



Royal Canadian Mounted Police
Gendarmerie royale du Canada

Doc. no: G.S. 1045-357
Date: 2021-10-28

Specification

Vest, High Visibility, No Markings

This document has 18 pages including the drawings.

This document was created in English.

The document is available in English and French.

English/Anglais
Français/French

The photograph on this page is for reference only.

Modifications

Date	Para. No's	Modifications
2012-02-09		Original Specification
2013-09-13	Para. 2.5 Para. 4.1.5 Para. 4.1.6 Appendix B	Updated CGSB standard for Care & Labeling of textiles. Added Certificate of compliance required. Changed reference of Validation certificate to Certificate of compliance. Revised definitions and criteria.
2015-09-25	Para. 3.3 Para. 4.1.2 Para. 5 Table I Appendix B and Certification & Evaluation Criteria	Removed Removed reference to LAB reading Delivery, Packing and Marking removed Weight tolerance increased and breaking strength decreased Removed
2016-11-03	Entire Specification 4.3.2.2	Updated all reference of CAN/CSA Z96 2009 to the 2015 version. Name changed from Vest, High Visibility without Police Markings to Vest, High Visibility No Markings. Loop tape placement clarified.
2021-10-28	Entire Specification	Reformatted specification according to current template. Updated all reference of CSA Z96 to current version of Z96-15 (R2020). Updated all relevant standards.

RCMP VIEWING SAMPLE

A viewing sample, when available, will be supplied to the successful bidder.

This will be used for the guidance of the manufacturer in all factors not covered by this specification or referred to therein. Variation from the specification may appear in the sample in which case the specification must govern.

It may be obtained from:

Royal Canadian Mounted Police
ATTN: Uniform and Equipment Program
(440 Coventry Road, Warehouse Building)
73 Leikin Drive
Ottawa, Ontario
K1A 0R2

It will be sent “prepaid” and is to be returned “prepaid”.

The viewing sample must be returned to the RCMP in the same condition as received by the manufacturer. Lost or damaged viewing samples must be replaced by an identical item or the RCMP must be reimbursed for the cost of an acceptable replacement.

SPECIFICATION
Vest, High Visibility, No Markings

1. Definition

- 1.1 This specification must govern the manufacture and inspection of Vest, High Visibility, No Markings. The specific item covered under this specification with MMR number is as follows:
- i. 122451 - Vest, High Visibility, No Markings S/M / Gilet, Haute Visibilité sans Identification Policière P/M
 - ii. 122452 - Vest, High Visibility, No Markings L/XL / Gilet, Haute Visibilité sans Identification Policière G/ TG
 - iii. 122453 - Vest, High Visibility, No Markings 2XL/3XL / Gilet, Haute Visibilité sans Identification Policière 2TG/ 3TG
 - iv. 122454 - Vest, High Visibility, No Markings 4XL/5XL / Gilet, Haute Visibilité sans Identification Policière 4TG/5TG
- 1.2 This specification, patterns, viewing sample, drawing or other information issued in connection therewith, may only be used for specific enquiries, tenders, or orders placed on behalf of the Royal Canadian Mounted Police.
- 1.3 This specification supersedes all previous specifications for RCMP Vest, High Visibility without Police Markings.
- 1.4 This specification has been translated into French from this original English language document.

2. Applicable Specifications

- 2.1 The following publications are applicable to this specification and to the issues in effect on the date of the invitation to tender, unless otherwise specified.
- 2.2 **Canadian General Standards Board (CAN/CGSB)**
- | | |
|-------------------------|--|
| 4.2 No. 5.1-M90 (R2013) | Textile test methods – Unit mass of fabrics |
| 4.2 No. 6-2013 | Textiles — Woven fabrics — Construction — Methods of analysis — Part 2: Determination of number of threads per unit length |
| 4.2 No. 9.2-M90 (R2013) | Textile Test Methods - Breaking Strength of Fabrics - Grab Method - Constant-time-to-break Principle |

- 4.2 No. 12.3-2005 (R2013) Textile Test Methods: Textiles – Tear Properties of Fabrics – Part 1: Determination of Tear Force Using Ballistic Pendulum Method (Elmendorf)
- 4.2 No. 19.1-2004 (R2013) Colorfastness to washing – Accelerated test – Launder-Ometer
- 4.2 No. 22-2004 (R2013) Colorfastness to rubbing (crocking)
- 4.2 No. 23-M90 (R2013) Textile Test Methods - Colourfastness to Perspiration
- 4.2 No. 29.1-M89 Textile Test Methods – Colourfastness to Dry Cleaning Solvent
- 4.2 No. 58-2019 Dimensional change in domestic laundering of textiles
- 86.1-2003 Care Labelling of Textiles
- 2.3 **Canadian Standards Association (CSA Group)**
Z96-15 (R2020) High-visibility safety apparel
- 2.4 **General Services Administration – US Government**
Commercial Item Description
A-A-50199B Thread, Polyester Core, Cotton or Polyester-Covered
- 2.5 **American Society for Testing and Materials (ASTM)**
D1424-21 Standard Test method for Tearing Strength of Fabrics by Falling-Pendulum (Elmendorf-Type) Apparatus
D5034-21 Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)
D5169-98 (R2021) Standard Test Method for Shear Strength (Dynamic Method) of Hook and Loop Touch Fasteners
D5170-98 (R2021) Standard Test Method for Peel Strength (“T” Method) of Hook and Loop Touch Fasteners
E808-01 (R2016) Standard Practice for Describing Retroreflection
E809-21 Standard Practice for Measuring Photometric Characteristics of Retroreflectors
E1164-12 (R2017)^{E1} Standard Practice for Obtaining Spectrometric Data for Object-Color Evaluation
- 2.6 **American Association of Textile Chemists and Colorists (AATCC)**
Test Method 8-2016 Colorfastness to Crocking: Crockmeter Method
Test Method 15-2013 Colorfastness to Perspiration
Test Method 16.3-2020 Colorfastness to Light: Xenon-Arc
Test Method 132-2013 Colorfastness to Drycleaning

Test Method 135-2018 Dimensional Changes of Fabrics after Home Laundering

3. **General Requirements**

- 3.1 The article or material covered by this specification must be free from material and manufacturing defects that may affect its appearance or serviceability. In all particulars not covered by this specification or contract documents, production must be equivalent in all respects to the viewing sample.
- 3.2 **Design** – The vest must be a front closure, ‘five-point tear-away’ design traffic safety garment conforming in all respects to the CSA Z96-15 (R2020) Standard as a Class 2, Level 2 garment.

4. **Detail Requirements**

- 4.1 **Material & Performance Requirements** – Vest, High Visibility must conform in all respects to the following national standard of Canada:
- CSA Z96-15 (R2020) High-Visibility Safety Apparel**, (most recent edition), as published by the Canadian Standards Association, as non-FR Class 2, Level 2 garment, with specific requirements of design, colour, and size as listed below.
- 4.1.1 **Shell Material** – The shell material must be a woven fabric meeting the requirements outlined in Table I of this specification for non-water repellent, non-water resistant material. All vests must be machine-washable at temperatures up to and including 40° C, and dry-cleanable while meeting the performance requirements outlined in CSA Z96- 15 (R2020) High Visibility Safety Apparel. **Mesh type material is not acceptable.**
- 4.1.2 **Shell Material - Colour** – The colour must be fluorescent yellow-green in accordance with Table I. The colour must visually match the viewing sample provided by RCMP Uniform & Equipment Program.
- 4.1.3 **Edge Binding** – The front and back piece edges must be finished with a binding tape using material as specified in para. 4.1.1. The binding tape must be 8 mm ± 2 mm wide finished and spliced no more than 3 times on each piece.

- 4.1.4 **Retroreflective Markings** – The retroreflective markings must be exposed, wide angle, retroreflective lens, silver material in the form of a heat transfer film, 5 cm wide. It must meet all the retroreflective performance requirements outlined in Section 6, meeting Table 5 in the CSA Z96-15 (R2020) High-Visibility Safety Apparel standard. All retroreflective markings must meet a minimum coefficient of retro reflection, R_A , and must be determined in accordance with the procedures defined in ASTM E808 (R2016) and E809-21.
- 4.1.5 **Thread** – The thread must be polyester wrap, polyester core, Tex 40, Type II of matching colour to the shell material, meeting U.S. government Commercial Item Description (CID) A-A-50199B.
- 4.1.6 **Hook and Loop Tape** – The hook and loop tape must be woven nylon, fluorescent yellow-green in colour, with a high life cycle. The combined hook and loop must have no less than 8 P.S.I length-wise shear strength with initial peel strength of not less than 1 P.I.W. when tested to ASTM D5169-98 (R2021), standard test method for shear strength [dynamic method] of hook and loop touch fasteners and ASTM D5170-98 (R2021), standard test method for peel strength ["T" method] of hook and loop touch fasteners. Dimensions must be as per drawings.
- 4.2 **Size and Dimensions** – The Vest, High Visibility must be supplied in the sizes specified by the RCMP according to this specification and to the dimensions given in the scale of measurements and drawings. The garment components must be shaped, dimensioned and positioned in accordance with the pattern components and pattern requirements as outlined in Appendix A forming part of this specification.
- 4.3 **Construction**
- 4.3.1 **Stitching** – All stitching must be lockstitch. There must be no less than three nor more than four stitches per centimetre. The beginning and ending of all stitching must be securely backstitch tacked, unless secured by other stitching.
- 4.3.2 **Body**
- 4.3.2.1 **Front** – The front must be made from the material specified in para. 4.1.1 and must be sized and shaped to the pattern according to the scale of measurements. Both fronts must have retroreflective tape as specified in para. 4.1.4 applied vertically and horizontally as per patterns and drawings. The left front must have

one piece of loop tape sewn on the back side vertically from top to bottom along center front. The right front must have 4 pieces of hook tape 5 cm long by 3.8 cm wide placed on the face at center front according to the pattern. The name tag must be loop tape 8.5 cm long by 2.5 cm wide. Hook tape must be applied to the face of the garment on the side extensions as per drawing 3 and the measurements must be as per the scale of measurements extension length. Hook tape must be placed on the face of the material at the shoulder edge as per drawing 2. The hook tape must be 3.8 cm wide and the length must measure the width of the shoulder. All edges must be bound with binding tape as specified in para. 4.1.3 to ensure durability. Care must be taken to ensure that the binding is stitched to the shell material and does not separate.






4.3.2.2 **Back** – The back must be made from the material specified in para. 4.1.1 and must be sized and shaped to the pattern and scale of measurements. The back must have retroreflective tape as specified in para. 4.1.4 applied to form an ‘X’ and a horizontal stripe as per patterns and drawings. Loop tape must be applied to the wrong side of the garment on the side extensions as per drawing 3. The side extensions must have three pieces of loop tape, two placed vertically and one placed horizontally. The vertical pieces must be placed at a distance equal to the extension length in the scale of measurements. The loop tape placed horizontally must be centered between the two vertical loop tape and must be in line with the top of the vertical loop tape. At the shoulder, two pieces of 3.8 cm wide loop tape must be placed butted against each other to form a continuous piece 7.5 cm wide. The two pieces must have a length measuring the width of the shoulder and must be placed at the shoulder edge on the wrong side. All hook and loop tape must be placed in line with the piece edge. All edges must be bound with the binding tape as specified in para. 4.1.3 to ensure durability. Care must be taken to ensure that the binding is stitched to the shell material and does not separate.

4.3.2.3 **Retroreflective Markings** – The retroreflective as specified in para. 4.1.4 must be heat transferred to the shell material and positioned as per pattern and drawings. The back panel must have a symmetrical ‘X’. There must be a horizontal band at the bottom of the ‘X’ extending from side to side. The front body must have retroreflective material from the shoulder extending down the body to meet the horizontal band that extends from side to side. All retroreflective material must be permanently attached to the shell material by means of heat sealing. No stitching must be employed in attaching the retroreflective material, and the heat-sealing must endure for the life of the vest. There must be no loose or unbonded edges, or loss of film. Retroreflective material must not cover other retroreflective

material on the vest in order to provide the best bond between the retroreflective material and the background material.

4.4 **Marking & Cleaning Instructions Label** – Each vest must have a label marked legibly and indelibly in English and French attached in accordance with the requirements outlined in Section 9 of CSA Z96-15 (R2020) High-Visibility Safety Apparel, with additional information as listed below added to the label. The cleaning instructions must have all necessary and applicable care symbols for the garment and trim. All symbols must appear according to the CAN/CGSB 86.1-2003 Care Labeling of Textiles. The label must be placed on the back side of the front panel at the side aligning with the retroreflective material as per drawing 3.

1. Item name in English as written in para. 1.1.
2. Item name in French as written in para. 1.1.
3. RCMP stock number - reference contract documents. (Ex. 122451)
4. Size of the article, combining the size designation referenced in the English and French contract documents. (Ex. L/XL - G/TG)
5. Date of manufacture, in numeric format year/month (Ex. 2001/11)
6. Your manufacturer identification (Company name or number).
7. Print information as shown below.
8. Print information as shown below.

1					
2					
3					
4					
5					
6					
7	CAN/CSA Z96-15 Class 2, Level 2 Fluorescent Yellow-Green		Norme Z96-15 de la CAN/CSA Classe 2, Niveau 2 Jaune-vert fluorescent		
8					
	Do Not use fabric softener		Do Not use dryer sheets		
	Ne pas utiliser d'agent adoucissant		Ne pas utiliser d'assouplissant en feuilles		

4.5 **Identification Label** – Each vest must have a durable blank label 7.5 cm x 2 cm applied separately beside the marking and cleaning label used for the inscription of the wearer’s name.

5. **Quality Assurance Provisions**

- 5.1 **Responsibility for Inspection** – Unless otherwise stipulated in the Contract, it is the Contractor's responsibility to satisfy the RCMP, Uniform & Equipment Program that the material and services being supplied conform to this specification. This may be accomplished by performing the tests specified in this specification or by demonstrating to the satisfaction of the RCMP, Uniform & Equipment Program that conformity to this specification of manufacturing processes is assured. The Contractor must use an independent commercial testing establishment.
- 5.2 The RCMP, Uniform & Equipment Program reserves the right to perform any inspection considered necessary to ensure the material and services conform to the specified requirements. For the purpose of inspection, a portion of each delivery not exceeding two percent or two out of any number delivered under 100 may be put to tests that could destroy the articles. If found to be inferior or not in accordance with this specification, all articles so destroyed must be replaced by others of proper quality and pattern at the expense of the Contractor. The entire delivery may also be rejected if it is found that articles previously rejected due to non-repairable defects are redelivered for inspection.
- 5.3 The Contractor will be promptly notified when any articles are not accepted and such articles will be returned at the Contractor's risk and expense.

6. Scale of Measurement Definitions and Location References

(Refer to the Scale of Measurements and Drawing No. 4).

- 6.1 **Chest** – The chest is the distance across one vest front panel, measured 7.5cm below the lowest point of the neckline. (A).
- 6.2 **Front Hem** – The hem is half the distance across the vest bottom, measured 2.5cm above the bottom of the vest including extension. (B).
- 6.3 **Front Length** – The length is the distance measured 2.5 cm in from center front at the base of the neckline to the hem. (C).
- 6.4 **Shoulder to Waist** – The length is the distance measured from the shoulder 2.5cm in from the neckline to the hem. (D).
- 6.5 **Back Width** – The back width is the distance across the back of the vest measured 10cm down from the neckline. (E).
- 6.6 **Back Hem** – The hem is the distance across the vest bottom, measured 2.5cm above the bottom of the vest including extensions. (F).
- 6.7 **Center Back Length** – The length is the distance measured from the base of the neckline at center back to the hem. (G)
- 6.8 **Side Width** – The distance measured 2.5 cm in from the end of the extension from top to hem. (H).
- 6.9 **Extension Length** – The distance measured perpendicular from a continuation of the side measured to the side extension edge. (J).

Scale of Measurements – Vest, High Visibility, No Markings											
Size	Body Measurements		GARMENT MEASUREMENT								
Size	Chest	Waist	Front Chest (½ only)	Front Hem (½ only)	Front Length	Shoulder to Waist	Back Width	Back Hem	Center Back Length	Side Width	Extension Length
S/M	up to 40"	up to 34"	21.4	34.6	38	54.5	38.6	65.2	45.4	20	13
L/XL	40" - 48"	34" - 46"	23.9	42.2	42.4	59.3	43.6	80.4	49.8	19.8	18
2XL/3XL	48" - 56"	46" - 58"	26.4	49.8	46.8	64.1	48.6	95.6	54.2	19.7	23
4XL/5XL	56" - 62"	58" - 70"	28.9	57.4	51.2	69	53.6	110.8	58.6	19.5	28
Tolerances ± including binding			1 cm	1 cm	1 cm	1 cm	1 cm	1 cm	1 cm	1 cm	1 cm
Measurement Location			A	B	C	D	E	F	G	H	J

NOTE: All measurements are in centimetres unless otherwise indicated.

TABLE I
Properties of Shell Material (Fluorescent Yellow-Green)
CAN/CSA Z96-15 High Visibility Apparel Requirements (Meeting or Exceeding)

		REQUIREMENTS		TEST METHOD
1	Colour	Fluorescent yellow-green matching the viewing sample		
2	Fiber Content	100% Polyester		
3	Weave	Plain		
4	Mass	180g/m ² ± 15g/m ²		<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 5.1-M90 (R2013)
5	Yarns per 10 cm	Warp:	252 (min.)	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 6-2013
		Weft:	181 (min.)	
6	Breaking Strength	Warp:	400N (min.)	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 9.2-M90 (R2013) OR • ASTM D5034-21
		Weft:	400N (min.)	
REQUIREMENTS FROM CSA Z96-15 (R2020)				
7	Background - Material Colour	Initial: Table 2A - Fluorescent yellow-green		<ul style="list-style-type: none"> • ASTM E1164-12 (R2017) ^{E1}
		After colourfastness to light (AATCC 16 Test Option E, 40 AATCC Fading Units): Table 2A - Fluorescent yellow-green		
8	Colour Fastness To Light (Xenon)	Light fastness must be equal or better than Grade 4 by Grey Scale for Colour change after 40 AATCC Fading Units.		<ul style="list-style-type: none"> • AATCC 16.3-2020, Test Option E
9	Colour Fastness To Crocking	Dry:	Grey Scale 4 or better	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 22-2004 (R2013) OR • AATCC 8-2016
		Wet:	Grey Scale 4 or better	
10	Colour Fastness To Perspiration	Colour change:	Grey Scale 4 or better	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 23-M90 (R2013) OR • AATCC 15-2013
		Staining:	Grey Scale 4 or better	
11	Colour Fastness To Domestic and Commercial Laundering	Colour change:	Grey Scale 4 or better	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 19.1-2004 (R2013), Test 2
		Staining:	Grey Scale 3 or better	
12	Colour Fastness To Dry Cleaning	Colour Change:	Grey Scale 4 or better	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 29.1-M89 OR • AATCC 132-2013
13	Dimensional Change to Laundering 5 cycles:	Warp:	Not exceed 4%	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 58-2019 OR • AATCC Method 135-2018
		Weft:	Not exceed 2%	
14	Tearing Strength	Warp:	Minimum: 13N	<ul style="list-style-type: none"> • CAN/CGSB-4.2 Method 12.3-2005 (R2013) OR • ASTM D1424-21
		Weft:	Minimum: 13N	

APPENDIX A

Sealed Pattern Identifier

Pattern #: G.S. 1045-357
 Title: Vest, High Visibility, No Markings

Patterns – Patterns are available from the RCMP, Uniform and Equipment Program. Firms requested to produce Pre-Award Samples will be provided with the base pattern only. The full set of patterns in individual sizes will be provided to the successful bidder after the contract is awarded. The bidder will receive the files electronically in a .DXF format unless paper is requested.

The patterns include drill holes and/or placement templates. All pieces must be cut in the direction indicated on the grain line of the pattern pieces. The scale of measurements indicates the finished garment measurements however the patterns may not reflect the same measurements. The manufacturer is responsible for making changes to the pattern, if necessary, in order to meet the scale of measurements, adjust for shrinkage/stretch and/or to suit the production process, however, the design and grade must not be affected or changed. No seam allowance is required.

All patterns are the property of the RCMP and must be returned upon completion of the contract. Electronic patterns must be deleted from the Contractor’s files.

Pattern Pieces - This design has 3 pattern components.

<u>Legend:</u>	
Cut 1 Single	= Cut 1
Cut 1 Paired	= Cut 2

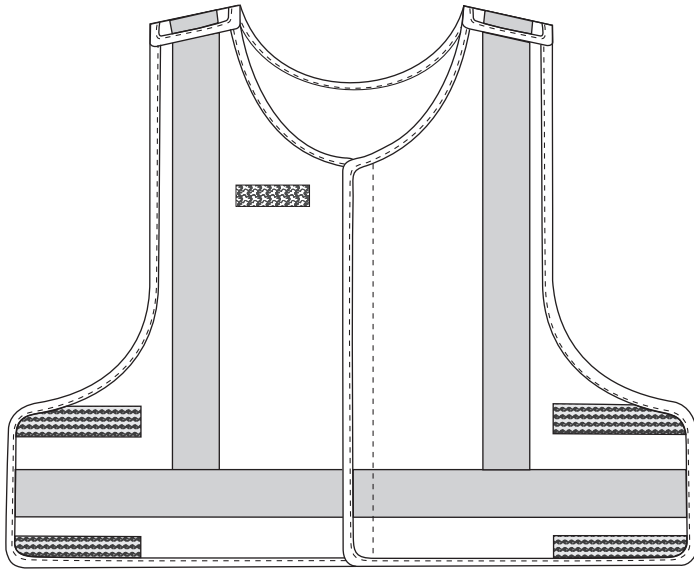
Pattern Components	Nomenclature	Quantity to be cut	Material
# 1 of 2	Back	1 Single	Shell Material
# 2 of 2	Front Right	1 Single	Shell Material
# 3 of 3	Front Left	1 Single	Shell Material

Note: Pattern piece for edge binding not included.

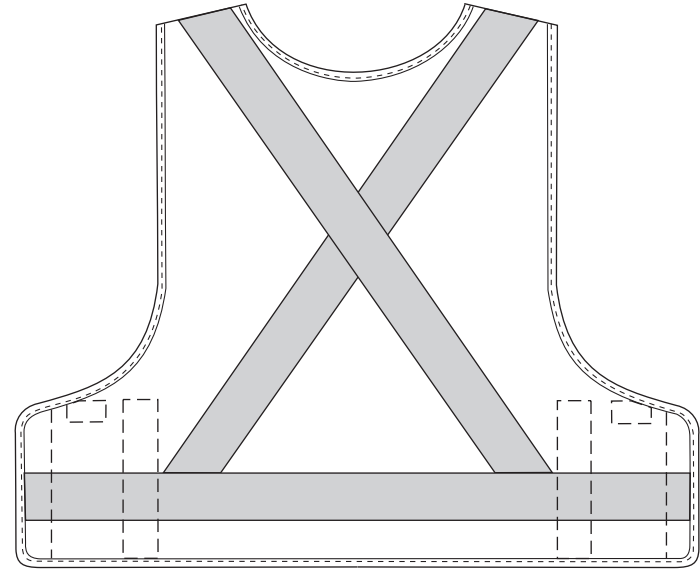
Drawing 1

G.S. 1045-357

Vest, High Visibility, No Markings



Front View



Back View

NOT TO SCALE

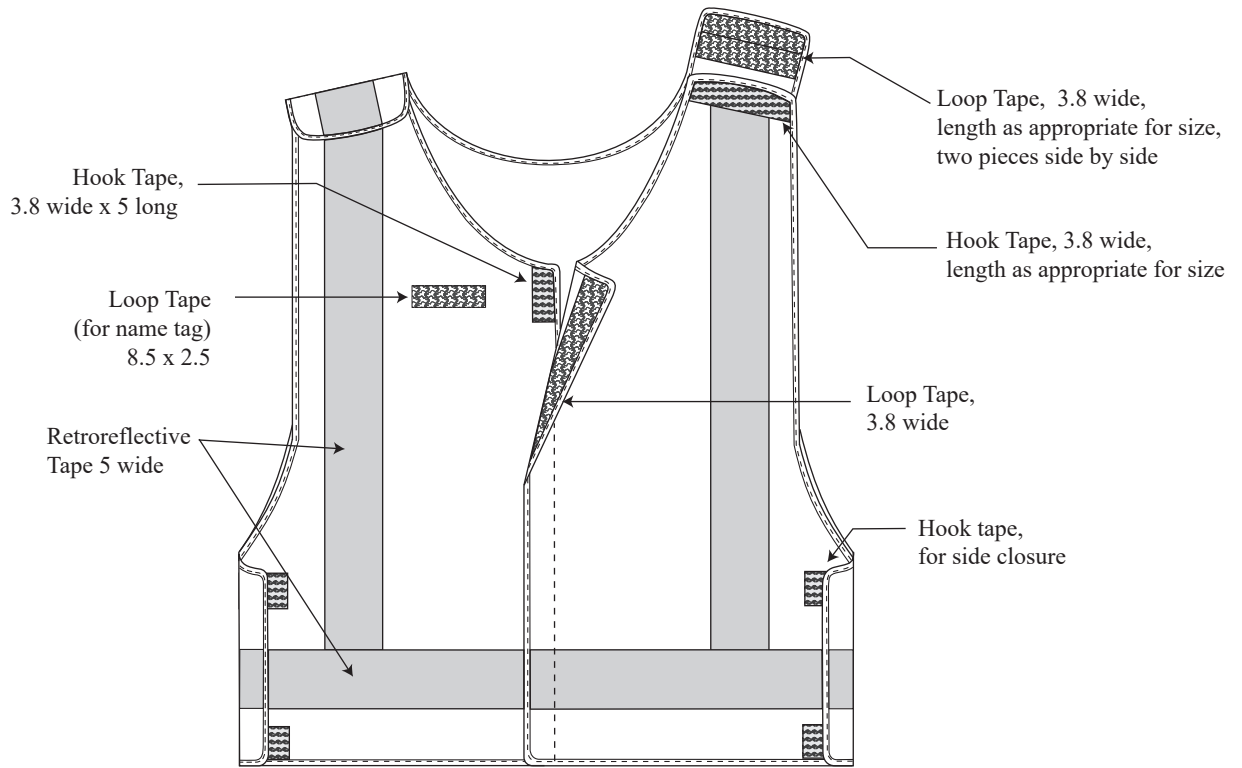
All measurements are shown in centimeters.

± 0.5 cm tolerance acceptable unless otherwise indicated.

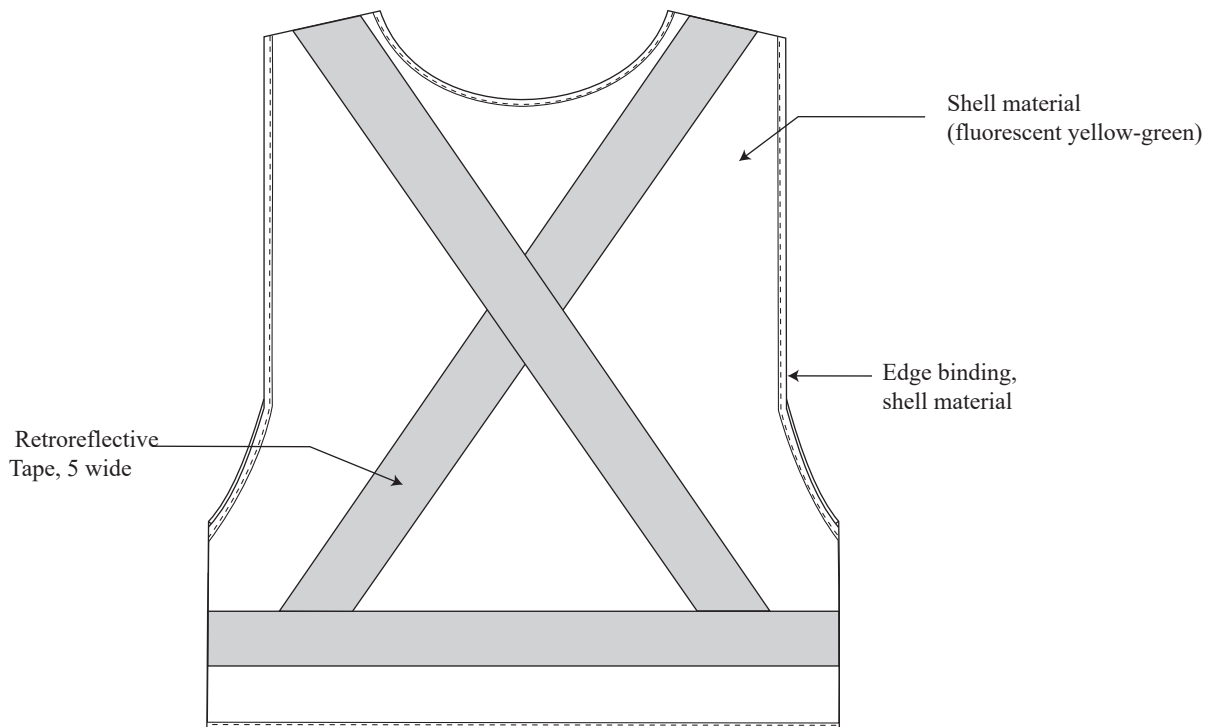
Drawing 2

G.S. 1045-357

Vest, High Visibility, No Markings



Front



Back

NOT TO SCALE

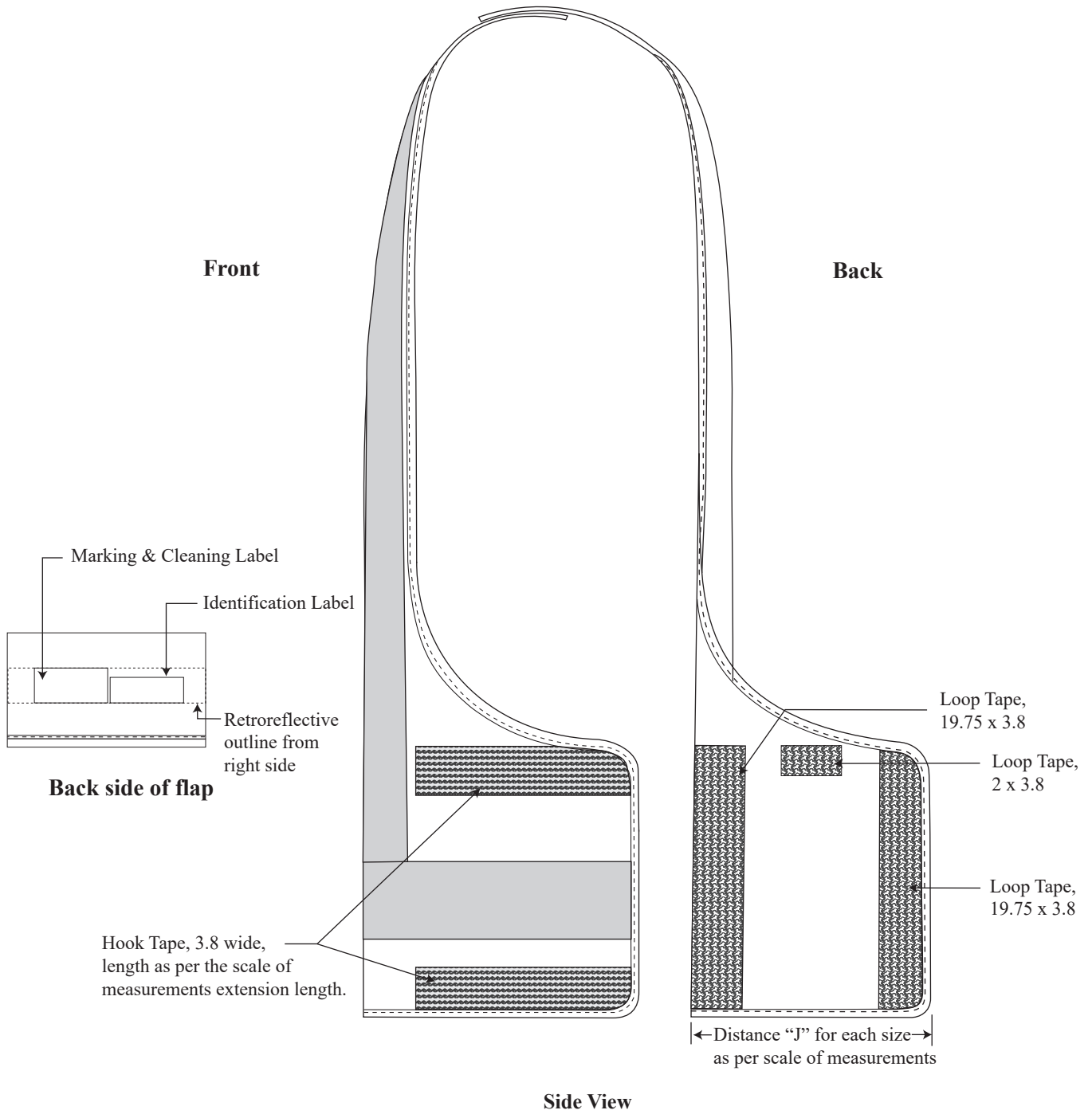
All measurements are shown in centimeters.

± 0.5 cm tolerance acceptable unless otherwise indicated.

Drawing 3

G.S. 1045-357

Vest, High Visibility, No Markings Side Closure Detail



NOT TO SCALE

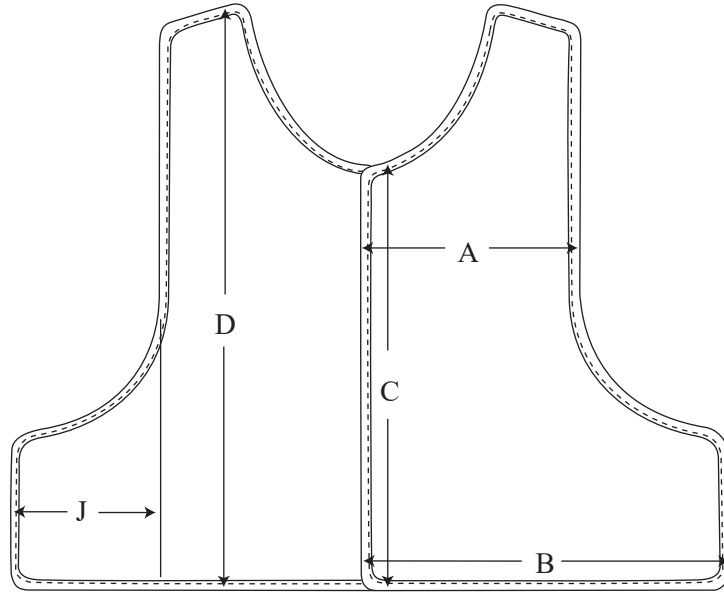
All measurements are shown in centimeters.

± 0.5 cm tolerance acceptable unless otherwise indicated.

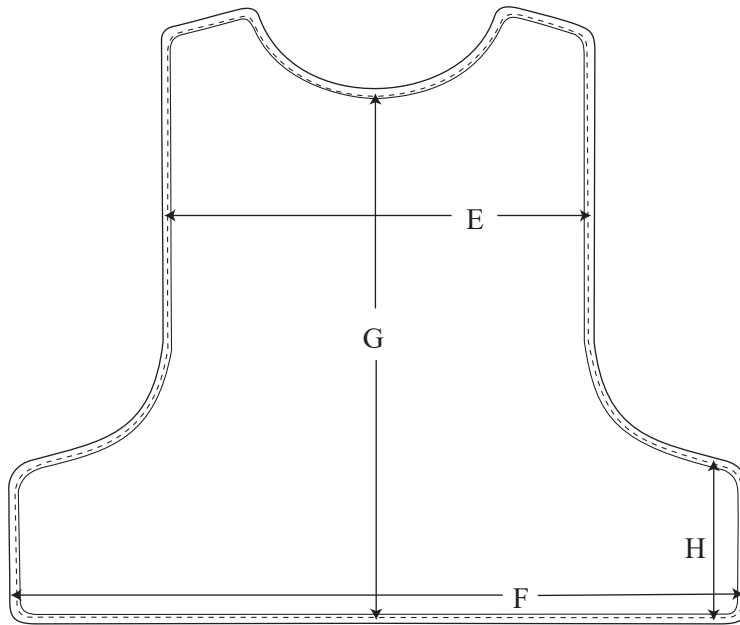
Drawing 4

G.S. 1045-357

Vest, High Visibility, No Markings
Measurement Location Chart



Front



Back

NOT TO SCALE

All measurements are shown in centimeters.

± 0.5 cm tolerance acceptable unless otherwise indicated.