INCH POUNDS
CO-PD-02-02P
17 May 2023
SUPERSEDING
CO-PD-02-02N
24 September 2019

PURCHASE DESCRIPTION

MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT (MOLLE)

This document is approved for use by all Departments and Agencies of the Department of Defense (DoD).

1. SCOPE

1.1 Scope. This purchase description (PD) covers the Modular Lightweight Load-carrying Equipment (MOLLE). The system is needed to increase the mobility of the fighting force by providing an ergonomically designed individual load-carrying system that will minimize the burdens of weight, improve overall system compatibility, and minimize physiological threats to the marine/soldier such as fatigue and heat stress.

1.2 Classification. The MOLLE covers the following classes:

Class 1 - Woodland Camouflage
Class 2 - 3 color Desert Camouflage
Class 3 - Arctic White
Class 4 - Marine Pattern (MARPAT) Woodland
Class 5 - Marine Pattern (MARPAT) Desert
Class 6 - DELETED
Class 7 - Coyote 498
Class 8 - DELETED
Class 9 - Operational Camouflage Pattern (OCP)
Class 10 - Black

2. APPLICABLE DOCUMENTS

Comments, suggestions, or questions on this document should be addressed: Attn: DLA Troop Support, 700 Robbins Avenue, Philadelphia, PA 19111-5096. Since contact information can change, you may want to verify the currency of the address information using Acquisition Streamlining and Standardization Information System (ASSIST) online database https://assist.dla.mil.

AMSC N/A FSC 8465

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this PD 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 of documents cited in sections 3 and 4 of this PD, whether or not they are listed.

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 cited in the solicitation or contract.

COMMERCIAL ITEM DESCRIPTIONS

A-A-3174	- Plastic Sheet, Polyolefin
A-A-55126	- Fastener Tapes, Hook and Loop, Synthetic
A-A-55301	- Webbing, Textile, Textured or Multifilament Nylon
A-A-55620	- Loop, Slide (For Equipage) (Previously MS51940)
A-A-55634	-.Fasteners, Slide Interlocking
A-A 59826	- Thread, Nylon

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-B-371	- Braid, Textile, Tubular
MIL-B-543	- Buckles, Tongueless and Web Strap
MIL-R-3390	- Rings, Dee
MIL-W-4088	- Webbing, Textile, Woven Nylon
MIL-DTL-5038	- Tape, Textile and Webbing, Textile, Reinforcing, Nylon
MIL-C-5040	- Cord, Fibrous, Nylon
MIL-W-5664	- Webbing, Textile, Elastic
MIL-C-8061	- Cloth, Nylon, Raschel Knit
MIL-DTL-10884	- Fasteners, Snap
MIL-L-11075	- Loops, Strap Fastener
MIL-PRF-17337	- Webbing, Textile, Woven Nylon
MIL-W-27265	- Webbing, Textile, Woven Nylon Impregnated
MIL-DTL-32075	- Label: For Clothing, Equipage, and Tentage, (General Use)
MIL-DTL-32439	- Cloth, Duck, Textured Nylon
MIL-DTL-43128	- Cloth, Plain Weave, Nylon Water Repellent
MIL-C-43701	- Cord, Elastic, Nylon or Polyester

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

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 specified in the solicitation or contract.

DRAWINGS

U.S. ARMY, DEVCOM – SOLDIER CENTER

2-1-2242	- 40 MM PYROTECHNIC GRENADE GAUGE
2-1-2243	- 40 MM HIGH EXPLOSIVE GRENADE GAUGE
2-6-101	- LADDERLOCK, ONE INCH
2-6-102	- SLIDE, ONE INCH
2-6-110	- M16 - 30 ROUND MAGAZINE GAUGE
2-6-111	- GRENADE GAUGE ASSEMBLY
PL 2-6-111	- PARTS LIST GRENADE GAUGE ASSEMBLY
2-6-112	- GRENADE GAUGE
2-6-113	- STEM
2-6-114	- LEVER
2-4-0101	- FASTENER, ONE INCH
2-4-0102	- MOLDED LOCKING CARABINER

MOLLE DRAWINGS

2-3-0632	- M 4 SINGLE POUCH/3 MAGS FOR POUCH ASSEMBLY
2-3-567	- D-RING (1-INCH)
2-6-0460	- HYDRATION SYSTEM
2-6-0468	- D-RING (1-1/2 INCH)
2-6-0473	- ENHANCED SUSPENDER ASSY
2-6-0541	- M4 THREE MAG SIDE x SIDE POUCH
2-6-0588	- DISTRACTION DEVICE GUAGE (FLASHBANG)
2-6-0798	- QUICK ATTACH BUCKLE 1-INCH
2-6-0799	- ANTI-SLIP SIDE-RELEASE BUCKLE 1-INCH.
2-6-0840	- MEDIUM RUCKSACK FRAME
2-6-0841	- MEDIUM RUCKSACK WAISTBELT
2-6-0844	- MEDIUM RUCKSACK SHOULDER STRAPS
2-6-0919	- REPAIRABLE SIDE-RELEASE FASTENER (1-INCH)
2-6-153	- SUSTAINMENT POUCH ASSY
2-6-171	- RADIO POCKET ASSY
2-6-197	- 100 ROUND UTILITY POUCH ASSY
2-6-201	- 200 ROUND SAW GUNNER POUCH ASSY
2-6-203	- K BAR HOLDER ASSY
2-6-206	- KEEPER W/SLIDE ADAPTOR ASSY
2-6-214	- 40MM HIGH EXPLOSIVE POUCH, SINGLE, ASSY
2-6-216	- 40MM HIGH EXPLOSIVE POUCH, DOUBLE, ASSY
2-6-219	- 40MM PYROTECHNIC POUCH, DOUBLE, ASSY
2-6-222	- 9MM MAGAZINE POUCH, SINGLE, ASSY

2-6-226	- HANDGRENADE POUCH ASSY
2-6-229	- BANDOLEER AMMUNITION POUCH, 6 MAG, ASSY
2-6-232	- LASHING STRAP ASSY
2-6-234	- IDENTIFICATION/ INSTRUCTION LABEL
2-6-239	- FASTENER, 1-INCH, 3-HOLE or 4-HOLE
2-6-253	- SYSTEM REPAIR KIT
2-6-280	- FIGHTING LOAD CARRIER VEST (FLC)
2-6-283	- WAISTBELT, F.L.C., ASSY
2-6-289	- WAISTPACK (BUTT PACK) ASSY
2-6-299	- PACK FRAME
2-6-300	- MODULAR LIGHTWEIGHT LOAD CARRYING EQUIP.
2-6-301	- CANTEEN POUCH ASSY
2-6-329	- POCKET ATTACHMENT
2-6-381	- ATTACHING STRAP ASSY
2-6-382	- HOLSTER, LEG EXTENDER
2-6-390	- MOLDED WAISTBELT ASSY
2-6-412	- M4 TWO MAGAZINE POCKET ASSY
2-6-417	- ASSAULT PACK ASSY
2-6-437	- RUCKSACK, LARGE ASSY
2-6-800	- TACTICAL ASSAULT PANEL (TAP)
2-6-801	- MARINE CHEST RIG
2-6-1004	- REPLACEMENT SIDE RELEASE BUCKLE (1-1/2 INCH)
2-6-1005	- REPLACEMENT SIDE RELEASE BUCKLE (1-INCH)
2-6-1006	- SIDE RELEASE BUCKLES (1-1/2 INCH)
2-6-1007	- MSR CURVED SIDE RELEASE (2-INCH)
2-6-1008	- SIDE- RELEASE BUCKLE (3/4-INCH).
2-6-1009	- CENTER RELEASE BUCKLE (2-INCH)
2-6-1010	- SHOULDER STRAP QUICK-RELEASE BUCKLE (1-INCH)
2-6-1011	- ADJUSTABLE BUCKLE 3 BAR, CORD HOLE (1-INCH)
2-6-1012	- ADJUSTABLE BUCKLE 4 BAR (1-INCH)
2-6-1013	- LADDERLOCK (1-1/2 INCH)
2-6-1014	- BARREL LOCK W/KEEPER
2-6-1015	- LADDERLOCK SPLIT BAR (1-INCH)
2-6-1016	- SLIDE (1-1/2 INCH)
2-6-1017	- BUCKLE STERNUM TRI-GLIDE
2-6-1019	- DUAL ADJUST SIDE- RELEASE BUCKLE (1-INCH)
2-6-1050	- A-TAP
2-6-1055	- BUCKLE, TUBE (4-INCH) ATAP BELT
2-6-1100	- MOLLE 4000 SYSTEM ASSY
2-6-1153	- THREE BAR ADJUSTER BUCKLE (2-INCH)
2-6-1201	- LOAD LIFTER, BUCKLE
2-6-1207	- 9MM M17 MAGAZINE POUCH
2-6-1209	- 9MM M17 MAGAZINE GUAGE
2-6-1260	- FEMALE SIDE RELEASE
2-6-1261	- STERNUM STRAP ADJUSTER BUCKLE
2-6-1262	- SLIDE BUCKLES (1-INCH)
2-6-1263	- G-HOOK

2-6-1264 - CLOTHING CLIP
2-6-1268 - NON-ADJUST (2-INCH) SIDE RELEASE BUCKLE
2-6-1380 - M111 GRENADE POUCH
2-6-1382 - WEB MOUNT BUCKLE (1-INCH)
2-6-1412 - M7 SINGLE MAG POUCH
2-6-1414 - SDMR MAGAZINE POUCH
2-6-1415 - SDMR POUCH ASSY
2-6-1416 - M7 DOUBLR MAG POUCH
2-6-1418 - M250 50 ROUND POUCH
2-6-1420 - M250 100 ROUND POUCH
2-6-1424 - MAGAZINE GUAGE
2-6-1426 - DUMP POUCH
2-6-1429 - MODULAR BELT SYSTEM
2-6-1437 - NON-SLIP SIDE RELEASE BUCKLE
2-6-1439 - SUPER G HOOK

(Copies of drawings are available from the U.S. Army, DEVCOM Soldier Center, ATTN: FCDD-SCP-PE, 10 General Greene Avenue, Natick, MA 01760-5019.)

(Comments, suggestions, or questions on this document should be addressed to: U.S. Army, DEVCOM – Soldier Center, ATTN: FCDD-SCD-PEI, 10 General Greene Avenue, Natick, MA 01760-5019.)

OTHER GOVERNMENT DOCUMENTS AND PUBLICATIONS

ARMY PUBLICATIONS:

FM 3-21-220 - Static Line Parachuting Techniques and Training

(Copies of this document are available through the contracting activity.)

(Copies of specifications, standards, drawings and publications required by contractors in connection with specification procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

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

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA INC.

NASM 16491 - Grommet, Metallic, General Specification for
NASM 20652/1B - Eyelets, Metallic, and Eyelet Washers, Metallic

(Copies of these documents are available from https://www.aia-aerospace.org.)

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC EP1 – Evaluation Procedure for Gray Scale for Color Change
AATCC EP2 - Evaluation Procedure for Gray Scale for Staining
AATCC EP8 - Evaluation Procedure for Chromatic Transference Scale, 9-Step
AATCC EP9 - Evaluation Procedure for Visual Assessment of Color Difference of Textiles
AATCC TM8 - Test method for Colorfastness to Crocking: AATCC Crockmeter Method
AATCC TM16.3 - Test method for Colorfastness to Light: Xenon Arc
AATCC TM22 - Test method for Water Repellency: Spray Test
AATCC TM61 - Test method for Colorfastness to Laundering: Accelerated
AATCC TM127 - Test method for Water Resistance: Hydrostatic Pressure Test

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

AMERICAN SOCIETY FOR QUALITY (ASQ)

ASQ/ANSI Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

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

ASTM INTERNATIONAL

ASTM D751	- Standard Test Methods for Coated Fabrics
ASTM E831	- Standard Test Method for Linear Thermal Expansion of Solid Materials by Thermomechanical Analysis
ASTM D1388	- Standard Test Method for Stiffness of Fabrics
ASTM D1424	- Standard Test Method for Tearing Strength of Fabrics by Falling-Pendulum Type (Elmendorf) Apparatus
ASTM D2060	- Standard Test Methods for Measuring Zipper Dimensions
ASTM D2061	- Standard Test Methods for Strength Tests for Zippers
ASTM D3776/D3776M	- Standard Test Methods for Mass Per Unit Area (Weight) of Fabric
ASTM D5034	- Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab test)
ASTM D5035	- Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)
ASTM D6576	- Standard Specification for Flexible Cellular Rubber Chemically Blow
ASTM D6988	- Standard Guide for Determination of Thickness of Plastic Film Test Specimens

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

PARACHUTE INDUSTRY ASSOCIATION (PIA)

PIA-C-7219 - Cloth, Duck Nylon

(Copies of these documents are available online at https://www.pia.com.)

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

3. REQUIREMENTS

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

3.1.1 Conformance inspection. When specified, a sample shall be subjected to inspection in accordance with 4.3.

3.2 System salient characteristics.

3.2.1 System requirements.

3.2.1.1 through 3.2.1.5. DELETED.

3.2.1.6 Individual identification. Select components of the system shall have a non-reflective slide-in name holder for identification as indicated on the drawings.

3.2.1.7 Load weight. The Large Ruck shall be capable of carrying a maximum load of 120 pounds.

3.2.1.8 Repair kit. The repair kit will be required when specified as a CLIN in the contract. The system shall include a buckle repair kit for quick common field repairs that can be accomplished by the individual user without special skills or equipment. The repair kit shall be furnished with each MOLLE. The kit shall contain four (4) 1-inch side release buckles described in 3.7.12.3, two (2) 1-inch ladderlock buckles as described in 3.7.12.6 and one (1) 2-inch center release buckles described in 3.7.12.18 for the waistbelt. It shall also contain two (2) 1-1/2 -inch replacement side release buckles as described in 3.7.12.14.1. The kit shall be placed in a resealable clear plastic bag and placed inside the front pocket of the assault pack.

3.2.1.9 DELETED.

3.2.10 Operator's technical manual. The system shall include a MOLLE II Operator's manual, TM 10-8465-236-10. The manual shall be furnished with each MOLLE rifleman system. (See 3.14.3)

3.2.11 Checklist. The system shall include a checklist. A checklist shall be included with each MOLLE. It shall be placed inside the main pack (see 3.14.4).

3.3.1 Large rucksack.

3.3.1.1 through 3.3.1.3. DELETED.

3.3.1.4 Sustainment pouch. Two (2) detachable large side pouches will be included with the pack each having internal volume of approximately 500 cubic inches.

3.3.1.5 through 3.3.1.7. DELETED.

3.3.2 Assault pack.

3.3.2.1 DELETED..

3.3.2.2 Volume/Capacity of the assault pack. An Assault Pack that attaches to the pack frame on top of the main pack, shall have an approximate internal volume of 1525 cubic inches in the main compartment and 825 cubic inches in the large front pocket.

3.3.3 through 3.3.5. DELETED..

3.3.6 Hydration systems. The hydration systems shall provide a marine/soldier with the capability to drink while road marching with a loaded Main Pack without the need to stop. The hydration system shall have a separate carrier that can be worn with thin 1-1/2 inch wide shoulder straps. For all classes the color of the film, bite valve, on/off valve, tube, and screw cap shall be Tan 499 (see 3.7.17, and 3.13.5).

3.4 Labels and markings, operator's technical manual (see 3.14).

3.5 First article. When specified (see 6.2), a sample representing a complete MOLLE shall be subjected to first article inspection in accordance with 4.2.

3.6 Standard sample. The finished cloths shall match the standard samples for shade and appearance and shall match the standard sample with respect to all characteristics for which the standard sample is referenced (see 6.3).

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

3.7.1 Thread. The thread used to fabricate all components of the MOLLE with lockstitch (301) seaming, shall be in accordance with A-A 59826 Type I or Type II Class B, Size F (Tex no. 90-101). The color of the thread cone shall indicate the thread size as specified in A-A 59826. Color shall be Class 1 – Camouflage Green 483, Class 2 – Tan 380, Class 3 – White, Classes 4, 5 and 7 – Coyote 498, Class 9 – Tan 499 and Class10 - Black.

3.7.2 Thread. The thread used for bartacks and lockstitch binding tape attachment shall be in accordance with A-A 59826 Type I or Type II Class B, Size E (Tex no. 68-70). The noted tolerance on the applicable drawings shall have a tolerance of zero (0). The color of the thread cone shall indicate the thread size as specified in A-A 59826. Color shall be Class 1 – Camouflage Green 483, Class 2 – Tan 380, Class 3 –White, Classes 4, 5 and 7 – Coyote 498, Class 9 – Tan 499 and Class10 - Black.

3.7.2.1 Thread. The thread shall be A-A 59826, Type I or II, Class B, Tex No 135-144, 3 ply (Government size FF). Color shall be Class 1 – Camouflage Green 483, Class 2 – Tan 380, Class 3 –White, Classes 4, 5 and 7 – Coyote 498, Class 9 – Tan 499 and Class10 - Black.

3.7.3 Base fabric. The base fabric, as specified in the drawings, for the MOLLE shall be textured nylon duck conforming to MIL-DTL-32439 Type I, Class 3, and Style as specified. The color shall be Woodland Camouflage for Class 1, 3 color Desert Camouflage for Class 2, Arctic White for Class 3, MARPAT Woodland Camouflage for Class 4, MARPAT Desert Camouflage for Class 5, Coyote 498 for Class 7, Operational Camouflage Pattern (OCP) for Class 9, and Black for Class 10 (see 6.2).

3.7.3.1 Base fabric infrared spectral reflectance requirements. The base fabric shall conform to the infrared spectral reflectance requirements specified in MIL-DTL-32439 both initially and after three (3) accelerated launderings.

3.7.4 500 Denier textured nylon. The cloth, as specified in the drawings, for all Classes shall be textured nylon duck, conforming to MIL-DTL-32439 Type III, Class 3 and style as specified. Class 2, non-urethane coated material may be used for all foam/fabric laminate applications only. The spectral reflectance of the camouflage printed finish cloth shall conform to the requirements of MIL-DTL-32439 Type III, Class 3, and Style as specified. The color shall be Woodland Camouflage for Class 1, 3, color Desert Camouflage for Class 2, Arctic White for Class 3, MARPAT Woodland Camouflage for Class 4, MARPAT Desert Camouflage for Class 5, Coyote 498 for Class 7, and Operational Camouflage Pattern (OCP) for Class 9 and Class10 – Black.

3.7.5 Mesh fabric. The mesh cloth, as specified in the drawings, shall be a nylon raschel knit cloth conforming to MIL-C-8061 Type II. Unless otherwise specified in the contract, the color of the mesh cloth shall be Class 1 – Camouflage Green 483, Class 2 – Tan 380, Class 3 –White, Class 4 and 5 – Coyote 476, Class 7 – Coyote 498, Class 9 – Tan 499 and Class 10 - Black. The finished mesh cloth shall meet the colorfastness requirements of Table I when evaluated as specified in Table VIII.

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TABLE I. Colorfastness requirements (mesh fabric 3.7.5, webbing 1-inch dyed 3.7.11.1 and printed 3.7.11.18, and tape binding 3.7.11.3).

Color	Color Evaluation	Laundering Color Change and Staining (3 cycles) (min.)	Light (after 40 AFU or 170 kJ /(m^2nm)@420 nm) (min.) 1/	Crocking (wet and dry) (min.)
Solid Shades 2/	All colors	3-4	3-4	3.5
Class 1 Woodland Camouflage	All colors except Black 357	3-4	3-4	3.5
	Black 357	3	2-3	1.0
Class 2 3 Color Desert Camouflage	All colors	3-4	3-4	3.5
Class 4 Woodland MARPAT	All colors except Black 477	3-4	3-4	3.5
	Black 477	3-4	3-4	1.5
Class 5 Desert MARPAT	All colors	3-4	3-4	3.5
Class 9 Operational Camouflage Pattern (OCP)	All colors except Olive 527	3-4	3-4	3.5
	Olive 527	3-4	3	3.5

1/ AFU: AATCC Fading Units
2/ Classes 3, 7 and 10 are covered in Solid Shades and Classes 6 and 8 were deleted

3.7.6 Nylon fabric. The coated fabric, as specified in the drawings, to be used in the spindrift collar shall be nylon plain weave conforming to MIL-DTL-43128, Type IV and the requirements of Table II and Table III when tested as specified in VIII. Unless otherwise specified in the contract, the color of the cloth shall be Class 1- Camouflage Green 483, Class 2 -Tan 380, Class 3 - Arctic White 488, Class 4 and 5 - Coyote 476, Class 7 - Coyote 498, Class 9 - Tan 499, or Class 10 - Black.

TABLE II. Nylon fabric physical requirements.

Characteristic	Requirement
Weight, oz/sq. yd. (max)	5.0
Breaking Strength, lbs., weakest direction (min)	
Warp	275
Fill	225
Tearing Strength, grams, weakest direction (min)	700

TABLE II. Nylon fabric physical requirements. - Continued

Characteristic	Requirement
Hydrostatic Resistance, psi (min):	
Initial	60
After abrasion	35
After strength of coating	35 1/
After high humidity	40
Stiffness, cm (warp only) (max): At 0ºF	6.0
Adhesion of Coating, lbs./2-inch width (min)	7 2/
Blocking, rating (max)	No. 1
Water Wicking, inch (max)	1/8
Resistance to Leakage	No leakage
Resistance to Insect Repellent	3/
Color & Pattern	4/
Spectral Reflectance	Table III as required

1/ The cloth shall not become stiff and brittle nor soft and tacky and there shall be no evidence of cracking or crazing under visual examination.
2/ Applicable if a film or coating is applied to the surface of the cloth.
3/ The cloth shall show no lifting, no tackiness, no solution, no pickoff, no adherence to itself greater than scale rating (2) (slight blocking).
4/ The color of the face side of the finished cloth shall match the standard sample as specified in 3.6

TABLE III. Infrared spectral reflectance requirements (percent) (solids) (loop. webbing, nylon fabrics) for Class 1, 7, and 9. 1/

Wavelength (nanometers)	Class 1 Camouflage Green 483		Class 7 Coyote 498		Class 9 Tan 499	
	Min	Max	Min	Max	Min	Max
600	3	10	8	20	8	26
620	3	10	8	20	8	26
640	3	10	8	22	8	30
660	3	11	8	24	8	34
680	3	13	12	24	12	38
700	4	28	12	34	12	40
720	5	40	16	42	16	46
740	7	52	22	46	22	50
760	11	60	30	50	30	50
780	17	64	34	54	34	54
800	24	67	36	56	36	56
820	32	70	38	58	38	58
840	37	71	38	58	38	58
860	40	73	40	60	40	60

1/ For Class 2, 3, 4, 5 and 10 requirements refer to contract, if required

3.7.6.1 Nylon fabric. The nylon fabric, as specified in the drawings, shall conform to PIA-C-7219. Unless otherwise specified in the contract. the color shall be Class 1 - Camouflage Green 483, Class 2 - Tan 380, Class 3 - Arctic White 488, Class 4 and 5 - Coyote 476, Class 7 - Coyote 498, Class 9 - Tan 499, or Class 10 - Black.

3.7.7 Slide fasteners.

3.7.7.1 Slide fastener. The slide fastener, as specified in the drawings, shall conform to A-A-55634, individual element plastic chain, with minimum of 250 pounds crosswise breaking strength, overall closed chain width of 0.435 inch (nominal) and minimum single element pull-off strength of 26 pounds with water repellent treated tape. Two (2) non-locking sliders in throat-to-throat configuration with pulls (short or long) having holes large enough to allow a thong and 1/4- inch diameter padlock to lock the slider pull together and a padlock pull that can accommodate a 1/4-inch diameter padlock. (Note: Plastic continuous element coil chain cannot be used in horizontal stress design configuration). An 11/32-inch nylon webbing as described in 3.7.11.13 shall be attached to each pull as a thong. Unless otherwise specified in the contract, the color shall be Tan 499 for lasses 1, 2, 4, 5, and 9, Coyote 498 for Class 7, and Black for Class 10 for sliders, chain, tape and thong.

3.7.7.2 Slide fastener. The slide fastener as specified in the drawings, shall conform to A-A-55634, individual element plastic chain with minimum 135 pounds crosswise breaking strength, overall closed chain width of 0.270-inch (nominal) and minimum single element pull-off strength of 20 pounds with water repellent treated tape. Two (2) non-locking sliders in throat-to-throat configuration with pulls (short or long) having holes large enough to allow a thong. 11/32 nylon black webbing as described in 3.7.11.13 shall be attached to each pull as a thong and a padlock pull that can accommodate a 1/4-inch diameter padlock. (Note: Plastic continuous element coil chain cannot be used in horizontal stress design configuration). Unless otherwise specified in the contract, the color shall be Tan 499 for Classes 1, 2, 4, 5, and 9, Coyote 498 for Class 7, and Black for Class 10 for sliders, chain, tape and thong.

3.7.7.3 Slide fastener. The slide fastener, as specified in the drawings, shall be top open, one way separating, #10 individual element molded plastic, autolock slider, minimum chain crosswise strength of 135 pounds, individual element, pull off 20 pounds minimum conforming to A-A-55634. 11/32-inch braid as described in 3.7.11.13 shall be attached to each pull as a thong. Unless otherwise specified in the contract, the color shall be Tan 499 for Classes 1, 2, 4, 5, and 9, Coyote 498 for Class 7, and Black for Class 10 for sliders, chain, tape and thong.

3.7.7.4 Slide Fastener. The slide fastener shall be A-A- 55634, Type I, Style 6, closed ends with nonlock slider, long tab pull with no thong. Chain shall be plastic continuous element, size 10 with crosswise strength 250 pounds minimum and bartacked at ends. (Slider on the Tactical Assault Panel and Chest Rig shall close in an upward direction.) The tape shall be water repellent treated. Unless otherwise specified in the contract, the color shall be Tan 499 for Classes 1, 2, 4, 5, and 9, Coyote 498 for Class 7, and Black for Class 10 for sliders, chain, tape and thong.

3.7.8 Plastic stiffeners.

3.7.8.1 Attachment strap stiffener. Sewn to the 1-inch webbing attaching straps for the interlocking attachment system shall be high-density polyethylene, .030 inch thick, natural color when tested as specified in Table VIII.

3.7.8.2 Stiffener (2-inch wide). Material shall be high-density polyethylene, .030-inch thick by 2-inch wide, natural color, when tested as specified in Table VIII.

3.7.8.3 Stiffener (2.5-inch wide). Material shall be high-density polyethylene, 030-inch thick by 2.5-inch wide, natural color, when tested as specified in Table VIII.

3.7.8.4 Stiffener (.045 inch or .050 inch thick). Material shall be high-density polyethylene, .045 inch or .050 inch thick, natural color, when tested as specified in Table VIII.

3.7.8.5 Stiffener (.030 inch thick). Material shall be high-density polyethylene, .030 inch thick, natural color when tested as specified in Table VIII.

3.7.9 Fastener tape, hook and loop.

3.7.9.1 Fastener tape hook and loop (1-inch wide). The hook and loop shall be A-A-55126, Type II, Class 1. Unless otherwise specified in the contract, the color of the hook and loop pile tapes shall be Class 1 - Camouflage Green 483, Class 2 - Tan 380, Class 3 - Arctic White 488, Class 4 and 5 - Coyote 476, Class 7 - Coyote 498, Class 9- Tan 499 and Class 10 - Black**.**

3.7.9.2 Fastener tape hook and loop. The hook and loop shall conform to A-A-55126, Type II, Class 1. Unless otherwise specified in the contract, the color of the hook and loop pile tapes shall be Class 1 - Camouflage Green 483, Class 2 - Tan 380, Class 3 - Arctic White 488, Class 4 and 5 - Coyote 476, Class 7 - Coyote 498, Class 9 - Tan 499 and Class 10 - Black**.**

3.7.9.3 Fastener tape hook and loop, (Laminated Circular Engagement). The hook and loop shall conform to A-A-55126 Class 8. Unless otherwise specified in the contract, the color of the hook and loop pile tapes shall be Class 1 - Camouflage Green 483, Class 2 - Tan 380, Class 3 - Arctic White 488, Class 4 and 5 - Coyote 476, Class 7 - Coyote 498, Class 9 - Tan 499 and Class 10 - Black**.**

3.7.10 DELETED.

3.7.11 Webbing, braid, cord and tape. Unless otherwise specified in the contract, the color of the webbing, braid, cord and tape, shall be solid, Class 1 – Camouflage Green 483, Class 2 – Tan 380, Class 3 –Arctic White 488, Class 4 and 5 – Coyote 476, Class 7 – Coyote 498, Class 9 – Tan 499, Class 10 - Black, or a Camouflage Pattern as specified. The webbings, braid, cord and tape specified in 3.7.11.1 through 3.7.11.18 shall meet the spectral reflectance requirements as specified in the referenced specification for each item unless otherwise specified in contract.

3.7.11.1 Webbing, (1-inch). The 1-inch webbing shall conform to A-A-55301, Type III made from texture yarn. Alternate construction not acceptable. Unless otherwise specified in the contract, the color of the webbing shall be Camouflage Green 483 for Class 1, Tan 380 for Class 2, Arctic White 488 for Class 3, Coyote 498 for Classes 4, 5 and 7, 499 for Class 9 and Black for Class 10 (see 3.7.11.18). The webbing shall meet the colorfastness requirements of Table I when tested as specified in Table VIII.

3.7.11.2 Elastic webbing (1-inch). The elastic webbing shall be 1-inch wide and conform to MIL-W-5664, Type II, Class 1.

3.7.11.3 Tape, binding (1-inch). The tape for binding shall be 1-inch and conform to MIL-DTL-5038, Type III, Class 2 and shall meet the colorfastness requirements to laundering and light in Table I. Testing shall be as specified in Table VIII.

3.7.11.4 Webbing (1-1/2-inch). The 1-1/2 inch webbing shall conform to MIL-PRF-17337, Class 2.

3.7.11.5 Webbing (3-1/2-inch). The 3-1/2 inch Webbing shall conform to MIL-PRF-17337, Class 2.

3.7.11.6 Webbing (2-inch). The 2-inch webbing shall conform to MIL-PRF-17337 Class 2.

3.7.11.7 Webbing (2-inch). The 2-inch webbing shall conform to MIL-W-4088 Type VIIIB, Class 2.

3.7.11.8 Webbing (2-1/4 inch). The 2-1/4 inch webbing shall conform to MIL-W-4088, Type VIIIc, Class 2, and per MIL-W-27265 Class R finish.

3.7.11.9 Webbing (9/16-inch). The 9/16-inch webbing shall conform to MIL-W-4088, Type I, Class 2.

3.7.11.10 Webbing (3/4-inch). The 3/4-inch webbing shall conform to MIL-W-4088, Type IA, Class 2.

3.7.11.11 Webbing (3-inch). The 3-inch webbing shall conform to MIL-W-4088, Type VIIIA, Class 2.

3.7.11.12 Webbing (1-23/32-inch). The 1-23/32 inch webbing shall conform to MIL-W-4088, Type XIII, Class 1 or 2. The color of the webbing shall be natural (white) for all classes.

3.7.11.12.1 Webbing (1-23/32-inch). The 1-23/32 inch webbing for the lowering line loop shall conform to MIL-W-4088, Type VIII, Class 2.

3.7.11.13 Braid, tubular (11/32-inch). The 11/32-inch tubular braid shall conform to MIL-B-371, Type VII, Class 2.

3.7.11.14 Elastic cord. The elastic cord shall conform to MIL-C-43701, Type I.

3.7.11.15 Round cord. The round cord shall conform to MIL-C-5040, Type II.

3.7.11.16 Flat cord. The cord shall conform to MIL-C-5040, Type IIA.

3.7.11.17 Elastic webbing (1-1/2-inch). The 1-1/2-inch elastic webbing shall conform to MIL-W-5664, Type 2, Class 1.

3.7.11.18 Webbing, printed. The 1-inch printed webbing shall conform to A-A-55301, Type III (3.7.11.1). Printed webbings 1-1/2 inches (3.7.11.4) and 2-inches (3.7.11.6) only, shall conform to MIL-PRF-17337 Class 2. Printing shall be on one (1) side only. Class 9 shall be 4 color OCP webbing unless otherwise specified. The printed webbing shall meet the colorfastness requirements of Table I. Testing shall be as specified in Table VIII**.** Alternate construction not acceptable.

3.7.11.19 Elastic webbing (1-1/2-inch). The 1-1/2-inch elastic webbing shall conform to MIL-W-5664, Type 1, Class 3.

3.7.12 Hardware. Unless otherwise specified in the contract, all hardware shall be color Coyote 498 for Class 7, and Tan 499 for Class 9, and shall meet the spectral reflectance requirements in Table IV when tested as specified in 4.4.1. When Class 10 Black is specified, the spectral reflectance requirements shall be specified in the contract, if required. The color of all other classes shall be specified in the contract.

TABLE IV. Spectral reflectance requirements for acetal hardware (Classes 7 and 9 only).

Wavelength, Nanometers (nm)	Class 7 Coyote 498		Class 9 Tan 499	
	Min.	Max.	Min.	Max
600	8	20	16	26
620	8	20	18	26
640	8	22	20	30
660	8	24	22	34
680	12	24	26	38
700	12	34	30	40
720	16	42	32	46
740	22	46	36	50
760	30	50	36	54
780	34	54	38	58
800	36	56	40	59
820	38	58	42	60
840	38	58	44	60
860	40	60	48	60

3.7.12.1 Side release buckles (1-inch). 1-inch side release buckles shall conform to drawing 2-4-0101.

3.7.12.2 Side release buckles, canteen/general purpose pouch (1-inch). 1-inch side release buckles shall conform to drawing 2-6-239.

3.7.12.3 Side release buckles, repair kit (1-inch). 1-inch side release buckles for the Repair Kit shall conform to drawing 2-6-1005.

3.7.12.4 Barrel lock, single cord. All barrel locks shall conform to drawing 2-6-1014.

3.7.12.5 Ladderlock buckles (1-inch). 1-inch ladderlocks shall conform to drawing 2-6-101 where applicable.

3.7.12.6 Ladderlock buckles, repair kit (1-inch). 1-inch ladderlocks shall conform to drawing 2-6-1015.

3.7.12.7 Tension lock buckles, rucksack (1-inch). 1-inch tension locks shall conform to drawing 2-6-1011.

3.7.12.8 Tension lock buckles, waistbelt (1-inch). 1-inch tension locks for the waistbelt shall conform to drawing 2-6-1012.

3.7.12.9 D-Ring (1-inch). All acetal 1-inch D-rings shall conform to drawing 2-3-567.

3.7.12.9.1 D-ring (1-1/2 inch). The 1-1/2-inch D-rings used on the Hydration System Carrier shall conform to drawing 2-6-0468.

3.7.12.10 Slide buckles (1-inch). 1-inch slide buckles shall conform to drawing 2-6-102 where applicable.

3.7.12.11 Brass loop (1-inch) . All 1-inch brass loops shall be MIL-L-11075, Style G, welded, 0120 wire.

3.7.12.12 Double bar, nonslip buckles (1-inch). 1-inch quick release nonslip buckles shall conform to MIL-B-543, Type V, Class 3.

3.7.12.13 Slide buckles (1-inch). 1-inch slide buckles shall conform to drawing: 2-6-1262.

3.7.12.14 Side release buckles, sleep system carrier (1-1/2 inch). 1-1/2-inch side release buckles shall conform to drawing 2-6-1265.

3.7.12.14.1 Replacement side release buckles, repair kit (1-1/2 inch). The 1-1/2-inch replacement side release buckles shall conform to drawing 2-6-1004.

3.7.12.15 Side release buckles, fighting load carrier (FLC) (1-1/2 inch). 1-1/2-inch side release buckles shall conform to drawing 2-6-1006.

3.7.12.16 Ladderlock buckles (1-1/2 inch). 1-1/2-inch Ladderlock buckles shall conform to drawing 2-6-1013.

3.7.12.17 Slide buckles (1-1/2 inch). 1-1/2-inch slide buckles shall conform to drawing 2-6-1016.

3.7.12.18 Center release buckles (2-inch). 2-inch center release buckle shall conform to drawing 2-6-1009.

3.7.12.19 Quick-release buckle. The quick release buckles for the backpack frame shoulder straps shall conform to drawing 2-6-1010.

3.7.12.20 Pack frame. The pack frame shall conform to drawing 2-6-299.

3.7.12.21 Clothing clip. The clothing clip for the hydration system shall conform to drawing 2-6-1264.

3.7.12.22 Sternum strap buckles. The sternum strap buckles shall conform to drawing 2-6-1017.

3.7.12.23 Grommets. The grommets shall conform to NASM-16491 Type III Class 3 size 0.

3.7.12.24 Eyelets. The metal eyelets with washers shall be NASM 20652/1B dash numbers BBE-114, BBW101, brass and have a dull chemical finish suitable for copper alloys. The brass for the eyelets shall be annealed suitable for forming. Brass for the flat washers shall be tempered, minimum half-hard. The finished eyelets and washers shall be free from fracture, malformation, burrs and rough or sharp edges. Washers shall be smooth and free of any bend. The finish shall be free of foreign imbedded matter and discoloration and provide complete coverage of the eyelets and washers. Eyelet metal shall not crack when clinched. The eyelet size in inches shall be as follows: 0.200 (± 0.004) bottom outside diameter, 0.403 (± 0.007) overall outside diameter, 0.143 (± 0.008) or 0.210 (± 0.008) (to be determined by the contractor) effective shank length, and 0.013 (± 0.0015) thickness. The washer size in inches shall be as follows: 0.220 (± 0.002) diameter of hole, 0.450 (± 0.003) overall diameter, and 0.020 (+ 0.004/ - 0.002) thickness.

3.7.12.25 Eyelets drain holes. Drain hole eyelets shall conform to NASM 20652/1B dash no. ABE -131, aluminum with chemical finish.

3.7.12.26 Snap fasteners. The snap fasteners shall be MIL-DTL-10884 style 2, constructed in accordance with drawings 4-1-176, or 4-1-178 at the option of the contractor. The snap fasteners shall have a black chemical finish, except the button cap shells shall be color as specified in 3.7.12, baked-on enamel finish. The enamel shall be uniformly coated over the top surface of the shell including the visible portion of the edge. The gloss for the black chemical finish and the

enamel finish shall be no more than 40. The enamel shall be capable of withstanding attachment operations without removal of any enamel. The enamel coating shall be smooth and free of sags, runs, and streaks.

3.7.12.27 Snap fasteners. The small snap fasteners shall conform to MIL-DTL-10884, style 2A. Physical requirements per 3.7.12.26.

3.7.12.28 D-Ring, metal. The D-ring shall be MIL-R-3390, K, welded, .162 wire, brass or steel.

3.7.12.29 Sternum strap adjuster buckle. The 1-inch to 3/4-inch Sternum Strap Adjuster buckle for the hydration system carrier shall conform to drawing 2-6-1261.

3.7.12.30 Side- release buckle (3/4-inch). The 3/4-inch side release buckle shall conform to drawing 2-6-1008.

3.7.12.31 Molded carabiner . The molded carabiner shall conform to drawing 2-4-0102.

3.7.12.32 Dual adjust side- release buckle (1-inch). The 1-inch dual adjust side-release buckle shall conform to drawing 2-6-1019.

3.7.12.33 Dual adjust side- release buckle (2-inch). The 2-inch dual adjust side-release buckle shall conform to drawing 2-6-1007.

3.7.12.34 Repairable female side- release fastener/buckle (1-inch). The repairable female side release fastener/buckle shall conform to drawing 2-6-0919.

3.7.12.35 Female side release. The female side release shall conform to drawing 2-6-1260.

3.7.12.36 Quick attach surface mount female. Quick attach surface mount female hardware shall conform to 2-6-0798.

3.7.12.37 Friction side-release. Friction side-release shall conform to drawing 2-6-0799.

3.7.12.38 Frame, medium rucksack. Frame, medium rucksack shall conform to drawing 2-6-0840.

3.7.12.39 Single bar side release. Single bar side release shall conform to drawing 2-3-0632.

3.7.12.40 Load-lifter buckle. Load-lifter buckle shall conform to drawing 2-6-1201.

3.7.12.41 G-Hook. The G-Hook shall conform to drawing 2-6-1263.

3.7.12.42 Three bar adjuster buckle 2-inch. Three bar adjuster buckle 2-inch shall conform to drawing 2-6-1153.

3.7.12.43 Tube buckle. The 4-inch tube buckle shall conform to drawing 2-6-1055.

3.7.12.44 Non-adjust side-release buckle, 2-inch. The 2-inch non-adjust side-release buckle shall conform to drawing 2-6-1268.

3.7.12.45 Three bar metal buckle. The three bar metal buckle shall conform to A-A-55620 (9S) construction C, 1-inch.

3.7.12.46 Non-slip side-release, 2-inch. The 2-inch non-slip SR buckle shall conform to drawing 2-6-1437.

3.7.12.47 Super G hook. The Super G hook shall conform to drawing 2-6-1439.

3.7.12.48 Web Mount Buckle, 1-inch. The web mount 1-inch female shall be compatible with the male 2-4-0101 buckle and shall conform to 2-6-1382

3.7.12.49 Three bar slide. The 1 1/2-inch three bar slide shall conform to A-A-55620 (5S).

3.7.13 Foam padding (1/2-inch). The foam padding shall be 1/2-inch thick and conform to ASTM D6576 Type II, grade C, condition soft, color black.

3.7.14 Foam padding (1/4-inch). The foam padding shall be 1/4-inch thick and conform to ASTM D6576 Type II, grade C, condition soft, color black. The construction on the shoulder straps shall be a 500 denier textured nylon laminate conforming to MIL-DTL-32439, on the face and back laminated to 2 pound cross-link polyethylene, .26-inch thick.

3.7.14.1 Foam padding (1/8-inch). The foam padding shall be 1/8-inch thick and conform to ASTM D6576 Type II, grade C, condition soft, color black.

3.7.15 Clear film for ID windows. The clear film shall conform to A-A-3174, 0.020-inch thick, Type I, Class 1, grade A, B or C, finish 1.

3.7.16 Clear film for map case. The clear film shall be, 15 MIL thick, clear with UV protection.

3.7.17 Hydration system carrier material. The material used to construct the main body of the Hydration System Carrier shall be MIL-DTL-32439 Type III, Class III Style as specified. Unless otherwise specified, the color shall be Class 1 - Camouflage Green 483, Class 2 -Tan 380, Class 3-Arctic White 488, Class 4, 5 and 7 - Coyote 498, Class 9 –Tan 499, and Class 10 - Black. The material used on the top; front of the carrier shall conform to 3.7.3. The foam material shall conform to 3.7.14 (see 3.3.6). The nylon/foam laminate used to construct the main body of the alternate Hydration System Carrier shall be face MIL-DTL-32439 Type III, Class II, Style as specified, laminated to .140 inch, 2 pound Black cross-link polyethylene, with a 70 denier Black polyester interlock backing. The color shall be Class 1 - Woodland Camouflage, Class 2 - Desert, Class 3 - Arctic White 488, Class 4, 5, and 7 - Coyote 498, Class 9 - Operational Camouflage Pattern (OCP), and Class10 - Black (see 3.7.8.5).

3.7.18 Polyvinyl chloride tubing. The polyvinyl chloride tubing shall be 3/8-inch OD and 1/16-inch thick wall.

3.7.19 Operator's technical manual (if required). The operator's technical manual is a staple bound pocket-sized booklet and is 130 pages in length. It is color, and black and white, text and images. Copies shall be clear, legible, and in permanent ink. The copies shall be duplicated to match the quality of the master manual (see 3.14.3) and in accordance with the following:

Style	Trim Size (inches)	Orientation	Maximum Printing Area (inches)
Pocket-sized	4 X 5-1/2	Vertical	3-1/8 X 5
Technical Manual	5-1/2 X 4	Horizontal	5 X 3-1/8

Text Stock: White Offset (50 lb.)
Cover Stock: Buff Index (110 lb.)
Prints: Head to Head
Color of Ink: Black
Binding: Leave blank
Number of Staples: 2
Sides to be trimmed: 4
Drill: 0

3.7.20 Checklist. The checklist is 5-1/2-inch by 8-1/2-inch and is one (1) page in length. Copies shall be clear legible and in permanent black ink. The check list shall be in accordance with Figure 1 of this document.

3.8 Physical requirements of cloth. The color matching, colorfastness, pattern execution, and infrared spectral reflectance requirements shall conform to MIL-DTL-32439 Type III, Class II, Style as specified.

3.8.1, 3.8.2, and 3.8.2.1 to 3.8.2.6. DELETED.

3.8.2.7 Fluorescence. All cloths shall be tested for fluorescence according to the method in 4.4.2.

3.8.3 and 3.8.4. DELETED.

3.9 Design. The MOLLE system shall conform to drawing 2-6-300, and subsequent drawings.

3.9.1 DELETED.

3.10 Physical characteristics. The MOLLE shall provide a stable platform for carrying the marine/soldiers' load and except for the frame and pouches/pockets; each component shall have straps/carry handles to facilitate movement. All fabric components unless otherwise specified shall be in the color specified for the appropriate Class (see 3.8).

3.11 Interface requirements. The MOLLE shall be compatible with the clothing and equipment commonly worn, carried, and used by the individual marine/soldier, and must be compatible with the load plan for the Bradley and Stryker Fighting Vehicles. The MOLLE shall be deliverable by both the harness, single point release and the all-purpose weapon and equipment container system used by parachutists and be compatible with all individual airborne equipment items and rigging procedures. All components of the system shall be compatible with each other. Integration of the components shall be accomplished with minimum use of straps/belts or hardware.

3.11.1 MOLLE pocket attachment. The Interlocking Attachment System shall be used to attach pockets to the Fighting Load Carrier, packs, and waist belt conforming to drawings 2-6-280, 2-6-283 and 2-6-289. Drawing 2-6-329 illustrates the method in which it is employed. This system is a patented design and is not allowed for commercial sale without a license. There are no restrictions on the sale of this system undersigned contracts with Federal agencies.

3.12 Performance.

3.12.1 DELETED.

3.12.2 Reliability. The Large Rucksack with frame and straps, uniformly loaded with sandbags and cloth ballast to a capacity of 120 pounds, shall be capable of withstanding an 8-foot free fall drop three (3) times, with impact on the frame. The same item shall be dropped an additional three (3) times with impact on the Large Rucksack. There shall be no rupture of seams or visual damage to frame or fabric or components when tested as specified in Table VIII. An airdrop slide impact test final velocity of 31 to 34 feet per second at 45 degrees from vertical (3 times) shall be conducted with impact on the frame. An additional three (3) drops shall be conducted with impact on the Main Pack or Large Rucksack. There shall be no rupture of seams or visual damage to frame or fabric or components when tested as specified in Table VIII.

3.12.3 DELETED.

3.13 Components of MOLLE.

3.13.1 Fighting load carrier (FLC) description. The FLC shall be made from fabric and thread specified in this document and shall be a vest design. The FLC shall be designed so that pouches/pockets and other individual equipment items/carriers can be easily attached/detached and securely held in place. The FLC and frame waist belt shall not interfere with each other when worn together (see 3.3.3).

3.13.2 Lightweight frame. The frame shall weigh no more than 2.3 pounds. The frame shall have a method of attaching the M122 tripod and ancillary equipment, light anti-tank weapons, and bulk items (e.g., 5 gallon cans, cases of items, etc.) to the frame in a manner to hold items securely in place (see 3.7.12.20).

3.13.3 DELETED.

3.13.3.1 Assault pack. The Assault Pack shall be made from fabric and thread specified in this document and is capable of carrying at least a 60-pound load to include the current family of field radios including SINCGARS and ASIP. The Assault Pack shall be quickly and easily donned and doffed. The exterior sides and outermost surface of the Assault Pack shall contain a means to accomplish secure attachment/detachment of the modular pouches/pockets and other individual equipment items/carriers i.e., mattax, entrenching tool, two-quart canteen, etc. The Assault Pack should be accessible through the top with a slide fastener closure and have a flap covering the opening and providing water resistance. There shall be a non-reflective slide in name holder for name identification on the exterior of the pack. The Assault Pack will have front pocket that is specifically sized to house a standard protective mask and allow quick and easy access to it. The pack has two (2) 30-inch Type 8 webbing for direct attachment to the parachutist snaphook described in FM 3-21-220, for integration with the T-10 Harness Assembly. The Assault Pack will have a sewn in lowering line attachment point. The Assault Pack shall have rain holes. The waist belt shall be stowed behind the back panel of the pack.

3.13.4 DELETED.

3.13.4.1 Large rucksack. The Large Rucksack shall be made from fabric and thread specified in this document and is capable of carrying a 120-pound load. The Large Ruck shall be quickly and easily attached/detached to/from the frame. The Large Ruck shall have an internal pouch to the side of the Ruck nearest the back of the wearer to accommodate the current family of field radios including SINCGARS and ASIP. The Large Ruck shall have a dual-purpose flap and map case covering the opening. The lower compartment shall provide storage of readily available mission items, e.g., poncho liner, modular sleeping bag system, rain suit, etc.). The rucksack shall incorporate drain holes. Access to the interior of the ruck should be through the top and lower front with the flap covering the top opening providing water resistance. There shall be at least two (2) removable pockets on the exterior of the ruck capable of carrying small clothing items such as the poncho, improved rain suit, spare batteries, etc. Additionally, the exterior sides and outermost side of the rucksack shall contain a means to accomplish secure attachment/ detachment of the modular pouches/pockets and other individual equipment items/carriers. There shall be a non-reflective slide-in name holder for Marine/Soldier identification on the exterior of the rucksack.

3.13.5 Hydration systems. The hydration systems as described in 3.3.6 shall provide a Marine/Soldier with the capability to drink while road marching with a loaded Main Pack without the need to stop. The hydration system shall have a separate carrier that can be worn with thin 1.5-inch wide shoulder straps. A tube from the hydration system shall provide a means of getting liquid from a bladder container to the Marine/Soldiers' mouth. It shall be a low reflective surface 100-ounce reservoir with a screw top cap, a tube and bite valve. A clip for securing the tube to the users clothing when not drinking shall be provided.

3.13.6 Waist belt. The waist belt shall attach to the pack frame (see 3.13.2). The waist belt shall have a number of attachment areas that are compatible with MOLLE pockets and pouches. It shall have straps to easily attach it to the frame by the user. The waist belt shall be capable of distributing part of or Large Rucksack load to the hips.

3.14 Identification and marking. The size and location of the US marking shall be indicated on the drawings. The letters US printed in dark black ink shall not fade to the point of being illegible after repeated washings and field use. Each component of the MOLLE shall have a combination identification and washing instruction label (exceptions noted) conforming to MIL- DTL-32075. The labels shall be of sufficient strength to withstand repeated field use and laundering. The color of the label shall be Tan 499 for Class 9 and the marking medium shall be Black. The printing shall be legible and shall not show off-setting, smearing or bleeding. All printing shall be in capitals except where otherwise indicated on the instruction label. Size of characters shall be approximately 1/8 inch for capitals and 3/32-inch for lower case. The identification portion of label shall contain item description, National Stock Number (NSN), contract number, lot number, and contractor's name. The item descriptions shall be as follows:

"MOLLE II - RUCKSACK, LARGE"
"MOLLE II - ASSAULT PACK"
"MOLLE II - FIGHTING LOAD CARRIER (FLC)"
"MOLLE II - TACTICAL ASSAULT PANEL (TAP)"
"MARINE CHEST RIG"
"MOLLE II - SUSTAINMENT POUCH"
"MOLLE II - RADIO POUCH"
"MOLLE II - BANDOLEER AMMUNITION POUCH"*
"MOLLE II - M-4, TWO MAGAZINE POUCH"*
"MOLLE II - M-4, THREE MAGAZINE SIDE X SIDE POUCH"*
"MOLLE II - 100 ROUND UTILITY POUCH"*
"MOLLE II - 200 ROUND SAW GUNNER POUCH"*
"MOLLE II - HANDGRENADE POUCH"*
"MOLLE II - 40MM GRENADE POUCH (SINGLE)"*
"MOLLE II - 40MM GRENADE POUCH (DOUBLE)"*
"MOLLE II - 40MM PYROTECHNIC POUCH (DOUBLE)"*
"MOLLE II - 9MM MAGAZINE POUCH (SINGLE)"*
"MOLLE II - LASHING STRAP"*
"MOLLE II - WAIST PACK"
"MOLLE II - 1 QUART CANTEEN/GENERAL PURPOSE POUCH"*
"MOLLE II - ALICE CLIP ADAPTER"*
"MOLLE II - K-BAR ADAPTER"*
"MOLLE II - SHOULDER STRAPS (FRAME)"*
"MOLLE II - MOLDED WAISTBELT"*
"MOLLE II - HYDRATION SYSTEM CARRIER"*
"MOLLE II - MEDIUM PACK" *
"MOLLE II - MEDIUM PACK WAISTBELT"*
"MOLLE II - MEDIUM PACK SHOULDER STRAPS"*
"MOLLE II - RUCKSACK, 4000"
"MOLLE II - COMPRESSION STRAP, MOLLE 4000"
"MOLLE II - SHOULDER STRAP, RIGHT, MOLLE 4000"*
"MOLLE II - SHOULDER STRAP, LEFT, MOLLE 4000"*
"MOLLE II - TAP RIGHT SHOULDER ADAPTER"*

"MOLLE II - TAP LEFT SHOULDER ADAPTER"*
"MOLLE II - TAP HARNESS"*
"MOLLE II - TAP PLATE CARRIER ADAPTER"*
"MOLLE II - TAP ATTACHMENT STRAP"*
"MOLLE II - BUCKLE, MALE SHOULDER SUSPENSION"*
"MOLLE II – A-TAP"*
"MOLLE II – MODULAR BELT"*
"MOLLE II – M7 SINGLE MAG POUCH"*
"MOLLE II – M7 DOUBLE MAG POUCH"*
"MOLLE II – M250 50 ROUND POUCH"*
"MOLLE II – M250 100 ROUND POUCH"*
"MOLLE II – DUMP POUCH"*
"MOLLE II - 9MM MAGAZINE POUCH"*
"MOLLE II - M111 GRENADE POUCH"*
"MOLLE II - SDMR MAGAZINE POUCH"*

*These items do not require washing instructions.

NOTE: The frame markings shall include Vendor Name, NSN, Lot, Month and Year of manufacture molded into the part.

The washing instructions shall read:

Hand Washing:
1. Scrape dirt/dust from item using a brush that will not cut into fabric.
2. Hose or wash item in a pail of water using Mild detergent or synthetic soap.
3. Rinse thoroughly with clean water
4. DO NOT USE CHLORINE BLEACH, COLORED SYNTHETIC SOAP, CLEANING FLUIDS OR SOLVENTS WILL DISCOLOR/DETERIORATE THE ITEM.
5. Dry item in shade or indoors
6. DO NOT DRY IN DIRECT SUNLIGHT, DIRECT HEAT OR OPEN FLAME
7. DO NOT LAUNDER OR DRY ITEM IN FIXED/COMMERCIAL HOME TYPE LAUNDRY EQUIPMENT.
8. DO NOT ATTEMPT TO DYE ITEM OR REPAIR IT. TURN-IN FOR REPAIR/REPLACEMENT.

** The Hydration Bladder/Reservoir does not require any special markings. The Hydration Carrier requires item description; NSN, contract number and prime contractor's name, and the following care and use instructions:

Care and Use:
1. Rinse hydration system with mild soap and hot water before first use and after each use.
2. To freshen, add 2 teaspoons of baking soda to a full system of water and let soak overnight. Rinse well.
3. To sanitize, add 2 teaspoons of bleach to a full system of water and let soak overnight. Rinse well. The use of liquids other than water will accelerate mold growth and will require more frequent cleaning.

3.14.1 Label attachment. The combination labels shall be located as indicated on the pattern drawings.

3.14.2 DELETED.

3.14.3 Operator's technical manual. A master copy of the operator's technical manual will be furnished to the successful awardee.

3.14.4 Checklist. The checklist shall be in accordance with Figure 1.

4. VERIFICATION

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

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

4.2 First article inspection. When a first article is required (see 3.1 and 6.2), it shall be examined for the defects specified in 4.3.1, 4.3.2, 4.3.3, 4.3 4., 4.3.5 and 4.3.6.

4.3 Conformance inspection. Conformance inspection shall be in accordance with 4.3.1, 4.3.2; 4.3.3; 3.3.4; 4.3.5; and 4.3.6. Unless otherwise specified, sampling for inspection shall performed in accordance with ASQ/ANSI Z1.4, except where otherwise indicated.

4.3.1 Compatibility. The MOLLE components shall be examined to verify compatibility between components (attaching/detaching).

4.3.2 Visual examination of MOLLE. Each component in the MOLLE shall be examined for the defects listed in Table V. The lot size shall be expressed in units of either MOLLE or the individual component (when the component is purchased separately). The sample unit shall be one (1) completely fabricated MOLLE or individual component.

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TABLE V. End item visual defects.

Examine	Defect	Classification	
		Major	Minor
Fabric	Hole, cut, tear, smash, broken or missing yarn, or open place clearly visible at normal inspection distance (approximately 3 ft.).	101	
	Shade bar or abrasion mark.		201
	Defective or partially omitted coating		202
Webbing or tape	Any hole, cut, tears, or smash.	102	
	Not firmly and tightly woven, edges frayed or scalloped.	103	
	Multiple floats.		203
	Abrasion mark, slub, or broken end or pick.	104	
	Cut ends of webbing not fused as specified.	105	
Fastener tape	Any hole, cut, or tear.	106	
	Hooks flattened, broken, or missing. impairing function.	107	
Hardware	Broken or malformed, failing to serve intended purpose, corroded area, burr or sharp edge.	108	
	Finish omitted or not as specified:		
	- on brass or aluminum components		204
	- on steel components.	109	
	Area of partial or no finish.		205
	Any required component improperly installed causing failure to serve intended purpose.	110	
	Not assembled as specified.	111	
	Size or type not as specified.	112	
Snap fasteners	Any fastener not functioning properly i.e. fails to snap closed, provide a secure closure or to open freely.	113	
	NOTE: The fasteners shall be snapped and un-snapped twice to determine whether parts of fastener separate freely; and also affect a secure closure.		
	Clinched excessively tight, cutting adjacent material.	114	
	Clinched loosely, permitting any component to rotate freely		206
	Clinched loosely to the degree that components can be expected to become detached during use.	115	
	NOTE: Incomplete roll of end of button or eyelet barrel is evidence of improper and insecure clinching.		
	Incorrect style.	116	
	Any splits in eyelet or button barrels.		207

TABLE V. End item visual defects. - Continued

Examine	Defect	Classification	
		Major	Minor
Drawstrings	Cut, chafed, or abraded.	117	
	Ends not fused.		208
	Not threaded through grommets or knotted as specified.		209
	Omitted.	118	
Barrel Lock	Reversed.		210
Sub-assemblies	Not attached as specified.		211
Brass Grommets and eyelets	Clinched excessively tight, cutting adjacent material.	119	
	Insecurely clinched to a degree that grommet or eyelet may be detached from material.	120	
	Washer installed on incorrect side of material.		212
	Eyelet barrel split.		213
SEAMS AND STITCHING:			
Slide fastener	Not functioning properly, failing to effect a secure closure or to open freely.	121	
	Not specified type or size.	122	
	Slider jams or fails to interlock.	123	
	Thong omitted.	124	
	Fastener tape cut or torn	125	
Open seam	1/2-inch or less.		214
	More than 1/2-inch.	126	
	NOTE: A seam shall be classified as open when one or more stitches joining a seam are broken or when two or more consecutive skipped or run-off stitches occur. On double stitched seams, a seam shall be considered open when either one or both sides of the seam are open.		
Raw edge (on edge required to be finished)	More than 1/2-inch when securely caught in stitching.		215
	NOTE: Raw edge not securely caught in stitching shall be classified as an open seam.		
Seam and stitch type	Wrong seam or stitch type.	127	
Bartacks	Any bartack omitted.	128	
	Any bartack not as specified or not in specified location. Loose stitching, incomplete or broken.		216 217
Stitch tension	Loose, resulting in loose bobbin or top thread.		218
	Excessively tight, resulting in puckering of material.		219

TABLE V. End item visual defects. - Continued

Examine	Defect	Classification	
		Major	Minor
SEAMS AND STITCHING - CONTINUED:			
Stitches per inch	Up to two (2) stitches less than minimum specified. Three (3) or more stitches less than minimum specified. One (1) or more stitches in excess of maximum specified. NOTE: Variation in the number of stitches per inch caused by the operator speeding up the machine and pulling the fabric in order to sew over heavy seams, or in turning corner shall be classified as follows: (a) Within the minor defect classification no defect. Within the major defect classification minor defect.	129	220 221
Stitching ends	Not secured as specified.		222
Thread breaks, skipped stitches, or run-offs	Not overstitched as specified. NOTE: Thread breaks or two or more consecutive skipped or run-off stitches not overstitched shall be classified as open seams.		223
Rows of stitching	Any row missing except on box, and box-x stitching. On box, and box-x stitching: - one (1) row of stitching omitted. - two (2) or more rows of stitching omitted.	130 131	 224
Component And Assembly	Any component part omitted or not as specified or any operation omitted or not as specified (unless otherwise classified herein). Needle chews. Any mend, darn, patch, splice or other unauthorized repair. Any material pleated or caught in stitching where not specified.	 132 133 134	 225
Plastic frame (Stiffener or Film)	Chip, cut, crack, splinter, broken end or space, failing to serve intended purpose.	135	
Binding	Loosely applied but not exposing raw edge of material. Loosely applied exposing raw edge of material. Ends of binding on pocket flap and on ammunition pockets not caught in seams. Ends of binding on pocket flap and on grenade pockets not caught in seams.	136	226 227 228
Darts (on pouch pocket flaps)	One (1) or more omitted. Not formed and sewn separately on pouch pocket flap as specified	 137	229

TABLE V. End item visual defects. - Continued

Examine	Defect	Classification	
		Major	Minor
Ammunition and grenade pocket and flap	Pocket is single ply construction. Pocket or flap not formed as specified. Flaps improperly set or distorted failing to effect a full and smooth closure. Binding tape not securely attached.	138 139	 230 231
Cleanness	Grease, oil, dirt or ink stains clearly noticeable. Thread ends not trimmed as specified.		232 233
Location markings	Drilled or Permanent Printed marking more than 1/32-inch in width or not covered by component part.	140	 234
Markings: US Identification and instructions	Omitted, incorrect, illegible, or misplaced, or size of characters not as specified.		235
Manual and Checklist	Omitted, incorrect, illegible.		236

4.3.2.1 Visual shade matching. The color and appearance of the Finished MOLLE shall match the standard sample when viewed using the AATCC EP9, Option C, (see 6.9) with a primary light source simulating the spectral quality of average daylight, CIE Illuminant D65, with a color temperature of 6500 (± 200) Kelvin (K) illumination of 100 (± 20) foot candles. Alternatively, the color and appearance of the (item) shall match the standard sample with a primary light source simulating artificial daylight, CIE Illuminant D75, with a color temperature of 7500K (±200) illumination of 100 (± 20) foot candles in lieu of D65. (See 6.9.1). The MOLLE shall also be a good match to the standard sample with a secondary source simulating the spectral quality of incandescent lamplight, CIE Illuminant A, with a color temperature of 2856K (± 200). DD1222's shall reflect which light source is used. If the light source is not indicated on the DD1222, D65 will be assumed by the Government Shade Laboratory.

4.3.3 Dimensional examination. The completed MOLLE or individual components shall be examined for the end item dimensional defects listed below in Table VI. The sample unit shall be one (1) MOLLE or individual component.

TABLE VI. End item dimensional examination.

Examine	Defect	Classification	
		Major	Minor
Dimensions (overall)	Smaller than nominal dimensions less applicable minus tolerance indicated on drawings, but not smaller than nominal dimensions less twice the applicable minus tolerance.		
	Smaller than nominal dimensions less twice the applicable minus tolerance.		237
	Larger than nominal dimensions and applicable plus tolerance.	141	
Component and location dimensions	Not within specified tolerance.		238
Stitch margin or gauge	Not within specified tolerance.		239
Box, box-x and stitching	Dimensions not within specified tolerance.		240
Brass eyelets	Not spaced on equipment within specified dimensions.		241
Grommets	Set off center on hems by more than 1/4-inch.		242

4.3.4 End item fit examination. The MOLLE or individual components shall be examined for the end item fit defects listed below in Table VII. The sample unit shall be one (1) complete MOLLE System or one (1) individual component (when components are purchased separately). The gauges used to determine proper fit of the magazine clips and the grenades shall be furnished by the contractor. The gauges shall be constructed in accordance with drawings 2-1-2242, 2-1-2243, 2-6-110, 2-6-111through 2-6-114, 2-6-1424, (see 4.3.4.1 through 4.3.4.12). The pouches shall be examined for the defects listed below in Table VII. The sample unit shall be one (1) Pouch.

TABLE VII. End item fit examination.

Examine	Defect	Classification	
		Major	Minor
Gage Fit into Pocket/Pouches & Closure of Flaps	Failure of pocket/pouches to fit properly within pocket/pouches without force. Inability to completely close flap down in order to secure the Strap fastener without applying excessive force.	142	

4.3.4.1 Magazine clip fit. Two (2) magazine gauges shall be inserted into the M-4, Two (2) Magazine pouch. The open ends of the gauges shall face up with the outline of the ammunition at the open end pointing towards the center front of the vest. The gauges shall be inserted into the pouch without effort other than that necessary to overcome reasonable friction between the gauges and the pocket. A defect shall be scored if any gauge must be forced into the pocket. With the gauge(s) in the pocket, the pocket flap shall be closed and the fastener(s) secured. A defect shall be scored if the pocket body or the flap is too short causing inability to secure the fastener without applying excessive force to the flap to secure the fastener(s). The fit test shall be repeated for the individual pockets of the six (6) magazine Bandoleer. A single magazine shall be used to determine proper fit of each of the M-4, Three (3) Magazine Side by Side Pouch's.

4.3.4.2 Grenade fit. The grenade gauge shall be inserted into the pouch with the safety pin on top. The gauge shall be fully inserted within each pouch without effort other than that necessary to overcome reasonable friction between the gauge and the pouch. A defect shall be scored if the gauge must be forced into the pouch.

4.3.4.3 SINCGARS/ASIP Radio fit. A wooden block 10 3/4-inches x 14 1/2-inches x 3 1/2-inches shall be inserted lengthwise into the radio pouch to determine proper fit of the radio. The gauge shall be fully inserted within each pouch without effort other than that necessary to overcome reasonable friction between the gauge and the pouch. The ASIP gauge shall measure 5 3/8-inches x 3 3/8-inches x 10-inches. The ASIP Block shall be inserted into the webbing cradle without effort other than that necessary to overcome reasonable friction between the gauge and the pouch. A defect shall be scored if the gauge fails fit properly within the pouch.

4.3.4.4 100-round SAW magazine fit. A wooden block 5 9/16-inches x 4 5/8-inches x 2 5/8-inches shall be inserted lengthwise into the 100 round/utility pouch to determine proper fit. The gauge shall be fully inserted within each pocket without effort other than that necessary to overcome reasonable friction between the gauge and the pouch. A defect shall be scored if magazine fails to fit properly within the pouch.

4.3.4.5 200-round SAW magazine fit. A wooden block 7 3/4-inches x 6 1/2-inches x 3 1/8-inches shall be inserted lengthwise into the 200 round SAW magazine pouch to determine proper fit. The gauge shall be fully inserted within each pouch without effort other than that necessary to overcome reasonable friction between the gauge and the pouch. A defect shall be scored if the magazine fails to fit properly within the pocket.

4.3.4.6 40mm High explosive grenade fit. The gauge shall be inserted into each high explosive grenade pouch. The flat ends of the fit gauges shall face towards the tab/flap of the pouch. A defect shall be scored if the gauge must be forced into the pouch(s), or if they extend beyond the bottom of the pouch by more than 1/2-inch.

4.3.4.7 40mm Pyrotechnic grenade fit. The gauge shall be inserted into each 40mm pyrotechnic grenade pouch. The flat ends of the fit gauges shall face towards the tab/flap of the pouch. A defect shall be scored if the gauge must be forced into the pouch(s), or if they extend beyond the bottom of the pouch by more than 1/2-inch.

4.3.4.8 1 quart canteen fit. A 1 quart standard canteen shall be inserted into each 1 quart canteen/general purpose pouch. The webbing straps that form a lid shall be buckled to the female fastener on the front of the pouch. The canteen shall be fully inserted within each pouch without effort other than that necessary to overcome reasonable friction between the canteen and the pouch. A defect shall be scored if the canteen fails to fit properly within the pouch.

4.3.4.9 Tactical assault panel (TAP). One magazine gauge shall be inserted into each of the M-4 Magazine pouches. The hook and loop pouch flaps shall close securely.

4.3.4.10 M7 Single Magazine Pouch Fit. One (1) magazine gauge, 2-6-1424, (or real magazine) shall be inserted into the M-7 single magazine pouch. The open end of the gauges shall face up with the outline of the ammunition at the open end pointing towards the center front of the wearer's torso. The gauges shall be inserted into the pouch without effort other than that necessary to overcome reasonable friction between the gauges and the pocket. A defect shall be scored if any gauge must be forced into the pocket. With the gauge in the pouch, the pouch flap shall be closed and the fastener(s) secured. A defect shall be scored if the pocket body or the flap is too short causing inability to secure the fastener without applying excessive force to the flap to secure the fastener(s).

4.3.4.11 M7 Double Magazine Pouch Fit. Two(2) magazine gauges, 2-6-1424, (or real magazines) shall be inserted into the M-7 double magazine pouch. The open end of the gauges shall face up with the outline of the ammunition at the open end pointing towards the center front of the wearer's torso. The gauges shall be inserted into the pouch without effort other than that necessary to overcome reasonable friction between the gauges and the pocket. A defect shall be scored if any gauge must be forced into the pocket. With the gauges in the pouch, the pouch flap shall be closed and the fastener(s) secured. A defect shall be scored if the pocket body or the flap is too short causing inability to secure the fastener without applying excessive force to the flap to secure the fastener(s).

4.3.4.12 M250, 50 and 100 Round Magazine Pouch Fit. The appropriate gauge from 2-6-1424 (or full real magazine) shall be inserted into the pouch to determine proper fit. The gauge shall be fully inserted within each pocket without effort other than that necessary to overcome reasonable friction between the gauge and the pouch. A defect shall be scored if magazine fails to fit properly within the pouch and the flap securely closed.

4.3.5 End item testing.

4.3.5.1 Frame and large rucksack. An Airdrop Slide Impact test shall be performed if directed by the Government in accordance with 3.12.2. The sample unit shall be one (1) Large Rucksack, set with frame, shoulder straps, and waist belt. The Government may perform verification drops.

4.3.5.2 DELETED.

4.3.6 Material tests. The finished cloth, thread and components shall be tested for the characteristics listed in Table VIII.

TABLE VIII. End item testing.

Characteristic	Requirement Paragraph	Test Method
Fabric Textured Nylon Duck (3.7.3)		
Infrared Spectral Reflectance	3.7.3.1	MIL-DTL-32439
Textured Nylon Duck (500 denier) (3.7.4)		
Infrared Spectral Reflectance	3.7.4	MIL-DTL-32439

TABLE VIII. End item testing. - Continued

Characteristic	Requirement Paragraph	Test Method
Nylon Fabric (3.7.6) Continued		
Mesh (3.7.5)		
Colorfastness Laundering, after 3 cycles Light Crocking	 Table I Table I Table I	 AATCC TM61 1A 1/ AATCC TM16.3 Option 3 2/ AATCC TM8 3/
Nylon Fabric (3.7.6)		
Weight, oz/sq. yd (max)	Table II	ASTM D3776/ D3776M (Method C)
Breaking Strength, lbs, weakest direction (min) Warp Fill	Table II	ASTM D5035 (1C-E or 1C-T)
Tearing Strength, grams, weakest direction (min)	Table II	ASTM D1424
Hydrostatic Resistance, psi (min): Initial After abrasion After strength of coating After high humidity	Table II	 ASTM D751 4/ ASTM E831 5/ & ASTM D751 4/, 6/ ASTM D751 4/, 7/ ASTM D751 4/
Stiffness, cm (warp only)(max): At 0ºF	Table II	ASTM D1388 8/
Adhesion of Coating, lbs/2-inch width (min)	Table II	ASTM D751 6/, 9/
Blocking, rating (max)	Table II	ASTM D751 10/
Water Wicking, inch (max)	Table II	11/
Resistance to Leakage	Table II	ASTM D751 12/
Resistance to Insect Repellent	Table II	13/
Color & Pattern	Table II	Visual 14/
Infrared Spectral Reflectance	Table III	4.4.1
Matching Standard Sample		Visual
Spray Rating	3.7.6	AATCC TM22 Direct Transfer
Hydrostatic Resistance	3.7.6	AATCC TM127
Slide Fastener Tests (3.7.7)		
Breaking strength Crosswise Pull off	3.7.7	ASTM D2061
Water repellency	3.7.7	A-A-55634
Width	3.7.7	ASTM D2060
Plastic stiffeners (3.7.8)		
Appearance	3.7.8	Visual
Thickness	3.7.8	ASTM D6988

TABLE VIII. End item testing. - Continued

Characteristic	Requirement Paragraph	Test Method
Webbing and Tape (3.7.11)		
Infrared spectral reflectance	3.7.11	4.4.1
1-inch webbing (3.7.11.1)		
Colorfastness		
Laundering, after 3 cycles	3.7.11.1	AATCC TM61 1A 1/, 15/
Light	3.7.11.1	AATCC TM16.3 Option 3 2/,
Crocking	3.7.11.1	AATCC TM8 3/
Tape, binding (3.7.11.3)		
Colorfastness		
Laundering, after 3 cycles	3.7.11.3	AATCC TM61 4A 1/, 15/
Light	3.7.11.3	AATCC TM16.3 Option 3 2/
Webbing 1-inch printed (3.7.11.18)		
Colorfastness		
Laundering, after 3 cycles	3.7.11.18	AATCC TM61 1A 1/, 15/
Light	3.7.11.18	AATCC TM16.3 Option 3 2/
Crocking	3.7.11.18	AATCC TM8 3/
Hardware (3.7.12)		
Infrared spectral reflectance	3.7.12	4.4.1
Large Rucksack (Main Pack) with Frame and Straps Reliability	3.12.2	16/

1/ Rated using the AATCC EP1 and AATCC EP2.
2/ Rated using the AATCC EP1.
3/ Rated using the AATCC EP8.
4/ Hydrostatic Resistance Procedure A, Procedure 1 with water pressure applied to the back side of the finished cloth.
5/ Except that a solid rubber diaphragm 0.030 (± 0.010) inches thick shall be used. The abradant shall be the face side of the finished cloth. The face side of the finished cloth specimen shall be abraded 1000 multidirectional cycles. The specimen shall be tested for hydrostatic resistance with the abraded portion centered in the hydrostatic tester.
6/ Five (5) specimen, 6 by 6-inches, shall be cut specimen edges at an angle of 45 degrees to the warp and filling directions of the finished cloth. The testing machine used to stretch the specimen, as required in perpendicular directions, shall be that described in ASTM D5034 except that the face of each jaw shall be 1-inch by 2-inches with long dimension perpendicular to the direction of loading. The test specimen shall be centered in the clamps of the testing machine with the edges of the specimen parallel to the edges of the clamps. The clamps shall by separate at a rate of 5 millimeters per second until a load of 20 pounds has been applied to the specimen. The load shall be held for 30 seconds, released and the specimen removed from the testing machine. The procedure shall be repeated on the same specimen with the load applied in the direction perpendicular to that of the first loading.
7/ Three (3) 4 by 4-inch specimen shall be laid flat, face side up, on a supporting plate and the assembly placed in a desiccator containing water in the lower portion. The water level shall be approximately 1-inch below the specimens. The lid of the desiccator shall be put in place and the desiccators placed in a circulating air oven having a temperature of 180º (± 2) ºF for a period of

14 days. At the end of the aging period, each specimen shall be removed from the desiccator and tested immediately for hydrostatic resistance.
8/ Except that five (5) test specimen with long dimension parallel to the warp direction of the finished cloth shall be tested. The apparatus and test specimens shall be subjected to a temperature of 0°F (± 2) °F for a period of four (4) hours and the test performed in a still atmosphere at that temperature.
9/ Except that 2-inch wide reinforced coating adhesion specimens, cyanoacrylate (solventless) adhesive, and pulling clamp speed of 5 mm/sec shall be used. Three (3) specimens shall be tested.
10/ Except that only one (1) specimen shall be exposed at an oven temperature of 180°F (± 2) °F for 30 minutes.
11/ Three (3), 2-inch by 7-inch specimens (face side) with long dimension parallel to the filling direction of the finished cloth shall be tested. One (1) end of the each specimen shall be weighted (10 to 20 grams) across the full width of the specimen and immersed to a depth of 2-inches in distilled water at room temperature for five (5) minutes. When withdrawn from the water, the height of the wetted area above the original 2-inch water line of each specimen shall be measured to the nearest 1/32-inch.
12/ Hydrostatic Resistance procedure B, procedure 2 with the hydrostatic head fixed at 50 centimeters and applied to the test specimen for 10 minutes. The back side of the finished cloth shall contact the water. The report shall only include the "measurement of the appearance of water drops". Leakage of any specimen shall be considered a test failure. Leakage is defined as the appearance of water at three (3) or more different places within the 4-1/2-inch diameter test area.
13/ The diethyltoluamide for use in this test shall conform to Type II, concentration A of 0-I-503. Three (3) drops of the diethyltoluamide solution shall be placed in the center of a 4 by 8-inch specimen of the finished cloth with the diethyltoluamide solution contacting the face side. The specimen shall be folded to form a 4-inch by 4-inch square with the face sides contacting each other. The folded specimen shall then be placed between two (2) 6-inch by 6-inch glass plates and a 4-pound weight placed on the assembly and left at standard conditions for 16 hours. The specimen shall then be removed from between the glass plates, scale rated for blocking as shown in ASTM D751, except that the specimen shall not be exposed to elevated temperature, and then immediately examined for conformance to the requirements in Table II.
14/ As specified in contract.
15/ Use test 1A, Table I with the following changes: temperature = 100 (± 4)°F, total liquid volume is 100 ml, time = 30 minutes.
16/ Both drop tests shall be conducted on asphalt or concrete surfaces. Two (2) separate items shall be used for the 8-foot drop test and slide impact test. Verification drop tests may be performed by the Government.

4.4 Method of inspection.

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4.4.1 Infrared spectral reflectance (measurements in the visible/near infrared). Spectral reflectance data shall be obtained from 600 to 860 nanometers (nm) at 20 nm intervals, for solid loop, webbing and nylon fabric as specified in Table II and acetal hardware as specified in Table IV or as specified in the referenced documents on a spectrophotometer (see 6.5) relative to the polytetrafluoroethylene (PTFE) family of compounds, the preferred white standard. Other white reference materials may be used provided they are calibrated to absolute white or vitrolite tiles. The spectral bandwidth shall be less than 20 nm at 860 nm. Reflectance measurements may be made by either the monochromatic or polychromatic mode of operation. When the polychromatic mode is used, the spectrophotometer shall operate with the specimen diffusely illuminated with the full emission of a source that simulates either CIE Source A or CIE Source D65. Measurements shall be taken on a minimum of two (2) different areas and the data averaged. The specimen shall be measured as a single layer of the same fabric and shade with layers as specified in the referenced documentation or as specified in the contract or procuring documents. For all solid cloths use a single layer backed up by six (6) layers. For all camouflage patterns, measurements should be taken backed with layers of the same shade so that no light can be detected through the sample. The specimen shall be viewed at an angle not greater than 10° from normal with the specular component included. Photometric accuracy of the spectrophotometer shall be within 1 percent and wavelength accuracy within 2 nm. Unless otherwise specified, the standard aperture size used in the color measurement device shall be 1.0 to 1.25 inches in diameter for Classes 1, 2 ,3, 7 and 10 and 0.3725 inches in diameter or larger for Classes 4, 5, and 9. (NOTE: Always use the largest aperture possible). When the measured reflectance values for any color at four (4) or more wavelengths do not meet the limits specified in Tables II, IV or as specified in the referenced documents it shall be a test failure.

4.4.2 Determination of fluorescence. One (1) sample of cloth and one (1) specimen from the standard sample shall be compared under ultra-violet light in an otherwise completely dark room. The specimen shall be considered satisfactory if its hue of fluorescence is the same as the standard sample. The result shall be reported as "pass" or "fail".

4.4.3 Verification tests. Verification field tests may be conducted to verify requirements in Section 3 for which standard test methods are not available. The following requirements shall be verified:

a. MOLLE - All components, except pouches/pockets, shall have straps/carry handles (see 3.10)
b. MOLLE - Compatibility with clothing and equipment (see 3.11)
c. MOLLE - Successful delivery by harness, single point release and all-purpose weapon and equipment container system (see 3.11)
d. MOLLE - Compatible with individual airborne equipment items and rigging procedures (see 3.11)
e. MOLLE - Easily field repairable (see 3.2.1.8)
f. Frame - Secure attachment of five gallon can, the M122 tripod and ancillary equipment, light anti-tank weapons, and bulk items to lightweight frame, weighing no more than 2.3 pounds, when weighed on a calibrated scale (see 3.13.2)
g. Large Rucksack and frame shall withstand 120 pound drop tests (see 3.12.2)

4.4.4 to 4.4.4.3. DELETED.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in- house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature, which may be helpful, but is not mandatory).

6.1 Intended use. The MOLLE system is intended for use by all Soldiers and Marines for man-transportation of mission essential items.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this purchase description.
b. Class of cloth required (see 1.2).
c. The specific issue of individual documents referenced (see 2.2).
d. When first article is required (see 3.1, 4.2, and 6.9).
e. When conformance inspection is required (see 3.1.1 and 4.3)
f. When operators manual is required (3.2.10)
g. Camouflage pattern drawing if required (see 3.6 and 6.3).
h. Packaging (see 5.1).

6.3 Standard samples, specifications/drawings and pattern drawings. For access to the standard samples of finished fabrics and the specified camouflage pattern drawings, if applicable, address the contracting activity issuing the invitation for bids or request for proposal.

6.4 Through 6.7. DELETED.

6.8 NOTE: Ensure that you have received the proper components and quantities of the set being issued by using Figure 1 in the specified camouflage.

FIGURE 1. Modular lightweight load-carrying equipment checklist Woodland Camouflage – Class 1.

WOODLAND CAMOUFLAGE		
Item Nomenclature	**NSN**	**QTY**
RIFLEMAN SET/BASIC CONFIGURATION SET	**8465-01-459-6572**	**-**
FIGHTING LOAD CARRIER SET (FLC Set)	8465-01-521-8363	-
FIGHTING LOAD CARRIER (Buckle or Slide Fastener)	8465-01-465-2056	1

FIGURE 1. Modular lightweight load-carrying equipment checklist Woodland Camouflage – Class 1. - Continued

WOODLAND CAMOUFLAGE		
Item Nomenclature	**NSN**	**QTY**
RIFLEMAN SET/BASIC CONFIGURATION SET - CONTINUED		
CANTEEN/GENERAL PURPOSE POUCH	8465-01-484-0450	2
HAND GRENADE POUCH	8465-01-465-2093	2
M4 TWO MAGAZINE POUCH	8465-01-513-4058	3
M4 THREE MAGAZINE SIDE BY SIDE POUCH	8465-01-513-4048	2
ASSAULT PACK, MOLLE	8465-01-513-4083	1
WAIST PACK	8465-01-465-2058	1
CARRIER ENTRENCHING TOOL (GL-PD-05-03)	8465-01-478-0345	1
BANDOLEER AMMUNITION POUCHES (6 mag)	8465-01-465-2144	1
FLASH BANG GRENADE POUCH(GL-PD-05-03)	8465-01-513-4063	1
HYDRATION SYSTEM	8465-01-519-2300	1
CARRIER HYDRATION SYSTEM	8465-01-519-2306	1
BLADDER HYDRATION SYSTEM	8465-01-519-2304	1
DRINK TUBE, HYDRATION SYSTEM	8465-01-519-2385	1
BITE VALVE, HYDRATION SYSTEM	8465-01-519-2383	1
LARGE FIELD PACK SET WITH FRAME AND STRAPS	**8465-01-523-6275**	**-**
RUCKSACK, LARGE FIELD PACK, MOLLE	8465-01-520-4855	1
SUSTAINMENT POUCH	8465-01-465-2152	2
MOLLE PACK FRAME (Black or Tan)	8465-01-465-2158	1
MOLDED WAIST BELT	8465-01-465-2109	1
ENHANCED FRAME SHOULDER STRAPS	8465-01-522-6490	1
LOAD LIFTER ATTACHMENT STRAP	8465-01-521-7815	2
BUCKLE,MALE,SHOULDER SUSPENSION	8465-01-526-3324	2
PISTOLMAN SET	**8465-01-459-6584**	**-**
HOLSTER/LEG EXTENDER	8465-01-502-3346	1
9MM MAGAZINE POUCH (Single)	8465-01-465-2155	4
SAW GUNNER SET	**8465-01-459-6580**	**-**
100 ROUND UTILITY POUCH	8465-01-465-2070	2
200 ROUND SAW GUNNER POUCH	8465-01-465-2263	2
GRENADIER SET	**8465-01-459-6582**	**-**
40MM HIGH EXPLOSIVE POUCH (Single)	8465-01-465-4416	4
40MM HIGH EXPLOSIVE POUCH (Double)	8465-01-465-4417	-
40MM PYROTECHNIC POUCH (Double)	8465-01-465-4445	2
MOLLE SYSTEM COMPONENTS	-	-
BUCKLES SET	8465-01-465-2080	-
K-BAR ADAPTER	8465-01-465-2272	-
ALICE CLIP ADAPTER	8465-01-465-2062	-
RADIO POUCH	8465-01-465-2057	-
LASHING STRAPS	8465-01-465-2095	-
SLING,UNIVERSAL,INDIVIDUAL LOAD	8465-01-506-6049	-
30 ROUND MAGAZINE POUCH (Double)	8465-01-465-2092	-

FIGURE 1. Modular lightweight load-carrying equipment checklist Operational Camouflage Pattern (OCP), Class 9. – Continued

OPERATIONAL CAMOUFLAGE PATTERN (OCP)		
Item Nomenclature	**NSN**	**QTY**
RIFLEMAN SET w/TAP	**8465-01-641-3485**	**-**
TACTICAL ASSAULT PANEL (TAP)	8465-01-641-8924	-
ATTACHING STRAP (TAP)	8465-01-641-2141	-
TAP HARNESS	8465-01-641-9252	-
TAP RIGHT SHOULDER ADAPTER	8465-01-641-9288	-
TAP LEFT SHOULDER ADAPTER	8465-01-641-9291	-
TAP PLATE CARRIER ADAPTER	8465-01-641-9304	-
TAP BUCKLE (MALE AND FEMALE)	8465-01-600-8170	-
CANTEEN GENERAL PURPOSE POUCH	8465-01-641-9310	-
HAND GRENADE POUCH ……OBSOLETE	8465-01-641-9377	-
M111 GRENADE POUCH	8465-01-xxx-xxxx	-
M4 TWO MAGAZINE POUCH	8465-01-641-9431	-
M4 THREE MAGAZINE POUCH	8465-01-641-9389	-
HYDRATION SYSTEM	8465-01-641-9423	1
CARRIER HYDRATION SYSTEM	8465-01-641-9671	1
BLADDER HYDRATION SYSTEM	8465-01-641-9698	1
DRINK TUBE, HYDRATION SYSTEM	8465-01-641-9707	1
BITE VALVE, HYDRATION SYSTEM	8465-01-641-9709	1
ASSAULT PACK, MOLLE	8465-01-641-6358	1
WAIST PACK	8465-01-641-9395	1
CARRIER ENTRENCHING TOOL (PD 05-03)	8465-01-641-9405	1
BANDOLEER AMMUNITION POUCHES (6 mag)	8465-01-641-9413	1
FLASH BANG GRENADE POUCH (PD 05-03)	8465-01-641-9419	1
LARGE FIELD PACK SET WITH FRAME AND STRAPS	**8465-01-641-6338**	-
RUCKSACK, LARGE FIELD PACK, MOLLE	8465-01-641-9857	1
SUSTAINMENT POUCH	8465-01-641-9858	2
MOLLE PACK FRAME	8465-01-519-6440	1
MOLDED WAIST BELT	8465-01-641-9862	1
ENHANCED FRAME SHOULDER STRAPS	8465-01-641-9864	1
LOAD LIFTER ATTACHMENT STRAP	8465-01-641-9867	2
BUCKLE,MALE,SHOULDER SUSPENSION	8465-01-580-1672	2
PISTOL SET M17	**8465-01-680-6312**	-
9MM MAGAZINE POUCH (Single) M9 OBSOLETE	8465-01-677-2135	3
9MM MAGAZINE POUCH M17	8465-01-677-2135	4
SAW GUNNER SET	**8465-01-641-5336**	-
100 ROUND UTILITY POUCH	8465-01-642-2287	2
200 ROUND SAW GUNNER POUCH	8465-01-642-2292	2

Modular lightweight load-carrying equipment checklist Operational Camouflage Pattern (OCP), Class 9. - Continued

OPERATIONAL CAMOUFLAGE PATTERN (OCP)		
Item Nomenclature	**NSN**	**QTY**
GRENADIER SET	**8465-01-641-6242**	-
40MM HIGH EXPLOSIVE POUCH (Single)	8465-01-642-2291	10
40MM HIGH EXPLOSIVE POUCH (Double)	8465-01-642-2293	4
40MM PYROTECHNIC POUCH (Double)	8465-01-642-2294	2
MOLLE SYSTEM COMPONENTS	-	-
HOLSTER/LEG EXTENDER	8465-01-642-2284	1
BUCKLES SET	8465-01-585-1540	-
K-BAR ADAPTER	8465-01-642-2211	-
LASHING STRAPS	8465-01-585-1555	-
RADIO POUCH	8465-01-642-2071	-
ALICE CLIP ADAPTER	8465-01-642-2212	-
A-TAP	8465-01-682-0448	1
MOLLE 4000 RUCKSACK SET	8465-01-673-3364	
WAIST BELT, MOLLE 4000	8465-01-673-3449	1
FRAME MOLLE 4000	8465-01-673-3400	1
SHOULDER STRAP, RIGHT, MOLLE 4000	8465-01-673-3510	1
SHOULDER STRAP, LEFT, MOLLE 4000	8465-01-673-3517	1
STRAP, COMPRESSION, MOLLE 4000	8465-01-673-3521	1
RUCK, MOLLE 4000	8465-01-673-3374	1
SDMR POUCH	8465-01-xxx-xxxx	
MODULAR BELT	8465-01-xxx-xxxx	
M7 SINGLE MAG POUCH	8465-01-xxx-xxxx	
M7 DOUBLE MAG POUCH	8465-01-xxx-xxxx	
M250 50 ROUND MAG POUCH	8465-01-xxx-xxxx	
M250 100 ROUND MAG POUCH	8465-01-xxx-xxxx	
DUMP POUCH	8465-01-xxx-xxxx	

***Either a FLC or TAP or A-TAP will be used. The Rifleman set includes only one of these items. See contract to determine which item will be included in the Rifleman set.**

6.9 Visual shade matching. In 2017, Option A of AATCC Evaluation Procedure 9, Visual Assessment of Color Difference of Textiles was changed to Option C. NOTE: In case of confusion, the viewing geometry should be "The specimen plane and illumination source will be parallel to each other and aligned so that the light flux is incident at the center of the specimen plane, which is set at a 35 (± 5°) angle relative to the horizontal. The observer will view the specimens at a 90° angle, relative to the plane of the specimens".

6.9.1 In 2022, the U.S. Military (All Services) accepted D65 as the new preferred light source for visual shade matching due to the supply chain issues with D75.

6.10 Subject term (key word) listing.

Fighting Load Carrier Vest
Grenadier set
Hydration system
Operational Camouflage Pattern (OCP)
Medic Set
Pouch
Rucksack
Tactical Assault Panel (TAP)
Woodland Camouflage

Custodian:
Army – GL

Preparing Activity:
Army - GL