668 – Series 1 Freight Containers – Classification, Dimensions, and Ratings

ISO 1496-1 – Series 1 Freight Containers – Specification and Testing – Part 1: General Cargo Containers for General Purposes

ISO 6346 – Freight Containers – Coding, Identification, and Marking

(Copies of these documents are available online at https://www.iso.org.)

NFPA 70 – National Electrical Code

(Copies of this document are available online at https://www.nfpa.org.)

SAE-AMS-STD-595 – Colors Used in Government Procurement

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(Copies of this document are available online at https://www.sae.org.)

2.4. Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1. First article. When specified (see section 6.2), the shelter shall be subjected to first article inspection in accordance with section 4.2.

3.2. Materials. Materials and construction methods are the choice and responsibility of the contractor and shall be capable of meeting all of the requirements specified herein. Materials and design shall be such to minimize the effects of galvanic corrosion.

3.2.1. Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operation and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3. Workmanship. The shelter shall be in accordance with the quality of product established by this performance specification. Utmost care shall be taken during fabrication to ensure quality workmanship and safety of the service person using the item. Manufacturing practices shall be capable of consistently yielding product that conforms to all requirements in this specification and any internal specifications. Continual improvement shall also be a constant focus of the manufacturing practices. Materials shall be produced and integrated to extend durability and provide consistency of appearance throughout the product's life. All components to be assembled shall be thoroughly cleaned of all foreign matter. In any case of material, process, or equipment change desired to be made by the contractor, the written consent of the Government shall be obtained before making the change. Additional testing may be required prior to implementation of the change to verify product performance.

3.4. Design requirements. The shelter shall be of suitable form, fit, and function for a wide range of military and non-military applications and shall be designed for maximum sustainability. As such, the shelter shall comply with the following design requirements.

3.4.1. Transport mode exterior dimensions. The exterior dimensions of the shelter in its closed, ready-for-transport configuration, heretofore referred to as "transport mode", shall be in accordance with ISO 1496-1, and by reference ISO 668. In the case of a Size I shelter, the exterior dimensions of the shelter shall be in accordance with the requirements for the 1C ISO designation. In the case of a Size II shelter, the exterior dimensions of two such shelters coupled together end-to-end shall be in accordance with the requirements for the 1C ISO designation. In the case of a Size III shelter, the exterior dimensions of three such shelters coupled together end-to-end shall be in accordance with the requirements for the 1C ISO designation.

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3.4.2. Transport mode interior dimensions. The interior dimensions of the shelter in transport mode shall be not less than the values listed in TABLE I. See FIGURE 1 for additional guidance.

TABLE I. **Transport mode interior dimensions**

Shelter size	L	W	H
I	210 inches	70 inches	80 inches
II	98 inches	70 inches	80 inches
III	70 inches	60 inches	80 inches

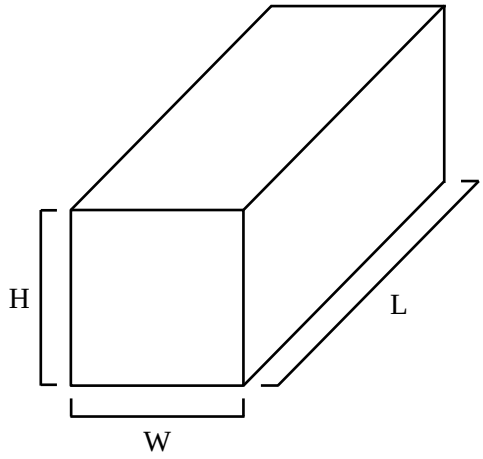


FIGURE 1. **Transport mode diagram**

3.4.3. Operational mode interior dimensions. The interior dimensions of the shelter in its fully operational, deployed configuration, heretofore referred to as “operational mode”, shall be not less than the values listed in TABLE II. See FIGURE 2 for additional guidance.

TABLE II. **Operational mode interior dimensions**

Shelter size / type	L*	W	H1**	H2**
I / A	212 inches	80 inches	80 inches	N/A
II / A	106 inches	80 inches	80 inches	N/A
I / B	208 inches	158 inches	80 inches	78 inches
II / B	100 inches	158 inches	80 inches	78 inches
I / C	210 inches	230 inches	80 inches	78 inches
II / C	100 inches	212 inches	80 inches	78 inches
III / C	68 inches	212 inches	80 inches	78 inches

* If designated as Class H, a 10-inch reduction in interior shelter length (L) shall be permitted.

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** MIL-STD-1472 requires that "ceiling height (distance from the floor to the bottom of any light, cable run, or other protuberance over the aisle or standing work space) shall be not less than 198 centimeters (78 inches) for vans and shelters…unless otherwise specified by the procuring activity (see section 6.2)."

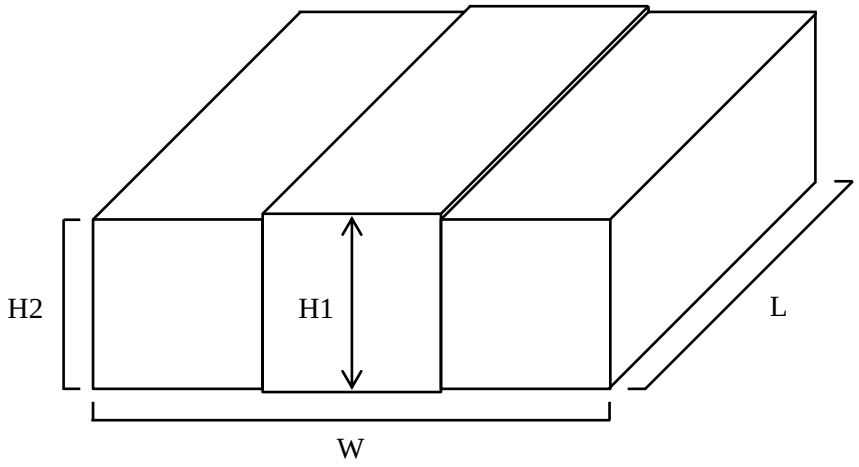


FIGURE 2. **Operational mode diagram**

3.4.4. Weight. The weight of the shelter in transport mode shall be not greater than the values, in pounds (lb), listed in TABLE III.

TABLE III. **Shelter weight**

Shelter size / type	Maximum tare weight*	Maximum gross weight*, **
I / A	4,500 lb	22,500 lb
II / A	2,750 lb	15,000 lb
I / B	6,000 lb	22,500 lb
II / B	3,750 lb	15,000 lb
I / C	7,500 lb	22,500 lb
II / C	4,750 lb	15,000 lb
III / C	3,500 lb	10,000 lb

* Tare weights shown are for Class B Shelters. Class C shelters can have an increase in Tare weight of up to 5%. Class E shelters can have an increase in Tare weight of up to 10%. If designated as Size I and Class H, maximum shelter tare weight of 9,000 lbs and maximum shelter gross weight of 26,000 lbs shall be permitted. If designated as Size I and Class M the maximum shelter tare weight shall be 7500 lbs

** Different gross weight limitations may be imposed by mode of transport and if shelters are coupled together for transport.

3.4.5. Panel flatness. The shelter shall have wall, ceiling, and floor panels that exhibit variation not greater than 0.125 inches when measured with a 48-inch long straight edge. Outside and

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inside skin temperatures shall be within 5°F of each other when this is verified. This requirement shall not apply to shelter designs featuring curved/beveled walls.

3.4.6. Panel squareness. The shelter shall have wall and floor panels squared such that any two intersecting panels are mutually perpendicular to the inside surface of the adjacent panel within 0.125 inches when measured with a 36-inch square whose two edges are perpendicular to each other within 0.005 inches. Outside and inside skin temperatures shall be within 5°F of each other when this is verified. This requirement shall not apply to shelter designs featuring curved/beveled walls.

3.4.7. Doors. The shelter shall have no fewer than one primary door and one emergency egress. If the shelter features a secondary door, an additional emergency egress is not required. If the shelter is equipped with an emergency egress it shall only be capable of being opened from the inside. The primary door opening shall have dimensions of 76 inches high and 48 inches wide. All doors shall have a stopping mechanism to hold it in open position at not less than 90 degrees. The primary door opening mechanism shall have a hasp capable of accepting a paddle type lock on the exterior. The primary door shall be capable of being opened from the inside if it is locked by a paddle type lock from the outside. All doors shall be in accordance with MIL-STD-1472.

3.4.8. Attachment points. The shelter shall be constructed of materials and in such a way that attachment points can be installed after the manufacturing process.

3.4.9. Hook bar and load handling system (LHS) provisions. If designated as Size I and Class H, the shelter shall have an integral hook bar capable of safely mounting and dismounting the shelter loaded to its maximum gross weight according to TABLE III using a LHS. The shelter shall have integral provisions required to safely interface with the LHS for repeated mounting and dismounting without damage or degradation of performance to the shelter, the LHS, or the host vehicle. The hook bar and LHS provisions shall be in accordance with STANAG 2413.

3.4.10. Environmental control unit (ECU) provisions. The shelter shall have provisions for use of a 9,000 British thermal units per hour (BTU/hr), 18,000 BTU/hr, or 36,000 BTU/hr wall-mounted Environmental Control Unit (ECU) or an external ECU via 16-inch supply and return ducts. If ECU provisions involve removable panels, those panels and their respective openings shall be sealable in such a way that they do not affect the shelter's ability to meet the environmental requirements in section 3.6 and the shelter shall have a stowage location for any removable panel. Any ECU provisions shall be in accordance with the horizontal air conditioner sections of MIL-STD-1408.

3.4.11. Electrical system.

3.4.11.1. Power compatibility. The shelter shall accept 50/60 hertz, 120/208 volt, three-phase power from the standard family of military power sources, to include tactical (up to 200 kilowatts) and prime power (greater than 200 kilowatts).

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3.4.11.2. Modular power panel. The power panel shall include exterior connectors in accordance with Class L of MIL-DTL-22992 and an interior load center. The exterior connector configuration shall be one of two selectable styles per customer request: (1) a 100 ampere (amp) input and 60 amp output, and (2) a 60 amp input and 60 amp output. The interior load center shall include a solid neutral bus, a ground bus, an appropriately sized main breaker, and not less than 18 breaker spaces excluding the main breaker. The main breaker shall have a lockout tag. The neutral bus and ground bus shall not be bonded. All circuit breakers shall be bolt-on type with an interrupting capacity of not less than 10,000 amp. The power panel bus feed shall be by rigid conduit and conductors. If designated as Size I, the shelter shall have not fewer than two locations where a power panel can be installed per customer request.

3.4.11.3. Interior outlets. The shelter shall have 120 volt 20 amp outlets evenly spaced inside the shelter and numbering not less than the quantities listed in TABLE IV. Outlets shall provide for ground fault circuit interrupter protection and/or arc fault circuit interrupter protection per customer request.

TABLE IV. **Minimum outlets**

Shelter size / type	Minimum interior outlets
I / A	8
II / A	6
I / B	10
II / B	8
I / C	12
II / C	10
III / C	8

3.4.11.4. Interior lighting. The shelter shall have interior lighting fixtures that, in normal mode, produce a color temperature of 4,500–5,500 K with intensity not less than 50 footcandles (fc) at 30 inches above the shelter floor across the entire shelter interior. The shelter shall have a provision to manually switch interior lighting fixtures to blackout mode producing a color wavelength of 490–520 nanometers with intensity not greater than 5 fc at 30 inches above the shelter floor. With interior lighting turned off, the shelter shall have a discrete means of designating the location of the primary door and emergency egress with an intensity not less than 5 fc. The total power draw of the interior lighting, in watts (W), shall be not greater than the values listed in TABLE IV.

TABLE IV. **Interior lighting power draw**

Shelter size / type	Maximum interior lighting power draw
I / A	170 W
II / A	85 W
I / B	340 W
II / B	170 W
I / C	490 W

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II / C	245 W
III / C	170 W

3.4.11.5. Exterior lighting. The shelter shall have one exterior lighting fixture located near the primary door that produces a color temperature of 4,500–5,500 K with intensity such that darkened entry/exit is possible. The exterior lighting fixture shall turn off automatically when interior lighting is switched to blackout mode.

3.4.11.6. Rating and continuity. The shelter shall have conductors and hardware rated for current carrying in accordance with NFPA 70. The shelter electrical system shall operate when tested for electrical continuity.

3.4.11.7. Cabling. If using relocatable outlets or lighting fixtures, the shelter shall have appropriately rated, rubber SOOW (Service Cord, Oil Resistant Conductor Insulation, Oil Resistant Jacket, Water Resistant Jacket) flexible cables.

3.4.12. Finish, color, and markings.

3.4.12.1. Exterior finish and color. The exterior surfaces of the shelter shall have finish and color in accordance with MIL-T-704, MIL-DTL-53039, and SAE-AMS-STD-595. Colors shall be Sand (color ID 33303) or Green 383 (color ID 34094) as specified by the contract.

3.4.12.2. Interior finish and color. The interior surfaces of the shelter shall have finish and color in accordance with MIL-T-704 and SAE-AMS-STD-595. Interior ceiling and wall surface color shall be Untinted White (color ID 17925). Interior floor color shall be Gray (color ID 26251) and have a texture in accordance with Type I of A-A-59166.

3.4.12.3. Markings. All markings on the interior and exterior of the shelter shall be in accordance with ISO 6346, MIL-STD-129, MIL-STD-130, and MIL-STD-1472.

3.4.12.4. Stencils. Unless otherwise specified, the shelter shall have stencils in accordance with MIL-T-704, MIL-DTL-53039, and SAE-AMS-STD-595.

3.4.12.5. Asset visibility. The shelter shall have Item Unique Identification and nameplate in accordance with MIL-STD-129 and MIL-STD-130. The shelter in transport mode shall have the ability to host smart Radio Frequency Identification Devices.

3.4.13. Complexing. The shelter shall have provisions for complexing or connecting together with other rigid or soft wall shelters by way of a TEMPER vestibule adapter in accordance with NRDEC drawing 5-4-9755. These complexing provisions shall not affect the shelter's ability to meet the environmental requirements in section 3.6.

3.4.14. Leveling. The shelter shall have provisions for leveling over a range of not less than 16 inches. The shelter shall have some visual indicator to show its levelness. For expandable shelters (Size I Type B and Size I Type C) the shelter shall be capable of being leveled with

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leveling devices attached only to the ISO core box. No leveling devices shall be required for the expanded sections.

3.4.15. Physical security. The shelter shall have provisions for securing openings, folding or expanding components, and removable components to prevent unauthorized access, expansion, or removal from the exterior of the shelter. Primary door will allow exit from inside the shelter when locked from the outside.

3.4.16. Tools. The shelter shall not require any special/unique tools for operation. Any tools provided with the shelter shall be stowable and readily accessible to personnel when the shelter is in either transport mode or operational mode.

3.4.17. Manual stowage. The shelter shall have provisions for stowage of its manual(s) in a readily accessible location near the primary door.

3.4.18. Communications pass-through. The shelter shall have a weatherproof removable panel located near both power panel board locations. A removable blank panel will be provided however the opening shall be configured to accept one of the following panel configurations to meet customer requirements: (1) a blank “waterfall” style panel, or (2) a panel containing a 3-inch diameter weatherproof pass-through.

3.4.19. Gaskets and seals. The shelter shall have provisions for sealing it against water, air, and light leakage that are an integral part of the shelter and are readily replaceable without special tools or training.

3.4.20. Roof access. The shelter shall have provisions to access its roof that do not violate the dimensional requirements of ISO 668.

3.4.21. Standardization. The shelter shall have mechanical hardware (e.g., nuts, bolts, fasteners), opening hardware (e.g., hinges, handles, latches), electrical/lighting hardware (e.g., outlets, circuit breakers, connectors, fixtures), structural panels, and removable panels that are uniform for common functions across the various shelter size, types, and classes delineated in this specification.

3.5. Performance requirements. The shelter shall be suitable for effective and efficient use across a wide range of military and non-military applications. As such, the shelter shall comply with the following performance requirements.

3.5.1. Heat transfer coefficient. The system level heat transfer coefficient, in BTU per hour-square foot-degree Fahrenheit (BTU/hr-ft^2-°F), of the shelter in operational mode shall be not be greater than 0.21 BTU/hr-ft^2-°F for all expandable types and 0.19 BTU/hr-ft^2-°F for all non-expandable types.

3.5.2. Set up and take down. The set up and take down time for the shelter shall be not greater than the values listed in TABLE VI inclusive of leveling time. No special tools or material handling equipment material handling equipment shall be required for set up or take down. Set

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up is defined as expanded, leveled and made ready for use. It does not require electrical connections or ECU connections. Take down will be closed, secured, and made ready for shipment. It does not include disconnecting from power or ECU's.

TABLE VI. **Set up and take down time**

Shelter type	Maximum set up and take down time
A	10 minutes with 4 personnel
B	20 minutes with 4 personnel
C	30 minutes with 4 personnel

3.5.3. Road transportability. The shelter in transport mode shall be road transportable in accordance with MIL-STD-1366 and MIL-STD-209 and shall not experience damage (see definition, section 6.3) when subjected to road mobility vibration testing in accordance with MIL-STD-810.

3.5.4. Rail transportability. The shelter in transport mode shall be rail transportable in accordance with MIL-STD-1366 and MIL-STD-209 and shall not experience damage when subjected to rail impact testing in accordance with MIL-STD-810.

3.5.5. Air transportability. The shelter in transport mode shall be air transportable in accordance with MIL-STD-1366 and MIL-STD-209.

3.5.6. Sea transportability. The shelter in transport mode shall be marine transportable and shall not experience damage when subjected to nine-high stacking in accordance with ISO 1496-1.

3.5.7. Forklift handling. The shelter in transport mode shall not experience damage when subjected to forklift handling.

3.5.8. Sling lift. The shelter in transport mode shall be capable of sling lift in accordance with MIL-STD-1366 and MIL-STD-209 and shall not experience damage when subjected to a sling lift by top corner fittings and a sling lift by bottom corner fittings in accordance with the proof-load testing requirements of MIL-STD-913.

3.5.9. Hook bar and LHS provisions fatigue. If designated as Class H, the shelter shall not experience damage or degradation of performance when subjected to repeated mounting and dismounting using a LHS.

3.5.10. Airtightness and venting. If designated as Type A, the shelter shall restrict air leakage such that a pressure not less than 1.20 inches of water gauge (iwg) is maintained inside the shelter when an air supply of 200 cubic feet per minute (cfm) is applied. If designated as Type B or Type C, the shelter in operational mode shall restrict air leakage such that a pressure not less than 0.30 iwg is maintained inside the shelter when an air supply of 100 cfm is applied, and the shelter in transport mode shall restrict air leakage such that a pressure not less than 0.30 iwg is

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maintained inside the shelter when an air supply of 200 cfm is applied. The shelter, regardless of type, shall have vent provisions to prevent damage to the aircraft and shelter during air transport.

3.5.11. Blackout. The shelter in operational mode with doors closed shall prevent light leakage.

3.5.12. Roof loads. The roof of the shelter in transport or operational mode shall not experience damage when subjected to a uniform load of 40 pounds per square foot (lb/ft^2) or a concentrated load of 660 lb over 2 square feet (ft^2).

3.5.13. Floor loads. The floor of the shelter in transport or operational mode shall not experience damage when subjected to a uniform load of 80 lb/ft^2, a concentrated load of 2,500 lb over 4 ft^2, or a point load of 125 lb over 1 square inch (in^2). If designated as Class H, the floor of the shelter in transport or operational mode shall not experience damage when subjected to a uniform load of 80 lb/ft^2, a concentrated load of 4,500 lb over 4 ft^2, or a point load of 1,200 lb over 1 in^2.

3.5.14. Floor Stiffness. When Designated as a Class M shelter the floor shall have floor deflection under live load of Length (L)/240 @85 lb/ft^2.

3.5.15. Door loads. Each shelter door shall not experience damage when subjected to a vertical load of 200 lb applied to its outermost edge with the door opened to 90 degrees. Each shelter door with its stopping mechanism engaged shall not experience damage when subjected to a horizontal load equal to 10 lb times the door's area in square feet applied to the midpoint of its outermost edge.

3.5.16. Roof access loads. Each provisions for roof access shall not experience damage when subjected to a vertical load of 500 lb applied to its outermost edge.

3.5.17. Impact resistance. Production representative shelter panel specimens shall not experience damage when subjected to an impact from a 70-lb steel cylinder dropped from a height of 30 inches. The following shelter surfaces, and their respective panel specimens, shall be subject to this requirement: interior surface of all floor panels, exterior surface of all roof panels. Any of the following criteria shall constitute damage for this requirement: rupture of the impacted or opposite surface, delamination on the impacted surface that extends beyond a 3-inch radius (3.50-inch radius for fixed floor panels) from the point of impact, crushing or collapsing of the specimen core that extends beyond a 3-inch radius (3.50-inch radius for fixed floor panels) from the point of impact, or delamination of any kind on the opposite surface.

3.5.18. Drop shock. The shelter in transport mode shall not experience damage when subjected to a flat or rotational drop from a height of 6 inches with a uniformly distributed payload.

3.5.19. Sound attenuation. A production representative shelter panel specimen shall have a sound transmission class rating not less than 30 in accordance with ASTM E90 and ASTM E413.

3.5.20. Attachment point loads. The shelter panels shall be capable of accepting threaded inserts as attachment points for mounting equipment. Each attachment point within the shelter shall be

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of adequate strength and construction to withstand the pullout and torque loads as specified in Table VII.

TABLE VII. **Insert strength (proof loads)**

Insert type (thread size)	Pullout load	Torque load
10 - 32	1,000 lb	10 ft-lb
1/4 - 28	1,000 lb	20 ft-lb
5/16 - 24	2,000 lb	20 ft-lb
3/8 - 24	2,000 lb	40 ft-lb

3.5.21. Floor tie down points. The shelter shall have a minimum of 12 tie down points evenly spaced 12 inches from the interior curbside and roadside walls of the shelter in its transport mode. Each tie down shall have a minimum pull out load of 2,000 pounds.

3.5.22. Electromagnetic interference (EMI) shielding. Expandable shelters (Type B and Type C) shall provide the minimum shielding effectiveness (60 dB) prescribed by Specification E1925, Fig. 1, in any location of the shelter over the frequency range of 150 kHz to 10 GHz. Non-expandable shelters (Type A) shall provide the minimum shielding effectiveness (80 dB) prescribed by Figure 3 in any location of the shelter over the frequency range of 150 kHz to 10 GHz.

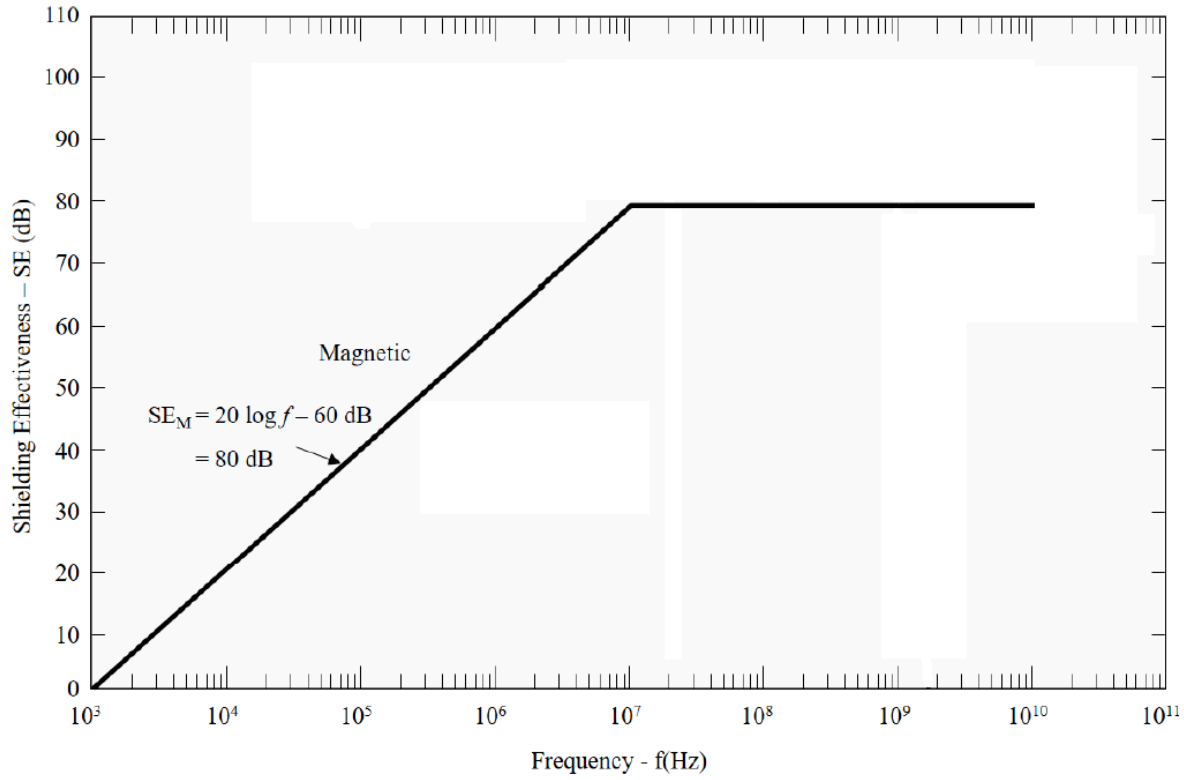


FIGURE 3. **Minimum Shielding Effectiveness Requirements**

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3.5.23. Chemical and biological hardness. If designated as Class C, the shelter in operational mode shall be capable of maintaining an interior pressure between 0.50 and 0.70 iwg when supplied with conditioned air from a military approved, chemical/biological hardened ECU and filtration system. Gaskets and insulating materials used in a Class C shelter shall withstand exposure to chemical and biological agents.

3.5.24. Chemical and biological decontamination. The shelter in transport mode shall be decontaminable using decontaminants and procedures in accordance with FM 3-11.5.

3.6. Environmental requirements. The shelter shall be suitable for use in a variety of environments. As such, the shelter shall comply with the following environmental requirements.
3.6.1. High temperature. The shelter in transport mode shall not experience damage or degradation of performance when subjected to high temperature testing in accordance with MIL-STD-810.

3.6.2. Low temperature. The shelter in transport mode and operational mode shall not experience damage or degradation of performance when subjected to low temperature testing in accordance with MIL-STD-810.

3.6.3. Solar radiation. The shelter in operational mode shall not experience damage or degradation of performance when subjected to solar radiation testing in accordance with MIL-STD-810.

3.6.4. Rain. The shelter in transport mode and operational mode shall not experience damage and shall resist water penetration when subjected to rain testing in accordance with MIL-STD-810.

3.6.5. Humidity. The shelter in operational mode shall not experience damage or degradation of performance and shall resist water penetration when subjected to humidity testing in accordance with MIL-STD-810.

3.6.6. Fungus. The shelter or production representative specimens shall resist fungal growth when subjected to fungus testing in accordance with MIL-STD-810.

3.6.7. Salt fog. The shelter in transport mode and operational mode shall not experience damage or degradation of performance when subjected to salt fog testing in accordance with MIL-STD-810.

3.6.8. Sand and dust. The shelter in transport mode and operational mode shall not experience damage and shall resist sand and dust penetration when subjected to sand and dust testing in accordance with MIL-STD-810.

3.7. Safety requirements. The shelter shall be non-hazardous to the user and personnel in the surrounding area. As such, the shelter shall comply with the following safety requirements.

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3.7.1. Flame resistance. Production representative shelter panel specimens shall be non-burning or self-extinguishing within 30 seconds and shall exhibit no degradation (charring) of material outside a 1.25-inch radius from the point where flame is applied.

3.7.2. Electrical hazard. The shelter shall be designed and constructed to prevent electrical hazards. Any potential electrical hazard shall be marked in accordance with MIL-STD-1472.

3.7.3. Human systems integration (HSI). The shelter shall be designed and constructed with consideration for HSI throughout its lifecycle and permit safe and effective operation by male and female personnel in the 5th to 95th percentile while wearing a field duty uniform, mission-oriented protective posture level II, or cold weather ensemble.

3.7.4. Toxicity. The shelter shall not have hazardous toxicity characteristics. All finishes/chemicals used to process the shelter material should be identified and accompanied by the appropriate Safety Data Sheet (SDS).

3.7.5. Cleaning. The shelter shall be easily cleaned and disinfected using customary cleaning supplies. Surfaces inside the shelters shall be smooth, sealed, and capable of being cleaned. Pockets, voids, or joints that inhibit access for cleaning shall be limited.

3.7.6. Sharp edges. The shelter shall not have sharp edges or burrs that present a hazard to personnel during set up, take down, operation, or transport.

4. VERIFICATION

4.1. Classification of inspections. The inspection requirements specified herein are as follows:

a. First article inspection (see section 4.2)
b. Conformance inspection (see section 4.3)

4.2. First article inspection. First article inspection shall be performed on one complete shelter when a first article inspection is required (see section 3.1). This inspection shall include verification as specified in section 4.4.

4.3. Conformance inspection. Conformance inspection shall be performed on one complete shelter per 25 units produced, unless otherwise specified. This inspection shall include verification as specified in section 4.4.

4.4. Verification methods and responsibility. The verification methods to be used for first article inspection and conformance inspection are examination, to include visual assessment, dimensional measurement, weight measurement, and properties analysis when applicable; testing; and confirmation of similarity to previously verified designs. The contractor shall establish and document verification procedures in a quality assurance plan that is made available to the Government. For some requirements, if a design has been previously verified and that verification is documented – either by certificate of conformance, test report, or otherwise – verification need not be repeated during conformance inspection as long as the design remains

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unchanged. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet a specified requirement shall receive particular attention for adequacy and suitability. Noncompliance with any specified requirements or presence of one or more defects shall constitute cause for rejection. The absence of any inspection requirements in this specification shall not relieve the contractor of the responsibility of ensuring that all products submitted to the Government for acceptance comply with all requirements of the contract. Sampling is an acceptable practice to ascertain conformance to requirements; however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material. The methods to be used for verification against each requirement are as specified in TABLE VIII.

TABLE VIII. **Requirements and verification methods**

REQUIREMENT	REQUIREMENT SECTION	VERIFICATION SECTION	FIRST ARTICLE INSPECTION METHOD	CONFORMANCE INSPECTION METHOD
Design	3.4	4.6		
Transport mode exterior dimensions	3.4.1	4.6	E	C
Transport mode interior dimensions	3.4.2	4.6	E	E*
Operational mode interior dimensions	3.4.3	4.6	E	E*
Weight	3.4.4	4.6	E	E*
Panel flatness	3.4.5	4.6	E	E*
Panel squareness	3.4.6	4.6	E	E*
Doors	3.4.7	4.6	E	E*
Attachment points	3.4.8	4.6	E	C
Hook bar and LHS provisions	3.4.9	4.6	E	E*
ECU provisions	3.4.10	4.6	E	E*
Electrical system	3.4.11	4.6		
Power compatibility	3.4.11.1	4.6	E	E*
Modular power panel	3.4.11.2	4.6	E	E*
Interior outlets	3.4.11.3	4.6	E	E*
Interior lighting	3.4.11.4	4.6	T	T*
Exterior lighting	3.4.11.5	4.6	T	T*
Rating and continuity	3.4.11.6	4.6	E, T	E*, T*
Cabling	3.4.11.7	4.6	E	E*
Finish, color, and markings	3.4.12	4.6		
Exterior finish and color	3.4.12.1	4.6	E	E*
Interior finish and color	3.4.12.2	4.6	E	E*

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Markings	3.4.12.3	4.6	E	E*
Stencils	3.4.12.4	4.6	E	E*
Asset visibility	3.4.12.5	4.6	E	E*

Key

E	Examination by independent evaluator
E*	Examination by contractor evaluator
T	Testing conducted at independent facility
T*	Testing conducted at contractor facility
C	Confirmation of similarity to previously verified design

TABLE VIII. **Requirements and verification methods** – Continued

REQUIREMENT	REQUIREMENT SECTION	VERIFICATION SECTION	FIRST ARTICLE INSPECTION METHOD	CONFORMANCE INSPECTION METHOD
Complexing	3.4.13	4.6	E	E*
Leveling	3.4.14	4.6	E	E*
Physical security	3.4.15	4.6	E	E*
Tools	3.4.16	4.6	E	E*
Manual stowage	3.4.17	4.6	E	E*
Communications pass-through	3.4.18	4.6	E	E*
Gaskets and seals	3.4.19	4.6	E	E*
Roof access	3.4.20	4.6	E	E*
Standardization	3.4.21	4.6	E	C
Performance	3.5	4.7		
Heat transfer coefficient	3.5.1	4.7.1	T	C
Set up and take down	3.5.2	4.7.2	T	C
Road transportability	3.5.3	4.7.3	T	C
Rail transportability	3.5.4	4.7.4	T	C
Air transportability	3.5.5	4.7.5	T	C
Sea transportability	3.5.6	4.7.6	T	C
Forklift handling	3.5.7	4.7.7	T	C
Sling lift	3.5.8	4.7.8	T	C
Hook bar and LHS provisions fatigue	3.5.9	4.7.9	T	C
Airtightness and venting	3.5.10	4.7.10	T	C
Blackout	3.5.11	4.7.11	T	C
Roof loads	3.5.12	4.7.12	T	C

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Floor loads	3.5.13	4.7.13	T	C
Floor Stiffness	3.5.14	4.7.14	T	C
Door loads	3.5.15	4.7.15	T	C
Roof access loads	3.5.16	4.7.16	T	C

Key

E	Examination by independent evaluator
E*	Examination by contractor evaluator
T	Testing conducted at independent facility
T*	Testing conducted at contractor facility
C	Confirmation of similarity to previously verified design

TABLE VIII. **Requirements and verification methods** – Continued

REQUIREMENT	**REQUIREMENT SECTION**	**VERIFICATION SECTION**	**FIRST ARTICLE INSPECTION METHOD**	**CONFORMANCE INSPECTION METHOD**
Impact resistance	3.5.17	4.7.17	T	C
Drop shock	3.5.18	4.7.18	T	C
Sound attenuation	3.5.19	4.7.19	T	C
Attachment point loads	3.5.20	4.7.20	T	C
Floor tie down points	3.5.21	4.7.21	T	C
EMI shielding	3.5.22	4.7.22	T	T*
Chemical and biological hardness	3.5.23	4.7.23	T	T
Chemical and biological decontamination	3.5.23	4.7.23	E	C
Environmental	3.6	4.8		
High temperature	3.6.1	4.8.1	T	C
Low temperature	3.6.2	4.8.2	T	C
Solar radiation	3.6.3	4.8.3	T	C
Rain	3.6.4	4.8.4	T	C
Humidity	3.6.5	4.8.5	T	C
Fungus	3.6.6	4.8.6	T	C
Salt fog	3.6.7	4.8.7	T	C
Sand and dust	3.6.8	4.8.8	T	C
Safety	3.7	4.9		
Flame resistance	3.7.1	4.9.1	T	C
Electrical hazard	3.7.2	4.9.2	E	E*
Human systems integration	3.7.3	4.9.3	E	C

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Toxicity	3.7.4	4.9.4	E	C
Cleaning	3.7.5	4.9.5	E	C
Sharp edges	3.7.6	4.9.6	E	E*

Key

E	Examination by independent evaluator
E*	Examination by contractor evaluator
T	Testing conducted at independent facility
T*	Testing conducted at contractor facility
C	Confirmation of similarity to previously verified design

4.5. Verification alternatives. Alternative examination techniques; test methods, procedures, or devices; or sampling procedures may be proposed by the contractor for Government approval. Government approved alternatives shall be identified in the contract and amended into this specification, if necessary.

4.6. Design verification. The shelter shall be examined, using calibrated devices when applicable, to determine compliance with the design requirements set forth in sections 3.4.1 through 3.4.21.

4.7. Performance verification. The shelter shall be tested using approved methods, procedures, and devices, or confirmed for similarity to previously verified design, to determine compliance with the performance requirements set forth in sections 3.5.1 through 3.5.22.

4.7.1. Heat transfer coefficient. The shelter shall be set up inside a chamber with a control system capable of maintaining a chamber temperature of –25 degrees Fahrenheit (°F). The volume of the chamber shall be such that the shelter in operational mode does not interfere with maintaining test conditions and the minimum distance from any shelter panel to the adjacent chamber wall is not less than 24 inches. The conditioned air flow shall provide free circulation between the shelter and the chamber walls and ceiling and provide uniform air flow around the shelter with a velocity on the shelter surface not greater than 5 miles per hour. The chamber temperature shall be measured by placing a thermocouple 6 inches away from each shelter corner fitting and a thermocouple 6 inches away from the center of each wall and roof panel. The shelter temperature shall be measured with a total of 16 thermocouples located as shown in FIGURE 3, with each located 6 inches away from the panel surface and shielded from the heat source. An electrical resistance heat source capable of maintaining a shelter temperature not less than 100°F above chamber temperature shall be positioned as shown in Figure 4. The features of the heat source and air circulating devices shall be used to ensure uniform shelter temperature such that the difference between any two interior thermocouples is not greater than 5°F. Temperature conditions shall be considered stable when, for 30 uninterrupted minutes, the shelter temperature remains uniform and not less than 100°F above the –25°F chamber temperature. Once stable temperature conditions are met, the electrical power draw of the heat source shall be recorded every 15 minutes. The test shall continue until four consecutive power draw recordings show a variation not greater than 5 percent, indicating stable power draw. Once

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four consecutive stable power draw recordings at stable temperature conditions are obtained, the test is concluded. The heat transfer coefficient shall be calculated as follows to determine compliance with section 3.5.1:

$$U = \frac{P}{A_i \times \Delta T}$$

where:

U	=	heat transfer coefficient in BTU/hr-ft^2-°F
P	=	stable power draw in BTU/hr (note: 1 W = 3.412 BTU/hr)
A_i	=	nominal interior shelter surface area in ft^2
ΔT	=	stable temperature difference between chamber and shelter in °F

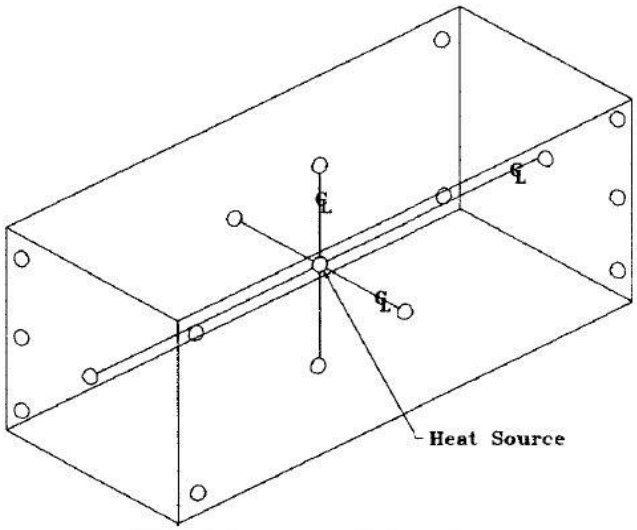


FIGURE 4. **Thermocouple locations**

4.7.2. Set up and take down. The shelter shall be set up and taken down by four personnel familiar with the set up and take down procedures defined by the operator's manual. The time to set up and take down the shelter shall be recorded using a calibrated device to determine compliance with section 3.5.2.

4.7.3. Road transportability. The shelter in transport mode shall undergo road mobility vibration testing in accordance with MIL-STD-810, Procedure III – Large Assembly Transport, Category 6 – Truck/Trailer, to determine compliance with section 3.5.3.

4.7.4. Rail transportability. The shelter in transport mode shall undergo rail impact testing in accordance with MIL-STD-810 to determine compliance with section 3.5.4.

4.7.5. Air transportability. The shelter in transport mode shall undergo examination to determine compliance with section 3.5.5.

4.7.6. Sea transportability. The shelter in transport mode shall undergo examination and nine-high stacking testing in accordance with ISO 1496-1 to determine compliance with section 3.5.6.

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4.7.7. Forklift handling. The shelter in transport mode shall be loaded with evenly distributed payload to achieve a gross weight of 10,000 lb. The loaded shelter shall be lifted by an appropriately rated, certified, and calibrated forklift; transported over 1,500 feet of paved surface at safe speed; complete two 90-degree right turns and two 90-degree left turns at safe speed; and then be lowered to the ground. The shelter shall then be examined for damage, not to include minor abrasion from forklift tines, to determine compliance with section 3.5.7.

4.7.8. Sling lift. The shelter in transport mode shall be loaded with evenly distributed payload or otherwise secured to achieve design limit load and subjected to a sling lift by the top corner fittings and a sling lift by the bottom corner fittings using a spreader bar in accordance with MIL-STD-913. Sling lift by top corner fittings shall be with a four-cable sling with cable lengths such that a single apex resides over the center of gravity of the shelter and an angle of 45 degrees is formed between each cable and the roof plane as shown in FIGURE 5. Sling lift by bottom corner fittings shall be with a four-cable sling and spreader bar with cable lengths such that the spreader bar resides 24 inches above the center of gravity of the shelter and an angle of 45 degrees is formed between each cable and the roof plane as shown in FIGURE 6. Lifts shall be performed using appropriately rated slings and load maintained for a duration of 5 minutes. Lifts shall be performed such that minimal acceleration or deceleration forces are applied. After each lift, the shelter shall be examined to determine compliance with section 3.5.8.

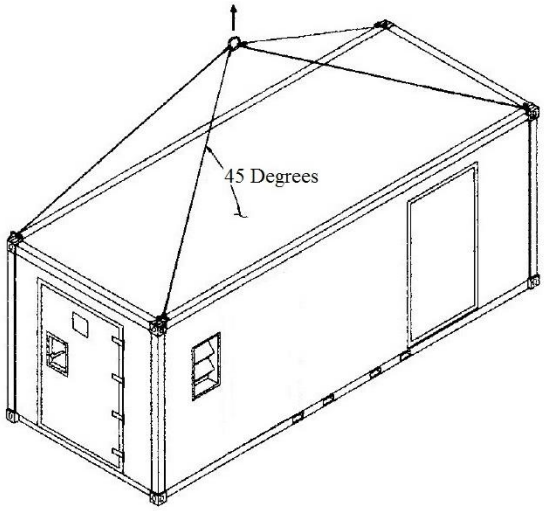


FIGURE 5. **Sling lift by top corner fittings**

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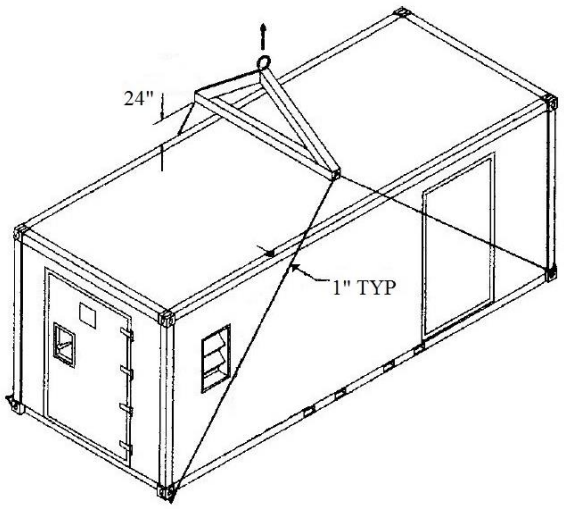


FIGURE 6. **Sling lift by bottom corner fittings**

4.7.9. Hook bar and LHS provisions fatigue. If designated as Class H, the shelter shall undergo not less than 22 mounting and dismounting cycles, both loaded and empty, by an appropriately rated, certified, and calibrated LHS-equipped vehicle. One cycle consists of lifting the shelter from the ground, securing it on the LHS-equipped vehicle, and then returning the shelter to rest on the ground. For loaded cycles, the shelter shall be loaded with evenly distributed payload to achieve its maximum gross weight. Following each mounting and dismounting cycle, the shelter shall be examined for damage and structural integrity to determine compliance with section 3.5.9. In addition, during this verification, the shelter may be instrumented with strain gauges to allow fatigue analysis to be performed.

4.7.10. Airtightness and venting. If designated as Type A, the shelter shall be connected to an air supply producing 200 cfm. If designated as Type B or Type C, the shelter in operational mode shall be connected to an air supply producing 100 cfm and the shelter in transport mode shall be connected to an air supply producing 200 cfm. During each of these conditions, the pressure inside the shelter shall be recorded with a calibrated device to determine compliance with section 3.5.10.

4.7.11. Blackout. While an observer is stationed inside the closed and darkened shelter, a bare 100 W incandescent bulb shall be moved around its exterior at a distance of 1 foot from the shelter surface. The interior observer shall watch for light penetration from the exterior light source to determine compliance with section 3.5.11.

4.7.12. Roof loads. The roof of the shelter in transport and operational mode shall be uniformly loaded to 40 lb/ft^2 over the full surface area of the roof for a duration of 5 minutes. The uniform load shall then be removed and a concentrated load of 660 lb applied over 2 ft^2 in a central area of the roof for a duration of 5 minutes. During and after each loading condition, the roof of the shelter shall be examined to determine compliance with section 3.5.12.

4.7.13. Floor loads. The floor of the shelter in transport and operational mode shall have a uniform load of 80 lb/ft^2 applied over its full surface area for a duration of 30 minutes. The

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uniform load shall then be removed and a concentrated load of 2,500 lb applied over 4 ft^2 at the center of each floor section for a duration of 30 minutes. The concentrated load shall then be removed and a point load of 125 lb balanced upon a 1 in^2 block applied at the center of each floor section for a duration of 5 minutes. If designated as Class H, these loading conditions shall be 80 lb/ft^2, 4,500 lb over 4 ft^2, and 1,200 lb over 1 in^2, respectively. During and after each loading condition, the floor of the shelter shall be examined to determine compliance with section 3.5.13.

4.7.14. Floor Stiffness. The shelter floor, in its deployed mode, shall subjected to a uniform load of 85 lb/ft^2. During and after each loading condition, the floor of the shelter shall be examined to determine compliance with section 3.5.14.

4.7.15. Door loads. Each door of the shelter shall be opened to 90 degrees, its stopping mechanism engaged, and a 200 lb load applied vertically to its outer edge for a duration of 30 minutes. The vertical load shall then be removed and a horizontal load equal to 10 lb times the door's area in square feet applied to the midpoint of its outer edge. During and after each loading condition, the door shall be examined to determine compliance with section 3.5.15.

4.7.16. Roof access loads. Each roof access provision shall have a 500 lb load applied vertically to its outer edge for a duration of 5 minutes. During and after this loading condition, the roof access provision shall be examined to determine compliance with section 3.5.16.

4.7.17. Impact resistance. 24-inch x 24-inch production representative shelter panel specimens shall be subjected to an impact from a 70-lb steel cylinder with a 3-inch diameter and hemispherical end dropped from a height of 30 inches. The panel specimens shall be in compliance with section 3.5.15; and after each impact, the panel specimen shall be examined and acoustically interrogated to determine compliance with section 3.5.17.

4.7.18. Drop shock. The shelter in transport mode shall be loaded with evenly distributed payload to its maximum gross weight, as specified in TABLE III, and subjected to a flat and rotational drop. For the flat drop, the shelter shall be lifted to a height of 6 inches, using a four-cable sling equipped with a quick release hook to ensure the shelter falls freely and flatly, and then dropped onto concrete-type surface. For the rotational drop, one bottom edge of the shelter shall be placed on a sturdy surface at a height of 4 inches and then the opposite edge of the shelter lifted to a height of 6.25 inches and dropped onto concrete-type surface. After each drop, the shelter shall be examined to determine compliance with section 3.5.18.

4.7.19. Sound attenuation. A production representative shelter panel specimen shall undergo sound attenuation testing in accordance with ASTM E90 and ASTM E413 to determine compliance with section 3.5.19.

4.7.20. Attachment point loads. Production representative attachment point specimens shall undergo pullout load testing and torque load testing. A single test specimen may include attachment points for the pullout load test and torque load test, provided that it allows for 6 inches of space between the specimen edge and each attachment point and 6 inches of space between any two attachment points. For the pullout load test, the load shall be applied to the

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attachment point in the direction perpendicular to the attachment surface. For the torque load test, loads shall be applied to the attachment point in both the clockwise and counterclockwise direction and held for a duration of 5 seconds. During and after each test, the specimen shall be examined to determine compliance with section 3.5.20.

4.7.21. Floor tie down points. Production representative tie down point specimens shall undergo pullout load testing. For the pullout load test, a 2000 lb load shall be applied to the tie down point in the direction perpendicular to the attachment surface. After each test, the specimen shall be examined to determine compliance with section 3.5.21.

4.7.22. Electromagnetic interference (EMI) shielding. The shelter shall be tested in accordance with Test Method E1851, except that the measurements shall be made at 150 kHz and 14 MHz in the H-field and 400 MHz, 1 GHz, and 10 GHz in Plane Wave. Failure to meet the requirements of 3.5.22 shall constitute failure of this test.

4.7.23. Chemical and biological hardness. If designated as Class C, the shelter shall be examined and shall undergo wind-driven challenge testing in accordance with ECBC-TR-849 to determine compliance with 3.5.23.

4.7.24. Chemical and biological decontamination. The shelter shall be examined by a qualified evaluator to determine compliance with section 3.5.24.

4.8. Environmental requirements. The shelter shall be tested using approved methods, procedures, and devices, or confirmed for similarity to previously verified design, to determine compliance with the environmental requirements set forth in sections 3.6.1 through 3.6.8.

4.8.1. High temperature. The shelter shall undergo high temperature testing in accordance with MIL-STD-810, Procedure I – Storage, Cycle A1 (Hot-Dry), to determine compliance with section 3.6.1.

4.8.2. Low temperature. The shelter shall undergo low temperature testing in accordance with MIL-STD-810, Procedure I – Storage, Procedure II – Operation, and Procedure III – Manipulation, Cycle C3 (Severe Cold), to determine compliance with section 3.6.2.

4.8.3. Solar radiation. The shelter shall undergo solar radiation testing in accordance with MIL-STD-810, Procedure I – Cycling, Cycle A1 (Hot-Dry), to determine compliance with section 3.6.3.

4.8.4. Rain. The shelter shall undergo rain testing in accordance with MIL-STD-810, Procedure II – Exaggerated, to determine compliance with section 3.6.4.

4.8.5. Humidity. The shelter shall undergo humidity testing in accordance with MIL-STD-810, Procedure I – Induced and Natural Cycles, Cycle B2 (Cyclic High Humidity), to determine compliance with section 3.6.5.

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4.8.6. Fungus. The shelter or production representative specimens shall undergo fungus testing in accordance with MIL-STD-810 for a duration of 28 days to determine compliance with section 3.6.6.

4.8.7. Salt fog. The shelter shall undergo salt fog testing in accordance with MIL-STD-810 to determine compliance with section 3.6.7.

4.8.8. Sand and dust. The shelter shall undergo sand and dust testing in accordance with MIL-STD-810, Procedure I – Blowing Dust and Procedure II – Blowing Sand, to determine compliance with section 3.6.8.

4.9. Safety requirements. The shelter shall be tested using approved methods, procedures, and devices, or confirmed for similarity to previously verified design, to determine compliance with the safety requirements set forth in sections 3.7.1 through 3.7.6.

4.9.1. Flame resistance. Two 12-inch x 12-inch production representative shelter panel specimens shall be prepared and tested for flammability in the following fashion: (1) drill a 0.25-inch pilot hole in the center of the panel through all layers of the panel; (2) using a 1-inch diameter hole saw and the 0.25-inch pilot hole, remove only the outermost layer of the panel on both sides; (3) mount the panel in any appropriate fixture in a horizontal position and adjust the height of the panel so that its lower surface is approximately 2.50 inches above the top of a standard barrel Bunsen burner; (4) away from the panel, light the burner and adjust its flame height to approximately 5 inches; (5) apply the flame to the center of the panel for 30 seconds; (6) at the end of the 30-second period, remove the flame and record the time, in seconds, for self-extinguishment to occur. Each panel specimen shall be in compliance with section 3.7.1.

4.9.2. Electrical hazard. The shelter shall be examined by a qualified evaluator to determine compliance with section 3.7.2.

4.9.3. Human systems integration (HSI). The shelter shall be examined by a qualified evaluator to determine compliance with section 3.7.3.

4.9.4. Toxicity. The shelter and/or its relevant documentation shall be examined by a qualified evaluator to determine compliance with section 3.7.4.

4.9.5. Cleaning. The shelter shall be examined to determine compliance with section 3.7.5.

4.9.6. Sharp edges. The shelter shall be examined to determine compliance with section 3.7.6.

5. PACKAGING

5.1. Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see section 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the

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Military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general, explanatory, but non-mandatory nature.)

6.1. Intended use. The shelters specified herein are intended for DoD use as hospital facilities, command posts, tactical operation centers, laboratories, maintenance shops, billeting and hygiene facilities, and various other working environments in the field.

6.2. Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification
b. Size, type, and class of shelter (see section 1.2)
c. When first article inspection is required (see sections 3.1)
d. Packaging requirements (see section 5.1)

6.3. Definitions.

6.3.1. Set up. Set up includes the duration of time and actions taken to orient, level, expand (if necessary), and secure the shelter so it is operationally ready for habitation and use. It does not include the duration of time or actions taken to incorporate auxiliary equipment into the shelter.

6.3.2. Take down. Take down includes the duration of time and actions taken to collapse (if necessary) and secure the shelter so it is ready for transport. It does not include the duration of time or actions taken to remove auxiliary equipment from the shelter or stow equipment not required for take down within the shelter.

6.3.3. Damage. Damage includes any rupture, delamination, compressive failure, shear failure, corrosion, or permanent deformation that compromises the structural or material integrity of the item and renders it unsuitable for use.

6.3.4. Delamination. Delamination is a mode of failure for laminated/layered materials whereby repeated cyclic stresses, impact, and so on can cause layers to separate, resulting in a significant loss of mechanical toughness. The approved method for evaluating delamination is acoustic interrogation using a coin or tap hammer. A bright, metallic sound indicates good structure. A dull "thud" indicates a flaw such as a delamination or disbond.

6.4. Subject term (key word) listing.

Container
ISO Shelter
Structure

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6.5. Change notations. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

CONCLUDING MATERIAL:

Custodians:
Army – GL

Review Activities:
DLA – DH

Preparing Activity:
Army – GL
(Project 5411-2023-001)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST online database at https://assist.dla.mil.

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