DFP 662 – Rev A
18 October 2012
SUPERSEDING
DFP 662 Initial Release
17 May 2012

Description for Purchase (DFP)
for
Tool Kit, Technical Engineering:
Surveying Set, General Purpose (GPSS)

1. Scope

1.1. Scope. This DFP provides the necessary components to complete surveying tasks. This set is specifically organized to support the technician and supply the tools required for making military planimetric, construction and topographic surveys in a military environment. The general design and layout of the set has been specified to the degree that is required to assure that the kit serves the daily life style and work needs of the repair teams.

2. Applicable Documents

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

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 dated on or before the date of issue for this DFP revision.

MILITARY SPECIFICATION

MIL-STD-129	Military Marking for Shipment and Storage
MIL-STD-1472	Design Criteria Standard Human Engineering
MIL-STD-1916	DoD Preferred Methods for Acceptance of Product
MIL-STD-2073	Standard Practice for Military Packaging
MIL-C-12316	Case, Map and Photograph

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, 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 DFP to the extent specified herein. Unless otherwise specified, the issues of these documents are those dated on or before the date of issue for this DFP revision.

COMMERCIAL ITEM DESCRIPTIONS (CID)

A-A-52046	Arrow Sets, Surveying
A-A-50208	Protractor, Rectangular
A-A-50271	Plate, Identification
A-A-59486	Padlock Set (Individually Keyed or Keyed Alike)

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094)

2.3. Non-Government publications. The following document(s) form a part of this DFP to the extent specified herein. Unless otherwise specified, the issues of these documents are those dated on or before the date of issue of this DFP revision.

AMERICAN SOCIETY OF TESTING AND MATERIALS

ASTM D3575	Standard Test Methods for Flexible Cellular Materials Made From Olefin Polymers
ASTM D6251	Wood-Cleated Panelboard Shipping Boxes
ASTM D4169	Standard Practice for Performance Testing of Shipping Containers and Systems

(Application for copies should be addressed to The American Society for Testing and Materials, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428.)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS

ASME B107.400	Striking Tools
ASME B107.410	Struck Tools

(Application for copies should be addressed to The American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990)

USDA FOREST SERVICE

6170-4	Chaps, Chainsaw

(Application for copies should be addressed to USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59804-7924)

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

3. Requirements

3.1. Preproduction verification. When specified in the contract, the contractor shall furnish one or more sets for preproduction verification inspection in accordance with Section 4 herein. The sets submitted shall be in accordance with the terms of the contract. Approval of the preproduction verification shall not relieve the contractor of the responsibility to furnish equipment in accordance with the requirements of this DFP. All items supplied under this contract shall be identical to the preproduction verification sample, including packaging requirements in Section D of the contract.

3.2. Industrial quality tools. All components supplied with this set shall be industrial quality. For the purposes of this procurement, the term "industrial quality tools" versus household-use tools or general purpose tools are defined as tools commercially marketed and manufactured for constant, rigorous, industrial or professional environment use. The items offered shall have either achieved industrial market acceptance (as defined in paragraph 3.2.1) or have been satisfactorily supplied to the Government under current or recent contracts for the same or similar requirements. Industrial quality tools are used primarily by skilled professionals and technicians in such areas as machine shops, automotive maintenance and repair facilities, aircraft maintenance and repair facilities, industrial automotive assembly plants, fleet maintenance facilities, and airline service facilities. The tools will be used for specialized applications in an environment of virtual constant use, (i.e. around-the-clock eight hour shifts), with applications requiring high torque, low slippage, and strict tolerances.

3.2.1. Market acceptance. Market acceptance is demonstrated by the component having a higher percentage of sales to industrial/professional customers than to retail or government customers. Advertising or marketing literature indicating "professional grade" or "industrial quality", or merely stating an item is "professional grade" or "industrial quality" is insufficient to establish industrial quality tools since these are terms for which there is no generally accepted definition. A claim that an item is manufactured to an industry consensus standard is also insufficient to establish industrial quality tools. The contracting officer may require offerors to provide evidence of market acceptance in the professional or industrial market. Evidence of acceptance by industrial/professional customers includes sales to fleet operators, distributors, contractors, industrial and professional users, and sales to distributors who retail exclusively to the professional or industrial market.

3.3. Warranty. All components shall be supplied with the warranties as specified in Table 1 below. The offeror shall state the length and terms of the warranties in response to the solicitation. The warranty period shall start from the day that the item is first delivered and accepted by the Government. Lifetime warranty shall be unconditional regardless of fault by either party.

3.4. Components. The majority of the components listed in Table 1 are considered "Brand Name or Equal." Offerors may offer the brand name components or equivalent components from other manufacturers determined by the Government to be equal to the specified product. Equal components shall meet the salient characteristics of the brand name components as specified in paragraphs 3.4.1 through 3.4.86 below to be acceptable for award. The citation of trade or manufacturers' names does not constitute an endorsement by the Government. The tool set shall be furnished with the components and corresponding quantities as listed in Table 1 below. The contractor shall submit a complete list of the individual tool kit subset components in accordance with Contract Data Requirements List (CDRL) Contract Line Item Number (CLIN) XXXX. The list shall include: CAGE code, part number, nomenclature, and unit of issue.

TABLE 1: Components

PARA	ITEM DESCRIPTION	UI[1]	QTY[2]	WTY[3]	FSC[4]
3.4.1	Anvil, Stamping	EA	2	M	5120
3.4.2	Arrow Set	EA	1	M	6675
3.4.3	Axe, Single Bit	EA	1	M	5110
3.4.4	Bag for Stakes	EA	2	M	8105
3.4.5	Bar, Digging	EA	1	L	5120
3.4.6	Book, Field, Pocket	EA	6	M	7530
3.4.7	Box, Tool	EA	4	M	5140
3.4.8	Calculator, Scientific	EA	1	M	7420
3.4.9	Case, Map	EA	1	M	8460
3.4.10	Chaps, Protective, 36 inch	PR	1	M	8415
3.4.11	Chaps, protective, 40 inch	PR	1	M	8415
3.4.12	Chisel, Hand	EA	1	M	5110
3.4.13	Cord, Plumb Bob	EA	1	M	4020
3.4.14	Curve, French, Templates	EA	1	M	6675
3.4.15	Desk, Field Portable	EA	1	M	7110
3.4.16	Die Set, Metal Stamp	EA	1	M	5110
3.4.17	Digger, Posthole	EA	1	M	5110
3.4.18	Dispenser, Flagging Ribbon	EA	3	M	6675
3.4.19	Drawing Lead, Graphite	EA	2	N	7510
3.4.20	Drill Bit, Masonry	EA	1	L	5133
3.4.21	Envelope, Expanding Wallet	EA	1	M	7530
3.4.22	Eraser	DZ	1	N	7510
3.4.23	Flag, Marking, Blue	BD	5	N	9905
3.4.24	Flag, Marking, High Visibility Orange	BD	6	N	9905
3.4.25	Flag, Marking, High Visibility Pink	BD	4	N	9905
3.4.26	Flag, Marking, High Visibility Red	BD	2	N	9905
3.4.27	Flag, Marking, Green	BD	2	N	9905
3.4.28	Flag, Marking, White	BD	4	N	9905
3.4.29	Flag, Marking, Yellow	BD	4	N	9905
3.4.30	File Set, Chain Saw	EA	1	M	5110
3.4.31	Folder, File	BX	1	N	7530
3.4.32	Hammer, Blacksmith	EA	1	M	5120
3.4.33	Hammer, Carpenter's, 16 oz	EA	1	M	5120
3.4.34	Hammer, Sledge	EA	1	M	5120

3.4.35	Hatchet	EA	1	M	5110
3.4.36	Laser, Dual Slope	KT	1	M	6675
3.4.36.1	Tripod	EA	1	M	6675
3.4.36.2	Bipod	EA	1	M	6675
3.4.36.3	Prism Pole	EA	1	M	6675
3.4.36.4	Laser Detector	EA	1	M	6675
3.4.37	Laser, Leveling	KT	1	M	6675
3.4.37.1	Tripod	EA	1	M	6675
3.4.37.2	Grade Rod	EA	1	M	6675
3.4.38	Machete	EA	1	L	5110
3.4.39	Markers, Solid Paint, Black	EA	3	N	7520
3.4.40	Markers, Solid Paint, Black High Visibility Orange	EA	3	N	7520
3.4.41	Markers, Solid Paint, White	EA	3	N	7520
3.4.42	Markers, Solid Paint, Yellow	EA	3	N	7521
3.4.43	Marker, Survey Brass	EA	10	M	6675
3.4.44	Mattock, Pick, 5 LB	EA	1	M	5120
3.4.45	Pad, Writing Paper	EA	12	N	7530
3.4.46	Padlock	EA	4	M	5340
3.4.47	Paper, Drawing	BX	1	N	7530
3.4.48	Pencil, Mechanical	BX	1	N	7520
3.4.49	Plumb Bob, Brass	EA	1	M	5210
3.4.50	Protractor, Rectangular	EA	1	N	6675
3.4.51	Protractor, Semicircular	EA	2	N	6675
3.4.52	Reel, Gammon	EA	1	M	6675
3.4.53	Ribbon, Flagging, High Visibility Blue	RO	24	N	9905
3.4.54	Ribbon, Flagging, High Visibility Orange	RO	24	N	9905
3.4.55	Ribbon, Flagging, High Visibility Pink	RO	24	N	9905
3.4.56	Ribbon, Flagging, White	RO	12	N	9905
3.4.57	Ribbon, Flagging, Yellow	RO	12	N	9905
3.4.58	Rope, Fibrous	CL	1	M	4020
3.4.59	Saw, Hand	EA	1	M	5110
3.4.60	Scale, Drafting	EA	1	M	6675
3.4.61	Scale, Drafting, Triangular	EA	1	M	6675
3.4.62	Scriber, Machinist's	EA	3	M	5120
3.4.63	Sheath, Axe	EA	1	M	5110
3.4.64	Sheath, Plumb Bob	EA	1	M	5110
3.4.65	Shovel, Round	EA	1	M	5120
3.4.66	Shovel, Hand	EA	1	M	5120
3.4.67	Spike, Monument	EA	20	M	6675
3.4.68	Stake, Wooden, 1 x 2 x 18 inch	BD	2	N	5510
3.4.69	Stake, Wooden, 2 x 2 x 18 inch	BD	4	N	5510
3.4.70	Stake, Wooden, 12 inch	BD	4	N	5510
3.4.71	Stapler	EA	1	M	7520
3.4.72	Staples	EA	1	N	7510
3.4.73	Stone, Sharpening	EA	1	N	5345
3.4.74	Surveyor's, Template	EA	1	M	6675
3.4.75	Tack, Ball	EA	1	M	6675
3.4.76	Tack Stake	PG	2	M	5315

3.4.77	Tape, Adhesive	RO	2	N	7510
3.4.78	Tape, Measuring, Enclosed	EA	1	M	5210
3.4.79	Measuring, Tape	EA	1	M	5210
3.4.80	Tip, Plumb Bob	EA	1	M	5210
3.4.81	Triangle, Drafting, 45 Deg	EA	1	M	6675
3.4.82	Triangle, Drafting, 60 Deg	EA	1	M	6675
3.4.83	Trowel, Pointing	EA	1	M	5120
3.4.84	Umbrella, Surveyor's	EA	3	M	8340
3.4.85	Vest, Safety, Surveyor's	EA	3	M	8415
3.4.86	Wheel, Measuring	EA	1	M	6675

[1]QTY: Quantity
[2]UI (unit) definitions:
EA = Each YD = Yard
KT = Kit PG = Package
BD = Bundle BX = Box
CL = Coil PR = Pair
RO = Roll
[3]WTY (Warranty) Column definitions:
L = Original Equipment Manufacturer's Lifetime warranty, Unconditional Warranty Regardless of Fault by Either Party
LL = Limited Lifetime Warranty
M = Original Equipment Manufacturer's warranty
N = No Warranty
[4]FSC = Federal Supply Class

3.4.1. Anvil, Stamping. The stamping anvil shall be made of steel and shall be 2.875 to 3 inches in diameter. The anvil shall have two (2) different sized holes drilled into it: one hole shall have a diameter of 0.75 to 0.875 inches and the second shall have a diameter of 1.25 to 1.325 inches. The anvil shall be 3.175 to 3.25 inches tall. Suggested source: Berntsen, part number ANVIL or equivalent.

3.4.2. Arrow Set. The arrow set shall be composed of a metal carrying ring and 11 arrows. The diameter of the arrows shall be 0.1875 to 0.25 inches. The top of the arrow shall be formed into a ring with a nominal inside diameter of 1.5 inches. The lower end of the arrow shall be a pyramidal or conical point. The nominal length of the arrows shall be 14 inches. The carrier ring shall be formed into a loop with the ends bent back in such a manner as to provide a means of hooking the arrows, or a triangular shape with sufficient spring action to permit easy placement and removal of the arrows. The arrows shall be made of steel and shall have a corrosion resistant coating. The arrows shall be painted with alternating bands of red and white enamel paint. The carrier ring shall also be corrosion resistant. The arrow set shall be in accordance with A-A-52046, Type II. Suggested source: CST Berger, part number 04-501 or equivalent.

3.4.3. Axe, Single Bit. The single bit axe shall have a weight of 3.5 to 4 pounds and shall have a length of 35 to 37 inches. The axe shall have a forged steel head with a cutting edge of

4.75 inches. The head shall be treated to prevent corrosion and the cutting edge shall be hardened. The handle shall be made of fiberglass. Suggested source: Council Tool, part number 35DRFG or equivalent.

3.4.4. Bag, Surveying Stakes. The surveying stakes bag shall be constructed of 1000 denier nylon and shall have dimensions of 18 to 19 inches long by 7.5 to 8.5 inches wide by 11.5 to 12.5 inches deep. The bag shall feature external pockets and an adjustable shoulder strap. The bag shall be orange, black or olive drab in color. Suggested source: Estex, part number 2192-KP or equivalent.

3.4.5. Bar, Digging. The digging bar shall be made of steel and shall have a length of 48 to 50 inches. The bar shall have two working ends: a chisel end for digging and a tamper end for packing loose materials. Suggested source: Council Tool, part number TB4 or equivalent.

3.4.6. Book, Field Pocket. The pocket field book shall be a hardcover, bound book containing no less than 80 sheets of 1/4-inch ruled journal paper. The book shall be all-weather resistant and capable of being used in the rain. The book shall be 4 to 4.5 inches wide and 6.5 to 7 inches tall. Suggested source: J. L. Darling Corporation, part number 390-4F or equivalent.

3.4.7. Box, Tool. The tool box shall be used to house all components of the GPSS with the exception of the Portable Field Desk described in paragraph 3.4.15. All components listed in Table 1 and their quantities shall be organized into layers with a tool retention feature to prevent movement during shipment and storage. The tool box characteristics shall be in accordance with Section 3.5 herein.

3.4.8. Calculator, Scientific. The scientific calculator shall have a display capable of displaying 8 to 10 digits and shall be solar powered. The calculator shall be capable of no less than the following functions: basic arithmetic calculations (addition, subtraction, multiplication, division), roots of numbers, trigonometric calculations (sin, cos, tan, inverse) in degrees and radians, logs and their inverses, scientific notation, and standard deviation. The calculator shall have enough memory storage for no less than one number and shall be supplied with a slide-on case. Suggested source: Texas Instruments, part number TI-36X Solar or equivalent.

3.4.9. Case, Map. The map case shall be made of synthetic or non-synthetic fibers and shall be 12.25 to 12.75 inches long and 11.75 to 12.25 inches wide. The map case shall contain 3 map envelopes that are 20.5 by 23 inches and 9 photograph envelopes that are 10.5 by 11.75 inches. The map case shall be furnished with a shoulder strap and shall be olive drab or camouflage in color. The case shall be constructed in accordance with MIL-C-12316. Suggested source: BSW, part number 8460-00-368-4281 or equivalent.

3.4.10. Chaps, Protective, 36 inch. The protective chaps shall be specifically designed to protect against chain saw cuts. The chaps shall be constructed of layers of Aramid fibers and cut-resistant cotton duck. The chaps shall have a length of 35 to 37 inches and shall cover the front and sides of the legs. The chaps shall be secured with an adjustable waist belt and leg straps and shall feature a tool pouch. The chaps shall be in accordance with Forest Service specification 6170-4. Suggested source: Weckworth Manufacturing, part number 8415-01-028-5575 or equivalent.

3.4.11. Chaps, Protective, 40 inch. The protective chaps shall be specifically designed to protect against chain saw cuts. The chaps shall be constructed of layers of Aramid fibers and cut-resistant cotton duck. The chaps shall have a length of 39 to 41 inches and shall cover the front and sides of the legs. The chaps shall be secured with an adjustable waist belt and leg straps and shall feature a tool pouch. The chaps shall be in accordance with Forest Service specification 6170-4. Suggested source: Weckworth Manufacturing, part number 8415-01-294-7717 or equivalent.

3.4.12. Chisel, Hand. The hand cold chisel shall have a length of 12 inches with a 1 inch cutting edge. The chisel shank shall be hexagonal and 0.75 inches wide across the flats. The chisel shall feature a hand guard. The chisel shall be Type I, Class 2 in accordance with ASME B107.410. Suggested source: Mayhew, part number 12405 or equivalent.

3.4.13. Cord, Plumb Bob. The plumb bob cord shall be made of braided synthetic fibers and shall be furnished without knots or splices in rolls of 24 to 26 yards. The cord shall have a breaking strength of no less than 36 pounds and shall be white or orange in color. Suggested source: Gladding, part number A-A-52070 or equivalent.

3.4.14. Curve, French Templates. The French curve templates shall be made of molded plastic and feature double-beveled inking edges. The set shall include no less than 4 French curves in the following sizes: 5.25, 6.5, 10.25 and 12.5 inches. The curves shall be furnished in a protective case. Suggested source: Alvin, part number FC44 or equivalent.

3.4.15. Desk, Field Portable. The field portable desk shall be made of plastic and 30 to 31 inches long, 20.5 to 21.5 inches wide and 28 to 29 inches tall when it is collapsed into a shipping container. The desk shall feature 6 pull out drawers that become progressively larger as they near the bottom. No less than two drawers shall be capable of being locked. The desk shall have an attachable table top with leg extensions that can be removed and secured to the drawers during transport. The desk shall be furnished with a collapsible chair that can be stowed in the lid. The desk shall be olive drab in color. Suggested source: Hardigg Case, part number 472-FLD-DESK-TA or equivalent.

3.4.16. Die Set, Metal Stamp. The die set shall have a gothic character design and a character height of 3/16 inches. The die set shall include 37 characters: nine (9) numeric characters 0 thru 8, twenty-seven (27) upper case letters A-Z including a period, and an ampersand. The die set shall be furnished in a protective case. Suggested source: Young Brothers Stamp Works, part number 5110-00-293-1905 or equivalent.

3.4.17. Digger, Posthole. The posthole digger shall have two fiberglass handles with a length of 47 to 50 inches. The digger heads shall have a length of 8 to 10 inches with a tip-to-tip distance of 6 to 6.5 inches. The posthole digger shall feature cushioned hand grips. Suggested source: Seymour, part number PD48 or equivalent.

3.4.18. Dispenser, Flagging Ribbon. The flagging ribbon dispenser shall accommodate one (1) roll of ribbon that is 1-3/16 inches wide be used to dispense the ribbon described in

paragraphs 3.4.53 to 3.4.57. The dispenser shall have provisions for cutting the ribbon into strips and for attaching to a belt or waistband. Suggested source: Sokkia, part number 811010 or equivalent.

3.4.19. Drawing Lead, Graphite. The graphite drawing lead shall be 0.5 mm fine lead for general writing and shall be compatible with all 0.5 mm automatic pencils. The drawing lead shall be supplied with 12 pieces of lead per tube. The lead shall have a hardness of 2H. The lead shall be compatible with the pencil described in paragraph 3.4.48. Suggested source: Pentel, part number C505-2H or equivalent.

3.4.20. Drill Bit, Masonry. The masonry drill bit shall be a star type and have four (4) flutes. The bit shall have a length of 12 inches and shall have a 0.75 inch cutting diameter. The bit shall be made of steel. Suggested source: Enderes Tools, part number 0192 or equivalent.

3.4.21. Envelope, Expanding Wallet. The expanding wallet envelope shall be 14.75 to 15.25 inches wide and 9.75 to 10.25 inches tall. The envelope shall be made of a leather-like material and feature tear proof gussets that allow for an expansion of 3 to 3.5 inches. The envelope shall feature a flap and elastic cord. Suggested source: Smead, part number 71356 or equivalent.

3.4.22. Eraser. The eraser shall be capable of erasing both ink and pencil markings. The eraser shall be 2 to 4 inches long. Suggested source: Paper Mate, part number 70522 or equivalent.

3.4.23. Flag, Marking, Blue. The marking flag shall be vinyl and 2 to 3 inches tall by 3 to 4 inches wide. The flag shall be mounted on a metal stake 20 to 22 inches long and shall be blue in color. The flag shall be packaged in bundles of 100. Suggested source: Keson, part number STK21B or equivalent.

3.4.24. Flag, Marking, High Visibility Orange. The marking flag shall be vinyl and 2 to 3 inches tall by 3 to 4 inches wide. The flag shall be mounted on a metal stake 20 to 22 inches long and shall be a high visibility orange color. The flag shall be packaged in bundles of 100. Suggested source: Keson, part number STK21GO or equivalent.

3.4.25. Flag, Marking, High Visibility Pink. The marking flag shall be vinyl and 2 to 3 inches tall by 3 to 4 inches wide. The flag shall be mounted on a metal stake 20 to 22 inches long and shall be a high visibility pink color. The flag shall be packaged in bundles of 100. Suggested source: Keson, part number STK21GP or equivalent.

3.4.26. Flag, Marking, High Visibility Red. The marking flag shall be vinyl and 2 to 3 inches tall by 3 to 4 inches wide. The flag shall be mounted on a metal stake 20 to 22 inches long and shall be a high visibility red color. The flag shall be packaged in bundles of 100. Suggested source: Keson, part number STK21GR or equivalent.

3.4.27. Flag, Marking, Green. The marking flag shall be vinyl and 2 to 3 inches tall by 3 to 4 inches wide. The flag shall be mounted on a metal stake 20 to 22 inches long and shall be

green in color. The flag shall be packaged in bundles of 100. Suggested source: Keson, part number STK21G or equivalent.

3.4.28. Flag, Marking, White. The marking flag shall be vinyl and 2 to 3 inches tall by 3 to 4 inches wide. The flag shall be mounted on a metal stake 20 to 22 inches long and shall be white in color. The flag shall be packaged in bundles of 100. Suggested source: Keson, part number STK21W or equivalent.

3.4.29. Flag, Marking, Yellow. The marking flag shall be vinyl and 2 to 3 inches tall by 3 to 4 inches wide. The flag shall be mounted on a metal stake 20 to 22 inches long and shall be yellow in color. The flag shall be packaged in bundles of 100. Suggested source: Keson, part number STK21Y or equivalent.

3.4.30. File Set, Chain Saw. The file set shall consist of one (1) round file, one (1) file guide and one (1) handle. The round file shall be 7/32 inches in diameter, 8 inches long and shall have a double cut Swiss pattern. The file set shall be used to sharpen the teeth on a chain saw. Suggested source: Oregon, part number 31686 or equivalent.

3.4.31. Folder, File. The file folder shall be have a manila color and shall be 14.5 to 14.75 inches wide by 9.25 to 9.75 inches tall. The folders shall have a straight cut tab and be packaged in boxes of 100. Suggested source: Smead, part number 15300 or equivalent.

3.4.32. Hammer, Blacksmith. The blacksmith's hammer shall weigh 2.5 pounds and be a cross-peen style in accordance with ASME B107.400. The hammer shall have a fiberglass handle that is 13 to 15 inches long. The hammer head shall be made of steel. Suggested source: Council Tools, part number PR25XPFG or equivalent.

3.4.33. Hammer, Carpenter's, 16 oz. The carpenter's hammer shall be 13 to 15 inches long and shall weigh 15 to 17 ounces. The hammer shall have a fiberglass handle with a cushion grip. Suggested source: Vaughan, part number S16F or equivalent.

3.4.34. Hammer, Sledge. The sledge hammer shall have a weight of 8 to 9 pounds and shall have a double faced head made of forged steel. The hammer shall have a fiberglass handle with a length of 35 to 37 inches. Suggested source: Council Tool, part number PR800FG or equivalent.

3.4.35. Hatchet. The hatchet shall have a steel head with a 3-1/2 inch cutting edge. The hatchet shall have a fiberglass handle and cushion grip with a length of 13 to 16 inches. Suggested source: Vaughan, part number RBFG or equivalent.

3.4.36. Laser, Dual Slope. The dual slope laser level kit shall consist of a dual grade laser transmitter with receiver and long range remote control, tripod, bipod, prism pole and laser detector. The dual slope laser level shall have a laser reference diameter of 3,000 feet. The dual slope level shall have an axis grade range accuracy of ± 10% along the X direction and -0.5% to + 25% along the Y direction. The laser shall feature auto axis alignment and grade match modes. The dual slope level shall have a waterproof housing and powered by "D" size

rechargeable or alkaline batteries. The laser shall be supplied with corresponding batteries uninstalled. The laser shall have selectable rotation speeds of 300, 600 and 900 RPM. The laser shall be furnished with a remote control that has no less than a 500 foot operating range. The laser receiver shall have no less than 7 on-grade sensitivities ranging from machine coarse (1 inch) to ultra fine (0.004 inches). A rod clamp shall be furnished with the set. Suggested source: Trimble, dual grade laser part number GL722, receiver part number CR600 or equivalent.

3.4.36.1. Tripod. The tripod shall be made of wood or fiberglass and shall have three legs. The tripod shall be adjustable and range in height from 3.5 to 4.9 feet when collapsed to 7 to 12 feet when extended. The tripod shall feature a center column that allows for an adjustment of no less than 2 feet. Suggested source: Seco, part number 90556 or equivalent.

3.4.36.2. Bipod. The bipod shall have two legs for supporting the prism pole described in paragraph 3.4.36.3. Suggested source: Trimble, part number 5217-57-TNL or equivalent.

3.4.36.3. Prism Pole. The prism pole shall have three sections and a total length of 14.75 to 15.25 feet. The pole shall have an adjustable tip and be painted in alternating bands of red and white. Seco, part number 5630-30 or equivalent.

3.4.36.4. Laser Detector. The laser detector shall mount to the prism pole described in paragraph 3.5.36.3 and shall be made of anodized aluminum. The laser detector shall have a designation of 115 mm HT. Suggested source: Seco, part number 5079-064 or equivalent.

3.4.37. Laser, Leveling. The self leveled laser kit shall consist of a self leveling laser transmitter with receiver, tripod and grade rod. The Laser Level shall send a continuous, self-leveled 360-degree laser reference over a work area that is 2,600 feet in diameter. The self leveling range shall be ± 5 degrees. The laser shall be weather resistant, drop-durable, automatic self-leveling and powered by "D" size rechargeable or alkaline batteries. The laser shall be supplied with corresponding batteries uninstalled. The laser shall have a 635 to 670 nanometer visible laser source with an accuracy of 1/16 inch at 100 feet. The laser shall have a battery status indicator and an out of level warning. The hand receiver shall be weather resistant and drop-durable with no less than 6 on-grade sensitivities ranging from coarse (0.5 inches) to ultra fine (0.03125 inches). The receiver shall have an automatic shut-off. Suggested source: Trimble, self leveling laser part number LL400, receiver part number HL700 or equivalent.

3.4.37.1. Tripod. The tripod shall be made of aluminum, have three legs and shall be extendable to 65 to 75 inches. Suggested source: Trimble, part number 2161 or equivalent.

3.4.37.2. Grade Rod. The aluminum grade rod shall be a telescopic with a length of 15 feet and shall be graduated in tenths. Suggested source: Trimble, part number GR151 or equivalent.

3.4.38. Machete. The machete shall be made of steel and shall be 16 to 18 inches long. The machete shall be a combination machete and brush hook and shall feature a wooden handle with a wrist strap. The machete shall be furnished with a waterproof nylon sheath. Suggested source: Pro Tool Industries, part number 481-N or equivalent.

3.4.39. Marker, Solid Paint, Black. The solid paint marker shall be 4.5 to 5 inches long and shall be black in color. The marker shall be capable of marking metal, wood, glass, concrete, rubber and paper. Suggested source: Markal, part number 80223 or equivalent.

3.4.40. Marker, Solid Paint, High Visibility Orange. The solid paint marker shall be 4.5 to 5 inches long and shall be a high visibility orange color. The marker shall be capable of marking metal, wood, glass, concrete, rubber and paper. Suggested source: Markal, part number 82834 or equivalent.

3.4.41. Marker, Solid Paint, White. The solid paint marker shall be 4.5 to 5 inches long and shall be white in color. The marker shall be capable of marking metal, wood, glass, concrete, rubber and paper. Suggested source: Markal, part number 80220 or equivalent.

3.4.42. Marker, Solid Paint, Yellow. The solid paint marker shall be 4.5 to 5 inches long and shall be yellow in color. The marker shall be capable of marking metal, wood, glass, concrete, rubber and paper. Suggested source: Markal, part number 80221 or equivalent.

3.4.43. Marker, Survey, Brass. The survey marker shall be made of brass and shall have a diameter of 3 inches. The marker shall have a 2 inch long stem and shall have a domed top. Suggested source: CST Berger, part number 20-707 or equivalent.

3.4.44. Mattock, Pick, 5 LB. The pick mattock shall have a head weight of 5 to 6 pounds and shall have a pointed pick on one side with a mattock blade on the other. The pick mattock shall have a fiberglass handle with a length of 35 to 37 inches. Suggested source: Nupla Corp, part number 24151 or equivalent.

3.4.45. Pad, Writing Paper. The writing paper shall be 8.5 inches wide and 11 to 12 inches long. The paper shall have legal ruling on both sides and shall be white in color. The pad shall feature 100 sheets of paper. Suggested source: Tops, part number TOP63998 or equivalent.

3.4.46. Padlock. The padlock shall have a solid steel body and a hardened steel shackle both with a corrosion resistant surface finish. The padlock shall have a shackle diameter of 0.303 to 0.383 inches, a shackle height of 1.125 to 1.500 inches and a clearance between body and shackle of no less than 0.875 inches. The padlock shall feature a 5-pin tumbler cylinder, double dead-bolt construction which engages the shackle at both toe and heel, and non-removable keys. All padlocks shall be keyed alike within the set. Separate sets shall be keyed differently. The padlocks shall be in accordance with CID A-A-59486, no chain required. Suggested source: American Lock, part number A5200GLN or equivalent required.

3.4.47. Paper, Drawing. The drawing paper shall be made of 100% cotton or linen fibers and shall have dimensions of 22 by 30 inches. The paper shall be white in color. The unit package quantity shall be 100 sheets per box. Suggested source: Daniel Smith, part number 262360001 or equivalent.

3.4.48. Pencil, Mechanical. The mechanical pencil shall be an automatic drafting pencil with a slim barrel and a soft grip. The pencil shall accept 0.5 mm lead. The pencil shall feature

a pocket clip, an eraser, a 4 mm fixed sleeve and be black overall. The pencils shall be packaged 12 per box. Suggested source: Pentel, part number A315A or equivalent.

3.4.49. Plumb Bob, Brass. The plumb bob shall be made of brass and have a weight of 16 ounces. The plumb bob shall feature a replaceable point and a removable, self-centering cap. Suggested source: LS Starrett, part number PBB-16 or equivalent.

3.4.50. Protractor, Rectangular. The protractor shall be made of plastic and shall be 6 inches long by 1.75 inches wide. The protractor shall contain four scales: an inch scale graduated in 0.1 inches, two yard scales with ratios of 1:20,000 and 1:62,500, and a meter scale with a ratio of 1:20,000. The protractor shall be constructed in accordance with A-A-50208. Suggested source: Dresser Argus, part number 50208 or equivalent.

3.4.51. Protractor, Semicircular. The protractor shall be semicircular with a diameter of 6 inches. The protractor shall measure from 0 to 180 degrees and shall be graduated into 0.5 degree increments. The protractor shall be made of transparent plastic. Suggested source: Alvin, part number 376 or equivalent.

3.4.52. Reel, Gammon. The gammon reel shall be compatible with the plumb bob described in paragraph 3.4.49. The reel shall have a red or orange string with a nominal length of 12 inches. The reel shall have an automatic string retraction system and shall be black and orange in color. Suggested source: CST Berger, part number 11-728 or equivalent.

3.4.53. Ribbon, Flagging, High Visibility Blue. The flagging ribbon shall have a nominal width of 1-3/16 inches and shall be a high visibility blue color. The ribbon shall be supplied in 150 foot rolls and shall be compatible with the dispenser described in paragraph 3.4.18. Suggested source: Presco, part number TXBG or equivalent.

3.4.54. Ribbon, Flagging, High Visibility Orange. The flagging ribbon shall have a nominal width of 1-3/16 inches and shall be a high visibility orange color. The ribbon shall be supplied in 150 foot rolls and shall be compatible with the dispenser described in paragraph 3.4.18. Suggested source: Keson, part number FTGO or equivalent.

3.4.55. Ribbon, Flagging, High Visibility Pink. The flagging ribbon shall have a nominal width of 1-3/16 inches and shall be a high visibility pink color. The ribbon shall be supplied in 150 foot rolls and shall be compatible with the dispenser described in paragraph 3.4.18. Suggested source: Keson, part number FTGP or equivalent.

3.4.56. Ribbon, Flagging, White. The flagging ribbon shall have a nominal width of 1-3/16 inches and shall be white in color. The ribbon shall be supplied in 300 feet rolls and shall be compatible with the dispenser described in paragraph 3.4.18. Suggested source: Keson, part number FTW or equivalent.

3.4.57. Ribbon, Flagging, Yellow. The flagging ribbon shall have a nominal width of 1-3/16 inches and shall be yellow in color. The ribbon shall be supplied in 300 feet rolls and shall

be compatible with the dispenser described in paragraph 3.4.18. Suggested source: Keson, part number FTY or equivalent.

3.4.58. Rope, Fibrous. The fibrous rope shall be constructed of three twisted strands of natural manila fiber and shall have a diameter of 0.375 inches. The rope shall have a length of 1,200 feet with a breaking strength of no less than 1,200 pounds. The rope shall be mildew resistant. Suggested source: Erin Rope, part number TWM121200 or equivalent.

3.4.59. Saw, Hand. The hand saw shall have a length of 14 to 16 inches and feature a plastic handle. The blade shall be made of steel and have 8 to 10 teeth per inch. Suggested source: Stanley, part number 20-046 or equivalent.

3.4.60. Scale, Drafting. The drafting scale shall be made of plastic and contain English and metric graduations. The scale shall measure 12 inches (30 centimeters) with the smallest graduations being $1/50^{th}$ of an inch and 1 millimeter. The scale shall have beveled edges and be furnished with a protective sheath. Suggested source: Alvin, 764PM or equivalent.

3.4.61. Scale, Drafting, Triangular. The drafting scale shall be made of plastic and have a length of 12 inches. The scale shall be triangular and divided into 10, 20, 30, 40, 50 and 60 parts per inch. The scale shall be furnished with a protective sheath. Suggested source: Alvin, part number 241P or equivalent.

3.4.62. Scriber, Machinist's. The machinist's scriber shall feature a reversible/replaceable carbide tip and a pocket clip. The scriber shall be able to mark on metal, glass, stone and ceramics. Suggested source: General Tools, part number 88CM or equivalent.

3.4.63. Sheath, Axe. The axe sheath shall be made of leather and shall be used on the axe described in paragraph 3.4.3. The sheath shall feature two snaps to secure the sheath to the axe. Suggested source: Heritage Leather, part number 1001 or equivalent.

3.4.64. Sheath, Plumb Bob. The plumb bob sheath shall be made of leather and shall accommodate the plumb bob described in paragraph 3.4.49. The sheath shall have provisions to secure the plumb bob and to be worn with a belt. Suggested source: Heritage Leather Company, part number 451 or equivalent.

3.4.65. Shovel, round. The shovel shall have a fiberglass handle with a length of 26 to 30 inches. The shovel shall have a D-handle. The shovel head shall be made of steel. The edge of the head shall be rounded with a point in the middle. Suggested source: Seymour Manufacturing, part number S600D or equivalent.

3.4.66. Shovel, hand. The shovel shall have a fiberglass handle with a length of 26 to 30 inches. The shovel shall have a D-handle. The shovel head shall be made of steel and the edge of the head shall feature a saw tooth pattern. Suggested source: Seymour Manufacturing, part number S710D or equivalent.

3.4.67. Spike, Monument. The monument spike shall be made of steel and have a 3/8 inch square shank. The spike shall have a nominal length of 6 inches and feature a chisel point and button head. Suggested source: Sokkia, part number 813262 or equivalent.

3.4.68. Stake, Wooden, 1 x 2 x 18 inch. The wooden stake shall have the following nominal dimensions: 1 x 2 x 18 inches. The stake shall be pointed on one end. The stakes shall be heat treated or kiln dried to meet ISPM Publication 15 requirements for shipments overseas. The unit package quantity shall be 50 stakes per bundle. Suggested source: Forestry Suppliers, part number 39516 or equivalent.

3.4.69. Stake, Wooden, 2 x 2 x 18 inch. The wooden stake shall have the following nominal dimensions: 2 x 2 x 18 inches. The stake shall be beveled on all four sides to make a point on one end. The stakes shall be heat treated or kiln dried to meet ISPM Publication 15 requirements for shipments overseas. The unit package quantity shall be 25 stakes per bundle. Suggested source: Forestry Suppliers, part number 39513 or equivalent.

3.4.70. Stake, Wooden, 12 inch. The wooden stake shall have the following nominal dimensions: 2 x 2 x 12 inches. The stake shall be beveled on all four sides to make a point on one end. The stakes shall be heat treated or kiln dried to meet ISPM Publication 15 requirements for shipments overseas. The unit package quantity shall be 25 stakes per bundle. Suggested source: Forestry Suppliers, part number 39512 or equivalent.

3.4.71. Stapler. The stapler shall be made of steel and have no less than a 3 inch reach. The stapler shall have an adjustable anvil and have a capacity of no less than 20 sheets. The stapler shall use 0.25 by 0.5 inch staples. Suggested source: Swingline, part number S7076701E or equivalent.

3.4.72. Staples. The staples shall be used in the stapler described in paragraph 3.4.71. The staples shall be 0.25 inches long by 0.5 inches wide and packaged in quantities of 5000. Suggested source: McMaster Carr, part number 1242T6 or equivalent.

3.4.73. Stone, Sharpening. The sharpening stone shall be round with a diameter of 3 inches and a thickness of 5/8 inches. The stone shall be a combination stone with coarse and fine silicon carbide or aluminum oxide material. Suggested source: Norton, part number JT3 or equivalent.

3.4.74. Surveyor's, Template. The surveyor's template shall be 6.25 to 6.75 inches long and 3.875 to 4.125 inches wide. The template shall contain standard symbols used for marking in field books. The symbols shall include various sized circles, triangles, squares, arcs and hexagons. The template shall also include a North arrow designator and a French curve. Suggested source: Alvin, part number TD654 or equivalent.

3.4.75. Tack Ball. The tack ball shall be made of rubber and feature an attached belt loop. The ball shall be 2 to 3 inches in diameter. Suggested source: CST Berger, part number 101352 or equivalent.

3.4.76. Tack, Stake. The stake tacks shall be made of galvanized steel with a nominal length of 0.75 inches. The stake tacks shall feature an indented head to accurately guide a plumb bob. The tacks shall be supplied in quantities of 100 per package. Suggested source: CST Berger, part number 20-750 or equivalent.

3.4.77. Tape, Adhesive. The adhesive tape shall be 0.75 inches wide by 72 yards long and wound on a 3 inch core. The tape shall have a transparent acetate or polyolefin backing and have adhesive on one side. The tape shall not show on copies, cut easily and resist splitting and tearing. Suggested source: 3M, part number 70012802206 or equivalent.

3.4.78. Tape, Measuring, Enclosed. The measuring tape shall be an enclosed type tape measure with flexible steel tape that is white in color. The blade shall be 0.375 to 0.5 inches wide by 100 feet long and have a coating that resists stains, dirt, dust and mildew. The tape shall be housed in a vinyl covered metal case with a manual crank winding mechanism and the tape shall have a metal hook secured at the end. The tape shall be graduated in no less than feet, meters, centimeters and 10ths. US Tape, part number 58556TC or equivalent.

3.4.79. Tape, Measuring. The measuring tape shall have a durable metal case and a steel blade that is 1/2 inches wide and 6 to 12 feet long. The measuring tape shall have an automatic rewind with a positive lock. The blade shall be graduated in no less than the following: feet, inches, 16ths, meters and centimeters. The blade shall be steel with corrosion resistant surface finish and shall feature a hook at the end that is attached with rivets. Stanley, part number 33-215 or equivalent.

3.4.80. Tip, Plumb Bob. The plumb bob tip shall be made of brass or hardened steel and shall be compatible with the plumb bob described in paragraph 3.4.49. The tip shall have a corrosion resistant coating. Suggested source: LS Starrett, part number PT24513 or equivalent.

3.4.81. Triangle, Drafting, 45 Degree. The drafting triangle shall be made of plastic and have a length of 6 inches. The triangle shall be made up of two 45 degree angles and a 90 degree angle. The triangle shall feature a double-taper center cutout. Suggested source: Alvin, part number 131C-4 or equivalent.

3.4.82. Triangle, Drafting, 60 Degree. The drafting triangle shall be made of plastic and have a length of 6 inches. The triangle shall be made up of a 30 degree angle, a 60 degree angle and a 90 degree angle. The triangle shall feature a double-taper center cutout. Suggested source: Alvin, part number 130C-6 or equivalent.

3.4.83. Trowel, Pointing. The pointing trowel shall have dimensions of 5 to 6 inches long by 2 to 3 inches wide. The trowel blade shall be made of steel and come to a point at one end. The handle shall be made of wood. Suggested source: Kraft Tool, part number GG422 or equivalent.

3.4.84. Umbrella, Surveyor's. The surveyor's umbrella shall have a spread of 62 to 64 inches and shall be made of a heavy cotton fabric. The umbrella shall have a 7 to 8 foot long

handle that can be broken down into multiple sections. Suggested source: Sokkia, part number 813640 or equivalent.

3.4.85. Vest, Safety, Surveyor's. The surveyor's vest shall be made of polyester and have a zipper or button closure. The vest shall be fluorescent orange in color and feature yellow reflective stripes on the front and back. The vest shall have no less than 4 exterior pockets. The size of the vest shall be XL. Suggested source: Seco, part number 8068-54-FOR or equivalent.

3.4.86. Wheel, Measuring. The measuring wheel shall have an adjustable length of 29 to 45 inches with a wheel circumference of 39 to 40 inches. The measuring wheel shall be furnished with a kickstand. The measuring wheel shall have a backlit, seven (7) digit LCD display that has English and metric unit conversion capabilities. The measuring wheel shall be able to calculate and store linear distances and area and volume measurements for no less than eight (8) areas. Suggested source: Calculated Industries, part number 6425 or equivalent.

3.5. Tool Box Requirements. The GPSS consists of the prescribed tool load as specified in Table 1 and other items, devices or characteristics as necessary to provide rapid inventory capability and tool position retention during transportation and rough handling. The components of the GPSS shall be divided between no more than four (4) tool boxes. Each fully loaded tool box shall weigh no more than 273 pounds, or within the requirements for an eight person lift as described in Table 2 below, and shall be large enough to house all components and their quantities. The tool box shall not be larger than 75 inches long by 30 inches wide by 30 inches high.

3.5.1. Materials. The tool boxes shall be non-metallic. The contractor is free to choose any materials in the manufacturer of the tool boxes. However, all provisions of this DFP must be met, regardless of the choice of materials. The tool boxes shall be new and constructed of parts and materials that are corrosion resistant or suitably processed to resist corrosion. Hardware that protrudes into the tool box interior shall not present a hazard to users' hands or the tool load. The use of toxic chemicals, hazardous substances, and ozone depleting chemicals (ODCs) shall be avoided.

3.5.2. Weight. Each tool box and moveable piece within the tool box shall be capable of being lifted and moved by manpower or by forklift without modification or use of an adapter on the cases. The weight limit of the fully loaded tool box shall be in accordance with MIL-STD-1472, 5.9.11.3.1 & Table XVII, Male and Female, scenario C: carry 33 feet (see TABLE 2 below for lifting capabilities for all three handling functions described in MIL-STD-1472).

Table 2: Weight requirements

MIL-STD-1472 Lifting Requirements for Males and Females					
A: Lift 5 feet from floor		B: Lift 3 feet from floor		C: Carry 33 feet	
#-Person Lift	Max Load (lbs)	#-Person Lift	Max Load (lbs)	#-Person Lift	Max Load (lbs)
1	37	1	44	1	42
2	74	2	88	2	84
3	102	3	121	3	116
4	130	4	154	4	147

5	157	5	187	5	179
6	185	6	220	6	210
7	213	7	253	7	242
8	241	8	286	8	273
9	268	9	319	9	305
10	296	10	352	10	336

3.5.2.1. Warning Marking Tool Box. Each tool box shall have a warning label prominently displayed on the exterior of the box. The warning label shall state the number of persons required to lift the tool box (i.e. “Two person lift required”, “Three person lift required”, etc) as well as the weight of the object in accordance with MIL-STD-1472, 5.9.11.3.9. This requirement will be waived if the total weight of the filled tool box is equal to or less than the weight of a one-person lift.

3.5.2.2. Warning Marking Layers. If layers are used and any one layer inside a tool box weighs more than a 1-person lift (42-lbs in accordance with MIL-STD-1472, 5.9.11.3.1 & Table XVII, Male and Female, scenario C: carry 33 feet), that layer shall have a warning label prominently displayed and permanently affixed to the top of the layer. The warning label shall state the number of persons required to lift the layer (i.e. “Two person lift required”, “Three person lift required”, etc) as well as the weight of the layer in accordance with MIL-STD-1472, 5.9.11.3.9.

3.5.3. Handles. The handle(s) shall each be rated for not less than 1.5 times the weight of the fully loaded tool box. The handles shall be installed using mechanical fasteners that cannot be readily removed, such as rivets or screws that cannot be removed with a screwdriver. (Reason: In the absence of another tethering point, the handle will be used to tie the tool box to a fixed post, pillar or another tool box with a cable and padlock for security. If the handle can be easily removed, then the tool box can be carried away without having to defeat the cable or padlock. Furthermore, if the handles are used to secure the tool box in a moving vehicle they need to be able to withstand higher forces than those encountered in a simple lift and carry situation.) The number of handles attached to the toolbox shall correspond to the number of people required to lift it. (i.e. for a one person lift, no less than 1 handle is required. For a two person lift, no less than two handles are required, etc.) The handles shall be spaced in such a manner that the lifters do not interfere with each other while lifting.

Handles shall not reduce the strength and firmness of the case. While in use, the handles shall stop at a 90-degree angle to the face of the case. If a bar type handle is used, the clearance for the hand inside the handle shall be not be less than 2 inches by 4.25 inches.

3.5.4. Hardware. All metal hardware items on the tool box shall be corrosion resistant stainless steel and shall be able to withstand long term attacks from corrosive atmospheric conditions.

3.5.5. Color. The color of the chest shall be subdued. The color shall be dark blue, dark green, black, tan or olive drab and the coloring agent shall be part of the base material such that no painting is ever required to maintain the color.

3.5.6. Finish. The exterior surface finish of each tool box shall be clean, corrosion resistant, non-reflective, non-glossy and shall have no sharp edges or projections.

3.5.7. Human Engineering. Each tool box, including the handle and clasps, shall be designed so that the tool box can be carried, opened, and closed by a person wearing insulated work gloves. Each clasp or latch shall be able to be opened and closed using only one gloved hand. It shall require no more than 20 pounds of force to open or close the latch. If a bar type handle is used the clearance for the hand inside the handle shall be not less than 2 inches by 4.5 inches. If a recessed, molded type handle is used the space provided for the hand shall be not less than 2 inches (from palm side to knuckle side) by 5.25 inches (thumb side to little finger side) and 0.75 inch clearance for the finger tips. If drawers are used, each drawer shall be able to be opened by a person wearing insulated work gloves.

3.5.8. Stack ability. The tool boxes shall be stackable, avoiding the placement of handles, clasps, or other features in such a position as to interfere with stacking. The tool boxes shall be capable of stacking four high using an integral interlock in the molded design. When four fully loaded tool boxes and stacked, a tipping force equal to at least 20% (in whole pounds) of one entire fully loaded tool box weight applied to the top tool box in any direction shall not cause the tool boxes to fall.

3.5.9. Water Entry Resistance. When closed and fastened, the empty tool boxes shall withstand immersion in water, without water entry, to a depth of no less than 1 meter (3.28 feet) to the uppermost surface of the tool box for 30 minutes when tested in accordance with test method 512.4 of MIL-STD-810. The tool boxes shall be conditioned so that their temperature is no less than 27°C (80.6°F) above the water temperature prior to immersion. The tool box shall be tied down using the handles, the tiedown points or weighted with other loaded tool boxes stacked upon the test item. Prior to conditioning and testing, the tool boxes shall have been unlatched, opened, closed and re-latched no fewer than 10 times. If a rubberized seal is used to meet the requirements, then it shall be easily replaced when damaged in the field.

3.5.10. Impact Resistance. When fully loaded, closed, latched and placed in its normal resting position in a room temperature environment, the tool boxes shall withstand impacts from dropped objects. As a minimum they shall withstand an impact from a steel bar weighing at least 3 pounds, with a cross section of 3/16 x 1-inch and with edge radii no larger than 1/16 inch. The bar shall have been dropped in free fall from a height of 8 feet, and shall have landed narrow end down on the lid of the tool boxes. The tool boxes shall absorb this blow without suffering permanent deformation to its general overall configuration. The impact shall not cause penetration of the lid by the steel bar.

3.5.11. Elevated Temperature Resistance. A fully loaded tool box, closed, latched, and stored for at least 3 hours at a temperature of 170°F shall withstand being dropped from a height of no less than 36 inches onto a concrete floor. The tool box shall not sustain any permanent damage or degradation to the proper functioning of the tool box, or the tools being damaged, becoming dislodged and moving freely around in the tool box. The tool box shall be designed for storage and handling in temperatures of no less than 170°F and use in temperatures of no less than 120°F.

3.5.12. Ambient Temperature Rough Handling Resistance. At ambient temperature a fully loaded tool box shall withstand being dropped 4 times from 60 inches to a concrete floor, each time landing on a different one of the four bottom edges. After being dropped, the locking features and the tool box shall operate properly without degradation of performance. The fully loaded tool box shall then withstand being rolled over on the floor so it's top is on the ground as well as being rolled 360 degrees, four times, once over each side. All this shall be accomplished without sustaining any permanent damage or degradation to the proper functioning of the tool box, or the tools being damaged, becoming dislodged and moving freely around in the tool box.

3.5.13. Cold Temperature Resistance/Performance. The tool box shall be designed for storage, use and handling in cold weather down to -25°F or colder. When loaded with the specified tools, closed, latched, and stored for three hours at a temperature no warmer than -25°F, the box shall withstand falls to a concrete floor surface from 24 inches without sustaining damage and continue to be operable with latches and handles working and lid opening and closing without difficulty. This requirement shall be supplemented by the requirement for warranty as stated in the contract.

3.5.14. Pressure Differential Compensation. The tool boxes shall compensate for differential pressures that may develop as a result of changes in temperature or in altitude. A device such as pressure relief valve shall serve this purpose. The device shall not alter the waterproof, dustproof, or any other design requirements of the tool boxes.

3.5.15. Physical Security. The tool boxes shall include a locking feature for the entire tool box that uses one or two padlocks conforming to the requirements of Commercial Item Description A-A-59486. With the padlock installed, the tool box locking feature (exclusive of the padlock) shall resist intrusion by prying for no less than 2 minutes. The eye through which the padlock fits shall be capable of withstanding a pull of no less than 250 pounds. The tool box shall include a means to tether the tool box to a post or pillar by means of a chain or cable that can be run from tool box to tool box and then locked with a padlock. The tethering features shall withstand a pull of no less than 250 pounds. If a securely attached handle that can be used for this purpose is not included in the design of the tool box, then another feature shall be provided that will serve this purpose. If more than one padlock for the entire set is used, all padlocks shall be keyed alike. (This will allow all tool boxes within one set to be unlocked with a single key. Separate sets shall be keyed differently.)

3.5.16. Rapid Inventory. The tool storage system in the tool boxes shall facilitate rapid component inventory. Storage methods employed shall enable the operator to verify within ten minutes or less that all items are present and secured in their designated storage locations. In the event an item is absent from the set, the user shall be provided with the means to identify the specific item by name, number and description. It is desired that any one missing item in a tool box be identifiable within five minutes.

Each component shall be permanently marked with its corresponding part number from the manufacturer in accordance with customary commercial practice. In the absence of a

manufacturer's marking, a label containing the component part number, manufacturer and NSN shall be securely fastened to the component for initial inventory purposes.

3.6. Inputs and interfaces.

3.6.1. Component List. The items identified in Table 1 shall be loaded into the tool boxes. All tools shall be industrial or professional quality. Only industrial/professional quality tools that have a verifiable market place acceptance shall be included in this tool set.

3.7. Loading Tool Boxes. The components listed in Table 1 shall be loaded in the tool boxes in accordance with the storage system specified herein.

3.7.1. Interior tool storage system. To the maximum extent practical, the tool boxes shall be designed with an interior tool storage system that shall protect the tools against damage from rough handling, shock, and vibration encountered during transportation, shipping and handling. Suitable cushions and restraints shall be provided to keep all components in place and stowed items secured inside the tool box. The interior storage system shall also allow the tools in the tool box to be immediately located and withdrawn from the tool box without having to sort through the other tools in the process. The storage system shall be configured in a manner that the users can immediately locate and identify a missing tool.

3.7.2. Proximate Storage. The contractor shall lay out the components and assemble them into layers with cut outs for each individual tool. Items normally used together, to the maximum extent practical, shall be stored in the same proximity within the tool box.

If more than one layer is necessary, each layer shall feature handles, straps, ties or some other device to aid in layer removal. The handles, straps, ties, or some other device shall be of correct length and position to facilitate the ease of layer removal. (i.e. it is easier to remove a layer with straps/handles on the narrow ends rather than placing them on the wide ends.) Layers shall not protrude past the interior edges of the tool box; they shall sit inside the lower portion of the tool box providing correct placement and making it easier to reattach lid correctly (preventing layers from getting in the way due to unwanted movement).

3.7.3. Organizers. The tool organizing liners shall fill the tool box to prevent as much movement as possible. The organizing layer shall retain tools in position to provide for rapid inventory of the tool load, and to maintain the position of tools under rough handling and shipping conditions. If foam is used, it shall be closed cell and have a water absorption limit of no more than 0.020 lbs/ft2 over cut surfaces when tested in accordance with ASTM D3575. The organizing liner shall provide contrasting color underneath the tools to aid in rapid inventory; contrasting color examples could include but are not limited to the following: light on dark such as white/red on top and black underneath the tool or dark on light such as black on top and white/red underneath the tool.

If stacking organizing liners within the tool box, each organizing liner shall feature a rigid bottom strong enough to hold the tools positioned within the layer as well as handles, ties, ropes,

or some other device to aid in the removal of each layer. The lift requirements shall be in accordance with that described in paragraph 3.5.2 herein.

The materials used in the tool organizing liner shall be resistant to water, refrigerants, automotive oils, greases, lubricants, fuels including gasoline, diesel fuel, JP-8 and JP-4, acids, bases, coolants, aircraft hydraulic fluid, alcohols and cleaning agents. Each contoured retention feature shall securely hold tools in place so that when a tool box is turned over, the tools will be retained in position. Each contoured retention feature shall allow easy removal of the tool and shall include as necessary pick holes, cut out or recessed areas or protrusion of tools above the tool organizing liner. Each retention feature shall be smooth and free from rough edges.

3.7.4. Markings.

3.7.4.1. Tool Layout. A diagram, photo or drawing showing the location of each component in its loaded position shall be provided with each tool box and shall be permanently affixed to the inside of the lid. The tool layout shall be labeled with the corresponding layer number as well as all components with their respective names and part numbers within that layer. The manner in which the diagram is permanently affixed to the inside of the lid shall not inhibit the ability to open or close the container. This diagram shall serve as an inventory sheet to facilitate rapid inventory. The diagram shall be durable, water and dust resistant through lamination or other means of sealing.

3.7.4.2. Warranty Information. Warranty information for the tools and the tool box shall be permanently affixed to the inside of the lid of the tool box. Warranty information shall include the following:

1. Government contract and delivery order number
2. Date of manufacture (month and year)
3. Instructions for submitting a claim including
   (i) Preferred claim method – via Internet site at https://pmskot.army.mil/SKO_Warranty.html
   (ii) Alternate claim method – via email to USARMY.DETROIT.PEO-CS-CSS.MAIL.PM-SKOT@MAIL.MIL or call 1-877-476-7568 for verification or assistance.
   (iii) Information required to submit a claim including:
   -Individual with responsibility to authorize claim
   -Date and location of incident
   -Unit location and DODAAC
   -Ship to address
   -Description of circumstances of component failure
4. Name and address of contractor, and any other means of contacting the contractor such as data fax number or e-mail address.
5. A complete list of warranties for each component including the nomenclature, manufacturer's part number and NSN, when known, shall also be permanently affixed to the inside of the lid.

3.7.4.3. Non-Warranty. For the non-warranty ordering of replacement tools from the contractor, the procedures as determined by the contractor (including phone number, web site and email address if they are applicable) may be provided separately or included with or near the above information. All information shall be provided on a permanent, water resistant, scuff resistant label, which is permanently affixed to the inside of the lid of the tool box.

3.7.4.4. Replacement Components. Replacement components may be ordered directly from the field under the PM-SKOT Web Site using the replacement unit prices in the contract. When replacement components are purchased they shall be covered by the same warranty type as the components supplied as part of this kit. The warranty period for the replacement components shall begin from the day that the item is first delivered and accepted by the Government.

3.7.4.4.1. The offeror is required to submit replacement prices for those components listed in Table 1 of this DFP in accordance with "Instructions, Conditions, and Notices to Offerors" of the solicitation. The replacement prices shall cover the entire length of the contract.

3.7.4.5. Warranty Label. The tool box shall have a warranty label that is permanently affixed to the inside of the lid of the tool box. The label shall be provided on a water resistant, scuff resistant label, which is permanently affixed to the inside of the lid of the tool box. The label shall be identical to that pictured in Figure 1. For more information on this label, contact the contracting officer.

Figure 1: PM SKOT Warranty Label

3.8. Safety Label.

3.8.1. Lift Hazards. Caution signs shall be provided for all items that exceed the safe limits for a single person to lift using both hands. Product safety signs and labels shall conform to ANSI Z535.4. The number of persons assigned for lifting each item shall be determined using the guidance per paragraph 5.9.11.3.1 of MIL-STD-1472. Lifting limits established for a single person is 42 lbs per Table 2. (See paragraph 3.5.2)

3.9. Plates.

3.9.1. Data Plate. Each tool box shall have a data plate permanently and legibly marked with the following information, including all information required to be inserted in the blanks indicated.

a. End Item Nomenclature: Tool Kit, Technical Engineering: Surveying, General Purpose
b. End Item LIN: TBD
c. End item NSN: TBD
d. End Item Serial No.: *
e. Box ____ of _____
f. Specification data: TACOM-ARDEC DFP 662
g. Weight_____Lbs, Volume_____cu ft, Length____in, Width_____in, Height_____in
h. Manufacturer: CAGE
i. Contract or Purchase Order No.: _____

* Format optional

The data plate shall conform to Commercial Item Description A-A-50271 Composition A, Class 2 or Composition D. The data plate shall be placed in a plainly visible location on the exterior of each tool box, but not on the lid, when it is closed in preparation for shipment or storage.

3.9.2. Plates and Labels. All identification, warning and instruction plates and labels shall be permanently affixed to the GPSS tool boxes. They shall be resistant to deterioration caused by heat, cold, solar radiation, water, and petroleum products to the extent that they will remain intact and readily legible for 5 years or the expected life of the GPSS, whichever is longer. Marking shall be accomplished in a manner that does not adversely affect the life and utility of the GPSS or its equipment. All plates and labels shall be printed using the English language and may be supplemented by graphical symbols.

3.9.3. Unique Item Identification (UII/UID). In addition to the requirements of DFARS clause 252.211-7003, when the cost of the complete tool kit exceeds an amount of $5000 or when required by the contract, each kit shall be marked with a UII/UID that has machine-readable data elements that will distinguish it from all other like and unlike items. Each unique item identifier shall be globally unique and unambiguous. The UII/UID data elements shall be contained in a 2D (2-dimensional) Data Matrix symbol with Error Correction Code (ECC) 200 symbol in accordance with ISO/IEC 16022. Any individual component within this set for which the cost to the Government exceeds $5000 shall also be marked with a UII/UID. Markings shall conform to MIL-STD-130. The identifier shall remain intact and readily human and machine readable for the expected life of the set. The unique item identifier shall not be repeated during the life of the contract. If construct number 2 is used (serialization within the original part number of the enterprise), the contractor shall maintain the original part number on the item for the life of the item (see "Department of Defense Guide to Uniquely Identifying Items: Assuring Valuation, Accountability and Control of Government Property", Version 1.4). Further guidance on unique item identification may be found at

http://www.acq.osd.mil/dpap/Docs/uid/guide_1_4.pdf and
http://www.acq.osd.mil/dpap/pdi/uid/index.html.

The 2D data matrix symbol shall not only contain information relating to a UII/UID number but shall also include the following information:

NSN: 6675-01-596-0505
Tool Kit, Technical Engineering: Surveying, General Purpose

3.9.4. Workmanship. The quality of workmanship imparted to the GPSS shall equal or exceed that typically provided to domestically produce commercial products of this type. Each GPSS presented for acceptance shall have been manufactured with skill and care; shall be uniform, neat, and clean; and shall be free from irregularities and anomalies that degrade form, fit, function, performance or appearance.

4. QUALITY ASSURANCE PROVISIONS

4.1. General provisions. The product verifications and conformance inspections stated herein shall be performed to determine whether the item conforms to Section 3 of this DFP. Unless otherwise specified in the contract, all verifications and inspections shall be performed in accordance with the conditions specified herein. The contractor is responsible for the performance of all product verifications and conformance inspections specified herein. The contractor may use its own or any other facilities suitable for the performance of the verifications and inspections, unless disapproved by the Government. The Government reserves the right to perform any of the verifications and inspections set forth in this DFP, at a later date and in its own facilities, where such verifications and inspections are deemed necessary to assure supplies and services conform to prescribed requirements. The absence of any verification requirements shall not relieve the contractor of the responsibility of assuring that all products submitted to the Government for acceptance comply with all requirements of this DFP and the contract.

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

a. Product performance verification (see paragraph 4.2)
b. Conformance inspection (see paragraph 4.3)

4.2. Product performance verification. Product performance verification is performed before full production begins and is intended to verify that the product is designed and manufactured to meet the requirements of this specification. It includes visual and manual inspections, some of which result in measured or counted values, as well as tests and demonstrations to prove compliance of the tested product and all of its assemblies and subcomponents with the requirements of this document. It also includes the product conformance inspections, as described in paragraph 4.3 that will be performed during production to prove that all inspected characteristics are in compliance at the beginning of production. Product submittal, inspections and acceptance criteria are as follows:

a. Submission. The contractor shall submit one or more tool kit sets for preproduction product verification and conformance inspections (see paragraph 3.1).

b. Inspections to be performed. As determined by the Government, the kit assemblies, components and specimens may be subjected to any or all of the verifications and inspections specified in Section 4 herein.

c. Rejection. If any kit assembly, component or specimen fails to comply with any of the applicable requirements, the entire kit shall be rejected. The Government reserves the right to terminate further verifications and inspections upon any failure of a kit assembly, specimen or component to comply with any of the requirements.

4.2.1. Tool box verification.

4.2.1.1. Materials. Verify the tool boxes are manufactured from non-metallic material. Verify the tool boxes are constructed of new parts and materials that are corrosion resistant or suitably processed to resist corrosion. Verify hardware that protrudes into the tool box interior does not present a hazard to users' hands or the tool load. Verify that all materials used in the tool box composition are not toxic chemicals, hazardous substances, or ozone depleting chemicals (ODCs) (see 3.5.1).

4.2.1.2. Weight. Verify the weight limit of the fully loaded tool box is in accordance with MIL-STD-1472, 5.9.11.3.1 & Table XVII, Male and Female, Scenario C: Carry 33 feet as described in Table 2 of this DFP, or by forklift without modification or use of an adapter on the cases (see paragraph 3.5.2).

4.2.1.3. Handles: Verify the handle(s) are rated for not less than 1.5 times the weight of the fully loaded tool box. Verify the handles are installed using mechanical fasteners that cannot be readily removed, such as rivets or screws that cannot be removed with a screwdriver. Verify the number of handles attached to the toolbox corresponds to the number of people required to lift it. (i.e. for a one person lift, no less than 1 handle is required, a two person lift no less than two handles are required, etc.) Verify the handles do not affect the strength and firmness of the case. Verify the handles stop at a 90-degree angle to the face of the case. When a bar type handle is used, verify the clearance for the hand inside the handle is not less than 2 inches by 4.25 inches (see paragraph 3.5.3).

4.2.1.4. Hardware. Verify with objective evidence that all metal hardware on the tool box is corrosion resistant stainless steel, and able to withstand long term exposure under corrosive atmospheric conditions (see paragraph 3.5.4).

4.2.1.5. Color. Verify the tool box is subdued and any of the following colors: dark blue, dark green, black, tan or olive drab (see paragraph 3.5.5).

4.2.1.6. Finish. Verify the exterior surface finish of each tool box is clean, corrosion resistant, non-reflective, non-glossy and contains no sharp edges or projections (see paragraph 3.5.6).

4.2.1.7. Human engineering demonstration. Verify by demonstrating the tool box, including the handle and clasps, can be carried, opened, and closed by a person wearing insulated work gloves. Demonstrate each clasp or latch can be opened and closed using only one gloved hand. Measure the force to open or close the latch to verify it does not exceed 20 pounds. If a bar type handle is used verify the clearance for the hand inside the handle is not less than 2 inches by 4.5 inches. If a recessed, molded type handle is used verify the space provided for the hand is not less than 2 inches (from palm side to knuckle side) by 5.25 inches (thumb side to little finger side) and 0.75 inch clearance for the finger tips (see paragraph 3.5.7).

4.2.1.8. Stack ability. Verify the tool box is designed for stack ability, avoiding the placement of handles, clasps, or other features in such a position as to interfere with stacking with themselves or other items of similar size. Demonstrate the tipping requirement by stacking four fully loaded tool boxes and apply a tipping force, equal to at least 20% (in whole pounds) of one entire fully loaded tool box weight, to the top tool box in any direction. The force shall not cause the tool boxes to fall (see paragraph 3.5.8).

4.2.1.9. Water entry resistance. Verify by testing the tool box for water entry in accordance with test method 512.4 of MIL-STD-810. Prior to conditioning unlatch, open, close and re-latch the tool box no fewer than 10 times. Condition the tool box so that its temperature is no less than 27°C (80.6°F) above the water temperature prior to immersion. Close and fasten the tool box and immerse it in water to a depth of no less than 1 meter (3.28 feet) to the uppermost surface of the tool box for no less than 30 minutes. Tie down the tool box using the handles, tie down points or weighted with other loaded tool boxes stacked upon the test item. Upon removal of the tool box from the immersion dry the exterior of the tool box. Upon removal from immersion, presence of any moisture inside the tool box shall constitute failure to meet this requirement (see paragraph 3.5.9).

4.2.1.10. Impact resistance demonstration. Verify a closed, latched tool box placed in its normal resting position at ambient environment can withstand impacts from falling objects. A steel bar shall be dropped, in free fall, from a height of not less than eight (8) feet. The steel bar shall weigh not less than three (3) pounds, shall have a cross section no larger than 3/16 x 1 inch and shall have an edge radii no larger than 1/16 inch. The bar shall land narrow end down on the tool box. Any damage or effect beyond minor denting of the exterior, such as penetration, shall constitute failure of this requirement (see paragraph 3.5.10).

4.2.1.11. Elevated temperature resistance demonstration. A tool box shall be fully loaded, closed, latched, and stored for a minimum of 3 hours at a temperature of no less than 170°F. Within five (5) minutes after temperature conditioning, the tool box shall be dropped from a height of no less than 36 inches onto a concrete surface. Verify the tool box and components did not sustain any permanent damage or functional degradation. Verify the tool load is not damaged, becoming dislodged or moving freely around in the tool box (see paragraphs 3.5.11 and 3.7.1).

4.2.1.12. Ambient temperature rough handling resistance. Condition the fully loaded tool box for no less than four (4) hours at ambient temperature. Drop the fully loaded tool box four (4) times from 60 inches onto a concrete surface, each time landing on a different one of the four

bottom edges. After being dropped, inspect the locking features and the tool box for proper operation without degradation of performance. The fully loaded tool box shall then be rolled over the floor so its top is on the ground as well as being rolled 360 degrees, four (4) times, once over each side. All this shall be accomplished without sustaining any permanent damage or degradation to the proper functioning of the tool boxes. Verify the tool load is not damaged, becoming dislodged or moving freely around in the tool boxes. Failure of the tool box to withstand being dropped without sustaining damages as described above or failure of the tool organizing liner to retain the tools in position shall constitute failure of this requirement (see paragraphs 3.5.12 and 3.7.1).

4.2.1.13. Cold weather use. A fully loaded tool box shall be stored for three (3) hours at a temperature no warmer than -25 degrees F. Within five (5) minutes after temperature conditioning, the tool box shall be dropped from a height of no less than 24 inches onto a concrete surface. Verify all of the latches, locks and handles operate properly, the lid opens and closes without difficulty and no permanent deformation or breakage of the tool box is observed (see paragraphs 3.5.13 and 3.7.1).

4.2.1.14. Pressure differential compensation. Verify the tool box contains a device that compensates for differential pressures that may develop as a result of changes in temperature or in altitude. The device may be a pressure relief valve. Verify by objective evidence the device does not alter the waterproof, dustproof, or any other design requirement of the tool box (see paragraphs 3.5.14).

4.2.1.15. Security. Verify the tool box includes a locking feature for the entire tool box using one or two padlocks in accordance with Commercial Item Description A-A-59486. Demonstrate with the padlock installed, the tool box locking feature is resistant to intrusion by attempting to pry it open for no less than 2 minutes. Test the strength of the eye through which the padlock fits by applying a pull force of no less than 250 pounds. Verify the tool box includes a means to tether the tool box to a post or pillar by means of a chain or cable that can be run from tool box to tool box and then locked with a padlock. Test the tethering features strength by applying a pull of no less than 250 pounds. If a securely attached handle that can be used for this purpose is not included in the design of the tool box, then another feature shall be provided that will serve this purpose. Verify if more than one padlock for the entire set is used, all padlocks are keyed alike (see paragraph 3.5.15).

4.2.1.16. Rapid Inventory. Demonstrate the storage methods employed enable the operator to verify all items are present and secured in their designated storage locations within ten minutes. Remove one (1) tool at random and verify an operator can identify it within five (5) minutes. Verify each component is permanently marked with its corresponding part number from the manufacturer in accordance with customary commercial practice. In the absence of a manufacturer's marking, verify a label containing no less than the component part number is securely fastened to the component for initial inventory purposes (see paragraphs 3.5.16, 3.7.1 and 3.7.3).

4.2.1.17. Proximate Storage. Verify the components are assembled into layers with cut outs for each individual tool. Verify in the case where more than one layer is necessary, each

layer has handles, straps, ties or some other device to aid in layer removal. Demonstrate the handles, straps, ties, or some other device is of correct length and position to facilitate the ease of layer removal. Verify layers do not protrude past the interior edges of the tool box (see paragraph 3.7.2).

4.2.1.18. Organizers. Verify that if foam is used, it is closed cell and has a water absorption limit of no more than 0.020 lbs/ft^2 over cut surfaces when tested in accordance with ASTM D3575. Verify the organizing liner provides contrasting color underneath the tools to aid in rapid inventory. Verify if stacking organizing liners within the tool box, each organizing liner has a rigid bottom strong enough to hold the tools positioned within the layer as well as handles, ties, ropes, or some other device to aid in the removal of each layer. Verify with objective evidence the materials used in the tool organizing liner are resistant to water, refrigerants, automotive oils, greases, lubricants, fuels (including gasoline, diesel fuel, JP-8 and JP-4), acids, bases, coolants, aircraft hydraulic fluid, alcohols and cleaning agents. Verify each retention feature is smooth and free from rough edges (see paragraph 3.7.3).

4.3. Conformance inspection. Conformance inspection shall be performed on the initial units inspected during the Product Performance Verification (see paragraph 4.2) and on production units being offered for acceptance under the contract. These inspections shall include all verifications listed under paragraph 4.3 and shall be limited to the examination of product to verify compliance with design requirements established during product performance verification.

4.3.1. Inspection lot formation. Inspection lots shall be formed in accordance with Section 4 of MIL-STD-1916.

4.3.1.1. Sampling plan determination. Sampling inspections shall be conducted in accordance with MIL-STD-1916 using Verification Level I.

4.3.1.2. Rejection: Failure of any unit to pass any verification requirement shall be cause for rejection of the lot.

4.3.2. Product examination. Visually, dimensionally, and manually examine each set to determine conformance with the requirements. Visual examination shall include verification of completeness of manufacture and assembly, proper cleaning, and freedom from defects. Dimensional examination includes measuring dimensions as specified and weighing the unit. Manual examinations shall include the operation of movable parts by hand to assure proper functioning (see paragraphs 3.4 thru 3.4.86).

4.3.3. Components and related items of the tool set. Verify the tool set is furnished with all the components and corresponding quantities as indicated in Table 1 (see paragraphs 3.4, 3.6 and 3.6.1).

4.3.4. Industrial quality components. Verify the components supplied with the sets are industrial quality. Verify the tools are commercially marketed and manufactured for constant, rigorous, industrial or professional environment use, and have demonstrated market acceptance.

Verify the components provided conform to industrial standards through substantial evidence of sales to industrial customers (see paragraph 3.2).

4.3.5. Workmanship. Verify the quality of workmanship imparted to the tool sets equal or exceed that typically provided to domestically produced, commercial tool boxes of these types. Verify the sets presented for acceptance have been manufactured with skill and care; uniform, neat, and clean; and free from irregularities and anomalies which degrade form, fit, function, performance or appearance (see paragraph 3.9.4).

4.3.6. Plates and Labels. Verify all identification, warning and instruction plates and labels are permanently affixed to the tool box. Verify data plate contains the information as described in paragraphs 3.9.1 and 3.9.2, including all information required to be inserted in the blanks indicated. Verify all plates and labels are printed using the English language or are supplemented by graphical symbols (see paragraphs 3.9.1 and 3.9.2).

4.3.7. Safety Lift Hazards. Verify caution signs are provided for all items that exceed the safe limits for a single person to lift using both hands and conform to ANSI Z535.4 (see paragraphs 3.5.2.1, 3.5.2.2 and 3.8.1).

4.3.8. Marking verifications:

4.3.8.1. Tool Layout. Verify a diagram showing the location and part number of each component in its loaded position is provided with each tool box and permanently affixed to the inside of the lid. Verify the manner in which the diagram is permanently affixed to the inside of the lid does not inhibit the ability to open or close the container. Verify the diagram is water and dust resistant and durable (see paragraph 3.7.4.1).

4.3.8.2. Warranty Information. Verify warranty information for the tools and the tool box is permanently affixed to the inside of the lid of the tool box. Verify the warranty information includes the information described in paragraph 3.7.4.2 (see paragraphs 3.3, 3.7.4.2).

4.3.8.3. Non-Warranty. Verify for the non-warranty ordering of replacement tools from the contractor, the procedures as determined by the contractor (including phone number, web site and email address if they are applicable) is provided separately or included with or near the warranty information. Verify all information is provided on a permanent, water resistant, scuff resistant label, which is permanently affixed to the inside of the lid of the tool box (see paragraph 3.7.4.3).

4.3.9. Packaging. Verify that unit packaging, unit package markings, shipping containers, shipping container markings, packing lists, quality certification heat treatment markings and unitization requirements are in accordance with Section D of the contract. Failure to comply with the requirements may be cause for rejection.

4.4. Changes to materials, processes, or configuration. The contracting officer shall be informed of any changes to the materials, processes, or configuration of any characteristic of the

sets. The contracting officer shall determine if the reported changes to materials, processes, or configuration shall require additional verifications.

4.5. Conformance of subsequent production quantity. All products offered for acceptance throughout the life of the contract shall conform to all of the requirements of the contract. The Government reserves the right to re-verify conformance with requirements at any time during the life of the contract whenever there is a lapse in production for a period in excess of one year; or whenever a change occurs in place of performance, manufacturing process, material used, specification, or source of supply and return to the contractor for warranty replacement such product that does not conform to the specified requirements. When any of the conditions above occur, the Contractor shall notify the Contracting Officer so that a determination can be made concerning the need for additional product performance verification and conformance inspections. Costs of any additional testing and inspection shall be borne by the Contractor, unless the change was directed by the Government. Further, any production delays caused by additional testing and inspection will not be the basis for an excusable delay as defined in FAR 52.212-4 of this contract. Such delays shall not form the basis for adjustment in contract price or delivery schedule.

5. PRESERVATION, PACKING AND PACKAGING

Section 5 shall be in accordance with Section D of the contract.