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AVIS

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**MANUFACTURING DATA
FOR
JACKET, WET WEATHER, MULTICAM®**

1.0 SCOPE

1.1 Scope

This Manufacturing Data covers the materials, design and construction requirements for the Jacket, Wet Weather, MULTICAM® for use by the Canadian Special Operations Forces Command (CANSOFCOM).

1.2 Intended Use

This Jacket, Wet Weather, MULTICAM® is worn with the Trousers, Wet Weather, MULTICAM®.

1.3 Classification

The Jackets will be supplied in one (1) of the following types as specified in the Contract:

- (a) Type I - Jacket, Wet Weather, MULTICAM® - Cloth, Nylon, Trilaminare, Waterproof Moisture Vapour Permeable (WMVP), MULTICAM®; and
- (b) Type II - Jacket, Wet Weather, MULTICAM®, Government Supplied Material.

2.0 GENERAL

2.1 Intellectual Property

The information, data, know-how, formulas, algorithms, software, processes, systems, methods, designs, text, works, figures, tables, sketches, photographs, plans, drawings, specifications, samples, reports, names, inventions and/or ideas contained herein (hereinafter "Intellectual Property") is the exclusive property of Her Majesty The Queen in Right of Canada as represented by the Minister of National Defence (hereinafter referred as "DND"). No one has the right to reproduce, disclose, disseminate, or utilize, in any manner or in any form, this Intellectual Property, or any part thereof, without the prior written consent of DND. For further information on the restrictions applicable to this Intellectual Property, or to request consent from DND, please contact the Contracting Authority.

2.2 Applicable Documents

The following documents form part of this Manufacturing Data to the extent specified, and are supportive of this Manufacturing Data when referenced; all other document references are to be considered supplemental information only. In the event of a conflict between the documents referenced and the contents of this Manufacturing Data, then the contents of this Manufacturing Data must take precedence:

DND Specifications and Standards (provided upon request)

- D-80-001-055/SF-001 Specification for Label, Clothing and Equipment
- D-83-001-005/SF-001 Specification for Fastener, Slide, Interlocking
- D-LM-008-002/SF-001 Specification for Marking for Storage and Shipment

DND Drawings (provided upon request)

- CS-149 Socket, Fastener
- CS-150 Studs, Fastener
- CS-151 Eyelet, Fastener
- CS-153 Button, Fastener

CAN/CGSB Standards (email: ncr.cgsb-ongc@pwgsc.gc.ca)

- CAN/CGSB-4.131-M Cotton-Covered or Polyester-Covered, Polyester Thread
- CAN/CGSB-54.1-M Stitches and Seams, Parts I and II
- CAN/CGSB-86.1-2003 Care Labelling of Textiles

FED Standards (Download Documents: <http://assist.daps.dla.mil/quicksearch/>)

- A-A-55126B Commercial Item Description - Fastener Tapes, Hook and Loop, Synthetic
- FED-STD-595C - Colors Used in Government Procurement

2.2.1 Order of Precedence

The order of preference is as follows:

- (a) In the event of inconsistency between contract documents, such as contract, Manufacturing Data, drawing and sealed pattern, the order of precedence shall be contract, Manufacturing Data, drawing and sealed patterns;
- (b) In the event of a conflict between the text of this manufacturing data and the references cited herein, the text of this manufacturing data must take precedence;
- (c) In the event of inconsistency within this manufacturing data, the Contracting Authority must be contacted for clarification; and
- (d) Nothing in this document supersedes applicable laws and regulations, unless a specific exemption has been obtained.

2.3 Material Standards

The following material standards are supplemental to this standard:

- (a) Specification for Cloth, Nylon, Trilaminate, Waterproof Moisture Vapour Permeable (WMVP), MULTICAM®;
- (b) Specification for Cloth, Nylon, Polyurethane Coated, MULTICAM®; and
- (c) Specification for Cloth, Taffeta, Nylon.

2.4 Definitions

Earth Tone	By definition, earth tone is considered a color scheme that draws from a color palette of browns, tans, grays, greens, oranges, whites and some reds. The colors in an earth tone scheme are muted and flat in an emulation of the natural colors found in soils, moss, trees and rocks. For the purpose of this specification, the earth tone color (where specified) must be based on the predominantly brown, tan and gray color series (lusterless) within FED STD-595C, where those colors do not include any elements of orange, red and white.
Hook and Loop Fastener	A fastening consisting of two strips of nylon fabric, one having hooked threads and the other a coarse surface, that form a strong bond when pressed together, trademarked under the name VELCRO®.
MULTICAM®	A proprietary design for a computer generated digital camouflage pattern patented by Crye Precision Ltd.
Slide Fastener	A fastener for locking together two toothed edges by means of a sliding tab, commonly referred to as a zipper.

2.5 Layout Sketches

Schematic layout sketches for the Jackets are included as part of this Annex. The sketches are designed to provide a general layout of the Jackets only. They are not to scale and are not representative of the style, fit, colour scheme or form of the final garment. The following sketches are included in Appendix 1:

- (a) Figure 1: Front View;
- (b) Figure 2: Back View;
- (c) Figure 3: Detachable Hood Details;
- (d) Figure 4: Right Side of Jacket – Inside View – Side Suppression System;
- (e) Figure 5: Finished Dimensions of Garment Components;
- (f) Figure 6: Finished Dimensions of Lower Semi-Cargo and Sleeve Pockets;
- (g) Figure 7: Underarm Ventilation System;
- (h) Figure 8: Hidden Front Chest Pockets and Sleeve Lining Details;
- (i) Figure 9: Marking and Care Label;

2.6 Patterns

DND will provide patterns as follows:

- (a) Sealed pattern: CANSOFCOM - Jacket, Wet Weather, MULTICAM® (Sealed for construction and design only); and
- (b) Paper patterns - DSSPM paper patterns for all sizes under Style Code JHWWAS06 - Converged Jacket, Hot/Wet Weather, Windbreaker, Static Dissipative. Size 7040 (Regular/Medium) will be used for tendering purposes.

Note: The paper patterns for the Converged Jacket, Hot/Wet Weather, Windbreaker, Static Dissipative are to be used for the construction of the Jacket, Wet Weather, MULTICAM®. The paper patterns have the following deviations:

- The strap for the rank slip-on on the front of the jacket has been deleted and replaced by a loop fastener patch;
- The reflector tape assemblies on the front and rear of the chest have been deleted;
- The ear defender retaining tabs in the cargo pockets have been deleted; and
- The communication device pass-through in each shoulder pocket have been deleted.

3.0 **REQUIREMENTS**

3.1 Design

The design must be in accordance with Sealed Patterns and incorporate the following features:

- (a) Front and back venting yokes;
- (b) Front closure with slide fastener and fly system;
- (c) Stand-up collar;
- (d) Detachable hood;
- (e) Two (2) front hidden pockets for hood and pencil/pen storage;
- (f) Rank tab on outside front fly;
- (g) Drawcord in waist and hem;
- (h) Side suppression systems with slide fasteners;
- (i) Cargo pockets;
- (j) Angled shoulder pockets;
- (k) Underarm vent with slide fastener closure; and
- (l) Raglan sleeves with hook and loop adjustable closure.

Note: Unless otherwise specified, these garments must be governed by the Scale of Measurements at Appendix 2.

3.2 Materials

The following applies:

- (a) Shell Material - The following applies:
 - i. The shell material for Type I must be Cloth, Nylon, Trilaminate, Waterproof Moisture Vapour Permeable (WMVP), MULTICAM®; and
 - ii. The shell material for Type II must be Government Supplied Material;

- (b) Elbow Reinforcement Patch - The material must be Cloth, Nylon, Polyurethane Coated, MULTICAM®;
- (c) Lining Material - Taffeta - The lining material for the upper portion of the sleeve and material for the pencil pocket must be Cloth, Taffeta, Nylon;
- (d) Lining Material - Mesh - The lining material for the lower portion of the sleeve and upper body and pocket bags for the hidden front chest pockets must be commercially available mesh liner in accordance with Table 1. The mesh must be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;

Table 1: Technical requirements for Mesh Lining Material

Description	100% polyester or 100% nylon tricot knit	
Gauge	28	
Wales	35 per inch	Tolerance: ± 2 per inch
Courses	41 per inch	Tolerance: ± 2 per inch
Weight	115 g/m ²	Tolerance: ± 5%
Shrinkage (length and width)	Tolerance: 3% max	

- (e) Sealing Tape - The sealing tape must be commercially available tape compatible with the shell material. The tape must be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (f) Hook and Loop Fastener Tape - The hook and loop fastener tape must:
 - i. Be plain backed Type I, Class 1, 100% nylon in accordance with A-A-55126B;
 - ii. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern; and
 - iii. Available in the following widths:
 - a. 18 mm (0.75 in);
 - b. 25 mm (1 in);
 - c. 38 mm (1.5 in); and
 - d. 50 mm (2 ins);
- (g) Slide Fasteners - The slide fasteners must be as follows:
 - i. Front closure:
 - a. Be Class 3, Type 9 moulded chain type with a regular pull; and
 - b. Have plastic interlocking members, automatic lock sliders and 100% polyester tape in accordance with D- 83-001-005/SF-001;
 - ii. Side suppression systems:
 - a. Be Class 3, Type 7 moulded chain type with a regular pull; and
 - b. Have plastic interlocking members, automatic lock sliders and 100% polyester tape in accordance with D- 83-001-005/SF-001;
 - iii. Underarm ventilation:
 - a. Be Class 2, Type 11 monofilament (coil) chain type with a regular pull; and
 - b. Have monofilament (coil) members, automatic lock sliders and 100% polyester tape with a polyurethane (PU) coating not less than 2.5 mils thick in accordance with D- 83-001-005/SF-001;
 - iv. Hood:

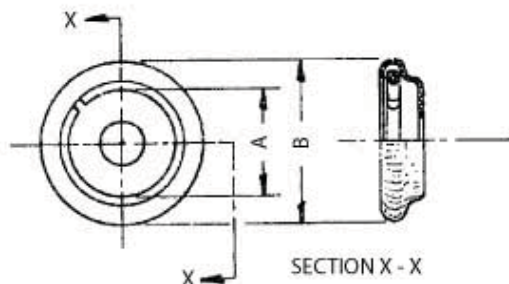
- a. Be Class 3, Type 9 monofilament (coil) chain type with stops at both ends and a regular pull;
 - b. Have an automatic lock slider in accordance with D-83-001-005/SF-001; and
 - c. Be the YKK Canada (3939 Thimens Blvd. St-Laurent, Quebec Tel: (514) 332-3350) Product Number CNFMO 56 5/8, or equivalent;
 - v. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (h) Webbing Tape - The webbing tape must be:
- i. Commercially available webbing, 100% polypropylene; and
 - ii. A non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (i) Herringbone Twill Tape - The herringbone twill tape must be:
- i. Commercially available 100% polyester woven edge twill tape, herringbone weave; and
 - ii. A non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (j) Elastic Cord - The elastic cord must:
- i. Be commercially available elastic cord in accordance with Table 2; and
 - ii. A non-florescent earth tone colour to match the MULTICAM® camouflage pattern;

Table 2: Technical requirements for Elastic Cord

Description	Round elastic looping, polyester covered rubber	
Diameter	3.5 mm	Tolerance: ± 0.2 mm
Cover yarn	600D acetate or polyester	
Sheath	16 carriers	
Core	34's sq. cut rubber, 16 ends	
Picks per centimeter	28.37	
Stretch	190	Tolerance: ± 10%

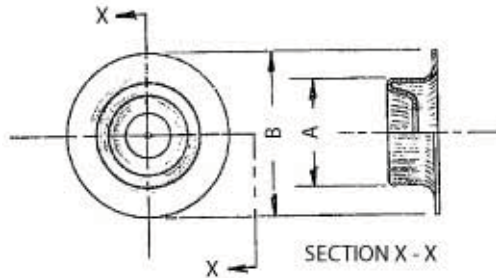
- (k) Drawcord Locks - The drawcord locks must:
- i. Be commercially available, flat type, black acetyl with non-corrosive metal spring and an attachment slot; and
 - ii. Have dimensions as follows:
 - a. Total height relaxed: 35 mm (1.375 in);
 - b. Total height compressed: 25.4 mm (1 in);
 - c. Body height: 19.1 mm (0.75 in);
 - d. Width bottom: 15.8 mm (0.625 in);
 - e. Thickness: 9.5 mm (0.375 in); and
 - f. Attachment slot: 14.4 mm x 1.6 mm (0.5625 in x 0.0625 in);
- (l) Snap Fasteners - Snap fasteners must be black finish with a phosphor bronze spring as detailed in the following drawings:

Drawing 1: CS-149 - Socket Fastener



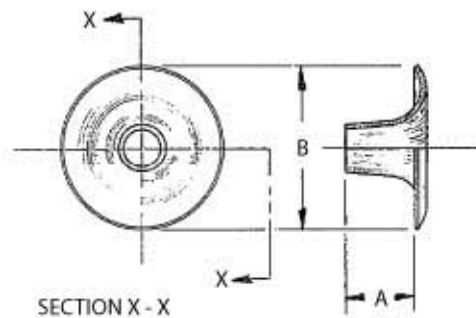
Inside diameter "A"	8.7 mm (0.3425 in)
Outside diameter "B"	14.3 mm 0.5625 in)

Drawing 2: CS-150 - Stud Fastener



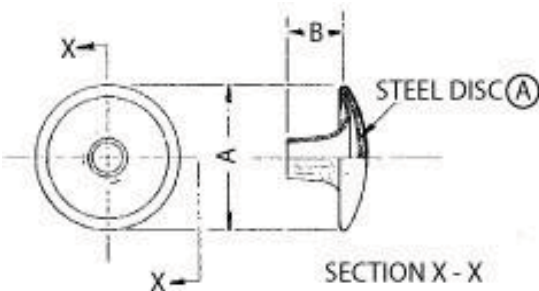
Diameter "A"	9.5 mm (0.375 in)
Diameter "B"	14.3 mm 0.5625 in)

Drawing 3: CS-151 - Eyelet Fastener



Barrel Length Diameter "A"	6.3 mm (0.25 in)
Flange Diameter "B"	14.3 mm (0.5625 in)

Drawing 4: CS-153 - Button Fastener



Diameter "A"	Ligne	24
	Diameter	15.5 mm (0.609 in)
Diameter "B"	Barrel Length	4.4 mm (0.172 in)

- (m) Thread - The following applies:
- i. The thread for seaming, stitching, buttonholes and bartacks must:
 - a. Be cotton-covered or polyester-covered, polyester thread (R50 Tex) conforming to CAN/CGSB-4.131-M; and
 - b. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;

- ii. The thread for serging and/or seaming and serging must:
 - a. Be polyester staple thread (R40 Tex) conforming to CAN/CGSB-4.139; and
 - b. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- iii. Unless otherwise specified, all other garment components must be matched for thread colour;

(n) All material must be sourced and supplied by the Contractor.

3.3 **Sizing**

The Jackets must be available in the following sizes in accordance with the Scale of Measurements at Appendix 2:

Height (in)	Chest (in)					
	32	36	40	44	48	52
64	X	X	X			
67		X	X	X	X	
70		X	X	X	X	X
73		X	X	X	X	X
76			X	X	X	X

Size	Type I - NSN
6432	8415-20-011-7337
6436	8415-20-011-7338
6440	8415-20-011-7339
6736	8415-20-011-7340
6740	8415-20-011-7341
6744	8415-20-011-7342
6748	8415-20-011-7343
7036	8415-20-011-7344
7040	8415-20-011-7345
7044	8415-20-011-7346
7048	8415-20-011-7347
7052	8415-20-011-7348
7336	8415-20-011-7349
7340	8415-20-011-7350
7344	8415-20-011-7351
7348	8415-20-011-7352
7352	8415-20-011-7353
7640	8415-20-011-7354
7644	8415-20-011-7355
7648	8415-20-011-7356
7652	8415-20-011-7357

The Jackets must also be available in special/extended sizes where the above sizes are not suitable.

3.4 Cutting

The following applies:

- (a) The Jackets must be cut using duplicates of Government supplied paper patterns as follows:
 - i. Paper patterns include seam allowance but do not include 'make-up' allowance; and
 - ii. The Contractor is responsible for adding 'make-up' allowance to suit their production methods without changing the design, grade or requirements for the Jackets;

Note: Paper patterns will not be supplied to the Contractor for special/extended sizes.

- (b) The shell parts of the Jackets must:
 - i. Be cut and used in accordance with best commercial standards;
 - ii. Be cut in the direction of the warp as shown on the paper patterns; and
 - iii. Be cut from the same piece of shell material with the exception of the yoke facings, pocket facing and semi-cargo pocket welts, which may be cut from separate lays of ends of shell material.

3.5 Sewing

The following applies:

- (a) Seams must be as follows:
 - i. Conform to CAN/CGSB-54.1-M;
 - ii. Be a minimum of 9.5 mm (0.375 in) wide unless otherwise specified; and
 - iii. Completed using a three-thread serger with not less than ten (10) stitches per 2.5 cm (1 in);
- (b) Stitching must be as follows:
 - i. Be either lock stitched Type 301 or chain stitch Type 401 (unless otherwise specified) conforming to CAN/CGSB-54.1-M, having not less than eight (8) nor more than ten (10) stitches per 2.5 cm (1 in);
 - ii. Ends of all lock stitched seams and stitching, also breaks in thread, securely backstitched; and
 - iii. Present a regular even appearance without fabric pucker and be free from skips that may result from faulty machine thread tension or other stitching malfunctions;
- (c) Where seaming, turning and stitching is specified, the edges must be properly worked out before stitching;
- (d) Where seaming and serging is specified, this may be done in one or two operations;
- (e) Buttonholes must:
 - i. Be gimp reinforced eyelet type with not less than 22 stitches per 2.5 cm (1 in);
 - ii. Have ends fishtailed or bartacked; and
 - iii. Unless otherwise specified, only the eyelet of the buttonhole is to be cut for extrusion of the drawcord;
- (f) Hook and loop fastener tape must:
 - i. Be stitched around all edges 3.2 mm (0.125 in) gauge, taking care to ensure stitching is formed into the hook and loop portion of the tape;

- ii. For tapes wider than 2.5 cm (1 in) stitched around all edges and through the centre or have a 'X' enclosed in the box; and
 - iii. For best results, a ball point needle, size 110 (#18) should be used;
- (g) Bartacks, unless specified otherwise, must be 12.7 mm (0.5 in) long and must have not less than twenty (20) cover stitches.

3.6 Snap Fasteners

When inlaying snap fasteners, reinforcement under the shell material may be added as required. Careful consideration must be given to the attaching force of the snap fastener machine to ensure that all parts of the snap fastener will remain attached and functional for the life of the garment.

3.7 Seam Sealing

When specified, seams must be sealed in a manner which will ensure the integrity of the waterproof barrier layer in the garment. The following requirements must be met:

Table 3: Requirements for Seams, Ends and Joins, Drill Holes and Stitching Lines, and Seamed Areas

Construction Details	Unacceptable Faults
Seams	<ul style="list-style-type: none"> – Tape which is not centered across the width of the seam; – Delamination along edges of tape, over seam allowance and stitching or across the width of the tape; – Bubbling; – Blistering; – Puckering; – Melting; and/or – Ends of threads which have not been trimmed.
Ends and Joins	<ul style="list-style-type: none"> – Loose ends and corners which have not bonded; – Rough edges or beads at the ends; and – An overlap at a join of less than 19.1 mm (0.75 in).
Drill Holes and Stitching Lines (Not in Seams)	<ul style="list-style-type: none"> – Left uncovered without a designated exception.
Stiffness of Seamed Area	<ul style="list-style-type: none"> – Marked increase of stiffness.

3.8 Marking and Care Label

The Jackets must include a Care and Marking Label (see Figure 9), in French and English, as follows:

- (a) A 14.0 cm (5.5 in) long by 8.9 cm (3.5 in) wide label, sewn onto the mesh lining positioned on the left inner side either in the chest area at 12.7 cm (5 in) down from the neck seam and 2.5 cm (1 in) from the zipper seam, or positioned along the lining hem at 2.5 cm (1 in) from the zipper seam, and topstitched around all edges at 3.2 mm (0.125 in) gauge;
- (b) Light sand in colour with black printing in characters not less than 3.2 mm (0.125 in) nor more than 6.4 mm (0.25 in) in height, with the exception of the size identification which must be twice the height;

- (c) Care symbols in accordance with CAN/CGSB-86.1-2003 including the following:
 - i. Table 1 – Washing – Symbol 6;
 - ii. Table 2 – Bleaching – Symbol 3;
 - iii. Table 3 – Drying – Symbol 3;
 - iv. Table 4 – Ironing/Pressing – Symbol 5; and
 - v. Table 5 – Professional Textile Care – Symbol 3;

- (d) Marking label in accordance with D-80-001-055/SF-001 including the following:
 - i. The abbreviated nomenclature:

JACKET, WET WEATHER
BLOUSON IMPERMEABLE

 - ii. NATO Stock Number as required for each size;
 - iii. Size by height and chest;
 - iv. NATO size designation;
 - v. Contract Number;
 - vi. Name of Contractor and/or Sub-Contractor as applicable (no logos or trademarks);
 - vii. Month/Year of manufacture; and
 - viii. Care Symbols (in black ink);

- (e) Include a bar code in accordance with D-LM-008-002/SF-001, Appendix 3 that identifies the NATO stock number.

3.9 Construction

The Jackets are to be manufactured in accordance with the following requirements:

- (a) **General** - The Jackets must consist of a full-length front opening Jacket with full-length arms constructed of the shell material;

- (b) **Collar** - The Jackets must have a high flat collar that rises above the shoulders as follows (see Figure 5):
 - i. Constructed of two (2) plies of shell material as follows:
 - a. Plies seamed together along the ends and upper edge, turned and stitched 1.6 mm (0.0625 in) gauge through all layers;
 - b. Outer layer as follows:
 - 1. Tape portion of two-way slide fastener, without the sliders, centred on the outer collar with the neckline raw edge of the collar and the edge of the fastener tape seamed together;
 - 2. Seamed to the neckline of the jacket with slide fastener tape caught between the shell and collar; and
 - 3. Turned up and stitched at 1.6 mm (0.0625 in) gauge with the body overlapping the collar;
 - c. Include a hanger loop constructed of shell material as follows:
 - 1. Made on an automatic looping machine;
 - 2. Width: 7.9 mm (0.3125 in); and
 - 3. Length: 6.3 cm (2.5 in);
 - d. Inner layer seamed to the neckline of the lining with the hanger loop caught in the seam; and
 - e. Include a throat tab as follows (see Figure 4):
 - 1. Constructed from one (1) ply of shell material; and

2. Folded in half, right side together, seamed across the ends, turned to the outside and stitched at 1.6 mm (0.0625 in) gauge to the right side of the collar and jacket front;
- (c) **Seams** - The Jackets must have seams as follows:
- i. Left and right front seams as follows:
 - a. Include a layer of shell material positioned on each front hem facing piece for drawcord outlets;
 - b. Include a buttonhole on each side, positioned as indicated on the paper patterns, to reinforce the drawcord outlets;
 - c. Raw edge of the hem turned under 6.4 mm (0.25 in) and the front hem facing piece placed over top with the edges turned under 6.4 mm (0.25 in);
 - d. Include the edge of the drawcord in the front hem pieces, with ends protruding from the buttonholes;
 - e. A cordlock and tape assembly positioned directly above the drawcord outlet and stitched in place with the front hem;
 - f. Front hem and the facing pieces stitched at 1.6 mm (0.0625 in) gauge along the hem edge from fly cover to side suppression cover, with the cordlock and tape assembly included in the stitching;
 - g. Drawcord end threaded through the cordlock and tape assembly and knotted;
 - h. The remaining drawcord end caught in the seam at the opposite end ensuring that the fly cover is not caught in this seam; and
 - i. The side edge hem stitched along the edge;
 - ii. Back hem seams as follows:
 - a. Include a layer of shell material positioned on the back hem as indicated on the paper patterns piece for drawcord outlets;
 - b. Include a buttonhole on each side, positioned as indicated on the paper patterns, to reinforce the drawcord outlets;
 - c. Assembles as follows:
 1. With right sides together, the back hem facing pieces sewn together to form one piece;
 2. Raw edge of the back piece turned under 6.4 mm (0.25 in) and the back hem facing piece placed over top with the edges turned under 6.4 mm (0.25 in);
 3. Drawcord laced through the centre buttonholes and included in the hem, with the ends protruding from the side end buttonholes;
 4. Two (2) cordlock and tape assemblies (one (1) on each side) positioned directly above each drawcord outlet and stitched in place with the back hem;
 5. Back hem stitched at 1.6 mm (0.0625 in) gauge along edge and both ends, with the end of the webbing tape (of the drawcord and tape assembly) caught in this seam;
 6. Ends of the drawcord threaded through the cordlocks and knotted; and
 7. Include a male snap fastener on each side, positioned as indicated on the paper patterns, inlaid trough all layers, facing outward;
 - iii. Include a shock cord holder at the bottom of the right front seam as follows:
 - a. Constructed from the following:
 1. One (1) piece of webbing measuring 11.4 cm (4.5 in) long by 19.1 mm (0.75 in) wide with heat sealed edges; and
 2. One (1) piece of hook fastener tape measuring 7.6 cm (3 in) long by 19.1 mm (0.75 in) wide;

- b. Assembled as follows:
 - 1. With one (1) raw edge of the webbing piece folded back 1.3 cm (0.5 in), place the piece of hook fastener tape 6.4 mm (0.25 in) from the folded edge, then stitch the hook fastener tape to the webbing around all edges; and
 - 2. The webbing and hook fastener tape assembly is placed at the bottom of the right front hem, as shown on the sealed sample, and stitched all around the edges through all plies with the raw edge of the webbing caught in this seam, then the seam is sealed;

- (d) **Lining** - The Jackets must have a lining as follows (see Figure 4):
 - i. Front and back mesh seamed and serged at the sides;
 - ii. Marking and care label will be sewn onto the mesh lining as follows:
 - a. Positioned on the left side either in the chest area at 12.7 cm (5 in) down from the neck seam and 2.5 cm (1 in) from the zipper seam, or positioned along the lining hem at 2.5 cm (1 in) from the zipper seam; and
 - b. Topstitched 3.2 mm (0.125 in) gauge onto the mesh lining;
 - iii. Hem facing sewn to the bottom edge of the mesh lining front and back, turned under and stitched at 6.4 mm (0.25 in) gauge;
 - iv. Raw edge folded under and stitched at 3.2 mm (0.125 in) gauge;
 - v. Tricot and mesh sleeve lining seamed and serged together, with the sleeve lining joined to the front and back mesh in one continuous operation;
 - vi. With the right sides together, the shell and lining seamed together along the collar edge and centre front;
 - vii. Shell and lining turned right side out and stitched at 3.2 mm (0.125 in) gauge around outer edges of the centre front and collar; and
 - viii. Include lining retainer tabs as follows:
 - a. Retainer tabs made of shell material measuring 2.5 cm (1 in) long by 10 cm (4 in) wide centred on the underside of each side seam at the waistline and stitched to the shell along the bottom edge at 9.5 mm (0.375 in); and
 - b. The raw edge of the lining retainer tabs/stays folded under and stitched to the lining facing at 3.2 mm (0.125 in) gauge;

- (e) **Front Yoke** - The Jackets must have a front left and right yokes as follows (see Figure 4):
 - i. Include a closure for each side as follows:
 - a. A piece of loop fastener tape measuring 2.5 cm (1 in) long by 19.1 mm (0.75 in) wide centred on the face side of the front yoke facing pieces, as indicated on the paper patterns, and stitched around all edges; and
 - b. A corresponding piece of hook fastener tape measuring 2.5 cm (1 in) long by 19.1 mm (0.75 in) wide on the front of the jacket and stitched around all edges affecting proper closure with the yoke;

- (f) **Front Closure** - The Jackets must have a slide fastener front closure with a fly as follows:
 - i. Left front facing as follows:
 - a. The left side of the slide fastener tape placed on the left centre front and stitched into place along the entire length;
 - b. Include the throat tab in this seam, placed in line with the top of the slide fastener tape as shown on the paper patterns; and
 - c. Include a fly cover as follows:
 - 1. Constructed from two (2) plies of shell material;
 - 2. Inner layer inlaid with five (5) female snap fasteners as follows:

- a. Each fastener reinforced with two (2) plies of shell material; and
 - b. Positioned as indicated on the paper patterns;
 3. With right sides together, the inner and outer layers seamed along the edge and across the ends, turned and stitched at 1.6 mm (0.0625 in) gauge; and
 4. Placed on the left front, as indicated on the paper patterns, and double stitched at 6.4 mm (0.25 in) gauge, then folded over and stitched at 6.4 mm (0.25 in) gauge, ensuring that the pocket bag is not caught in the seam, then sealed;
 - ii. Right front facing as follows:
 - a. The right side of the slide fastener tape placed on the right centre front and stitched into place along the entire length; and
 - b. Include a fly cover as follows:
 1. Constructed from one (1) ply of shell material;
 2. With right sides together, the fly cover is folded in half and seamed across the ends, turned and stitched at 1.6 mm (0.0625 in) gauge;
 3. Inlaid through both layers with five (5) female snap fasteners, positioned as indicated on the paper patterns; and
 4. Placed on the right front, as indicated on the paper patterns, and double stitched at 6.4 mm (0.25 in) gauge, then folded over and stitched at 6.4 mm (0.25 in) gauge, then sealed;
- (g) **Back Yoke** - The Jackets must have a back left and right yokes as follows (see Figure 3):
 - i. Include a closure for each side as follows:
 - a. A piece of loop fastener tape measuring 2.5 cm (1 in) long by 19.1 mm (0.75 in) wide centred on the face side of the back yoke facing pieces, as indicated on the paper patterns, and stitched around all edges; and
 - b. A corresponding piece of hook fastener tape measuring 2.5 cm (1 in) long by 19.1 mm (0.75 in) wide on the back of the jacket and stitched around all edges affecting proper closure with the yoke;
- (h) **Sleeves** - The Jackets must have raglan sleeves with elbow patches as follows:
 - i. Constructed from one (1) ply of shell material with interior tricot and mesh sleeve lining;
 - ii. Sleeve shell and sleeve lining finish at hem as follows:
 - a. With right sides together, the sleeve hems must be seamed together and turned right side out; and
 - b. The shell turned in 22.2 mm (0.875 in) and stitched through all plies at 19.1 mm (0.75 in) gauge with the stitching starting and finishing at the underarm seam, ensuring the cuff suppression tab is not caught in the seam;
 - iii. Sleeves seamed to their respective armholes and stitched at 1.6 mm (0.0625 in) with the sleeve overlapping the body, then sealed;
 - iv. Include elbow reinforcement patches as follows:
 - a. Each elbow patch placed on their respective sleeve, face up with raw edges folded under and double-needle stitched to the sleeve; and
 - b. Stitching sealed on the underside of the shell fabric;
 - v. Include a cuff suppression tab as follows:
 - a. Finished size 3.5 cm (1.38 in) wide by 9 cm (3.5 in) long constructed from one (1) ply of shell material as follows:
 1. Tab folded in half, right sides together, seamed across the ends, turned right side out and stitched at 1.6 mm (0.0625 in) gauge; and

- i. Underarm vent opening on the front portion of the garment to be properly worked out;
 - ii. A two-way water resistant slide fastener (with the polyurethane coating facing inside) that is 41.3 cm (16.25 in) long is to be centred under the vent opening and double-needle stitched across each end and front edge; and
 - iii. Underarm seam and side seams as follows:
 - a. Front and back joined along the underarm vent and yoke seam in one continuous operation with the back tape of the slide fastener on the underarm venting system caught in this seam;
 - b. Cuff suppression tab also included in this seam, placed at an angle to affect proper closure with loop fastener tape on the outer side of the cuff (tab may be stitched to the seam prior to joining the sleeve together); and
 - c. All seams sealed;
- (k) **Pockets** - The Jackets must have pockets as follows:
- i. **Semi-Cargo Pockets** - A patch pocket with side accessible hand warmer pocket on the front of each hip as follows (see Figure 6):
 - a. Constructed of one (1) ply of shell material;
 - b. Finish measurements of 17.8 cm (7 in) wide by 19.0 cm (7.5 in) high (bottom to base of flap);
 - c. Include a pleat as follows:
 - 1. Measuring 12.7 mm (0.5 in) placed at the upper and lower corners, 2.5 cm (1 in) from outer edge; and
 - 2. Folded towards the side seam, on the outside of the pocket and stitched in place;
 - d. Include two (2) pieces of hook fastener tape measuring 5.0 cm (2 in) long by 19.1 mm (0.75 in) wide stitched around all edges to the top of the pocket, positioned as marked on the paper patterns to correspond to the loop fastener tape patches on the pocket flap;
 - e. Include a pocket welt as follows:
 - 1. Constructed from one (1) ply of shell material seamed to the wrong side of the pocket top; and
 - 2. Turned, folded in half with raw edge folded under 12.7 mm (0.5 in) and stitched at 1.6 mm (0.0625 in) gauge;
 - f. Include a hand warmer pocket as follows:
 - 1. Lined with shell material with the knit portion of the fabric next-to-hand as shown on the sealed patterns;
 - 2. Placed over the pocket and seamed along the outer edge up to the welt;
 - 3. Turned right side out and stitched at 3.2 mm (0.125 in) gauge;
 - 4. Clipped to the seam and folded under at the welt; and
 - 5. Remaining edges stitched together at 6.4 mm (0.25 in) gauge;
 - g. Include a flap assembly as follows:
 - 1. Constructed from one (1) ply of shell material;
 - 2. Include two (2) pieces of loop fastener tape measuring 5.0 cm (2 in) long by 19.1 mm (0.75 in) wide stitched around all edges to the underside of the flap, positioned to correspond to the hook fastener tape patches on the pocket; and
 - 3. Folded in half, right sides together, seamed across the ends, turned and stitched along three edges at 3.2 mm (0.125 in) gauge;
 - 4. Raw edges of the flaps stitched together at 4.8 mm (0.1875 in) gauge including the ear defender tab;

5. Flap then placed over the pocket assembly with edges together and pocket lining seam allowance folded under, then flap and pocket lining seamed at 4.8 mm (0.1875 in) gauge; and
6. Both ends of the welt folded under and securely backstitched or bartacked to the pocket flap through all layers;
- h. Assembly attached to the Jacket as follows:
 1. Positioned and centred to their respective fronts with raw edges folded under;
 2. Bottom inner corner folded under into a 45° angle;
 3. Stitched at 1.6 mm (0.0625 in) gauge as follows:
 - a. Start from the bottom of the welt for a distance of 12.7 mm (0.5 in) on the outer side of the pocket;
 - b. Leaving a 15.0 cm (6 in) opening, stitching continues on the outer side and bottom of pocket and stops at the 45° inner corner;
 - c. Stitching continues on the inner side of the pocket directly above the 45° corner and stops at the bottom of the welt; and
 - d. All stitching sealed;
 4. Flap stitched across the top to the Jacket front at 6.4 mm (0.25 in) gauge taking care to ensure flaps affect proper closure with pockets, then sealed;
- ii. Sleeve Pockets - Angled semi-bellow pockets on the upper exterior portion of each sleeve as follows (see Figure 6):
 - a. Constructed from one (1) ply of shell material;
 - b. Finish measurements of 11.4 cm (4.5 in) wide (welt flat) by 17.8 cm (7 in) high (bottom to base of flap);
 - c. Top of the pocket folded 4.8 mm (0.375 in), folded again 2.5 cm (1 in), and sewn at 3.2 mm (0.125 in) gauge;
 - d. Pleat placed from the edge on the pocket welt to the bottom of the pocket and across the bottom of the pocket and sewn;
 - e. At the lower pocket corner, the side and bottom welt seamed at 6.4 mm (0.25 in) gauge;
 - f. Side and bottom welts folded and topstitched at 3.2 mm (0.125 in) gauge;
 - g. Include two (2) buttonhole eyelets on the bottom welt as indicated on the paper patterns;
 - h. Include one (1) piece of loop fastener tape measuring 10 cm (4 in) wide by 17.0 cm (6.75 in) high centred on the pocket front and sewn around all edges (Note: Two (2) side by side pieces that are 5 cm (2 in) wide is acceptable);
 - i. Include a pocket flap as follows:
 1. Constructed from one (1) ply of shell material;
 2. Folded in half, right sides together, seamed across the ends, turned and stitched along three edges at 3.2 mm (0.125 in) gauge;
 3. Include one (1) piece of loop fastener tape measuring 10 cm (4 in) long by 5.1 cm (2 in) wide centred width wise on the front of the pocket flap and stitched around all edges;
 4. Include a piece of webbing measuring 10.2 cm (4 in) long by 2.5 cm (1 in) wide heat fused at both ends and folded in half to create a tab; and
 5. Include one (1) piece of loop fastener tape measuring 10 cm (4 in) long by 19.1 mm (0.75 in) wide positioned on the lower inner side of the flap, centred and stitched all around the edges with the ends of the webbing tab included in the topmost stitches;

- j. Attached to the Jacket as follows:
 - 1. Sleeve pockets positioned on their respective sleeves with the raw edges folded under, seamed at 1.6 mm (0.0625 in) gauge and sealed;
 - 2. Top corners of the pocket secured with backstitching or bartacks; and
 - 3. Pocket flap placed above the sleeve pocket assembly and with the edges together and folded under 6.4 mm (0.25 in), the flap e seamed at 4.8 mm (0.375 in) gauge and sealed;
- iii. **Hidden Front Chest Pockets** - Hidden pockets on the upper interior portion of the left and right sides of the chest as follows (see Figure 8):
 - a. Include a bottom pocket bag as follows:
 - 1. A pocket facing (made from shell material) placed on the bottom pocket bag (made from mesh material), raw edge folded under and stitched at 1.6 mm (0.0625 in) gauge;
 - 2. A piece of hook fastener tape measuring 5.0 cm (2 in) long by 19.1 mm (0.74 in) wide centred onto the facing and stitched around all edges; and
 - 3. Include a pencil pocket made of lining material on the bottom pocket bag as follows:
 - a. The top of the pencil pocket folded under for 2.5 cm (1 in), raw edge folded under and stitched at 1.6 mm (0.0625 in) gauge;
 - b. The outside and bottom edge turned under and stitched to the pocket bag at 1.6 mm (0.0625 in) gauge with the top corner securely backstitched; and
 - c. Include a row of stitching centered on the pocket parallel to the edge, securely backstitched, to create two (2) pockets;
 - b. Include a top pocket bag as follows:
 - 1. A pocket facing (made from shell material) placed on the top pocket bag (made from mesh material), raw edge folded under and stitched at 1.6 mm (0.0625 in) gauge; and
 - 2. A piece of loop fastener tape measuring 5.0 cm (2 in) long by 19.1 mm (0.74 in) wide centred onto the facing and stitched around all edges ensuring the loop fastener tape will affect proper closure with the hook fastener tape on the bottom pocket bag;
 - c. Top and bottom bag seamed and serged together along the raw edge then stitched into the front closure seams;
- (l) **Hook and Loop Fastener Tape Patches** - The Jackets must have hook and loop tape fastener patches as follows (see Figure 5):
 - i. **Name Tape Patch** - A piece of loop fastener tape measuring 15.2 cm (6 in) long by 2.5 cm (1 in) wide positioned on the bottom of the right side front yoke piece, as indicated by the paper patterns, and stitched around all edges; and
 - ii. **Rank Patch** - As follows:
 - a. Constructed from one (1) piece of loop fastener tape 9 cm (3.5 in) long by 5 cm (2 in) wide;
 - b. Centred horizontally onto the outer left fly cover with the top of the patch positioned 22.8 cm (9 in) below the top of the fly; and
 - c. Stitched to the outer layer of the fly around all edges and through the centre (i.e., have an 'X' enclosed in the box);
- (m) **Waist Suppression** - The Jackets must have a waist suppression system as follows (see Figure 4):
 - i. A drawcord waist channel as follows:

- a. Include two (2) buttonholes for drawcord outlets positioned on the front waist as indicated on paper patterns and reinforced with a layer of shell fabric;
 - b. Drawcord placed over the waist area channel and extracted to the inside through the buttonholes;
 - c. Channel centred evenly along the waistline, on the outside shell;
 - d. Top and bottom raw edges folded under and stitched at 3.2 mm (0.125 in) gauge and sealed, with the drawcord included in the channel but not caught in any stitching; and
 - e. The top edges of the Semi-Cargo Pocket flaps on each front hip included in the bottom stitching of the drawcord waist channel;
 - ii. A cordlock and tape assembly as follows:
 - a. Two (2) cordlock and twill tape assemblies as follows:
 - 1. A piece of herringbone twill tape measuring 5.0 cm (2 in) long by 12.7 mm (0.5 in) wide threaded through each lock attachment slot forming a retaining tape loop; and
 - 2. Ends of the twill tape stitched together;
 - b. Assemblies positioned on either end of the drawcord at the outlets and stitched in place; and
 - c. Drawcord ends threaded through the cordlocks and knotted;
- (n) **Removable Hood** - The Jackets must have a removable hood as follows (see Figure 3):
- i. With right sides together, the upper back hood and lower back hood pieces seamed and stitched at 1.6 mm (0.0625 in) gauge, with the upper piece overlapping the lower piece, then sealed;
 - ii. Include a hood retaining system as follows:
 - a. A piece of loop fastener tape (hood retaining strap) measuring 24 cm (9.5 in) long by 19.1 mm (0.75 in) wide centred and included in the seam created when joining the upper back hood and lower back hood such that the tape hangs vertically; and
 - b. A piece of hook fastener tape measuring 5.0 cm (2 in) long by 19.1 mm (0.75 in) wide centred on the outer bottom side of the lower back hood piece at the neckline as shown on the pattern piece, stitched around all edges then sealed, ensuring the hook fastener tape corresponds with the loop tape hood retaining strap;
 - iii. With the right sides together, the left and right hood side shell pieces and the combined upper and lower back hood piece seamed, turned and stitched at 1.6 mm (0.0625 in) gauge, with the upper and lower back hood piece must overlapping the sides, then sealed;
 - iv. Each bottom outer corner of the left and right hood side shell pieces to include a buttonhole reinforced with a layer of shell material, positioned as shown on the pattern pieces;
 - v. Include a bottom hood facing as follows:
 - a. With right sides together, the bottom hood facing pieces seamed and turned; and
 - b. Bottom hood facing piece underside (knit portion) seamed at 9.5 mm (0.375 in) gauge to the hood front channel;
 - vi. Include a front hood facing as follows:
 - a. Include an elastic cord encased in the nylon hood channel piece;
 - b. With right sides together, the hood front facing, the nylon hood channel, and hood front channel pieces seamed and stitched at 9.5 mm (0.375 in) gauge;
 - c. With the ends of the drawcord protruding from the buttonholes and a cordlock and twill tape assembly positioned on each end, this piece is the sewn to the

- hood with the edge of the cordlock twill tape caught in the seam of the hood and facing pieces; and
- d. Assembly turned right side out, and stitched at 1.6 mm (0.0625 in) gauge all around;
- vii. Include a slide fastener as follows:
 - a. Tape portion of two-way slide fastener, with the sliders, placed inside the neck edge of the hood; and
 - b. Fastener tape placed face down with the teeth 15.9 mm (0.625 in) from the bottom edge of the hood and double needle stitched, with the bottom hood facing caught in this seam.

APPENDIX 1 LAYOUT SKETCHES

Figure 1: Front View

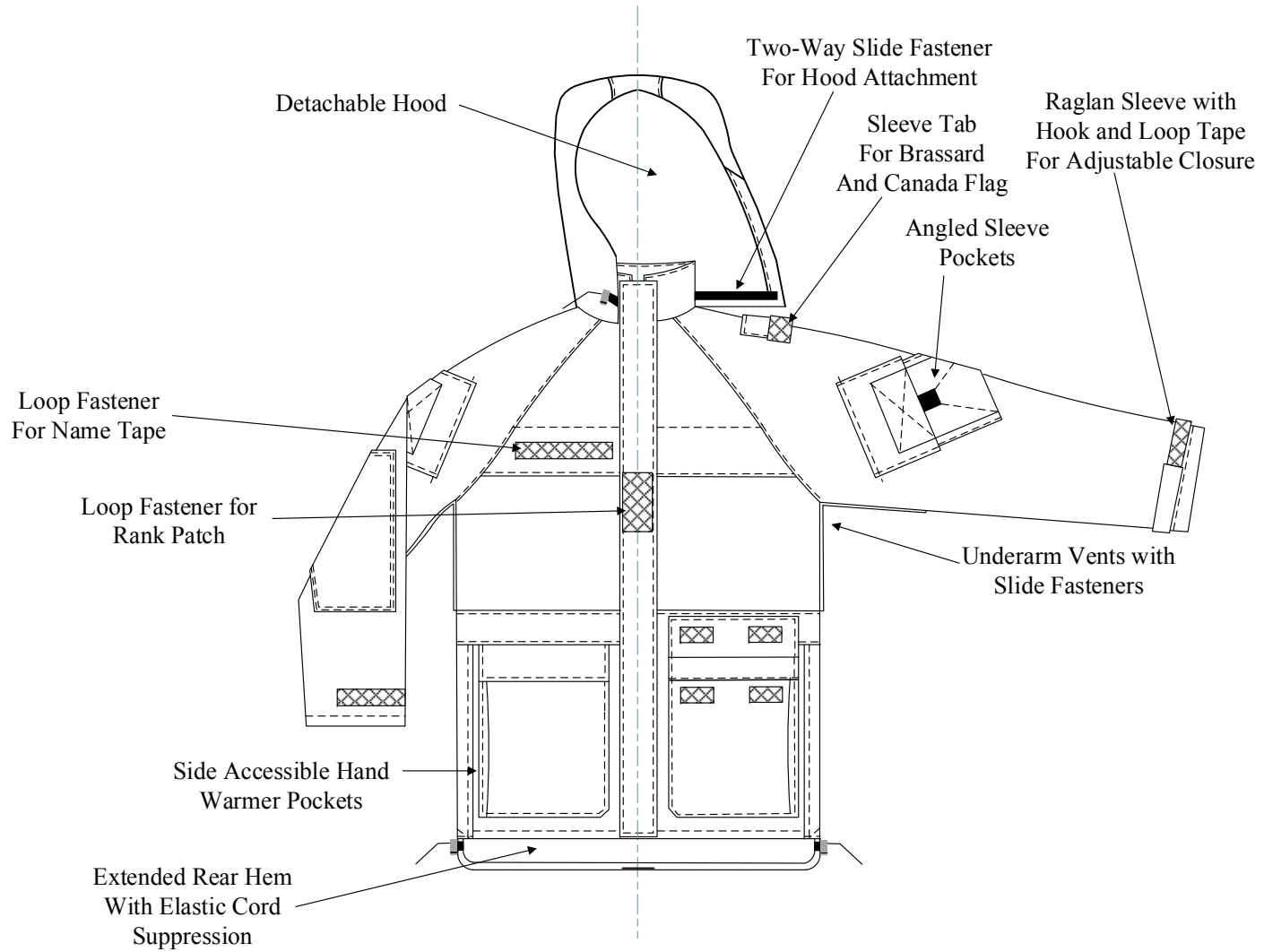


Figure 2: Back View

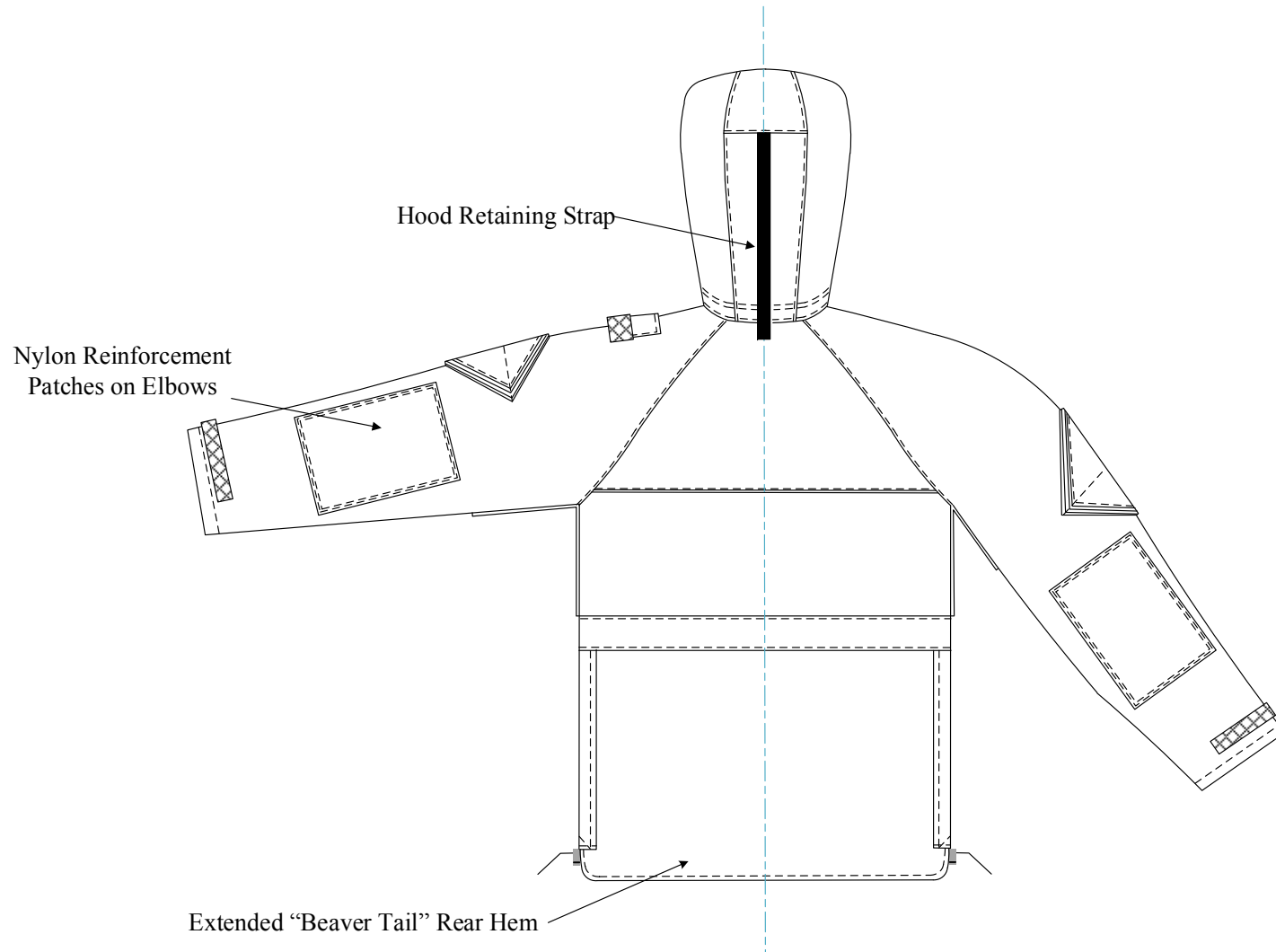


Figure 3: Detachable Hood Details

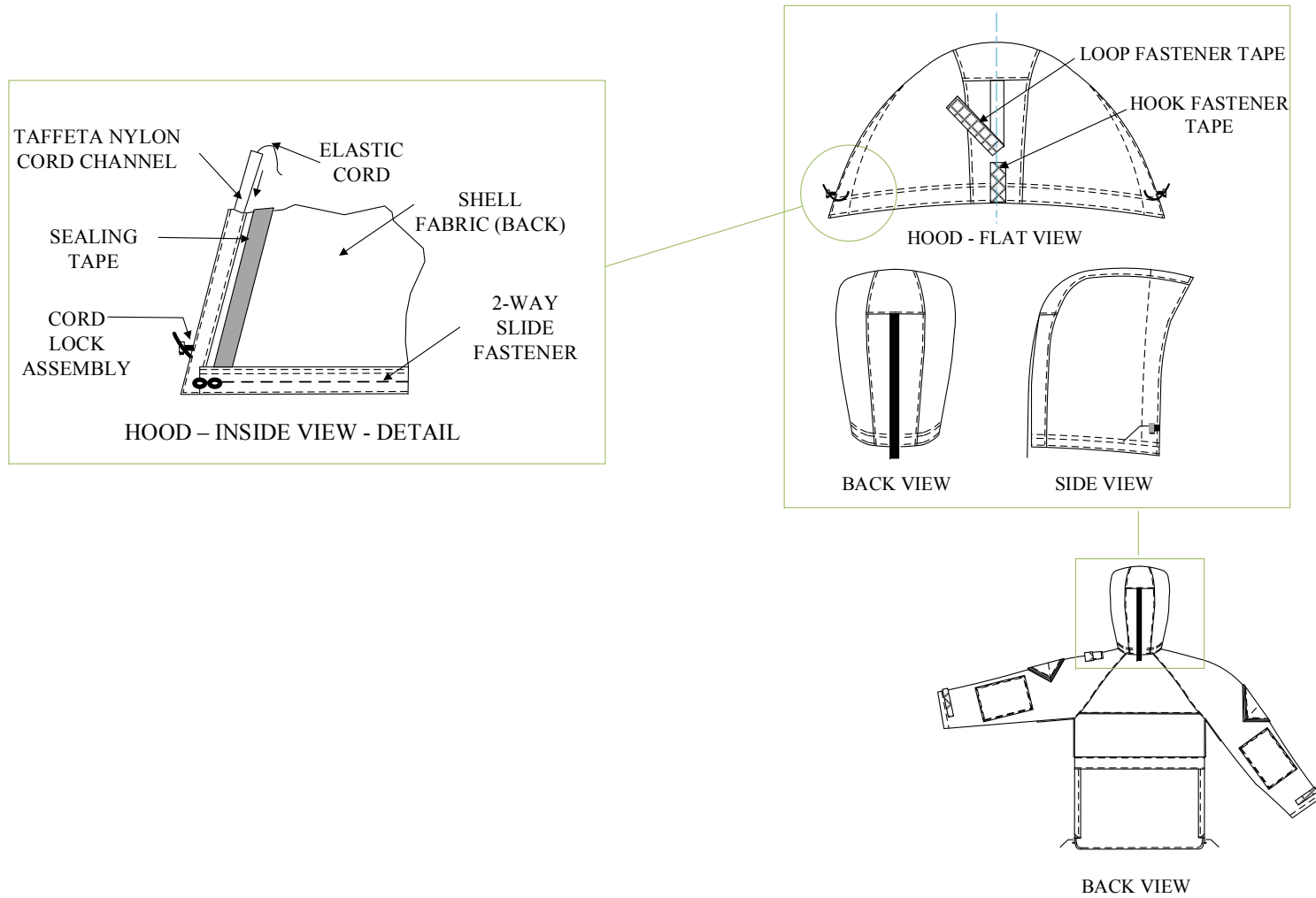


Figure 4: Right Side of Jacket – Inside View – Side Suppression System

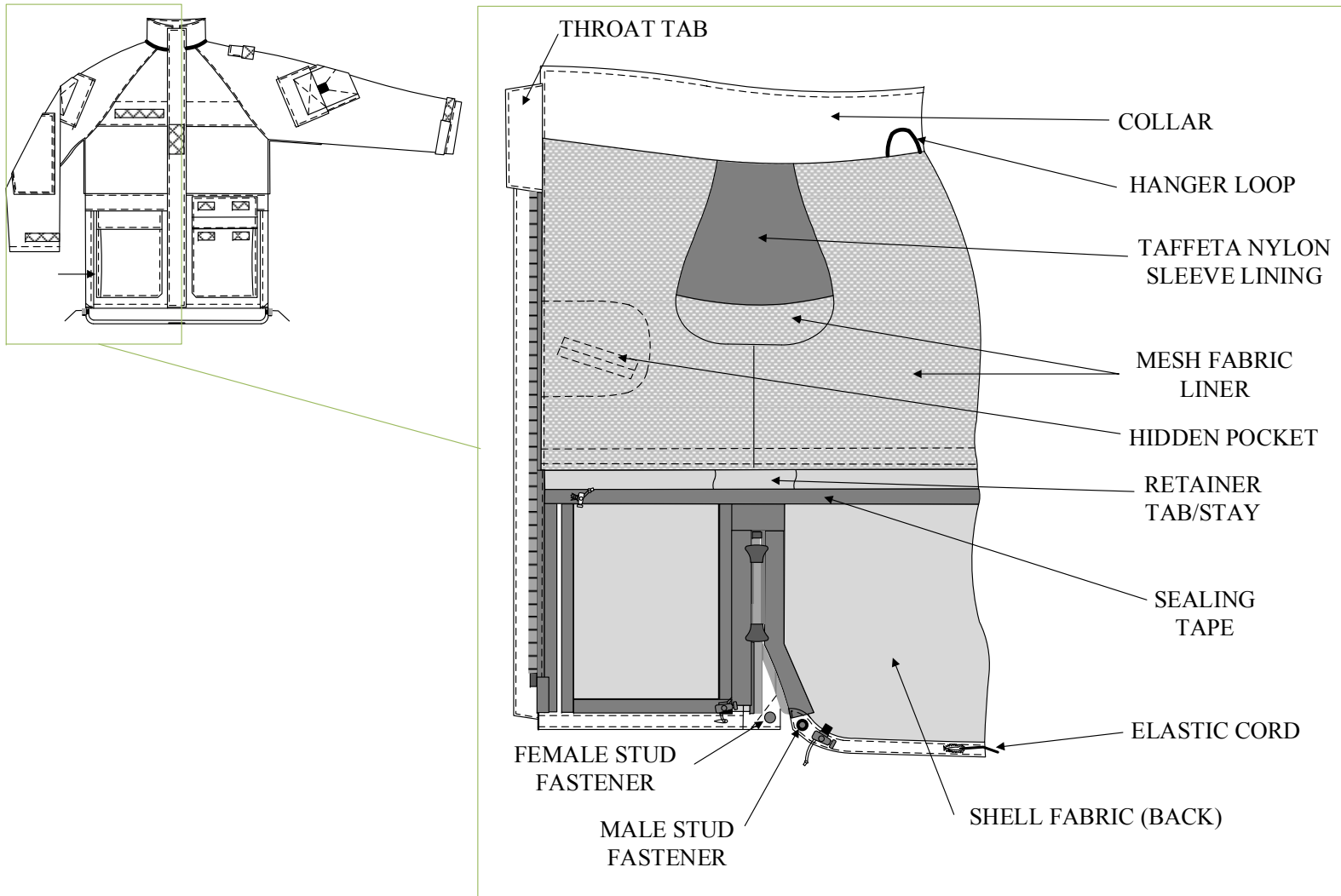


Figure 5: Finished Dimensions of Garment Components

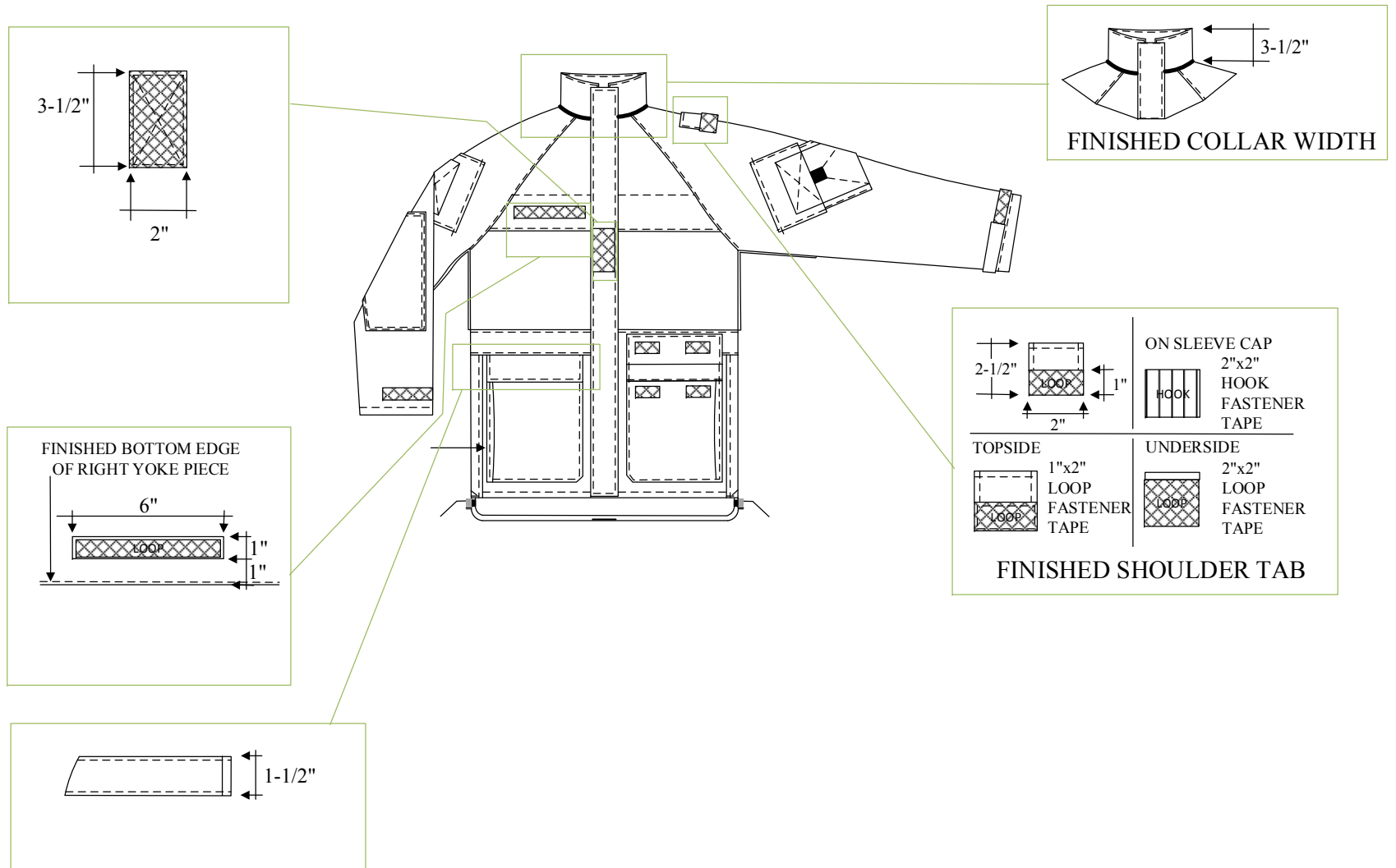


Figure 6: Finished Dimensions of Lower Semi-Cargo and Sleeve Pockets

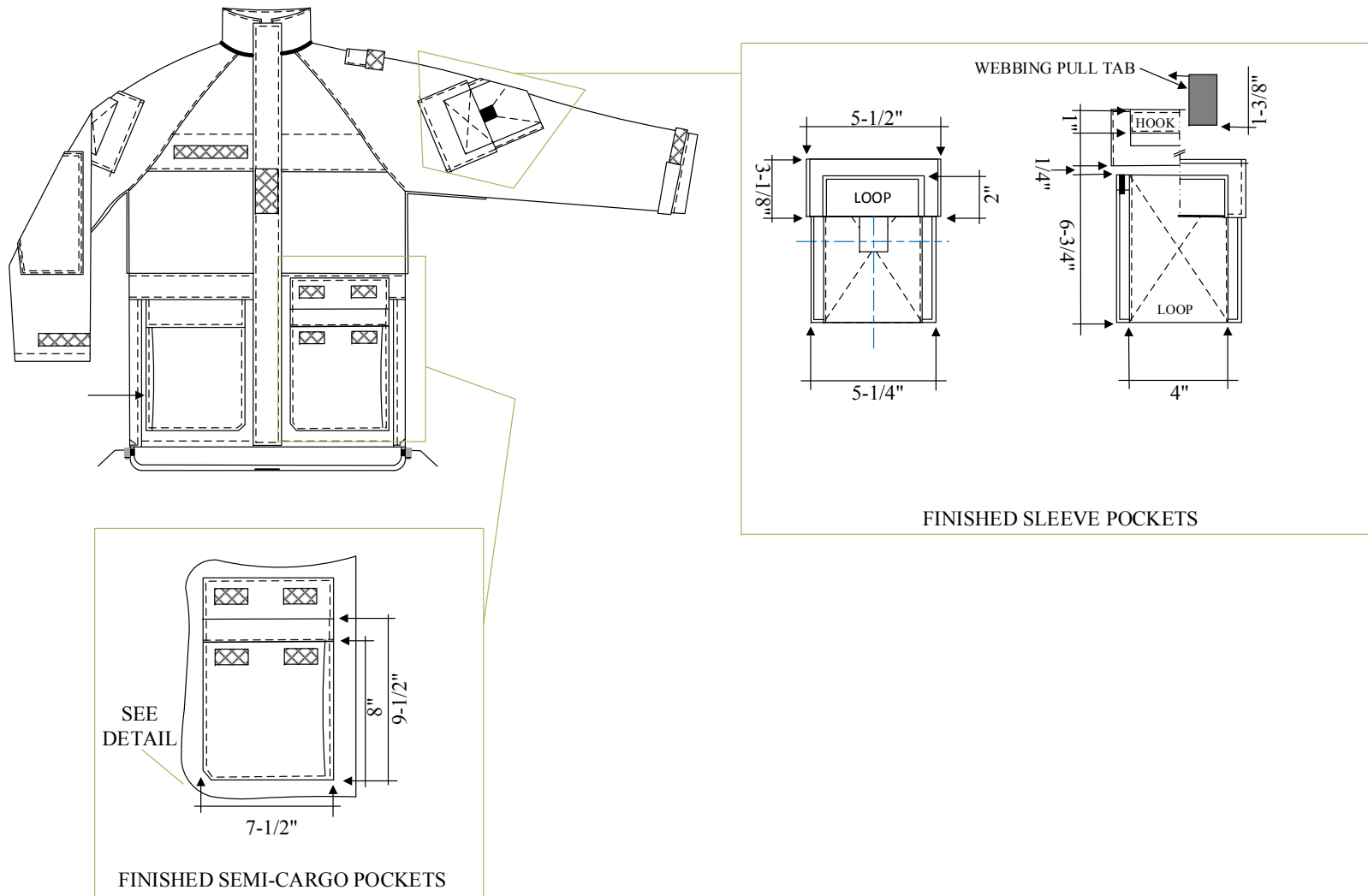


Figure 7: Underarm Ventilation System

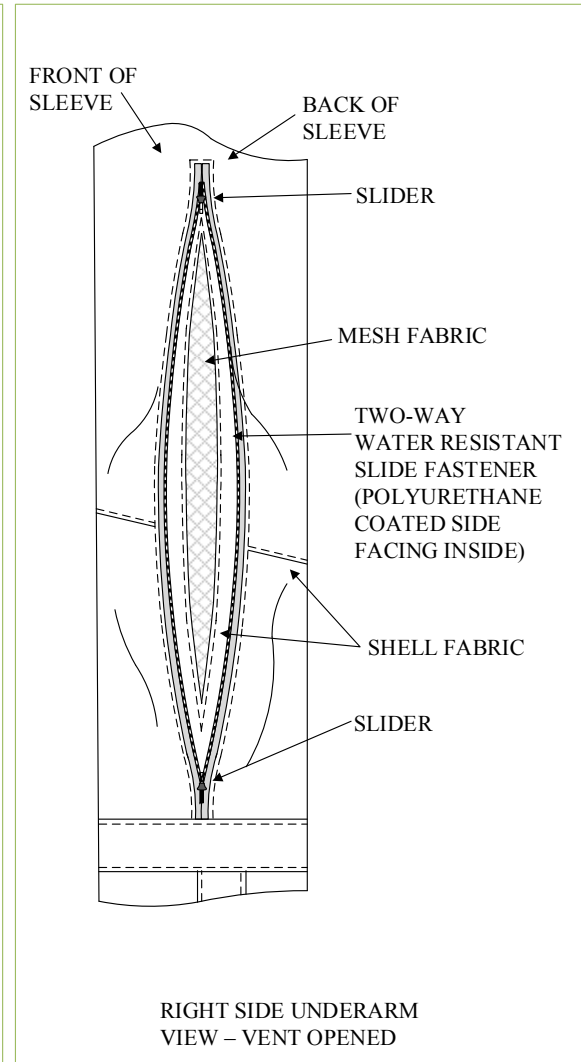
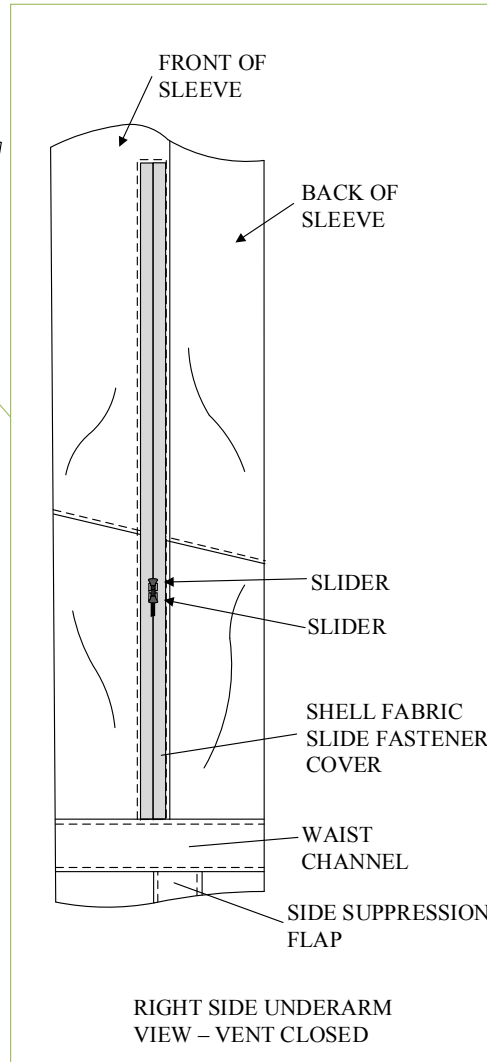
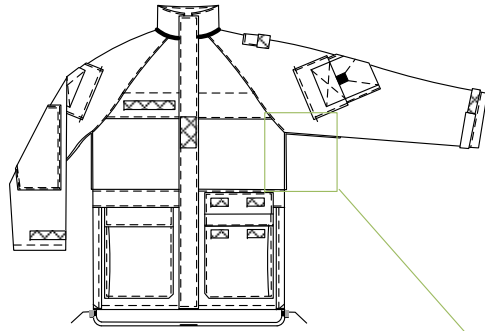


Figure 8: Hidden Front Chest Pockets and Sleeve Lining Details

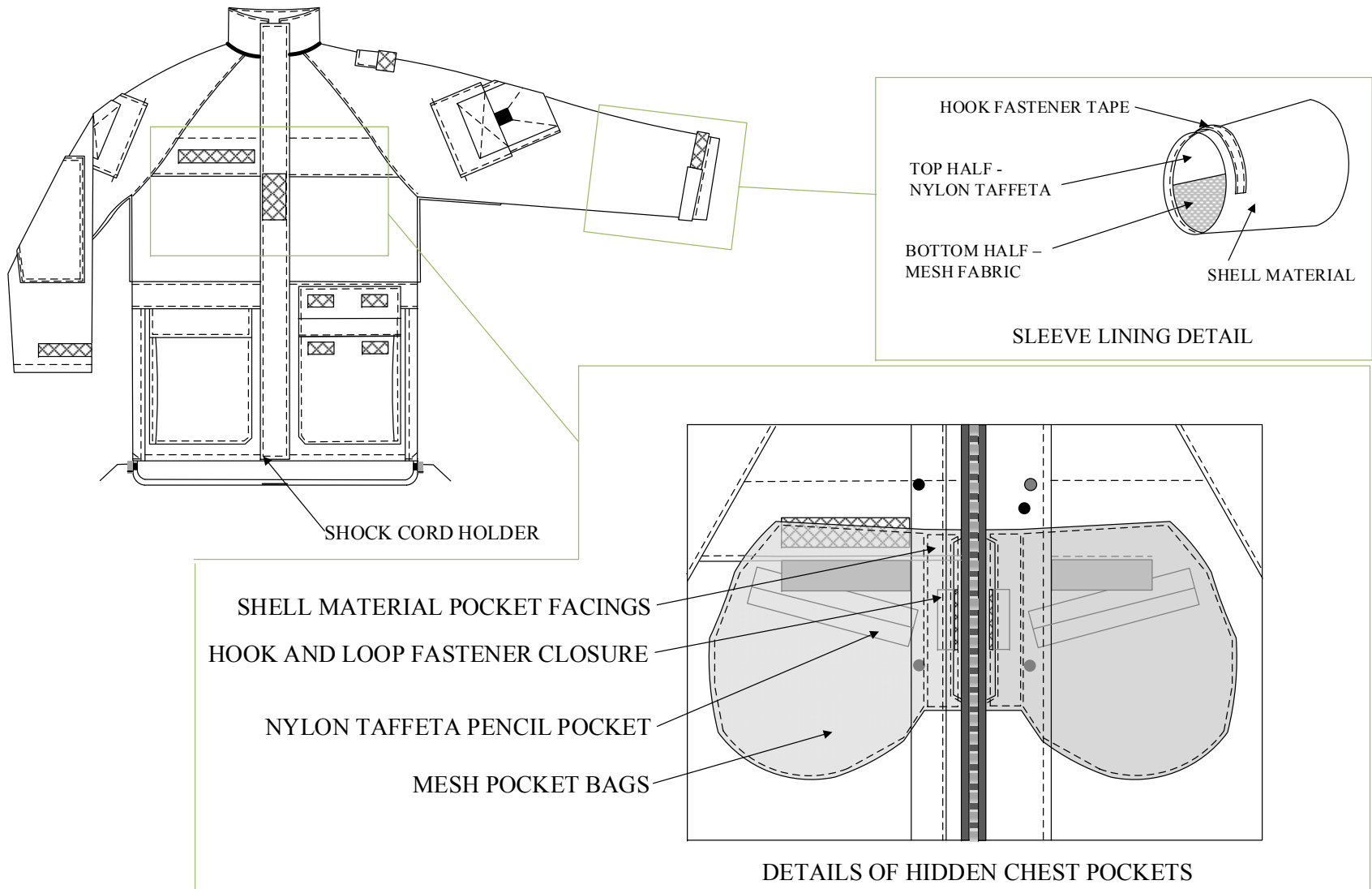
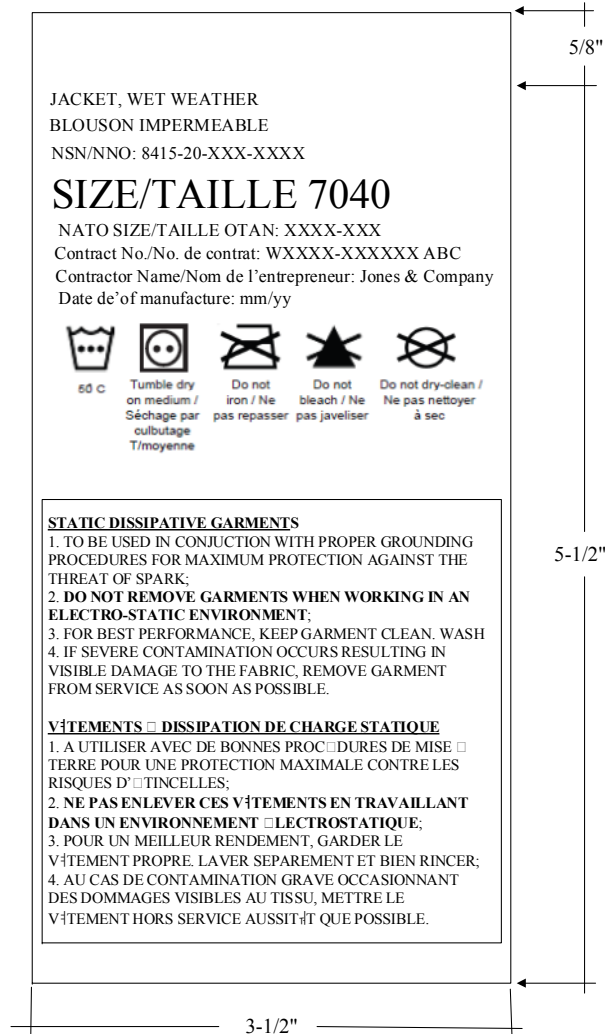


Figure 9: Marking and Care Label



APPENDIX 2 SCALE OF MEASUREMENTS

MEASUREMENTS OF BODY					MEASUREMENTS OF GARMENT														
					GIRTH MEASUREMENTS SLIDE FASTENER CLOSED			FULL LENGTH FROM COLLAR NECK SEAM		SLEEVE			HOOD						
SIZES BY HEIGHT AND CHEST	NATO SIZES	HEIGHT WITHOUT SHOES		CHEST OVER SHIRT	CHEST	WAIST	BOTTOM	FRONT	BACK	COLLAR EDGE TO EDGE AT NECK SEAM	BACK WIDTH AT BOTTOM OF YOKE	LENGTH AT UNDER ARM SEAM	WIDTH AT SCYE	SLEEVE BOTTOM (FULLY OPENED)	FRONT OPENING EDGE TO EDGE	FRONT TO BACK OVER CROWN	HOOD SLIDE FASTENER	SLIDE FASTENER LENGTH AT CENTRE FRONT	SLIDE FASTENER LENGTH AT SIDE
6432	5060-7585	5' 1" to 5' 3-1/2"	X- SHORT	29 - 32	44	40	41	25 1/2	31 1/4	19 1/4	20 3/4	20 1/2	22 1/2	11 1/2	32	19 1/4	17	25	7
6436	5060-8595			33 - 36	48	44	45		31 3/8	20 3/8	21 3/4		23 1/2	12		19 5/8	18		
6440	5060-9505			37-40	52	48	49		31 1/2	21 1/2	22 3/4		24 1/2	12 1/2		20	19		
6736	6070-8595	5'4" to 5' 6 1/2"	SHORT	33-36	48	44	45	27	32 7/8	20 3/8	21 3/4	21 1/2	23 1/2	12	32	19 5/8	18	26 1/2	7 1/2
6740	6070-9505			37-40	52	48	49		33	21 1/2	22 3/4		24 1/2	12 1/2		20	19		
6744	6070-0515			41-44	56	52	53		33 1/8	22 5/8	23 3/4		25 1/2	13		20 3/8	20		
6748	6070-1525			45-48	60	56	57		33 1/4	23 3/4	24 3/4		26 1/2	13 1/2		20 3/4	21		
7036	7080-8595	5'7" to 5'9 1/2"	REG.	33-36	48	44	45	28 1/2	34 3/8	20 3/8	21 3/4	22 1/2	24	12	32	19 5/8	18	28	8
7040	7080-9505			37-40	52	48	49		34 1/2	21 1/2	22 3/4		25	12 1/2		20	19		
7044	7080-0515			41-44	56	52	53		34 5/8	22 5/8	23 3/4		26	13		20 3/8	20		
7048	7080-1525			45-48	60	56	57		34 3/4	23 3/4	24 3/4		27	13 1/2		20 3/4	21		
7052	7080-2535			49-52	64	60	61		34 7/8	24 7/8	25 3/4		28	14		21 1/8	22		
7336	8090-8595	5'10" to 6'1/2"	TALL	33-36	48	44	45	30	35 7/8	20 3/8	21 3/4	23 1/2	24 1/2	12	32	19 5/8	18	29 1/2	8 1/2
7340	8090-9505			37-40	52	48	49		36	21 1/2	22 3/4		25 1/2	12 1/2		20	19		
7344	8090-0515			41-44	56	52	53		36 1/8	22 5/8	23 3/4		26 1/2	13		20 3/8	20		
7348	8090-1525			45-48	60	56	57		36 1/4	23 3/4	24 3/4		27 1/2	13 1/2		20 3/4	21		
7352	8090-2535			49-52	64	60	61		36 3/8	24 7/8	25 3/4		28 1/2	14		21 1/8	22		
7640	9000-9505	6'1" to 6'3 1/2"	X-TALL	37-40	52	48	49	31 1/2	37 1/2	21 1/2	22 3/4	24 1/2	26	12 1/2	32	20	19	31	9
7644	9000-0515			41-44	56	52	53		37 5/8	22 5/8	23 3/4		27	13		20 3/8	20		
7648	9000-1525			45-48	60	56	57		37 3/4	23 3/4	24 3/4		28	13 1/2		20 3/4	21		
7652	9000-2535			49-52	64	60	61		37 7/8	24 7/8	25 3/4		29	14		21 1/8	22		
TOLERANCE PLUS OR MINUS					1"	1"	1"	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	0	0	0