



**LETTER OF INTEREST /
LETTRE D'INTÉRÊT**

**RETURN BIDS TO /
RETOURNER LES SOUMISSIONS À:**

Department of National Defence
101 Colonel By Drive
Ottawa, ON
K1A 0K2

kathy.broom@forces.gc.ca

Proposal To: National Defence Canada

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods and services listed herein and on any attached sheets at the price(s) set out therefore.

Proposition à : Défense nationale Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens et services énumérés ici et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Title / Titre: Boots, Combat, Plain-Toe / Bottes de combat à bout ordinaire	Solicitation No / No de l'invitation: W8486-217614
Date of Solicitation / Date de l'invitation: September 17, 2020 / 17 septembre 2020	
Address Enquiries to – Adresser toutes questions à: Kathy Broom 101 Colonel By Drive Directorate Land Procurement Ottawa, ON K1A 0K2	
Telephone No. / N° de téléphone: 819-939-8457	FAX No / No de fax:
Destination: See Herein	

Instructions:

Municipal taxes are not applicable. Unless otherwise specified herein all prices quoted must include all applicable Canadian customs duties, GST/HST, excise taxes and are to be delivered Delivery Duty Paid including all delivery charges to destination(s) as indicated. The amount of the Goods and Services Tax/Harmonized Sales Tax is to be shown as a separate item.

Instructions:

Les taxes municipales ne s'appliquent pas. Sauf indication contraire, les prix indiqués doivent comprendre les droits de douane canadiens, la TPS/TVH et la taxe d'accise. Les biens doivent être livrés « rendu droits acquittés », tous frais de livraison compris, à la ou aux destinations indiquées. Le montant de la taxe sur les produits et services/taxe de vente harmonisée doit être

Solicitation Closes / L'invitation prend fin: At / à : 14:00 EST On / le : October 21, 2020 / 21 octobre 2020
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Delivery required / Livraison exigée: See herein	Delivery offered / Livraison proposée:
Vendor Name and Address / Raison sociale et adresse du fournisseur:	
Name and title of person authorized to sign on behalf of vendor (type or print) / Nom et titre de la personne autorisée à signer au nom du fournisseur (caractère d'imprimerie):	
Name / Nom: _____	Title / Titre: _____
Signature: _____	Date: _____

LETTER OF INTEREST FOR BOOTS, COMBAT, PLAIN-TOE

1.0 SCOPE

1.1 **Scope** – Boots, Combat, Plain-Toe and the assessment methods thereof.

1.2 **Purpose** – This Letter of Interest (LOI) serves to inform industry that the Department of National Defence (DND) is considering new requirements and methods of selection for combat footwear. DND intends to trial the first implementation of this selection plan for its purchase of Boots, Combat, Hot Weather (Desert), Plain Toe, as shown in the draft specification in Annex A. As such, this LOI seeks to investigate the following:

1.2.1 To inform industry of the expected changes to the requirements and selection process for all future plain-toe operational footwear;

1.2.2 To verify whether the new requirements align with industry standards;

1.2.3 Whether there are Commercial-off-the-Shelf (COTS) or Military-off-the-Shelf (MOTS) products that may meet the updated CAF requirements;

1.2.4 Whether the above COTS/MOTS products include Canadian Goods as defined in clause A3050T of the SACC Manual and explained in [Annex 3.6](#);

1.2.5 To set objective baseline requirements for accelerated aging testing during future bid evaluation;

1.2.6 How the above points 1.2.2, 1.2.3, and 1.2.4 relate to the Desert Combat Boot market; and

1.2.7 To commence the implementation of a holistic selection process.

1.3 **Nature of Letter of Interest** – This Letter of Interest (LOI) is not a bid solicitation. This LOI will not result in the award of any contract; therefore, potential suppliers of any goods or services described in this LOI should not earmark stock or facilities, nor allocate resources, as a result of any information contained in this LOI. Nor will this LOI result in the creation of any source list; therefore, whether or not any potential supplier responds to this LOI will not preclude that supplier from participating in any future procurement. Also, the procurement of any of the goods and services described in this LOI will not necessarily follow this LOI. This LOI is simply intended to solicit information from industry with respect to the contents of this LOI.

1.4 **Terminology** – For the purposes of this LOI the following initialisms, acronyms, and terms are defined as follows:

1.4.1 Acronyms & Initialisms

AATCC	American Association of Textile Chemists and Colorists
AECTP	Allied Environmental Conditions and Tests Publications
AMS	Aerospace Material Specification
ASTM	American Society for Testing and Materials
CAF	Canadian Armed Forces
CGSB	Canadian General Standards Board
CFAS	Canadian Forces Anthropometric Survey
CFSU	Canadian Forces Support Unit
COTS	Commercial-off-the-Shelf
CSA	Canadian Standards Association
CSS	Combat Sock System
DCB	Desert Combat Boot
DEET	Diethyltoluamide
DND	Department of National Defence
DSSPM	Directorate Soldier Systems Program Management
DLR	Director of Land Requirements
DRDC	Defence Research and Development Canada
EPA	Environmental Protection Agency
FAR	Federal Acquisitions Regulation
FOD	Foreign Objects and Debris
ISO	International Organization for Standardization
LF	Land Force (Army)
LOI	Letter of Interest
MOTS	Military-off-the-Shelf
NATO	North Atlantic Treaty Organization
NFPA	National Fire Protection Association
NSN	NATO Stock Number
POL	Petrol, Oil, or Lubricants
PSPC	Public Services and Procurement Canada
RFP	Request for Proposal
SACC	Standard Acquisition Clauses and Conditions
SATRA	Shoe and Allied Trades Research Association
SAE	Society of Automotive Engineers
SLS	Sodium Laureth Sulfate
SOW	Statement of Work
SWAT	Simulated Wear Assessment Test
TCB	Temperate Combat Boot
TDP	Technical Data Package
USAF	United States Air Force

1.4.2 Glossary

Antistatic/Static Dissipative footwear – a boot or shoe designed to continuously dissipate electrostatic charges.¹

Arid/semi-arid region – An operational environment characterised by low precipitation, low humidity, high temperatures, low vegetation, and loose surface material. Climactic categories A1, A2, and A3 as per AECTP 200 (Edition 3).

Boot, Combat, Hot Weather (Desert), Plain-Toe – The non-safety DCB(s) purchased by DND through means of a contract, and assigned a NATO Stock Number (by size).

Canadian Goods – See clause A3050T of the SACC Manual

Commercial-off-the-shelf – An item of supply that is:

- a) A commercial item as defined in FAR 2.101;*
- b) Sold in substantial quantities in the commercial marketplace;*
- c) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace.*

Desert Combat Boot – Footwear designed, marketed, and implemented for a range of military land operations in arid/semi-arid regions.

Lace-to-toe – Lacing that continues past the quarter and into the vamp, past the halfway point of the forefoot.

Metatarsal protection – An integrated component that protects the complete dorsum (top side) of the foot.²

Military-off-the-Shelf – Any item of supply that is:

- a) Of a type used by armed forces or law enforcement for operational purposes, and has been sold under contract to a governmental agency.*
- b) A non-developmental item, where the item was developed exclusively at private expense and sold in substantial quantities, on a competitive basis, to multiple provincial and local governments or to multiple foreign governments.*
- c) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace.*

Minor Modifications – Changes to an item of supply made to meet Federal Government requirements. For the purposes of this LOI these shall be limited to:

- a. Changes in colouration*
- b. Removal or modification of graphics and labelling*

¹ CSA Group, Z195-14, pg 10

² CSA Group, Z195-14, pg 10

c. *Combination of commercial components, limited to lacing and removable insoles/insocks.*

Non Developmental – *As defined in FAR 2.101,*

- a) *Any previously developed item of supply used exclusively for governmental purposes by a Federal agency, a Provincial, or local government, or a foreign government with which the Canada has a mutual defense cooperation agreement; or*
- b) *Any item described in paragraph (a) of this definition that requires only minor modification or modifications of a type customarily available in the commercial marketplace in order to meet the requirements of the procuring department or agency.*

Proposed Solution – *any product submitted by the respondent in answer to the LOI based on the requirements in Annex A.*

Protective sole plate – *An integrated component (metallic or nonmetallic) in footwear that provides puncture protection to the sole of the foot³ meeting the design requirements of CSA Z195-14 4.3 and the performance requirements of 5.2.*

Protective toecap – *A component designed to provide toe protection that is an integral and permanent part of the footwear⁴ meeting the design requirements of CSA Z195-14 4.2 and the performance requirements of 5.1.*

Speed-lacing closure – *A lacing system that terminates with at least 3 rows of (closed) speed hooks.*

Two zone lacing – *Lacing that allows varying control over the forepart and upper part of the boot, either through offset hardware at the flex notch, the use of different hardware in each part, or a combination thereof.*

³ CSA Group, Z195-14, pg 10

⁴ CSA Group, Z195-14, pg 10

1.5 Background

1.5.1 Due to zero stock inventories of certain sizes of nationally procured temperate weather combat boots, the Commander of the Canadian Army, endorsed by the Chief of the Defense Staff, approved a short-term solution that will permit entitled CAF members to purchase boots of their choice using simple criteria to define what the CAF recognize as acceptable features for boots. The following information has been revealed as a result of this decision:

- i Though this interim program has been successful in equipping CAF members with temperate weather boots, DND requires a long-term, sustainable solution for all operational footwear including, but not limited to, those boots issued for use in hot weather (dry), hot weather (wet), temperate weather, wet weather, cold/wet weather, and extreme cold weather;
- ii Due to the shift in cultural and gender diversity of the CAF, procuring footwear made with a variety of footwear sizing standards (last dimensions) may better accommodate the CAF population's feet;
- iii There exists COTS/MOTS footwear products that may meet CAF requirements including – but not limited to – durability, performance, and comfort. These products may offer advantages compared to traditionally sourced footwear such as: a larger supply network; lower cost of development, tooling, and economy of scale; production and delivery times; and warranty issues.

1.5.2 As a result, DND intends to purchase non-developmental COTS/MOTS footwear, first implementing the Future Testing Plan for Combat Footwear as a method of selection for Boots, Combat, Hot Weather (Desert), Plain Toe.

1.6 **Planned Procurement** – The estimated procurement schedule for the DCB is as described in Table 1. This schedule is subject to change.

Table I – Estimated Procurement Schedule

Procurement Activity	Estimated Timeline
Letter of Interest (LOI)	September 2020
Request for Proposal (RFP) posted on buyandsell.gc.ca	March 2021
Award of Contract	June 2021
Estimated delivery of Firm Quantity	March 2022

1.7 Potential Work Scope and Constraints

1.7.1 DND plans to acquire 10,000 DCBs with options for an additional 6,000. An additional 6,000 units and 6,000 in options may be available for product that meets the airworthiness requirements.

1.7.2 DND is investigating the possibility of awarding multiple contracts to fulfill the required quantities listed in 1.7.1. Based on the information garnered during this LOI – especially in regards to 1.5.1.ii – future contracts may be for the full quantity or be split amongst several suppliers.

1.7.3 The quantities listed in 1.7.1 are subject to change.

2.0 FUTURE TESTING PLAN FOR COMBAT FOOTWEAR

2.1 Preliminary Requirements

2.1.1 General Features – The description, features, colouration, and overall design will be included in each combat boot requirement, based on each application.

2.1.2 ISO 20347:2012 – In keeping with the global combat footwear industry, bids will need to demonstrate compliance in part or in whole to ISO 20347:2012. Different marking categories and special application requirements may be used for different articles of footwear. For example, a Temperate Combat Boot (TCB) may require a higher level of water resistance than a DCB.

2.1.3 Flame Resistance – As per operational clothing requirements, all combat footwear is required to be resistant to 3 second flash-flame exposure, self-extinguishing within 2 seconds, and no-melt/no-drip.

2.2 Performance Characteristics

2.2.1 The performance of each product will be used for bid selection, both on a pass/fail basis and point-rating. Whole-product testing will be used for this phase.

2.2.2 General Performance – Factors relating to the performance of all combat footwear, such as comfort, support, and slip resistance will be taken into consideration during performance assessment. These will remain mostly consistent from one Technical Data Package (TDP) to the next, though testing parameters and exact values may change.

2.2.3 Targeted Performance – Other key performance factors will be assessed depending on environmental factors and application. For example, the DCB will reward better moisture management testing results, while a TCB may be point-rated for water resistance.

2.3 Accelerated Aging

2.3.1 To assess the durability of each product, those selected based on performance may be subjected to accelerated aging, such as the SATRA SWAT protocol (<https://www.satrap.com/bulletin/article.php?id=986>). The lifespan will be quantified through this testing and used in bid selection.

2.3.2 DND is investigating how to better weigh the lifespan of the product against its cost. For example, a less durable product may be penalized and have its price adjusted to reflect frequent replacement costs. The selection process will encourage bidders to submit high-value products that balance cost with durability. Respondents are encouraged to take this information into consideration when selecting product to include with their responses.

3.0 RESPONSES

3.1 Instructions – Suppliers that produce or distribute COTS/MOTS Combat Footwear are encouraged to submit a written response to this LOI (3.2.1 i to iii). Respondents that produce or distribute COTS/MOTS Desert Combat Boots meeting the requirements of Annex A are requested to submit a written response detailing one or more products – their “proposed solution(s)” - as per 3.2.1 iv to vi. Suppliers that produce or distribute DCBs that fall outside of the requirements of Annex A are encouraged to do the same, with the addition of point 3.2.1.vii.

3.1.1 Suppliers are requested to submit their written response to the Delivery Address below by the closing date of this Letter of Interest (LOI).

3.2 Content

3.2.1 Responses should include the following:

- i Respondent’s name, contact information, and return address;
- ii The LOI number and closing date;
- iii A written statement containing any comments, feedback, or questions regarding the Future Testing Plan for Combat Footwear (Section 2.0).
- iv The brand, model name, and part number of each proposed solution;
- v Literature with general information about the proposed solution(s) including pamphlets, brochures, or specification sheets;
- vi Technical documents validating the information provided in the response (such as test reports, certificates of compliance, or technical data sheets).
- vii If the proposed solution falls outside the requirements of Annex A, include a written statement explaining which requirements cannot be met and how it affects the proposed solution. For example if the slip resistance requirement of ISO 20347:2012 SRC cannot be met but the proposed solution meets ISO 20347:2012 SRA , indicate so in the response and include a rationale for why the proposed solution would still meet the needs of DND. Include any design decisions that may have interfered with the ability to meet the requirement, the

impact that a lowered requirement might have on the user, and why the standard should be altered to allow the proposed solution. DND will take this rationale into consideration when finalising the draft requirements.

- 3.3 Format** – Written responses must be submitted in two (2) hard copies only on company letterhead. Responses may be submitted in either official language.
- 3.4 Samples** – Respondents may include product samples with their written response to help communicate the features of their product(s); however the Government of Canada will not assume any liability for samples, nor compensate Respondents for the value of the samples, or the cost of shipping them. Samples should be individually marked with the name and contact information of their Supplier.
- 3.5 Delivery Address** – Responses are not considered bids; however, responses shall be sent to the Department of National Defence at the following email address:
kathy.broom@forces.gc.ca
- 3.6 Use** - Responses and product samples will not be formally evaluated, however, they may be used by DND to develop a future performance specification. All responses and samples received by the LOI closing date will be reviewed by DND. DND may, at its discretion, review responses and samples received after the LOI closing date. Written responses to this LOI will not be returned. Product samples may be returned, at DND's discretion.
- 3.7 Costs** – The Government of Canada will not reimburse any respondent for expenses incurred responding to this LOI.
- 3.8 Parameters** – Respondents are reminded that this LOI is not a Request for Proposal. In that regard, respondents should feel free to include any comments or concerns with their responses. Canada reserves the right to seek clarification from a Respondent on information provided in response to this LOI, either by telephone, in writing, or in person.
- 3.9 Confidentiality** – The confidentiality of each Respondent will be maintained. Respondents are requested to clearly identify portions of their response that are proprietary. Items that are identified as proprietary will be treated as such except where Canada determines that the item is not of a proprietary nature.
- 3.9.1 DND Response** – Canada reserves the right to contact the respondent in order to request clarification, verification, or additional information regarding their response to this LOI. This communication may be by phone, email, or meetings between the Technical Authority and the respondents.

3.10 Enquiries – Enquiries regarding this LOI shall be directed to the LOI Authority. Enquiries received after 15 days before the closing date of this LOI may not be answered. Because this is not a bid solicitation, the Government of Canada will not necessarily respond to all enquiries in writing, nor circulate all answers to Industry. However, in the event that answers are circulated, Enquirers should clearly identify portions of their questions that are proprietary in nature. Canada may edit the questions or request that the Enquirer do so, so that the proprietary nature of the question is eliminated, and the enquiry can be circulated to Industry.

3.11 LOI Authority – The Department of National Defence is responsible for the management of the LOI process. The DND contact and LOI Authority for this LOI is:

Kathy Broom
Supervisor, Materiel Acquisition and Support Specialist
Directorate of Land Procurement 3-3-1
Department of National Defence / Government of Canada
kathy.broom@forces.gc.ca / Tel: 819-939-8457

4.0 Enclosures

Annex A – Draft Requirements for Boots, Combat, Hot Weather (Desert), Plain-Toe
Annex B – ISO 20347:2012 Requirements for Boots, Combat, Hot Weather (Desert), Plain-Toe

ANNEX A – DRAFT REQUIREMENTS FOR BOOTS, COMBAT, HOT WEATHER (DESERT), PLAIN-TOE

1.0 Overview

- 1.1** The Desert Combat Boot (DCB) may be used by all Canadian Armed Forces (CAF) personnel conducting training and operations in arid and semi-arid environments, with attention to those in the Army. Typically, the DCB may be worn for periods of 18 hours or more per day under the environmental conditions given below in Annex A paragraph 1.2. The DCB will provide protection from dust, debris, environmental hazards, and moisture.
- 1.2** The DCB will be used in arid/semi-arid environments, characterized by hot, dry weather. Ambient temperatures of +28° C to +49° C are to be typical, and relative humidity ranging from 8% to 43%. Extreme conditions of higher temperatures and lower humidity are to be expected.
- 1.3** Personnel are required to carry out a full range of tasks from marching over uneven, rocky and/or sandy terrain while carrying heavy loads, standing, climbing, operating and maintaining vehicles and equipment, and firing weapons.
- 1.4** The extended Combat Sock System (CSS) is used with all CAF-issued footwear, and all future footwear must be compatible with the system. It consists of a liner sock, a general purpose temperate sock, a hot weather sock, and a thermal cold weather combat sock. Samples of the extended CSS are available for reference upon request.
- 1.5** The DCB must be a Non-Developmental MOTS or COTS solution, as defined in 1.4.2 of Letter of Interest for Boots, Combat, Plain-Toe.

2.0 Design & Material Requirements

- 2.1** Certified or compliant to ISO 20347:2012 Category O2 with the following additional requirements:
- a. Outsole resistant to fuel oil (FO);
 - b. Sole complex heat insulative (HI);
 - c. Outsole resistant to hot contact (HRO); and
 - d. Slip resistance of outsole (ceramic floor with sodium lauryl sulfate and steel floor with glycerine) (SRC).

2.2 General Design

- 2.2.1** The DCB must include a “lace-to-toe”, two-zone, speed-lacing closure.

- 2.2.2** The DCB must not have any components or protrusions that are a snagging hazard, including a closed “pull-loop” for donning or any open hook lacing hardware.
- 2.2.3** The outsole design must be optimized for use in an arid and semi-arid environment. It must provide traction on wet or dry sand, rock, gravel, mud, desert grass, asphalt, concrete, and metallic surfaces. It must reduce the accumulation of foreign objects and debris (though must not necessarily be “Anti-FOD”), and should be self-cleaning.
- 2.2.4** The collar and tongue must be padded, and tongue must be gusseted, to protect the user from the ingress of foreign matter such as debris, dirt, sand, mud.
- 2.2.5** The user must be able to tuck their laces into the top opening of the boot (or a lace pocket) without impeding function nor causing irritation to the user.
- 2.2.6** A removable insole must be included as part of the seat region of the DCB, completely covering the non-removable insole. It must meet the “insock” requirements of ISO 20347:2012. Each pair of DCBs must include at least 1 additional pair of removable insoles.
- 2.2.7 Height** – The DCB must be of either B or C design according to the ISO 20347:2012 standard. For the purposes of this LOI the definition from EN ISO 20344:2011 (page 43) will be provided: *The height (in mm) of the upper is the vertical distance between the lowest point on the removable insole i.e. between the heel breast and the back of the heel [see Figure 1] and the highest point on the upper.*

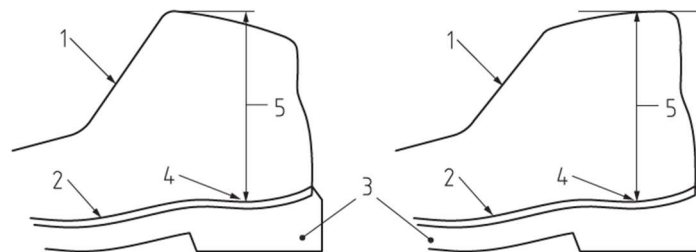


Figure 1 — Measurement of the height of the upper

Key to Figure 1

- 1 upper
- 2 insole/removable insole
- 3 outsole
- 4 lowest point of the insole within the heel region
- 5 height of the upper

- 2.3 Weight** – The weight of a size 10 US boot should be between 850g/boot and 700g/boot. This is a suggested value and subject to change based on the results of this LOI.

2.4 Material Requirements

2.4.1 All materials of the DCB must meet the requirements specified in ISO 20347:2012.

2.4.2 The lining must encourage quick drying of the user's feet through a combination of wicking and fast-drying properties. The upper as a whole must be breathable while affording protection from short periods of exposure to moisture (ex. Dew, rain). The lining, "insock" (or removable insole), and "insole" (or lasting insole) should contain an anti-microbial treatment or inherent properties. Any anti-microbial product(s) used in the DCB must be safe for use next-to-skin and must have documentation validating its innocuousness.

2.4.3 Any textile (i.e. excluding leather) used in the upper exterior must be made of high-tenacity nylon and meet the abrasion requirements of the collar specified in ISO 20347:2012. The tongue bellows may utilize a different textile but must meet the abrasion requirements.

2.4.4 The outsole material must have a density exceeding 0.9 g/cm³.

2.4.5 Reference values for the above (2.4.1, 2.4.3, and 2.4.4) have been provided in Annex B to assist respondents in evaluating their proposed solution's compliance.

2.5 Colour and Finish

2.5.1 The upper exterior leather must be Coyote Brown 476/498 according to AMS-STD-595 20150. All externally visible materials should be a close visual match to the upper leather. Hardware (i.e. grommets) and the cushion-midsole may be a non-gloss black.

Respondents are encouraged to comment on the availability of their product compared to other similar colours (i.e. "Tan" or "Sand"), and the impact on price, lead time, or minimum order quantity. Samples and literature are not required to be in Coyote Brown for the purposes of this LOI.

2.5.2 The upper leather must be flesh-out sueded or grain-out Nubuck for easy care and maintenance.

3.0 Performance

3.1 General Performance – The following performance indicators may be assessed on a pass/fail basis to determine if the product falls within acceptable ranges for stability.

- i Slip resistance (on gravel) in accordance with SATRA TM144;
- ii Longitudinal Stiffness in accordance with SATRA TM194; and
- iii Torsional Stiffness in accordance with SATRA TM256.

3.2 Targeted Performance – The following performance indicators may be assessed and point-rated for selection. These tests represent the key performance indicators most valued for a DCB.

- i Energy absorption in accordance with SATRA TM183;
- ii Moisture management (Sweating manikin foot) in accordance with SATRA TM376;

4.0 Durability

4.1.1 The DCB must have a minimum service life of 180 field days. The boot may be worn for periods of 18 hours or more per field day. Soldiers will be issued two pairs of boots to allow sufficient time to eliminate surface moisture or perspiration from the pair not being used. Respondents should indicate the estimated lifespan of their products in their response to the LOI. This estimate will not be used for selection nor will the accuracy of this estimate impact future bid selections.

4.1.2 SATRA Simulated Wear Assessment Test (SWAT). During bid evaluation the lifespan of the DCB will be determined through the SATRA Simulated Wear Assessment Test (SWAT), utilising combined equipment from TM362 (Abrasion Resistance of Soles – Biomechanical Method) and TM376 (Advanced Moisture Management Test). The lifespan of the boot will be quantified according to the degradation of performance and physical state during several thousand cycles (or "steps") of accelerated aging. This assessment process is subject to change based on the results of this LOI.

4.1.3 The lifespan of the boot will be used to assess performance and either point-rated or used to index the price, taking into consideration replacement costs for high-wear use.

4.1.4 The DCB may be resoleable, either through local third-party services or by sending the footwear to a manufacturer-approved facility.

4.1.5 The lifespan of the DCB includes up to 2 replacement each of the removable insole and laces. At least 1 replacement of each must be included with each product.

4.1.6 The DCB will likely be exposed to the following chemicals. All exterior materials must be able to withstand the described exposure without degradation to the point of failure. If contaminated by the below substances, washing with commercially available detergent or soap should remove enough of the substance to render any residue non-hazardous to combustion.

- i Perspiration (acidic) in accordance with AATCC TM 15-2013 (section 6);
- ii Sea Water in accordance with AATCC TM 106-2013 (section 6);
- iii Road Salt Mixture (solid, 77% minimum calcium chloride (type S, Grade 1) in accordance with ASTM D98, dissolved in water to make a 1:4 ratio mixture of road salt to water;

- iv Diethyltoluamide (DEET) insect repellent liquid (75%) and cream (32%);
- v Petroleum, Oils, and Lubricants (POLs):
 - Jet fuel in accordance with CAN/CGSB-3.22-2012 (R2017);
 - Lubricating Oil (SAE Grade 50 (military grade 1100, commercial grade 100) in accordance with SAE J1966*6);
 - Diesel Fuel (Grade 2, 100%) in accordance with ASTM D975; and
 - Gasoline (Reference Fuel B, Isooctane (70%) and Toluene (30%)) in accordance with motor fuels, section 1 of ASTM D2699;
- vi Anti-Freeze (ethylene glycol (reagent grade) 50% volume and distilled water, 50% volume).

4.2 Sizing – The DCB must be available in US customary sizing, in both male and female sizes (whole and half). Respondents must include available sizing with their documentation, as well as the availability of extended sizing.

4.3 Protection

4.3.1 As per 2.1.1, the DCB must have the following properties as defined in ISO 20347:2012:

O2 - A: Antistatic

O2 - E: Energy absorption of the seat region

O2 - WRU: Water resistance of the upper

FO: Resistance to Fuel Oil

HI & HRO: Resistance of the sole to heat transfer and hot contact

SRC: Slip resistance on tile and steel

Reference values have been provided in Annex B to assist respondents in evaluating their proposed solution's compliance.

4.3.2 The DCB must protect the user from the substances listed in 2.5.4 by preventing transference to the foot (either by penetrating the outer materials or circumventing them).

4.3.3 Flame Resistance – The DCB must be resistant to flash-flame exposure, self-extinguishing within 2 seconds, and no-melt/no-drip, in accordance to NFPA 1971 8.5 Flame Resistance Test 4 (modified for 3 second exposure to flame).

4.3.4 The DCB must not include metatarsal protection nor a protective toecap, as defined in CSA Z195-14.

4.3.5 Airworthiness – There may be the opportunity for additional purchases of DCB solutions that meet airworthiness requirements. Proposed solutions that are certified United States Air Force (USAF) Safe-to-Fly may be considered for additional purchase quantities during future bid evaluation and contract award phases.

5.0 APPLICABLE DOCUMENTS

- 5.1** The following documents or portions thereof are referenced within this draft specification and shall be considered part of the requirement for the Boots, Combat, Hot Weather (Desert), Plain-Toe. The edition in effect on the date of the Request For Proposal is the applicable edition unless otherwise specified.
- 5.2 Other Publications** – The Government does not provide the documents listed below. These documents may be purchased from the sources shown.

**American Association of Textile Chemists and Colorists (AATCC),
P.O. Box 12215, Research Triangle Park, North Carolina, U.S.A. 27709**

TM15 (2013) Fastness of Colored Textiles to (Acid) Perspiration
TM 106 (2013) Colorfastness to Water: Sea

**US Federal Standards and Military Specifications
DLA Document Services, Building 4/D, 700 Robbins Avenue
Philadelphia, PA, 19111-5094 USA**

AMS-STD-595 20150 Standard Colors Used in U.S. Government Procurement

**American Society for Testing and Materials (ASTM)
100 Barr Harbor Drive
West Conshohocken, Pennsylvania, 19428, U.S.A**

D98-15 Standard Specification for Calcium Chloride
D975-20 Standard Specification for Diesel Fuel
D2699-19 Standard Test Method for Research Octane Number of Spark-Ignition
 Engine Fuel

**Canadian General Standards Board Sales Unit
11 Laurier St, Place du Portage, Phase III, 6B1
Gatineau, Quebec, K1A 1G6**

CAN/CGSB-3.22-2012 (R2017) Wide-Cut Type Aviation Turbine Fuel (Grade JET B)

**Canadian Standards Association (CSA)
5060 Spectrum Way, Suite 100,
Mississauga, Ontario, L4W 5N6**

CSA Z195-14 Protective Footwear

NFPA Standards – National Fire Protection Association

**1 Batterymarch Park,
Quincy, Massachusetts, 02169-7471 USA**

NFPA 1971 (18) Standard on Protective Ensembles for Structural Fire Fighting and Proximity
Fire Fighting

**ISO International Standards – International Organization for Standardization
ISO Central Secretariat, Chemin de Blandonnet 8, CP 401
1214 Vernier, Geneva, Switzerland**

ISO 20344:2011 Personal protective equipment, Test methods for footwear
ISO 20347:2012 Personal protective equipment, Occupational Footwear

**SAE International – Society of Automotive Engineers
400 Commonwealth Drive
Warrendale, PA, 15096 USA**

SAE J1966*6 Lubricating Oils, Aircraft Piston Engine

**Shoe and Allied Trades Research Association, (SATRA)
SATRA House, Rockingham Road,
Kettering, Northants, NN169JH, England**

TM144 Friction (Slip Resistance) of Footwear and Floorings
TM183 Whole Shoe Cushion Assessment Test
TM194 Longitudinal Stiffness of Footwear
TM256 Torsional Stiffness of Footwear
TM362 Abrasion Resistance of Soles – Biomechanical Method
TM376 Advanced Moisture Management Test
TM436 Determination of Whole Shoe Thermal Insulation Value and Cold Rating

**ANNEX B – ISO 20347:2012 REQUIREMENTS FOR
BOOTS, COMBAT, HOT WEATHER (DESERT), PLAIN-TOE**

Table 1 features reference values for ISO 20347:2012, including the additional values for abrasion resistance of the upper fabric and density of the outsole. These values are only provided to assist respondents in assessing their proposed solution’s compliance to the standard, they do not supersede ISO 20347:2012. Compliance to the values presented in Table 1 does not guarantee compliance to 20347:2012 nor will it be accepted as compliance in future bid evaluations.

Table 1 - Reference requirements for ISO 20347:2012

COMPONENT	VALUE	DETAIL	UNIT	REQUIREMENT
ALL LEATHER	PH VALUE		pH	3.2 ± 0.7
	CHROMIUM VI CONTENT		%	≤ 3.0
UPPER	TEAR STRENGTH - UPPER	LEATHER	N	≥ 120
		TEXTILE	N	≥ 60
	TEAR STRENGTH - COLLAR	LEATHER	N	≥ 30
		TEXTILE	N	≥ 15
	TEAR STRENGTH - TONGUE	LEATHER	N	≥ 36
		TEXTILE	N	≥ 18
	TENSILE PROPERTIES	LEATHER ONLY	N/mm ²	≥15
	VAPOUR PERMEABILITY		mg/cm ² · h	≥ 0.8
	VAPOUR COEFFICIENT		mg/cm ²	≥ 15
	ABRASION RESISTANCE - UPPER TEXTILE AND COLLAR	DRY	CYCLES	25,600
WET		CYCLES	12,800	
LINING TEXTILE	TEAR STRENGTH	TEXTILE	N	≥15
		MESH	N	≥15
	ABRASION RESISTANCE - VAMP/QUARTER LINING	DRY	CYCLES	25,600
		WET		12,800
	ABRASION RESISTANCE - SEAT & HEEL LINING	DRY	CYCLES	51,200
		WET		25,600
VAPOUR PERMEABILITY		mg/cm ² · h	≥2.0	
VAPOUR COEFFICIENT		mg/cm ²	≥20	
INSOLE	THICKNESS - FINISHED		mm	≥2.0
	ABRASION	400 CYCLES	NONE	REFERENCE
	WATER ABSORPTION/ DESORPTION	ABSORB		mg/cm ²
DESORB			%	≥80
INSOCK/ REMOVABLE INSOLE	THICKNESS		mm	≥ 2.0
	ABRASION	DRY	CYCLES	25,600
		WET		12,800
	WATER ABSORPTION/ DESORPTION	ABSORB		mg/cm ²
DESORB			%	≥ 80

Table 2 (continued) - Reference requirements for ISO 20347:2012

COMPONENT	VALUE	DETAIL	UNIT	REQUIREMENT
OUTSOLE	THICKNESS (CROSS)	BASE	mm	≥4
		CLEAT		≥2.5
	DENSITY		g/cm ³	> 0.9
	TEAR STRENGTH		kN/m	≥8
	ABRASION RESISTANCE		mm ³	≤ 150
	FLEXING RESISTANCE	CUT GROWTH BY 30K CYCLES	mm	≤ 4
	FO - FUEL OIL RESISTANCE	ΔV	%	≤ 12
		CUT IF SHRINK/HARDEN	mm	YES
	HYDROLYSIS	CUT 100K CYCLES	mm	≥ 6
	HI - SOLE HEAT INSULATION	150 °C, 30 min = = MAX 22* INCREASE, + DAMAGE REPORTED	°C	≤ 22
			STATE	COMPLIANT
HRO - HEAT RESISTANCE	300°C, 1 MIN	No melt no crack (when bent)	COMPLIANT	
WHOLE FOOTWEAR	E - ENERGY ABSORPTION		J	≥ 20
	BOND STRENGTH - BOTH UPPER AND MIDSOLE	NO TEAR	N/mm	≥ 4.0
		TEAR		≥ 3.0
	SLIP RESISTANCE (FORWARD)	HEEL SLIP - SLS & TILE	μ	≥ 0.28
		FLAT SLIP - SLS & TILE		≥ 0.32
		HEEL SLIP - GLYCERINE & STEEL		≥ 0.13
		FLAT SLIP - GLYCERINE & STEEL		≥ 0.18
	INNOCUOUSNESS			COMPLIANT
A - ANTISTATIC		MΩ	0.1<≥1K	