

**PURCHASE  
DESCRIPTION  
MODULAR  
GENERAL  
PURPOSE TENT  
SYSTEM (MGPTS)**

**1. SCOPE**

1.1. Scope. This performance specification describes a modular tent system that provides environmental protection to Soldiers, Marines and Airmen for general-purpose field applications.

1.2. Classification. The Modular General Purpose Tent System (MGPTS) will be of the following types, sizes and class (colors) (see paragraph 6.2):

Type I – External side and end supports (poles) with internal center supports

Type II – External side, end and center supports

Class 1 – Green, Camouflage Shade 483, DSCP Standard Shade Sample #3299

Class 2 – Tan, Desert Tan, US Army 686A

1.3. Sizes. The Modular General Purpose Tent System (MGPTS) will be furnished in sizes Small, Medium and Large.

**2. APPLICABLE DOCUMENTS**

2.1 General. The documents listed in this section are specified in section 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements as cited in section 3 against the verification criteria listed in section 4 of this specification.

2.2. Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

**SPECIFICATIONS**

**MILITARY**

MIL-PRF-44103

- Cloth, Fire, Water, and Weather Resistant

**STANDARDS**

FEDERAL

- FED-STD-191 - Textile Test Methods
- FED-STD-595C - Colors Used In Government Procurement

MILITARY

- MIL-STD-129 - Military Marking
- MIL-STD-1472 - Human Engineering

(Unless otherwise indicated, copies of federal and military specifications, standards and handbooks are available from the Defense Automated Printing Service, Bldg 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

- NRDEC Drawing 5-4-6764 Fluorescent Light Set
- NRDEC Drawing 5-4-9755-12 Window Assy (side)
- NRDEC Drawing 5-4-9755-16 Vestibule
- NRDEC Drawing 5-4-9755-18 Vestibule Door

2.2 Non-government documents. The following document(s) form a part of this specification to the extent specified herein. Unless otherwise specified, the issue dates of these documents that are DoD adopted are those listed in the DoDISS.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

(Copies may be obtained from: American Association of Textile Chemists and Colorists, P.O. Box 122215, Research Triangle Park, NC 27709-22215. <http://www.well.com/user/css/AATCC.HTML>.)

THE AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

- ACGIH - Threshold Limit Values

(Copies may be obtained from: The American Conference of Governmental Industrial Hygienists  
1014 Broadway, Cincinnati, OH 45202.)

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION

- AIHA - Workplace Environmental Exposure Level Guide Series

(Copies may be obtained from: American Industrial Hygiene Association, AIHA Publication Orders, PO Box 27632, Richmond, VA 23261-7632, <http://www.aiha.org>)

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI/AATCC 30 Fungicides, Evaluation on Textiles: Mildew and Rot Resistance of Textiles  
ANSI/AATCC 169 Resistance to accelerated weathering - xenon lamp.

(Copies may be obtained from: American National Standards Institute, Attn: Customer Service,  
11 West 42nd Street, New York, NY 10036, [http://www.ansi.org/cat\\_b.html](http://www.ansi.org/cat_b.html))

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM-D-3951 - Packing  
ASTM-D-6413 - Standard Test Method for Flame Resistance of Textiles

(Applications for copies should be addressed to American Society For Testing and Materials, 100 Barr Harbor Drive,  
West Conshohocken, PA 19428, (610) 832-9585, <http://www.astm.org>.)

SANTA CLARA CENTER FOR OCCUPATIONAL SAFETY AND HEALTH

Chemical Exposure Guidelines, Version 9

(Copies may be obtained from: Chemical Exposure Guidelines, Version 9, Santa Clara Center for Occupational Safety  
and Health, 760 North First , San Jose, CA 95112., <http://www.152.3.65.120/oem/chem-exp.htm>)

NATIONAL INSTITUTE OF OCUPATIONAL SAFETY AND HEALTH

Pocket Guide to Chemical Hazards, 3<sup>rd</sup> printing, product number 12230-0000

(Copies may be obtained from: National Institute of Occupational Safety and Health, National Safety Council, P.O. Box  
558, Itasca, IL 60143-0558)

2.3 Order of precedence. 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/Conformance/End Item Requirements. When specified (see paragraphs 4.2, 6.2 and 6.3), a sample shall be subjected to test and inspection.
- 3.2 Interface and Interoperability Requirements. All component parts, including fabric, support system, tent pins and transport covers, shall be functionally interoperable and physically interchangeable with all other MGPTSs with no binding or misfit affecting ease of operation, visible openings affecting blackout, or form, fit and function incompatibilities. In addition, the MGPTS must interface with standard military shipping equipment; standard military camouflage net systems, standard military heaters, standard military environmental control ducts, and the Tent, Extendable, Modular, Personnel (TEMPER) vestibule.
- 3.2.1 Component Interchangeability Requirements. All Type I MGPTSs must interface with previously fielded Type I MGPTSs. All Type I MGPTS components shall be interchangeable with components from previously fielded Type I MGPTSs. The interface between end and intermediate fabric sections must be easy to use, able to function and maintain integrity in all weather conditions and shall prevent the leakage of water and light. The window pane and fastning system shall be in accordance with the TEMPER Window Pane 5-4-9755-12.
- 3.2.2 Modularity. The MGPTS, in any size and support configuration, shall be indefinitely extendable in length.
- 3.2.3 Interface with Camouflage Nets. The MGPTS must be compatible with the standard Army camouflage net system. No ladders or vehicles shall be required for installation of standard camouflage net system. Therefore, soldiers must be able to climb on, slide and pull the camouflage net over the top and sides of the MGPTS.
- 3.2.4 Interface with Tent Stakes. There shall be sufficient tent stakes with each MGPTS to anchor each tent support system base, all sidewalls and all guy lines under the various environmental and operating conditions identified in paragraph 3.3. The MGPTS uses a 36-inch long hackberry tent stake to secure the guy lines. There are 16 each 36-inch hackberry stakes required for the MGPTS Small; 24 required for the Medium; and 32 required for the Large. The MGPTS currently uses a 12-inch long polycarbonate tent stake to secure the foot loops in the walls of the tents and the base of all the poles. There are 24 required for the Small; 36 required for the Medium; and 48 required for the Large to secure the foot loops in the walls of the tents and the base of all the poles. All tent stakes must be able to be installed by an individual soldier without power equipment and the weight of these tent stakes shall be included in the total system weight. The tent stakes shall be able to secure the tent through snow, rain and wind testing. Multiple stakes at each guy line are allowable to meet the load requirements. Additionally, standard 24-inch long wood stakes may be used where practical.
- 3.2.5 Dimensions for Standard Configurations for Interface. Although the MGPTSs tent may extend indefinitely in length, three standard size configurations are required. They are the MGPTS Small, MGPTS Medium, and MGPTS Large. These physical dimensions of the complete system as well as individual components must be adhered to because of human interface requirements, equipment interface and for interface between previously fielded MGPTS tents in the field.
- 3.2.5.1 Length for Component Interchangeability Requirements. The minimum interior length of the roof at the eave of the erected MGPTS sizes shall be as follows: MGPTS Small - 18 feet; MGPTS Medium - 36 feet; MGPTS Large - 54 feet. The MGPTS shall not require interior poles or other obstructions at less than nine-foot intervals along the length of the tent. The unobstructed area shall be clear from ground level to the eaves height between supports.
- 3.2.5.2 Eaves Height for Component Interchangeability Requirements. The minimum interior eave height of all three size MGPTSs shall be seven feet above ground level to improve habitability and maximize useful floor area when the tent is erected in its standard configuration.
- 3.2.5.3 Maximum Height for Component Interchangeability Requirements. To minimize the visible signature and to ease installation of camouflage netting, no component of the MGPTS (when erected) shall extend beyond 12 feet above ground level.
- 3.2.5.4 Minimum Width of Roof at Eave for Component Interchangeability Requirements. The minimum width of

the roof at the eave height shall be 18 feet.

- 3.2.6 Transportability Interface. Transport covers shall be provided for all MGPTS components. Covers shall be designed to contain and protect tent components during storage and handling. Covers shall be designed so that handles are available for the soldiers to lift the cover without exceeding Human Factors safety limits for male and female soldiers. The safe lifting limits for one to eight male or female soldiers are respectively: 37, 74, 101.75, 129.5, 157.25, 185, 212.75 and 240.5 pounds. These weights are limited to lifts up to 5 feet from the ground and for distances not exceeding 33 feet. Covers shall be designed to be moved by male and/or female soldiers with at least one of them a 5th percentile female in height (61.8 inches tall). All covers shall include markings to indicate the contents and quantity of individual contents of the package. Marking for weight/lift requirements shall be provided on each transport cover, bag and/or container.
- 3.2.6.1 Packaged Size for Interface. No part of the MGPTS shall be longer than 96 inches when configured for transport. All sizes of the MGPTS that are packaged for shipping in transport covers (not the shipping box) must fit on an Air Force 463L pallet (available area: 104"L x 84"W x 96"H). The MGPTS must fit into an ISO container (useable volume: 234"L x 90"W x 90"H). The MGPTS must fit into a TRICON container (useable volume: 72"L x 90"W x 90"H).
- 3.2.6.2 Packaged Volume. All sizes of the MGPTS must not exceed the following formula for volume: packed volume/floor area = 0.0644 ft. Floor area shall be calculated as the length times the width of the roof perimeter to equalize the comparison between tents with sloping sidewalls and straight sidewalls. Packed volume for the MGPTS is in its transport covers, not a shipping crate.
- 3.2.6.3 System Weight. The allowable overall system weight shall be based on the enclosed floor space and shall not exceed 1.25 lb./sq. ft. for the medium and large size tents when using a support system with center supports. The allowable overall system weight shall be based on the enclosed floor space and shall not exceed 1.75 lb./sq. ft. for the medium and large size tents when using a support system without center supports. Small sizes may exceed this by 50 pounds. System weight includes support system, outer fabric, transport containers (not shipping boxes), guy lines and tent stakes. Floor area shall be calculated by multiplying length of the interior eave by the width of the interior end. This is to equalize comparisons between tents with sloping sidewalls and tents with straight sidewalls.
- 3.3 Operating Environment Requirements. The erected tent system shall provide shelter for the occupants in all the following environmental conditions listed in subsequent paragraphs 3.3.1 through 3.3.14. The system shall suffer no degradation of performance due to exposure to these conditions and by unpacking, setting up, striking and repacking in these temperatures which cannot be repaired in the field and which makes it impossible to setup or strike the tent, reduces the blackout capability of the tent and reduces the ability of the tent to support the required snow load or reduces the ability of the tent to resist rain intrusion.
- 3.3.1 Temperature. The MGPTS shall be fully operable in ambient temperatures between -60 °Fahrenheit (F) to +120 °F. There shall not be increased component stiffness in cold temperatures that prevents the setup/strike of the system. There shall not be any weaknesses due to high temperatures that prevent the setup/strike of the system. Temperature conditions are defined as follows:
- A. Severe Cold Temperature is minus (-) 60 degrees Fahrenheit (F)
  - B. Cold Temperature is - 35 °F with relative humidity tending towards saturation.
  - C. Basic Temperature is -25 °F to + 120 °F.
    - 1) Basic Cold is -5 °F to -25 °F with relative humidity tending toward saturation.
    - 2) Basic Hot is 86 °F to 110 °F with 14 % to 44 % relative humidity.
    - 3) Variable High Humidity is 78 °F to 95 °F with 95 % to 100 % relative humidity.
    - 4) Constant High Humidity is constant 75 °F with 95 % to 100 % relative humidity.
  - D. Hot Temperature is 88 °F to 120 °F.
    - 1) Hot Humid is 88 °F to 105 °F with 59 % to 88 % relative humidity.
    - 2) Hot Dry is 90 °F to 120 °F with 3 % to 8 % relative humidity.
- 3.3.2 Rain. The MGPTS shall ensure the safe use of electrical equipment inside the MGPTS and the comfort of soldiers in the field. The MGPTS without liner shall not pool water on any part under any circumstance and shall be capable of withstanding rain at a rate of two (2) inches per hour for thirty (30) minutes without

evidence of leakage through the tent fabric, flaps, seams or vents that would result in degradation of safety or loss of mission capability. Leakage is defined as:

- Negligible - Damp spots, barely noticeable.
- Minor - Droplets forming on the fabric or at the seams and hanging there (no movement of water) which under ordinary circumstances will not impair its intended military use.
- Major - Water continually leaking and dropping off or running down the item's inner surface which impairs the item's intended military use.

3.3.2.1 Wind-Driven Rain. The MGPTS without liner shall be capable of withstanding a wind-blown rain at 2 inches per hour with wind speeds of 55 miles per hour (MPH) for 30 minutes with three occurrences of wind gusts to 65 mph within the same 30-minute period. The MGPTS shall also withstand 35 mph wind-driven rain at a rate of one (1) inch per hour for three (3) hours without evidence of leakage through the tent fabric, flaps, seams or vents that would result in degradation of safety or loss of mission capability

3.3.3 Humidity. The performance of the MGPTS shall not be adversely affected by ambient humidity between zero and 100% (relative humidity), regardless of ambient temperature.

3.3.4 Condensation. The MGPTS shall minimize condensation on the inside of the tent that may adversely effect personnel or loss of mission capability.

3.3.5 Wind Load. The tent shall be capable of being setup in winds of 25 mph. The MGPTS and all component parts, when setup per the manufacturer's instructions, shall be capable of withstanding a steady wind of 55 miles per hour for 30 minutes and wind gusts of 65 mph in 10 second durations from any direction, over the surface of the tent perpendicular to the direction of the wind without sustaining damage which prevents the tent from being taken down and setup again. This test applies to conditions where the guy lines are anchored in a way that eliminates the possibility of the guy lines coming loose.

3.3.6 Snow Load. The MGPTS shall support a maximum snow load of 10 pounds per square foot for a maximum period of 12 hours without sustaining damage that prevents the tent from being taken down and setup again.

3.3.7 Sunlight. The MGPTS shall withstand exposure to direct sunlight for 18 months. Components exposed to direct sunlight or in contact with components exposed to direct sunlight shall tolerate material temperatures up to 160 °F without degradation which affects the ability to setup or strike the tent, reduces the blackout capability of the tent, reduces the ability of the tent to support the required snow load or reduces the ability of the tent to resist rain intrusion.

3.3.8 Blackout/Camouflage Performance. To ensure the safety of the soldiers under blackout conditions, the fully erected tent system (without liners) shall be capable of preventing detectable fluorescent and watt incandescent light leakage through the tent fabric, flaps, doors and vents on level and varying terrain when viewed with the naked eye at a minimum distance of 100 meters or with Night Vision Goggles (NVGs) at a minimum of 300 meters where there is no visible made-made light sources around the perimeter of the tent on a moonless night without any low clouds which could reflect ambient and man-made light sources. Two, 40 watt, military standard fluorescent lights or one 100-watt incandescent light per every 9 feet of floor length shall illuminate the MGPTS both light sources will be tested during First Article Testing. The light(s) shall be suspended on either side of the center of the tent in a location that provides the maximum use of the light sets. These light sets are already fielded and are in use throughout the Army and are the lights that may be used with the MGPTS for the foreseeable future. Light leakages through stitch holes, which cannot be seen with the naked eye at distances of more than 25 feet, are acceptable.

Additionally, the Opacity (Grade A) of MIL-PRF 44103, para. 3.4 shall apply on a lot release basis per DSCPM-4155.3

3.3.9 Salt Fog. The MGPTS shall be operable in seashore and coastal climates. The components shall function after exposure to a salt fog atmosphere for a minimum period of 18 months without a degradation of safety or loss of mission capability.

3.3.10 Blowing Sand and Dust. The MGPTS shall not be degraded beyond use in a blowing sand and dust

environment.

- 3.3.11 Insects. The system shall resist physical damage from entry of insects from the exterior, including flying insects from penetrating screening mesh diameter of 0.0125 +/- 0.001.
- 3.3.12 Petroleum Products Resistance. All components shall resist damage by petroleum products used by the military such as, but not limited to, diesel and jet fuel.
- 3.3.13 Mildew and Fungus. The MGPTS shall not sustain the growth of fungus and bacteria under any conditions in storage or use, which damages or renders the MGPTS unserviceable.
- 3.3.14 Varying Terrain. The MGPTS shall be used on both prepared and unprepared surfaces, it shall provide features which permit the tent to function on uneven terrain with local (point) variations in ground elevation of up to 6 inches and to maintain an eave height of 84 inches with no more than 1.5 inch vertical deviation at the eaves line. The tent shall not suffer any degradation in either wind, rain, or snow load performance due to this slope which affects the ability to setup or strike the tent, reduces the blackout capability of the tent, reduces the ability of the tent to support the required snow load or reduces the ability of the tent to resist rain intrusion.
- 3.3.15 Mechanical Shock and Vibration/Rough Handling. The MGPTS shall withstand vibration and mechanical shock without damage or degradation that affects its operational use. The MGPTS shall withstand rough handling by military personnel. Rough handling includes components being stepped on by soldiers, components being dropped or thrown from trucks onto hard ground and tents which have been setup being climbed on by 95th percentile soldiers.

#### 3.4 Component Functional Requirements.

- 3.4.1 Tent Support Systems. Support systems shall be of two types: (1) a pole support system that includes external perimeter pole supports and internal center supports and (2) a frame support system that doesn't require internal supports. The goal is to have both support systems accept structural loads from the fabric subsystem without requiring any modifications to the fabric when switching among support systems identified in paragraph 3.4.3. Perimeter poles shall be external to the fabric since Army testing has shown this eases the task of setting up or striking the tent for the soldier in the field. Connections shall be designed to safely transmit all loads from the fabric to the support subsystem under the operating environments identified in paragraph 3.3. The support systems shall be designed so that they do not interfere or impede access to the fabric subsystem doors or windows. The support systems shall include no more than three different types of pole supports as described in paragraphs 3.4.1.1 and 3.4.1.2. The support systems shall not interfere with the use of the TEMPER vestibule in conjunction with the tent door.
  - 3.4.1.1 Center Supports. Center supports shall be of one type to reduce logistics burden on the military.
  - 3.4.1.2 External Perimeter Poles. Perimeter poles may be of two types to reduce logistics burden on the military. Testing has shown that external perimeter poles reduce setup time and enhance personnel safety, reduce water leakage and improve blackout performance. Therefore, perimeter poles shall be external to the fabric subsystem. They shall also include a provision to insure they do not become disconnected from the fabric assembly under the design wind and snow conditions.
  - 3.4.1.3 Support System Base Restraints. All support subsystem components that are in contact with the ground shall include design provisions for staking the base to prevent horizontal and vertical movement. These restraints shall prevent movement of the base under all design load conditions specified in paragraph 3.3. The base shall insure that the tent stake is oriented 15° from vertical to provide vertical restraint. Tent stakes shall be able to be installed by left- or right-handed soldiers without interference from the tent supports or fabric. The base of the support system shall also be designed so that it doesn't slip on slick surfaces when no stake is used.
- 3.4.2 Lighting Support. The set of components used to support lights within the tent shall support two fluorescent field light sets or one incandescent bulb for each nine feet of floor length. One light shall be suspended on each side of the center of the tent in a location that provides the maximum use of the light sets. These light sets are already fielded and are in use throughout the Army and are the lights that shall be used with the

MGPTS for the foreseeable future. No ladders shall be used to attach the light supports or the lights since soldiers do not have ladders in the field.

- 3.4.3 Fabric Sections. Type I MGPTS fabric sections are only fully functional with the Type I MGPTS pole support system. The Type II MGPTS fabric sections shall be fully functional with either support system. The objective is that the fabric subsystems would be interchangeable with any support system designed for the MGPTS thus reducing logistical burden of having multiple types of similar fabric sections.
- 3.4.3.1 Fabric End Section. Each end section shall include as a minimum, one door/vestibule adapter assembly, one window assembly, two environmental control unit (ECU) feed-throughs, one electrical supply feed-through one roof vent and one stovepipe opening.
- 3.4.3.2 Fabric Intermediate Section. The intermediate section shall include as a minimum one-door/ vestibule adapter assembly, one window assembly, one roof vent, and one stovepipe opening.
- 3.4.3.3 Ventilation. The MGPTS shall provide non-powered ventilation to maintain a comfortable interior. The tent shall have sufficient ventilation to prevent hazardous fumes/combustion product build-up from vehicles or equipment being worked on, or from military standard heaters. Ventilation shall minimize visible interior condensation in any climate when the tent is setup on a dry surface that does not emit water vapor. The tent shall have sufficient warm weather high rate non-powered air exchange in non-blackout, hot or humid conditions to prevent heat build-up over ambient temperatures. The tent shall maintain an inside temperature no higher than ambient at ambient temperatures up to 90 °F. If roof vents are provided, then they shall be able to be opened and closed from the ground level. The roof vents shall not allow direct light from the tent to escape when viewed with the naked eye from any angle at a minimum distance of 100 feet due to tactical considerations because the tent must be ventilated when being operated under blackout conditions at high temperatures and humidity while operating electronic equipment.
- 3.4.3.4 Side Walls of End and Intermediate Sections. Walls along the side of the tent (not the end) shall include an outer fabric and a full height and width insect barrier. The insect barrier shall resist the intrusion of flying and crawling insects and animals while permitting a free exchange of light and air between inside and outside. An insect barrier is not required on end walls or at doors. All wall panels shall include the ability to roll-up and secure the outer wall fabric and/or the insect barrier independently. The insect barrier shall provide through-the-panel access to windows, doors and ECU's and electrical feed-throughs. Both the wall outer fabric and the insect barrier shall provide a way to keep them from flapping under all wind loads. All outer wall fabrics and the insect barriers shall have a method for attaching the base of the wall to the ground and shall have a mud skirt which can be folded into or out of the tent and is wide enough to have sandbags placed over it.
- 3.4.3.5 Door/Vestibule Adapter Assembly. The door shall have a minimum opening of 6 ft. 3 in. high and 4 ft. 6 in. wide to accommodate soldiers with backpacks. The door shall be capable of being sealed against wind, rain, snow, blowing sand and light. The door shall be capable of being opened from either the inside or outside. The door shall be capable of being restrained in either the open or closed position. Doors shall maintain blackout integrity when soldiers are entering or leaving. Each opening shall be capable of attaching to a standard TEMPER vestibule Drawing 5-4-9755-16.
- 3.4.3.6 Window Assemblies. Each window shall have a minimum of 12 square feet glazed area. Windows shall include design features that allow transmission of visible light while providing a barrier against wind, rain, snow and blowing sand. Windows shall also include a means of containing interior light during blackout operations. They shall include a means of resisting the intrusion of insects while permitting the passage of air.
- 3.4.3.7 ECU Feed-Through. The Environmental Control Unit (ECU) feed through shall permit the passage of two 18 inch diameter ducts, 5 to 6 feet apart, through the tent wall at a centerline height of 22 inches above ground level to allow interface with existing ECU units. It shall include an ability to seal the outer wall to the duct to prevent water migration, loss of conditioned air, or leakage of outside air into the conditioned space. The interface shall seal against the intrusion of rain, snow, blowing sand, flying/crawling insects and animals when in use and when closed.
- 3.4.3.8 Electrical Supply Feed Through. The electrical supply feed-through shall permit the passage of an electric



wire or bundle of wires up to 5 in. diameter through the tent wall at a centerline height of 22 inches above ground level. It shall include an ability to seal the outer wall to the wires to prevent water migration and minimize the exchange of air between inside and outside. The feed-through shall seal against the intrusion of rain, snow, blowing sand, flying/crawling insects and animals when in use and when closed.

- 3.4.3.9 **Stovepipe Shield.** A stovepipe shield shall permit the passage of a 4-inch diameter stovepipe, through the roof of the tent. The shield shall provide separation between the stovepipe and tent fabric to insure that contact with, or proximity to, a stovepipe with surface temperatures of 600 °F do not damage the fabric. The shield shall provide a seal around the stovepipe to minimize the intrusion of rain or snow or the release of light when the stovepipe is present and shall keep the fabric in contact with the outer edge of the shield at a temperature lower than 160 °F. The shield shall have a cover to close the opening when not in use and the cover shall be able to be opened and closed from the ground level. The cover shall be retained in the open position to prevent it from contacting or otherwise being damaged by the hot stovepipe. The stovepipe opening centerline shall be located no less than 48 inches, measured horizontally, from the side walls, end walls or liner partitions. The location of the stovepipe shall insure that the associated stove shall not obstruct the free movement of personnel through the doors either in the tent walls or liner partitions and that hot stove surfaces shall not impose unnecessary safety hazards.
- 3.4.3.10 **Field Expedient Repair Kit.** The field expedient repair kit shall contain components sufficient to allow lowest level of field repair at operator level to be performed. Components are required to patch a hole or rip in the tent fabric. Items to be considered for the kit are needles, thread, webbing, adhesive backed fabric patches, cutter, split ring, guy lines, and instruction sheet. (when specified see para. 6.2)
- 3.4.4 **Floor System.** The fabric floor system shall be modular in design. There shall be an end section floor and an intermediate section floor. The floor shall resist penetration of ground water and shall assist the MGPTSs in reducing or eliminating condensation. The floor shall be compatible with a liner system. The floor will have features allowing the floor alone to be used with the MGPTS. (when specified see para. 6.2)
- 3.4.5 **Liner System.** The liner subsystem shall provide an air gap between the liner and the fabric subsystem to improve thermal performance of the MGPTS. The liner subsystem shall be compatible with a fabric floor system. The liner subsystem shall be easily installed and fully compatible with the overall modular concept of the MGPTS. Liner components shall include window openings, door openings, air conditioning duct access, electrical wire feed-throughs, stovepipe openings and roof vent openings. The liner system, when used, shall be able to provide a minimum temperature difference of 60 °F at 3 feet above the floor at the middle of the tent compared to ambient when two H-45 heaters are used to heat a MGPTS Medium at -25 °F ambient. The liner subsystem shall not impede the use of the lighting support subsystem. (when specified see para. 6.2)
- 3.4.6 **System Color Characteristics.** Exterior color of all fabric components shall be green or tan. Interior facing sides of the liners and tent fabric shall be a light color, to reflect light. All hardware, findings, plastic components, fastener tape, webbing, grommets, rope slips and guy rope, etc., which are visible from the tent exterior, shall approximate the tent color or shall be black. All support system components shall approximate black or dark gray color. All components shall have a dull finish to reduce reflectance. The specular gloss of the exposed side of the tent shall be less than 2.0 on the face side. Standard color samples should be requested from the contracting officer. The fabric shall match the standard sample when viewed under filtered tungsten lamps that approximate artificial daylight and that have a correlated color temperature of 7500<sup>0</sup> Kelvin (K) +/- 200<sup>0</sup> K, with illumination of 100 +/- 20 foot candles, and shall be a good match to the standard sample under incandescent lamplight at 2300<sup>0</sup> K +/- 200<sup>0</sup> K.
- 3.4.7 **Fabric Performance.** The fabric shall provide a tent that meets all of the MGPTS performance requirements.
- 3.4.7.1 **Flame Resistance.** The fabric (roof, walls, floor, liner) shall be flame resistant, self-extinguishing and shall have no flaming melt drip or molten pieces when exposed to flame or heat. The MGPTS shall be tested IAW ASTM-D 6413 – Standard Test Method for Flame Resistance of Textiles (Vertical Test). All fabric components shall be self-extinguishing within 2.0 seconds after exposure to the flame source for 12 seconds in both the warp and fill directions. The damaged char length shall be less than 50% of the sample length of 12 inches.
- 3.4.7.2 **Fabric Weight.** The weight of the fabric shall be a maximum of 22 ounces per square yard for all classes of

fabric.

3.4.7.3 Breaking Strength. The breaking strength of the fabric shall be a minimum of 250 lbs in the warp and 230 lbs in the fill.

3.4.7.4 Cold Crack. The fabric shall be resistant to cold crack at –60 degrees (°F) Fahrenheit when tested in accordance with ASTM D2136.

3.4.7.5 Adhesion of coating. The fabric (roof, walls) shall have a minimum adhesion of coating of 20 lbs/ 2inch when tested in accordance with ASTM D751, dielectric or hot air bonding, and pulling clamp speed of 5 mm/s. Three specimens shall be tested by adhering face to face and three specimens shall be tested by adhering back to back.

3.4.7.6 Mildew Resistance. The fabric shall be mildew resistant

3.4.7.7 Dead Load Seam Strength. The fabric seam, bonded using a dielectric or hot air welder and 2 inch seam width, shall withstand a 50 lb load for 4 hours at 160°F and a 100lb load for 4 hours at room temperature when tested in accordance with ASTM D751.

3.4.5.8 Opacity. The base fabric shall be tested and meet the requirements of Grade A, 44103 Para. 3.4.

### 3.5 Support or Ownership Requirements and Safety.

3.5.1 Safety and Health. The MGPTS shall have no uncontrolled safety or health hazards and shall conform to OSHA requirements, best commercial practices and military standards when applicable. No part of the MGPTS shall introduce safety hazards to the soldiers who shall transport and use the MGPTS. This includes, but is not limited to, sharp or rough edges, pinch hazards or components that could swing out and strike a soldier.

3.5.2 Field Life. The MGPTS shall have a minimum field life of three (3) years. No part of the tent shall be degraded beyond use by the environmental conditions of paragraph 3.3. The MGPTS shall not suffer any reduction in capability due to the effects of weathering over the three year field life of the system. The MGPTS is expected to have a typical usage of 28 erect/strike cycles per year during peacetime operations.

3.5.3 Shelf Life. The tent shall have a minimum shelf life of 10 years. No part of the tent shall be degraded beyond use by storage while wet or dry. All parts of the tent system shall be resistant to the deteriorating effects of rot, fungus, mildew or corrosion. The tent components shall not suffer any loss of strength, increased water permeability or light emissivity due to storage and transportation at temperatures as low as -60 °F or as high as 180 °F. The tent shall be able to be setup after storage at these temperatures with no damage or degradation or loss of operational use. This requirement applies to new tents still in their original crates.

3.5.4 Maintainability. The MGPTS must be designed to be repairable by the user in the field. Any spare/repair parts for the MGPTS that are available in the Defense Logistics Agency supply system. Permanent repairs to fabric sections are to be performed at a fabric repair facility. Damaged hardware is to be replaced per the repair parts list in the MGPTS technical manual.

3.5.5 Retention of Parts by Lanyard and Loose Hardware. Military field experience with parts retained by lanyards and similar devices has shown that they are frequently separated and lost during field operations. Therefore, these retention devices are not permitted in any MGPTS component. No loose hardware, such as nuts, bolts or pins shall be used on the MGPTS for normal setup/strike operations in the field.

3.5.6 Slide Fasteners. No slide fastener shall be used in any part of the MGPTS due to military experience with durability failures of slide fasteners on tents in the field and with difficulties experienced in setting up tents that use slide fasteners.

3.5.7 Identification. The letters U. S. shall be permanently placed on the outside of the tent end and intermediate sections in a location that is always visible from ground level. These letters shall be 8 inches high. All separable fabric sections, transportation covers and all support system sections shall be marked with the name

of the component conforming to the instruction label description, contractor's name, trade name, trademark or manufacturer's component part number and the contract number. Marks shall be permanent, legible, durable, and placed approximately in the center of the component. Packaging shall be in accordance with (IAW) ASTM-D-3951. Marking for shipment and storage shall be IAW MIL-STD-129.

- 3.5.8 Instructions. Printed instructions for unpacking, erecting, striking and repacking the MGPTS shall be permanently attached to the inside surface on the end wall inner door. The same printed instructions shall be permanently attached to the inside surface of the end fabric transport covers. These instructions shall be written to a 7th grade reading level. The instructions shall include repacking instructions for putting the MGPTS back in the transport bags.
- 3.5.9 Setup/Strike Requirements.
- 3.5.9.1 Setup/Strike Aids. No ladders, vehicles or tools except for stake installation may be used to setup or strike an MGPTS or any part of an MGPTS. A type of non-powered hand tool may be used for installing stakes.
- 3.5.9.2 Setup/strike Crew Characteristics and Size. The crew size required to setup/strike any type of MGPTS shall not exceed: MGPTS Small - 4 soldiers; MGPTS Medium - 4 soldiers; and MGPTS Large - 6 soldiers. The physical characteristics of the soldiers available to setup/strike any type of MGPTS shall be 5th percentile height female (61.8 inches tall) to 95th percentile height male (male: 6 feet 1.5 inches) but at least one of these soldiers shall be a 5th percentile female in stature.
- 3.5.9.3 Setup/Strike Times. Due to the tactical requirements determined by the user, the MGPTS shall be able to be setup and struck in the following maximum times, per the manufacturers instructions, using the crew size identified in paragraph 3.5.9.2: MGPTS Small - 27 minutes for setup/27 minutes for strike; MGPTS Medium - 36 minutes for setup/36 minutes for strike; MGPTS Large - 67 minutes for setup/45 minutes for strike by the specified number of soldiers without the use of ladders or hand tools (except for tools for installing stakes). One or all of the soldiers may be a 5th percentile female soldier in stature (61.8 inches tall). These times apply to temperatures of 50 °F to 80 °F in dry conditions and include staking the guy lines only and without the use of cold weather clothing gloves or mittens. They do not include installation of floors, liners, or lights or other staking of fabric. The setup time shall begin when all tent components are present at the erection site and packaged in their transport covers. The set-up period shall end when the tent is fully setup and guyed out. Strike time shall end when tent components are in their storage containers and the containers are closed and ready for movement.
- 3.5.9.4 Setup/strikes in Extreme Conditions. Any size of tent shall be able to be setup, struck and operated by soldiers wearing cold weather clothing, including arctic mittens. Any size of tent shall be able to be setup in the Mission Oriented Protective Posture (MOPP) IV. The soldiers shall not have to remove their hand protection when setting up or striking the tent. The soldiers shall not require any extra setup aids such as ladders or tools to setup/strike the tent. Operators shall be capable of performing all operations including but not limited to setup/strike, entrance/egress, opening and closing of flaps while wearing cold weather hand wear. The tent shall be able to be setup in winds of 25 mph and at night with minimal lighting and in the temperature conditions identified in paragraph 3.3.1.
- 3.5.9.5 Setup/Strike Cycle Durability. The MGPTS shall not suffer any reduction in capability due to the effects of weathering over the three (3) year field life of the system. The MGPTS is expected to have a typical usage of 28 erect/strike cycles per year during peacetime operations.
- 3.6 Pre-Planned Product Improvement Program (P3I). Depending on the required use, the MGPTS should be capable of meeting the needs of the users from operational and environmental considerations. The following P3I's listed will permit a gradual and orderly expansion as technology changes and the technology becomes available. (when specified in Para. 6.2) All data delivered under P3I requirements shall not be considered proprietary and may be released for future procurements:
- Optional kits for flooring, liners, and anchoring kits for all temperature environments.
  - Complexing capability to tracked and wheeled vehicles, International Standardization Organization (ISO) shelters, Command Post shelters, Track command post (M577) and High Mobility Multipurpose Wheeled

Vehicles (HWWMV), M998, and M1038.

- Compatibility with the M28 Simplified Collective Protection system (desired) or develop a similar type system.
- Improved camouflaged, built-in protection (visual, radar/near infra-red (IR) radar).
- Internal separators, adaptors, and boot walls.
- Lighter materials in support structure and outer coverings.
- Insect-repellant capability in fabric outer coverings.
- Hardback support system design for long term deployments to replace either frame or pole supports.
- Floor system (both rigid and fabric).
- Fabric interior partitions
- Solar shade
- Plenum system
- Extreme weather kits.

Table I. Verification Methods

Title	Requirement	Verification	Title	Requirement	Verification
<b>Interface and Interoperability Requirements</b>	3.2	4.4	<b>Component Functional Requirements</b>	3.4	4.6
Component Interchangeability	3.2.1	4.4.1	Tent Support Systems	3.4.1	4.6.1
Modularity	3.2.2	4.4.2	Lighting Support	3.4.2	4.6.2
Interface with Camouflage Nets	3.2.3	4.4.3	Fabric Sections	3.4.3	4.6.3
Interface with Tent Stakes	3.2.4	4.4.4	End Section	3.4.3.1	4.6.3.1
Dimensions for Interface	3.2.5	4.4.5	Intermediate Section	3.4.3.2	4.6.3.2
Transportability Interface	3.2.6	4.4.6	Ventilation	3.4.3.3	4.6.3.3
			Side Walls	3.4.3.4	4.6.3.4
<b>Operating Environment Requirements</b>	3.3	4.5	Door/Vestibule Adapter	3.4.3.5	4.6.3.5
Temperature	3.3.1	4.5.1	Window Assemblies	3.4.3.6	4.6.3.6
Rain	3.3.2	4.5.2	ECU Feed-Through	3.4.3.7	4.6.3.7
Wind Driven Rain	3.3.2.1	4.5.2.1	Electrical Supply Feed -Thru	3.4.3.8	4.6.3.8
Humidity	3.3.3	4.5.3	Stove Pipe Shield	3.4.3.9	4.6.3.9
Condensation	3.3.4	4.5.4	Field Expedient Repair Kit	3.4.3.10	4.6.3.10
Wind Load	3.3.5	4.5.5	Floor System	3.4.4	4.6.4
Snow Load	3.3.6	4.5.6	Liner System	3.4.5	4.6.5
Sunlight	3.3.7	4.5.7	System Color Characteristics	3.4.6	4.6.6
Blackout	3.3.8	4.5.8	Fabric Performance	3.4.7	4.6.7
Salt Fog	3.3.9	4.5.9	Flame Resistance	3.4.7.1	4.6.7.1
Blowing Sand & Dust	3.3.10	4.5.10	<b>Support or Ownership Requirements and Safety</b>	3.5	4.7
Insects	3.3.11	4.5.11	Safety and Health	3.5.1	4.7.1
Petroleum Resistance	3.3.12	4.5.12	Field Life	3.5.2	4.7.2
Mildew and Fungus	3.3.13	4.5.13	Shelf Life	3.5.3	4.7.3
Varying Terrain	3.3.14	4.5.14	Maintainability	3.5.4	4.7.4
Mechanical Shock and Vibration Rough Handling	3.3.15	4.5.15	Retention of Loose Parts	3.5.5	4.7.5
			Zippers	3.5.6	4.7.6
			Identification	3.5.7	4.7.7
			Instructions	3.5.8	4.7.8
			Set/up Strike Requirements	3.5.9	4.7.9
			<b>Pre-Planned Product Improvement Efforts</b>	3.6	4.8

#### 4. VERIFICATION

4.1 Verification Methods. Acceptable verification methods include visual inspection, measurement, sample tests, full-scale demonstration tests, simulation, modeling, engineering evaluation, component properties analysis.

4.1.1 Verification Alternatives. The contractor may propose alternative test methods, techniques or equipment including the application of statistical process control, tool control or cost effective sampling procedures. Test data shall include detailed results of the tests for evaluation by the Government as well as a visual record of the test.

4.1.2 Verification Using Standard Samples. Use standard samples to verify colors with visual inspections. Compare with the naked eye in simulated daylight.

#### 4.2 Classification of inspections.

4.2.1 First Article or Product Demonstration Model (PDM) with First Lot Inspection. When a first article sample is required (see paragraphs 3.1, 6.2 and 6.3), first article inspection shall be performed on two complete MGPTS of each size being purchased in order to verify interchangeability between tents. This element of inspection shall encompass all visual examinations, including setup/strike, weights and dimensional measurements. When a Product demonstration Model is required 2 production units from the first lot shall be used to verify conformance to the approved Product Demonstration Model.

4.2.2 Conformance Inspection. Conformance inspection shall consist of the First Article Inspection or First Lot Samples and complete contractor data, which certifies conformance, with backup information, which proves the certification, with each performance parameter of section 3 of this document. Data in contractor format shall be available for Government review. The Government may accept some or all of this data in lieu of some or all of the verification testing in section 4. The Government reserves the right to test for any and all performance requirements.

4.3 End Item Examination. The contractor shall be responsible for verifying that each MGPTS meets all of the requirements in section 3. This element of inspection shall encompass all visual examinations and dimensional measurements.

#### 4.4 Interface and Interchangeability Requirements Verification.

4.4.1 Component Interchangeability. Components from two tents of the same Type and size from the same contract shall be interchanged to verify compatibility. Components from similar Types and size MGPTS tents made by other manufacturers and from fielded MGPTSs will be assembled to verify compatibility per the contract. Each component from each tent shall be interchanged to verify compatibility. Any inability to interchange parts shall be noted. Visually examine each component for compatibility between the tent components provided by the Government and the contract tent components. Verify no binding or misfit affecting ease of operation, visible openings affecting blackout, or form, fit and function incompatibilities between the contract tent and the Government tent. Inspect each configuration for galling, abrasion, pinching, mutilation, misalignment, distortion, distention, bent, misshapen, or deformed components, or other evidence the reassembled tents are not totally interchangeable. At a minimum A & C should be conducted.

- A. Baseline Type I MGPTS support system (external side poles, end poles and internal center pole(s)) with proposed MGPTS outer shell fabric.
- B. Baseline Type I MGPTS support system (external side poles, end poles and internal center pole(s)) with proposed MGPTS outer shell fabric including floor and liner system.
- C. Baseline MGPTS outer shell fabric with proposed support system.
- D. Baseline MGPTS outer shell fabric including floor and liner system with proposed support system.

4.4.1.1 Heater Interface. A standard Army H-45 stove shall be assembled in the tent under a stovepipe opening. The stovepipe opening cover shall be secured in the open position from the ground. The stovepipe opening cover shall be examined for secureness when held in the open position to prevent contact with the stovepipe. The gap between the stovepipe and the stovepipe opening shall be measured and shall not exceed 1 inch in any direction.

- 4.4.1.2 Stovepipe Opening. The manufacturer shall provide a certification and test results that the materials in the stovepipe shield which contact the stovepipe are not flammable and will withstand contact of a 600 °F stovepipe with no damage. A stovepipe shield demonstration shall be accomplished by inserting a 4-inch diameter duct into the stovepipe shield. Heat the duct interior to 600 °F and maintain at that temperature for three hours. Verify the temperature at the outer edge of the shield remains below 160 °F.
- 4.4.2 Modularity. A complete tent shall be setup in the following order: End sections shall be assembled together first. The end sections shall then be disassembled and an intermediate section, if required by the contract, shall be assembled between the end sections. This intermediate section shall then be removed and rotated so that the ends of the intermediate section are swapped with the end sections and reassembled. Liners shall be tested in a similar fashion. Inability to assemble in any of these configurations shall be noted.
- 4.4.3 Use with Camouflage Nets. The standard Army camouflage net (MIL-C-53004) shall be setup over the tent following the manufacturers instructions. Inability or difficulty to setup the camouflage net shall be noted.
- 4.4.4 Tent Stakes. There shall be sufficient tent stakes with each MGPTS to anchor each support system base, sidewalls and all guy lines under the various environmental and operating conditions. Tent stakes must be able to be installed by an individual soldier without power equipment and the weight of these tent stakes shall be included in the total system weight. The tent stakes shall be able to secure the tent through snow, rain and wind testing. The standard MGPTS uses a thirty-six (36) inch long Hackberry tent stake to secure the guy lines. There are 16 each 36-inch hackberry stakes required for the MGPTS Small; 24 required for the Medium; and 32 required for the Large. The MGPTS currently uses a twelve (12) inch long polycarbonate tent stake to secure the foot loops in the walls of the tents and the base of all the poles. There are 24 each, 12-inch long polycarbonate tent stake required for the Small; 36 required for the Medium; and 48 required for the Large. Additionally, standard 24-inch long wood stakes may be used where practical.
- 4.4.5 Overall Dimensions and Weights for Standard Configurations. Each size of tent being procured shall be setup, measured, packed and weighed for the characteristics in paragraph 3.2. Any differences between the dimensions and weights in paragraph 3.2 and the actual tent shall be noted.
- 4.4.6 Transportability. Each size of tent being procured shall be packaged for transport and measured for the ability to fit into the containers and onto the pallets described in paragraph 3.2. Any dimension which exceeds the dimensions of useable space required for storage in a 463L, ISO or TRICON as defined in 3.2 shall be noted. Packaged components shall be weighed and shall meet the lift requirements by the number paragraph of soldiers in paragraph 3.2.6. One of those soldiers must be a 5th percentile female in stature (5 feet tall). Components shall be weighed and must be lifted 4.5 feet up and into the back of a 2.5-ton and a 5-ton truck. The packed volume of each size of tent being procured shall be measured and the floor area of each size tent being procured shall be measured. The packed volume shall be divided by the floor area and the result shall be 0.0644 feet or less.
- 4.5 Operating Environment Requirements.
- 4.5.1 Temperature.
- 4.5.1.1 Storage. A tent shall be inspected and packaged for transport. This test can be conducted using a chamber or natural temperatures. Ambient temperatures for this test are 50 °F to 80 °F. The tent shall be cold soaked at -60 °F for 24 hours. The tent shall be allowed to return to ambient temperature for 12 hours. The tent shall then be heat soaked at 160 °F for 24 hours. The tent shall be allowed to return to ambient temperature for 12 hours. The tent shall then be setup and inspected for damage or any changes due to cold and heat. The ambient temperatures where the tent is stored and when the tent is setup shall be recorded.
- 4.5.1.2 Ambient. Ambient temperatures shall be recorded hourly over the duration of this test. This test may be conducted in chambers or natural environments, but the tent shall be setup for at least one 24-hour period in a hot, sunny environment with ambient temperatures of at least 110 °F. Inside temperatures of the tent and outside temperatures of tent components in direct exposure of the sun during the high temperature test shall be recorded.
- 4.5.1.3 Extreme Temperature Setup. A tent shall be setup in temperatures at a minimum low of -25 °F and a minimum high of 110 °F. The tent shall be setup by soldiers in the 5th percentile height female (61.8 inches) to 95th

percentile height male in stature (male: 6 feet 1.5 inches), with at least one soldier being a 5th percentile female in stature (61.8 inches tall). Any difficulties or damage shall be noted. The sidewalls shall be rolled up with the insect barrier remaining down and all the vents shall be opened.

- 4.5.2 **Rain Testing.** The MGPTS shall be exposed to a maximum rate of rain of two inches of rain per hour for a period of 30 minutes without evidence of leakage through the tent fabric, flaps, seams or vents that would result in degradation of safety or loss of mission capability. Leakage is defined as: Negligible - Damp spots, barely noticeable; Minor - Droplets forming on the fabric or at the seams and hanging there (no movement of water) which under ordinary circumstances will not impair its intended military use; and Major - Water continually leaking and dropping off or running down the item's inner surface which impairs the item's intended military use.
- 4.5.2.1 **Wind-Driven Rain.** The MGPTS without a liner shall be capable of withstanding a wind-driven rain at 2 inches per hour with wind speeds of 55 miles per hour (mph) for 30 minutes with three occurrences of wind gusts to 65 mph within the same 30-minute period. The MGPTS shall also withstand 35 mph wind-driven rain at a rate of one (1) inch per hour for three (3) hours without evidence of leakage through the tent fabric, flaps, seams or vents that would result in degradation of safety or loss of mission capability.
- 4.5.3 **Humidity.** The MGPTS shall be subject to cyclic high humidity conditions that randomly vary the temperature between +70 °F and +95 °F with the relative humidity randomly varied between 79 and 100% over a 24-hour period. The tent shall be inspected following this test for any components, which are damaged or degraded, by humidity. Manipulate all tent adjustments to verify smooth, non-binding operation. Verify no residue or discoloration from corrosion on the operator's hands. This test may be performed in the field or test chamber.
- 4.5.4 **Condensation.** The inner surface of the tent shall be visually verified and inspected for liquid or frozen condensation. Any condensation that may adversely affect personnel or loss of mission capability shall be noted. A tent of any size being procured shall be setup per the manufacturers instructions. The tent shall be setup at temperatures below 30 °F and occupied by 4 soldiers for 1 hour with doors and vents and stovepipes closed. The tent interior surfaces shall be inspected for liquid or frozen condensation and any condensation shall be noted. Each tent shall then be heated up to 60 °F at a height of 6 feet for 6 hours with the required number, per the manufacturer, of standard Army H-45 heaters with the outside temperature below 60 °F.
- 4.5.5 **Wind Load.** The tent shall be capable of being setup in winds of 25 mph. The MGPTS and all component parts, when setup per the manufacturer's instructions, will be tested using tent stakes and guy lines supplied with the tent. This test may be performed using natural or man-made winds and shall last a minimum of 1 hour. The tent shall be exposed to a steady wind of 55 miles per hour for 30 minutes and three wind gusts of 65 mph in 10-second durations from any direction, over the surface of the tent perpendicular to the direction of the wind without sustaining damage when the guy lines are anchored in a way which eliminates the possibility of lines coming loose. All anchor points shall be reinforced for this test to avoid pullout of tent stakes since this is a test of the tent and not the tent stakes. The wind shall be measured and recorded over the entire area of the tent being blown on to ensure that no part of the tent is receiving concentrated winds and the test shall be performed at least 3 times so that the wind is oriented at 0° (end) 45° (corner) and 90° (middle) to the x axis of the tent. Tent stakes that pull out of the ground are not considered system failures. Any flapping of any part of the tent fabric shall be noted and verify that the tent has suffered no damage or wear.
- 4.5.5.1 **Certification.** The manufacturer shall provide a certification that the type of tent being procured will withstand all the operating environmental requirements described in paragraph 3.3. The certification shall include any applicable backup engineering design data.
- 4.5.6 **Snow Load.** Snow shall be gradually and uniformly distributed over the horizontal projection of the roof. Snow shall be monitored for weight and shall be accumulated onto the tent until a weight of 10 pounds per square foot is achieved. The guy lines shall be anchored in such a way that eliminates the possibility of the lines pulling loose. Tent stakes that pull out of the ground are not considered system failures. The tent shall be loaded at a maximum of 10 pounds per square foot for a maximum of 12 hours. The snow shall be gradually removed from the tent and the tent shall be inspected for damage.
- 4.5.6.1 **Certification.** The manufacturer shall provide a certification that the type of tent being procured will withstand all the operating environmental requirements described in paragraph 3.3. The certification shall include any applicable backup engineering design data.



- 4.5.6.2 Setup for Snow Load Test. An MGPTS of the largest type being procured shall be setup. The tent shall be subjected to natural or manmade snow load over the roof area. This test will be performed using tent stakes and guy lines supplied with the tent. All anchor points shall be reinforced for this test to avoid pullout of tent stakes since this is a test of the tent and not the tent stakes. The total snow load, which the tent shall withstand, will be calculated as follows: Length of the tent roof multiplied by the width of the tent roof multiplied by 10 lbs. This test may be done using natural snow or artificial weight. The weight shall be measured and documented. The weight shall be applied to the tent gradually and shall be left in place for a period of 12 hours.
- 4.5.7 Sunlight. Setup a MGPTS configured with all doors, flaps and other openings in the closed position. All exterior tent components shall be subject to a uniform 100 Kilojoules ultraviolet environment for a minimum of 40 hours. After completing the exposure, verify that there is no cracking, crazing, blooming, chalking or appreciable color change on any exterior tent component which affects the ability to setup or strike the tent, reduces the blackout capability of the tent, reduces the ability of the tent to support the required snow load or reduces the ability of the tent to resist rain intrusion.
- 4.5.7.1 Certification. The manufacturer shall provide a certification that components are made from materials, which are not susceptible to deterioration, by sunlight.
- 4.5.7.2 Setup of Sunlight Test. Setup a MGPTS configured with all doors, flaps and other openings in the closed position. All exterior tent components shall be subject to a uniform 100 Kilojoules ultraviolet environment for a minimum of 40 hours. After completing the exposure, verify that there is no cracking, crazing, blooming, and chalking or appreciable color change on any exterior tent component.
- 4.5.8 Blackout Performance. Conduct test with one completely erected MGPTS with doors and windows secured and without test on a moon-less night in an area absent of man-made light sources. Locate and position the light source per manufacturing instruction. Visually verify no visible light is detectable using the naked eye from a distance of 100 meters. Begin observations directly in front of the light source. Both fluorescent lights and incandescent light sources will be separately tested. Continue observations 360-degrees around the MGPTS at 45-degree increments. Perform the night vision blackout test, using night vision device (NVGs) from a distance of 300 meters. Verify the light source is not detectable through the NVGs.
- 4.5.9 Salt Fog. The MGPTS components shall function after exposure to a salt fog atmosphere consisting of a continuously atomized, finely divided, wet, dense salt spray mixture (sodium chloride - 5%, water - 95%) for a period of not less than 48 hours at an approximate rate of 2.8 liters of salt solution per 0.28 M<sup>3</sup> of chamber volume per 24 hours at a constant 95 °F (use of immersion heater within the exposure area is prohibited). The tent doors, windows and roof vents shall be open. Spray apparatus, piping and collector reservoir materials shall be non-reactive to the salt spray. During the entire exposure period, the salt fog fallout rate and PH of the fallout solution shall be measured at no less than 24-hour intervals to be between 0.3 and 3 ml/80cm<sup>2</sup>/hr. Uniformly distribute the salt fog over each sample at a fallout rate between 0.5 and 3 ml/ 80 cm<sup>2</sup>/hr for at least 48 hours at a constant 95 °F with minimal air circulation. After the test, dry the samples at ambient conditions for at least 48 hours. Inspect all of the components for corrosion.
- 4.5.10 Blowing Sand and Dust. A tent of the largest type being procured shall be setup per the manufacturers instructions and inspected for any area where there is a potential for entrance by blowing sand and dust.
- 4.5.11 Insect Resistance Verification. Verify resistance of insect damage by demonstration or analysis. A tent shall be setup and inspected with all windows, doors and openings closed per the manufacturers instructions. Any places where there are gaps where flying and crawling insects or animals could enter the tent shall be noted. An insect resistance analysis is to demonstrate tent materials are similar to currently fielded MGPTSs or Military Specification Tents.
- 4.5.12 Petroleum Permeability Test. The test shall be conducted with ambient temperatures between +65 °F and +80 °F. Place one 8-inch square specimen of outer shell tent fabric on a wooden frame 6 by 6 inches square and 1 inch high. Force the fabric into the wooden frame with a 5.75-inch square wood block with rounded corners to form a smooth basin of uniform depth. Tack the edges of the sample to the frame and remove block. Place the test specimen on a non-porous light colored working surface. Pour diesel fuel into the frame to a depth of 0.5-inches. Let stand for 1 hour, and then lift the sample. Verify that no oil is present on the light colored

working surface. Then paint diesel fuel onto a 6 square inch area of each roof, walls, floor and liner component of the tent and let stand for 1 hour. Wipe diesel fuel off and inspect area for degradation.

- 4.5.13 Mildew and Fungus. Meet the criteria in ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi .
- 4.5.13.1 Mildew and Fungus Alternative Analysis. Demonstrate materials and manufacturing processes do not contain compounds that will support mildew and fungus growth and are not susceptible to deterioration by mildew and fungus.
- 4.5.13.2 Storage When Wet. A certification shall be provided by the manufacturer that identifies all materials in the MGPTS and that certifies that none of the materials are susceptible to rot, mildew, fungus or corrosion if the MGPTS is stored wet.
- 4.5.14 Varying Terrain Evaluation. Evaluate the construction details or compatibility with variations in terrain up to 6 inches anywhere along the MGPTS. Verify tent design incorporates provisions to protect against loss of environmental or blackout protection.
- 4.5.15 Mechanical Shock and Vibration.
- 4.5.15.1 Vibration. Mount the packaged tent (packed in the fabric transport containers, not in the shipping crate) on a suitable test fixture to ensure that the mounting is free from resonance over the test frequency range. Subject the test article to a simple harmonic motion having amplitude of 0.03 inches (0.06 inches to maximum excursion). Vary the frequency between the approximate limits of 10 to 55 Hertz (Hz). The motion shall traverse the entire frequency range from 10 to 55 Hz and return to 10 Hz and shall take approximately 1 minute. Apply this motion for 2 hours in each of three mutually perpendicular directions for a total test time of 6 hours. Inspect all of the components for damage.
- 4.5.15.2 Transit Drop. All components of the MGPTS, when contained in their transport bags, shall withstand 6 drops without damage or degradation from a minimum height of 4 feet onto any face of the transport bag at temperatures of at least -20<sup>0</sup>F after being cold soaked in their transport bags at -60<sup>0</sup>F for 12 hours. All components of the MGPTS, when contained in their transport bags, shall withstand 6 drops without damage or degradation which affects the ability to setup or strike the tent, reduces the blackout capability of the tent, reduces the ability of the tent to support the required snow load or reduces the ability of the tent to resist rain intrusion. Drops shall be from a minimum height of 4 feet onto any face of the transport bag at temperatures of at least 105<sup>0</sup>F after heat soaking the items at 160<sup>0</sup>F for 12 hours.
- 4.5.16 Roll. All components of the MGPTS, when contained in their transport bags, shall be capable of withstanding a circular synchronous mode at 300 RPM for a duration of no less than 45 minutes without damage or degradation which affects the ability to setup or strike the tent, reduces the blackout capability of the tent, reduces the ability of the tent to support the required snow load or reduces the ability of the tent to resist rain intrusion.
- 4.6 Component functional requirements. The tent being procured shall be setup and all the components shall be inspected for the characteristics in paragraph 3.4. Any deviation from these characteristics shall be noted.
- 4.6.1 Tent Support Systems. Visually verify one of two types of support systems is included with each MGPTS. Support systems shall be of two types: (1) a pole support system that includes external perimeter pole supports and internal center supports and (2) a frame support system that doesn't require internal supports. The goal is to have both support systems accept structural loads from the fabric subsystem without requiring any modifications to the fabric when switching among support systems identified in paragraph 3.4.3. Perimeter poles shall be external to the fabric since Army testing has shown this eases the task of setting up or striking the tent for the soldier in the field. Connections shall be designed to safely transmit all loads from the fabric to the support subsystem under the operating environments identified in paragraph 3.3. The support systems shall be designed so that they do not interfere or impede access to the fabric subsystem doors or windows. The support systems shall include no more than three different types of pole supports. The support systems shall not interfere with the use of the TEMPER vestibule in conjunction with the tent door.

- 4.6.1.1 Center Supports. Center supports shall be of one type to reduce logistics burden on the military.
- 4.6.1.2 External Perimeter Poles. Perimeter poles may be of two types to reduce logistics burden on the military. Testing has shown that external perimeter poles reduce setup time and enhance personnel safety, reduce water leakage and improve blackout performance. Therefore, perimeter poles shall be external to the fabric subsystem. They shall also include a provision to insure they do not become disconnected from the fabric assembly under the design wind and snow conditions.
- 4.6.1.3 Support System Base Restraints. All support subsystem components that are in contact with the ground shall include design provisions for staking the base to prevent horizontal and vertical movement. These restraints shall prevent movement of the base under all design load conditions specified in paragraph 3.4. The base shall insure that the tent stake is oriented 15 ° from vertical to provide vertical restraint. Tent stakes shall be able to be installed by left- or right-handed soldiers without interference from the tent supports or fabric. The base of the support system shall also be designed so that it doesn't slip on slick surfaces when no stake is used.
- 4.6.2 Lighting Support. Visually verify that the MGPTS tent can support two fluorescent field light sets or one incandescent bulb for each nine feet of floor length.
- 4.6.3 Fabric Sections. Type I MGPTS fabric sections are only fully functional with the Type I MGPTS pole support system. The Type II MGPTS fabric sections shall fully function with either support system. The objective is that the fabric subsystems are interchangeable with any support system designed for the MGPTS. Unless a specific test method for fabric verification has been identified testing methods specified in MIL- PRF-44013, MIL-PRF-20696 or MIL-DTL-55308 shall be used. The non-specified requirements shall be determined by the vendor. Test methods not applicable to these specifications shall be determined by the vendor and commercial testing documents that are used on similar military items.
- 4.6.3.1 Fabric End Section. Visually verify each end section has as a minimum, one door vestibule adapter assembly, one window assembly, two environmental control unit (ECU) feed-throughs, one electrical supply feed-through one roof vent and one stovepipe opening.
- 4.6.3.2 Fabric Intermediate Section. Visually verify each intermediate section has as a minimum, one-door/ vestibule adapter assembly, one window assembly, one roof vent, and one stovepipe opening.
- 4.6.3.3 Ventilation. The MGPTS shall provide non-powered ventilation to maintain a comfortable interior. The tent shall have sufficient ventilation to prevent hazardous fumes/combustion product build-up from vehicles or equipment being worked on, or from military standard heaters. Ventilation shall prevent visible interior condensation in any climate when the tent is setup on a dry surface that does not emit water vapor. The tent shall have sufficient warm weather high rate non-powered air exchange in non-blackout, hot or humid conditions to prevent heat build-up over ambient temperatures. The tent shall maintain an inside temperature no higher than ambient at ambient temperatures up to 90 °F. If roof vents are provided then they shall be able to be opened and closed from the ground level. The vents shall not allow direct light from the tent to escape when viewed with the naked eye from any angle at a minimum distance of 100 meters due to tactical considerations because the tent must be ventilated when being operated under blackout conditions at high temperatures and humidity while operating electronic equipment.
- 4.6.3.4 Side Walls of End and Intermediate Sections. Visually verify along the side of the tent (not the end) it includes an outer fabric and a full height and width insect barrier (screen). An insect barrier is not required on end walls or at doors. All wall panels shall include the ability to roll-up and secure the wall outer fabric and/or the insect barrier independently. The insect barrier shall provide through-the-panel access to windows, doors and ECU's and electrical feed-throughs. Both the wall outer fabric and the insect barrier shall provide a way to keep them from flapping under all wind loads. All wall outer fabric and the insect barrier shall each have a method for attaching the wall base to the ground and shall have a mud skirt which can be folded into or out of the tent. The mud skirt shall be wide enough to have sandbags placed over it.
- 4.6.3.5 Door/Vestibule Adapter Assembly. Visually verify the door opening to be a minimum opening of 6 ft. 3 in. height and 4 ft. 6 in. width to accommodate soldiers with backpacks. The door shall be capable of being sealed against wind, rain, snow, sand and light. The door shall be capable of being opened from either the inside or outside. The door shall be capable of being restrained in either the open or closed position. Doors

shall maintain blackout integrity when soldiers are entering or leaving. Each opening shall be capable of attaching to a standard TEMPER vestibule.

- 4.6.3.6 Window Assemblies. The window assemblies shall include design features that allow transmission of visible light while providing a barrier against wind, rain, snow and sand. Windows shall also include a means of containing interior light during blackout operations. They shall include a means of resisting the intrusion of insects while permitting the passage of air. The window pane shall interoperate with the TEMPER window in accordance with drawing 5-4-9755-12.
- 4.6.3.7 ECU Feed-Through. Verify the Environmental Control Unit (ECU) feed-through permits the passage of two 18-inch diameter ducts, 5 to 6 feet apart, through the tent wall at a centerline height of 22 inches above ground level to allow interface with existing ECU units. Verify the feed-through possesses the ability to seal the outer wall to the duct to prevent water migration, loss of conditioned air, or leakage of outside air into the conditioned space. The interface shall seal against the intrusion of rain, snow, snow, flying/crawling insects and animals when in use and when closed.
- 4.6.3.8 Electrical Supply Feed-Through. Verify the electrical supply feed-through permits the passage of an electric wire or bundle of wires up to 5-inch diameter through the tent wall at a centerline height of 22 inches above ground level. Verify the ability to seal the outer wall to the wires to prevent water migration and minimize the exchange of air between inside and outside. The feed-through shall seal against the intrusion of rain, snow, sand, flying/crawling insects and animals when in use and when closed.
- 4.6.3.9 Stovepipe Shield. Verify the stovepipe shield permits the passage of a 4-inch diameter stovepipe, through the roof of the tent. The shield shall provide separation between the stovepipe and tent fabric to insure that contact with, or proximity to, a stovepipe with surface temperatures of 600 °F do not damage the fabric. The shield shall provide a seal around the stovepipe to minimize the intrusion of rain or snow or the release of light when the stovepipe is present and shall keep the fabric in contact with the outer edge of the shield at a temperature lower than 160 °F. The shield shall have a cover to close the opening when not in use and the cover shall be able to be opened and closed from the ground level. The cover shall be retained in the open position to prevent it from contacting or otherwise being damaged by the hot stovepipe. The stovepipe opening centerline shall be located no less than 48 inches, measured horizontally, from the side walls, end walls or liner partitions. The location of the stovepipe shall insure that the associated stove shall not obstruct the free movement of personnel through the doors either in the tent walls or liner partitions and that hot stove surfaces shall not impose unnecessary safety hazards.
- 4.6.3.10 Field Expedient Repair Kit. Verify all components of the field expedient repair kit are included with each MGPTS. Verify instruction sheet on how to use the kit is included.
- 4.6.4 Floor System. When applicable, verify the fabric floor system is modular in design. There shall be an end section floor and an intermediate section floor. The intent of the floor is to resist penetration of ground water and assist the MGPTSs in reducing or eliminating condensation. The floor shall be compatible with a liner system.
- 4.6.5 Liner System. When applicable, verify the liner subsystem provides an air gap between the liner and the fabric subsystem to improve thermal performance of the MGPTS. The liner subsystem shall be compatible with a fabric floor system. The liner subsystem shall be easily installed and fully compatible with the overall modular concept of the MGPTS. Liner components shall include window openings, door openings, air conditioning duct access, electrical wire feed-throughs, stovepipe openings and roof vent openings. The liner system, when used, shall be able to provide a minimum temperature difference of 60 °F at 3 feet above the floor at the middle of the tent compared to ambient when two H-45 heaters are used to heat a MGPTS Medium at -25 °F ambient. The liner subsystem shall not impede the use of the lighting support subsystem. The liner must meet flame resistance requirements found in paragraph 3.4.7.1.
- 4.6.6 System Color Characteristics. Visually inspect the exterior color of all components for similarity to the sample standard as specified in the contract. The interior facing sides of the liners and tent fabric shall be of a light color to reflect light. All tent poles, findings, plastic components, fastener tape, webbing, slide fasteners, grommets, rope slips and guy rope, that are visible from the tent exterior, shall approximate the tent color or shall be black. Specular gloss shall be measured per ASTM D523 and shall have a value of 2.0 or less on the

face side.

4.6.7 Fabric Performance.

4.6.7.1 Flame Resistance. Flammability Test - Initial and After Weathering. The fabric (roof, walls, floor, liner) shall be flame resistant, self-extinguishing and there shall be no flaming melt drip or molten pieces when exposed to flame or heat. The MGPTS shall be tested IAW ASTM-D 6413 – Standard Test Method for Flame Resistance of Textiles (Vertical Test). All fabric components shall be self-extinguishing within 2.0 seconds after exposure to the flame source for 12 seconds in both the warp and fill directions. The damaged char length shall be less than 50% of the sample length of 12 inches.

4.6.7.2 Fabric Weight. The weight of the fabric shall be a maximum of 22 ounces per square yard for classes 1 & 2.

4.6.7.3 Breaking Strength. The breaking strength of the fabric shall be a minimum of 250 lbs in the warp and 230 lbs in the fill.

4.6.7.4 Cold Crack. The fabric shall be resistant to cold crack at –60 degrees (°F) Fahrenheit when tested in accordance with ASTM D2136.

4.6.7.5 Adhesion of coating. The fabric (roof, walls) shall have a minimum adhesion of coating of 20 lbs/ 2inch when tested in accordance with ASTM D751, dielectric or hot air bonding, and pulling clamp speed of 5 mm/s. Three-specimens shall be tested by adhering face to face and three-specimens shall be tested by adhering back to back.

4.6.7.6 Mildew Resistance. The fabric shall be mildew resistant in accordance with ASTM G-21.

4.6.7.7 Dead Load Seam Strength. The fabric seam, bonded using a dielectric or hot air welder and 2 inch seam width, shall withstand a 50 lb load for 4 hours at 160°F and a 100lb load for 4 hours at room temperature when tested in accordance with ASTM D751.

4.7 Support or Ownership Requirements and Safety.

4.7.1 Safety and Health. To determine conformance, the entire system shall be inspected for the presence of required safety features and for the absence of hazards to include interfacing. Tests shall be made for safety characteristics (such as fabric flammability). All incidents occurring during acceptance testing shall be analyzed for safety implications. When all 'high risk' and 'medium risk' safety or health hazards have either been corrected or the residual hazard has been accepted by the proper decision risk authority, the system shall be considered to have met the safety requirements for a full materiel release. Appropriate precautions and restrictions identified as a result of any residual 'low' risks shall also be provided. Any safety hazards such as, but not limited to, sharp or rough edges and pinch hazards shall also be noted. The MGPTS shall not harbor or emit noxious or toxic odors under all environmental conditions by meeting published chemical threshold limit values. Acceptable limits are any one of the following: ACGIH Threshold Limit Values; the Santa Clara Center for Occupational Safety and Health Chemical Exposure Guidelines, Table 1 - OSHA Permissible Exposure Limits; NIOSH Pocket Guide to Chemical Hazards, Exposure Limits and Signs and Symptoms of Exposure; or the AIHA Workplace Environmental Exposure Level Guide Series. The tent shall not irritate skin or cause other human reactions. The fabric, roof, walls, floors, and liners shall be flame resistant, self-extinguishing and shall not have flaming melt drip or molten pieces when exposed to flame or high heat.

4.7.2 Field Life. Demonstrate or provide analysis that the MGPTS does not suffer any reduction in capability due to the effects of weathering over the three (3) year field life of the system.

4.7.3 Shelf Life. Demonstrate shelf life of a minimum of ten (10) years by accelerated weathering or analysis. Demonstrate tent materials and manufacturing processes are similar to the currently fielded MGPTS.

4.7.4 Maintainability. During the setup/strike durability testing in paragraph 4.7.9.5 any damage sustained will be repaired using spare parts provided with the tent, the standard Army tentage repair kit. All repairs and the length of time to repair the tent shall be noted. Repairs shall take less than 30 minutes to complete.

4.7.5 Lanyards and Loose Hardware. The MGPTS shall be assembled and inspected for any components, which are

attached by lanyards or any loose nuts, bolts or pins, required for assembly. Any lanyards or any loose parts that are required for assembly shall be noted.

- 4.7.6 Zippers. The MGPTS shall be assembled and inspected for any zippers. Use of zippers shall be noted as a failure.
- 4.7.7 Identification. Verify the presence of required identification markings per paragraph 3.5.7. Marking durability criteria: For exterior marking samples, compare the baseline and test samples after the accelerated weathering test. The test sample may show a perceptible change in color, but not an appreciable change in color immediately noticeable when comparing the test specimen with the original unexposed sample. A perceptible color change requires closer inspection or a change in the angle of light to be apparent.
- 4.7.8 Instructions. Visually inspect inside surface of inner door on the end wall and intermediate sections of the MGPTS for printed instructions for unpacking, erecting, striking and repacking. The same printed instructions shall be permanently attached to the inside surface of the end fabric transport covers. The instructions shall include repacking instructions for putting the MGPTS back in the transport cover. The instructions shall be written in English for a 7th grade (+/- 1 grade) reading level.
- 4.7.9 Set/up Strike Requirements.
- 4.7.9.1 Setup/Strike Aids. A tent shall be assembled and any requirement for ladders or vehicles needed for setup will be noted.
- 4.7.9.2 Setup/Strike/Transport Crew Characteristics. The contractor shall show documentation of how the MGPTS was designed to meet the requirements in section 3. The Government may accept some or all of this data in lieu of some or all of the verification testing in section 4.
- 4.7.9.3 Setup/Strike Time/Personnel/Safety. Manufacturers instructions shall be followed for this test. U.S. Army soldiers shall be the setup crew and should be 5th percentile height female (61.8 inches tall) to 95th percentile height male (male: 6 feet 1.5 inches) except that at least one test personnel shall be a 5th percentile female in stature. The number of soldiers and temperature conditions per paragraph 3.5.9 shall be followed. Weather shall be dry for this test. Setup and strike times for each tent, size, weight and gender of setup/strike personnel and weather conditions shall be noted. There should be five (5) practice runs before five (5) timed runs for each size of tent. These times are for the erection of the tent fabric and pole support subsystems only. They apply to temperatures from 50 °F to 80 °F and without the use of cold weather clothing gloves or mittens. They do not include installation of liners or lights or staking. The setup time shall begin when all tent components are present at the erection site and packaged in their transport covers. The setup period shall end when the tent is fully setup and guyed out. Strike time shall end when tent components are in their transport covers and the transport covers are closed and ready for transport. Following evaluation of setup/strike times, the same crew used for setup/strike times shall install liners and lights. Any difficulties shall be noted. Any safety hazards, such as but not limited to, sharp or rough edges and pinch hazards, shall be noted.
- 4.7.9.4 Setup/Strike in Extreme Conditions. The MGPTS shall be assembled by four soldiers falling in the 5th percentile height female (61.8 inches) to 95th percentile height male (male: 6 feet 1.5 inches) one time while wearing cold weather clothing. A MGPTS shall be set up one time in the mission oriented protective posture (MOPP) IV. Any incidents where the soldiers have to remove their hand protection when setting up or striking the tent shall be noted. A tent shall be set up in artificial or natural winds of 20 - 25 mph. Any difficulties in setting up the tent shall be noted.
- 4.7.9.5 Setup/Strike Durability. A MGPTS of each size being procured will be setup and struck per the manufacturers instructions by the number of soldiers and the number of times prescribed in paragraph 3.5.9. Soldiers shall be 5th percentile height female (61.8 inches tall) to 95th percentile height male (male: 6 feet 1.5 inches) but at least one of these soldiers shall be a 5th percentile female in stature. All damage or difficulties will be noted.
- 4.8 Pre-Planned Product Improvement (P3I). As a result of technology changes, P3Is will occur. It is envisioned that items may include floors, extreme weather liners, CB liners, partitions, air distribution systems, electrical

distribution and cable management systems, lighting systems, complexing capabilities to vehicles and shelters, and other possibilities as they occur. These P3I items will be required to meet the minimum performance requirements of the basic MGPTS.

## 5. PACKAGING

For acquisition purposes, the packaging requirements shall be as specified in the contract or delivery order. When DoD personnel perform material packaging, those personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. The Inventory Control Point packaging activity within the military department or defense agency, or within the military department's system command, maintains packaging requirements. 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 or explanatory nature that may be helpful.

- 6.1 Intended Use. The MGPTS is intended for military use to provide environmental protection for general-purpose field applications. As such it may be used a semi-permanent field housing for soldiers with no other housing option for months at a time. The MGPTS should not be construed as a weekend camping tent or a commercial rental tent.
- 6.1.1 System Design. Army research has shown that tents designed as tension fabric structures with the fabric pre-stressed and designed with the support system as a complete system have better wind shedding, water shedding and more efficient weight characteristics than tents which are not designed as complete engineered systems.
- 6.2 Ordering Data. Procurement documents should specify the following:
- a. Title, number and date of this specification and any amendments.
  - b. Issue of the DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see paragraph 2.2).
  - c. Type, Class and Accessory package number.
  - d. When a First Article Inspection is required (see paragraphs 3.1, 4.2.1 and 6.3).
  - e. When a Conformance Inspection is required (see paragraphs 3.2, 4.2.2 and 6.4)
  - f. Packaging requirements (see Section 5)
  - g. Planned Product Improvement (P3I) (see section 3.6)
- 6.3 First Article. When requiring a first article inspection, the contracting officer should provide specific guidance to offerors whether the first article is a first article sample, a first production item, or a number of items to be tested. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Pre-solicitation documents should provide Government waiver rights for samples for first article inspection to bidders offering a previously acquired or tested product. Bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is appropriate for the pending contract.
- 6.4 Conformance Inspection. When requiring a Conformance Inspection, the contracting officer should provide specific guidance to offerors. Affordable conformance inspection with confidence varies depending upon a number of procurement risk factors. Some of these factors include contractor past performance, government schedules and budget, product material and design maturity, manufacturing capital equipment and processes applied, the controlled uniformity of those processes, labor skill and training, and the uniformity of measuring processes and techniques.
- 6.5 Spectrophotometers. Suitable spectrophotometers for measuring spectral reflectance in the visible/near infra-red include the Diano Hardy, Diano Match Scan, Milton Roy \match Scan 2, Hunter D54-IR, Applied color Systems Spectro Sensor I and II and CS-5, Hunter VIS/NIR spectrophotometer and Macbeth 1500 with IR option.

- 6.6 White Standard. Barium sulfate of suitable quality for use as a white reference standard is available from the Eastman Kodak Company. The same source has available magnesium reagent (ribbon) and Halon. Suitable tiles can be obtained from the National Institute of Standards and Tolerances or from the instrument manufacturers.
- 6.7 Clips. Style 2235-4E stainless steel spring clips have been found appropriate for securing the fabric to the rack and are available from the John F. Maguire Company, Inc., 121 Bacon Street, Pawtucket, RI 02860.
- 6.8 Tent Design. Army research has shown that tension fabric structures as designed by leading commercial architectural and structural design firms have the inherent capability to meet the stability requirements necessary to perform in the operational environmental conditions of paragraph 3.3.
- 6.9 Definitions.
- 6.9.1 Horizontal distance parallel to the X-axis.
- 6.9.2 Width. Horizontal distance parallel to the Y-axis.
- 6.9.3 Height. Vertical distance parallel to the Z-axis.
- 6.9.4 X Axis. The horizontal axis perpendicular to the modular interfaces. This is the axis along which the tent expands.
- 6.9.5 Y Axis. The horizontal axis parallel to the modular interfaces.
- 6.9.6 Z Axis. The vertical axis perpendicular to the X-Y plane.
- 6.9.7 Center Plane. The Center Plane is defined as the X-Z plane, which is equidistant from both sides of the tent.
- 6.9.8 Intermodular Joint. The area of the tent at which two sections are joined.
- 6.9.9 Intermediate Peaks. The highest point of an intermediate tent section. The point at which the tent fabric attaches to either the frame subsystem or center pole.
- 6.9.10 Gable Peaks. The highest point on the end walls of the tent subsystem. The point at which the end walls attach to the center pole.
- 6.9.11 Eaves. The horizontal line along the side of the tent at which the vertical walls end and the inclined roof begins.
- 6.9.12 Irreparable Damage. Damage that would cause the tent to fail any of the specifications stated in this document and which cannot be repaired by the set-up crew with tools and materials provided in the Standard Army tentage repair kit.
- 6.9.13 Interface Points. Fabric and support subsystems (frame or pole) liners and solar shade all interface at discrete points. The locations of these interfaces are defined as interface points.
- 6.10 Drawings. For general information only, fielded, production MGPTSs items have been produced using the drawing package included as Appendix A.
- 6.11 Recycled, Recovered, or Environmentally Preferable Materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided the material meets or exceeds all specified requirements and promotes economically advantageous life cycle costs.
- 6.12 International Standardization Agreements. Certain provisions of this document are the subject of international standardization agreement as cited in NATO, STANAG No. 2882, relative to camouflage requirements for shelters, and subsidiary components. When proposing amendment, revision, or cancellation of this specification that will affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels including departmental standardization offices.



6.13 Subject Term (Key Word) Listing.

Tent  
General Purpose  
Command and Control  
Billeting  
Medical

Preparing activity:  
DLA - CT