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Place du Portage, Phase III
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Gatineau
Québec
K1A 0S5
Bid Fax: (819) 997-9776

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Industrial Vehicles & Machinery Products Division
LEFTD - HS Division
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140, rue O'Connor,
East Tower, 4th Floor/
Tour Est, 4e étage
Ottawa
Ontario
K1A 0S5

Title - Sujet STOCK REPLENISHMENT ROPE	
Solicitation No. - N° de l'invitation W8482-194359/A	**Amendment No. - N° modif.** 001
Client Reference No. - N° de référence du client W8482-194359	**Date** 2019-01-08
GETS Reference No. - N° de référence de SEAG PW-$$HS-648-76007	
File No. - N° de dossier hs648.W8482-194359	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2019-01-21**	**Time Zone** **Fuseau horaire** Eastern Standard Time EST
F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☑	
Address Enquiries to: - Adresser toutes questions à: Pieris, Sherline	**Buyer Id - Id de l'acheteur** hs648
Telephone No. - N° de téléphone (613) 296-9858 ( )	**FAX No. - N° de FAX** ( ) -
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:**	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
Vendor/Firm Name and Address **Raison sociale et adresse du fournisseur/de l'entrepreneur** **Telephone No. - N° de téléphone** **Facsimile No. - N° de télécopieur**	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) **Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)** **Signature** **Date**	

AMENDMENT 001

This amendment is raised to provide questions and answers as follows:

Question 1:
What is the price details of the ropes on this tender, as it was awarded last time?

Answer 1:
This information cannot be disclosed. However, the last awarded contract value can be retrieve through a search on Buy and Sell.

Question 2:
Can bids be submitted via email to the Contracting Authority?

Answer 2:
No. Bids must be submitted in accordance with clause 2.2 Submission of Bids in the solicitation.

Question 3:
Could you offer some pictures or literature of each item?

Answer 3:
Clause 6.15-Canadian General Standards Board-Standards provide options on how to retrieve each publication referenced in the Line Item Detail. In addition, copies of all standards are provided in this amendment.

Question 4:
What is the description/supplementary features of items 3 through 7?

Answer 4:
No description/supplementary features for items 3 through 7 is referenced in the Line Item Detail. Nonetheless, all information needed for the production of this requirement is in the corresponding Canadian General Standard Board (CGSB) book.

Question 5:
What is the diameter/ length of line items 3 through 7?

Answer 5:
The following is as per the corresponding CGCS:
4020-21-8832792 – Diameter 14.0 mm Length any acceptable
4020-21-8830837 – Diameter 56.0 mm Length 200.0 meters
4020-21-8966811 – Diameter 36.0 mm Length minimum 360 meters maximum 400 meters

Question 6:
Can you please confirm if CGSB-40.20-2008 standard was withdrawn?

Answer 6:
Yes. All of the CGSB standards referenced in the Line Item Detail was withdrawn. Nevertheless, the production of the ropes are based off these standards. The withdrawn copies of CAN/CGSB-40.20-2008, CAN/CGSB-40.11-95 and CAN/CGSB-40.16-95 are provided below:

Government of Canada | Gouvernement du Canada

Canadian General Standards Board | Office des normes générales du Canada

CAN/CGSB-40.20-2008

ICS 59.080.50

WITHDRAWAL

October 2016

Reduced recoil rope

This National Standard of Canada is hereby withdrawn due to limited use and support for its revision. This withdrawal notice removes all remaining standards in the series.

The Standards Council of Canada requires that accredited Standards Development Organizations, such as the CGSB, regularly review a consensus Standard to determine whether to re-approve, revise or withdraw. The review cycle is normally five years from the publication date of the latest edition of the Standard.

The information contained in the Standard was originally developed pursuant to a voluntary standards development initiative of the CGSB. The information contained therein may no longer represent the most current, reliable, and/or available information on this subject. CGSB hereby disclaims any and all claims, representation or warranty of scientific validity, or technical accuracy implied or expressed respecting the information therein contained. The CGSB shall not take responsibility nor be held liable for any errors, omissions, inaccuracies or any other liabilities that may arise from the provision or subsequent use of such information.

RETRAIT

Octobre 2016

Câbles à recul amorti

Cette Norme nationale du Canada est retirée par le présent avis en raison de son utilisation limitée et du manque de support pour sa révision. Cet avis de retrait supprime toutes les normes restantes de la présente série.

Le Conseil canadien des normes exige que les organismes accrédités d'élaboration de normes, tel que l'ONGC, effectue régulièrement un examen des normes consensuelles afin de déterminer s'il y a lieu d'en renouveler l'approbation, de les réviser ou de les retirer. Le cycle d'examen d'une norme est généralement de cinq ans à partir de la date de publication de la dernière édition de celle-ci.

L'information contenue dans la norme a été élaborée initialement en vertu d'une initiative volontaire d'élaboration de normes de l'ONGC. Elle peut ne plus représenter l'information disponible et/ou l'information la plus actuelle ou la plus fiable à ce sujet. L'ONGC décline par la présente toute responsabilité à l'égard de toute affirmation, déclaration ou garantie de validité scientifique ou d'exactitude technique implicite ou explicite relative à l'information contenue dans la norme. L'ONGC n'assumera aucune responsabilité et ne sera pas tenu responsable quant à toute erreur, omission, inexactitude ou autre conséquence pouvant découler de la fourniture ou de l'utilisation subséquente de cette information.

Copies of withdrawn standards are available from the CGSB Sales Centre by telephone at 819-956-0425 or 1-800-665-2472, by fax at 819-956-5740, by Internet at www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-eng.html, by e-mail at ncr.CGSB-ONGC@tpsgc-pwgsc.gc.ca or by mail at Sales Centre, Canadian General Standards Board, 11 Laurier Street, Gatineau, Canada K1A 1G6.

Des copies des normes retirées peuvent être obtenues auprès du Centre des ventes de l'ONGC. Il suffit d'en faire la demande par téléphone au 819-956-0425 ou 1-800-665-2472, par télécopieur au 819-956-5740, par Internet à : www.tpsgc-pwgsc.gc.ca/ongc-cgsb/index-fra.html, par courriel à ncr.CGSB-ONGC@tpsgc-pwgsc.gc.ca, ou par courrier adressé au Centre des ventes, Office des normes générales du Canada, 11, rue Laurier, Gatineau, Canada K1A 1G6.

Government of Canada
Gouvernement du Canada

Canadian General Standards Board
Office des normes générales du Canada

CAN/CGSB-40.20-2008

Reduced Recoil Rope

ICS 59.080.50

Standards Council of Canada
Conseil canadien des normes

National Standard of Canada

Canada

Experience and excellence
Expérience et excellence
CGSB ONGC

The CANADIAN GENERAL STANDARDS BOARD (CGSB), under whose auspices this National Standard of Canada has been developed is a government agency within Public Works and Government Services Canada. CGSB is engaged in the production of voluntary standards in a wide range of subject areas through the media of standards committees and the consensus process. The standards committees are composed of representatives of relevant interests including producers, consumers and other users, retailers, governments, educational institutions, technical, professional and trade societies, and research and testing organizations. Any given standard is developed on the consensus of views expressed by such representatives.

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An up-to-date listing of CGSB standards, including details on latest issues and amendments, and ordering instructions, is found in the CGSB Catalogue, which is published annually and is available without charge upon request. An electronic version, CAT, is also available. More information is available about CGSB products and services at our Web site — www.ongc-cgsb.gc.ca.

Although the intended primary application of this standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any applicable regulatory requirements prior to its use. CGSB neither assumes nor accepts any responsibility for any injury or damage that may occur during or as the result of tests, wherever performed.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. CGSB shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights are entirely their own responsibility.

Further information on CGSB and its services and standards may be obtained from:

The Manager
Strategic Standardization Division
Canadian General Standards Board
Gatineau, Canada
K1A 1G6

The STANDARDS COUNCIL OF CANADA is the coordinating body of the National Standards System, a coalition of independent, autonomous organizations working towards the further development and improvement of voluntary standardization in the national interest.

The principal objects of the SCC are to foster and promote voluntary standardization as a means of advancing the national economy, benefiting the health, safety and welfare of the public, assisting and protecting the consumer, facilitating domestic and international trade, and furthering international cooperation in the field of standards.

A National Standard of Canada (NSC) is a standard prepared or reviewed by an accredited Standards Development Organization (SDO) and approved by the SCC according to the requirements of CAN-P-2. Approval does not refer to the technical content of the standard; this remains the continuing responsibility of the SDO. A NSC reflects a consensus of a number of capable individuals whose collective interests provide, to the greatest practicable extent, a balance of representation of general interests, producers, regulators, users (including consumers), and others with relevant interests, as may be appropriate to the subject in hand. It normally is a standard, which is capable of making a significant and timely contribution to the national interest.

Those who have a need to apply standards are encouraged to use NSCs. These standards are subject to periodic review. Users of NSCs are cautioned to obtain the latest edition from the SDO, which publishes the standard.

The responsibility for approving standards as National Standards of Canada rests with the:

Standards Council of Canada
200-270 Albert Street
Ottawa, Ontario
K1P 6N7

NATIONAL STANDARD OF CANADA **CAN/CGSB-40.20-2008**

REDUCED RECOIL ROPE

Prepared by the
Canadian General Standards Board CGSB

Approved by the
Standards Council of Canada

Published July 2008 by the
Canadian General Standards Board
Gatineau, Canada K1A 1G6

CANADIAN GENERAL STANDARDS BOARD

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Acknowledgment is made for the translation of this National Standard of Canada by the Translation Bureau of Public Works and Government Services Canada.

CANADIAN GENERAL STANDARDS BOARD

REDUCED RECOIL ROPE

FOREWORD

This standard sets out minimum performance requirements for ropes used in, but not limited to, marine applications with respect to their recoil and related properties. The objective of using reduced recoil rope is to enhance the safety of persons in the area of operations. However, the use of rope and cordage products has inherent safety risks, which are subject to variable conditions that may change over time.

CANADIAN GENERAL STANDARDS BOARD

REDUCED RECOIL ROPE

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CANADIAN GENERAL STANDARDS BOARD

REDUCED RECOIL ROPE

1. SCOPE

1.1 This standard establishes the minimum performance requirements for reduced recoil rope intended for use in, but not limited to, marine applications, primarily ship and boat handling.

1.2 Quantities and dimensions in this standard are given in metric units with yard/pound equivalents, mostly obtained through soft conversion, given in parentheses. The metric units shall be regarded as official in the event of dispute or unforeseen difficulty arising from the conversion.

1.3 The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any applicable regulatory requirements prior to its use.

2. REFERENCED PUBLICATIONS

2.1 The following publications are referenced in this standard:

2.1.1 ASTM International

ASTM D 882 — Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

2.1.2 The Cordage Institute (CI)

CI 1502 — Test Methods for Reduced Recoil Risk Rope.

2.1.3 A dated reference in this standard is to the issue specified. An undated reference in this standard is to the latest issue, unless otherwise specified by the authority applying this standard. The sources are given in the Notes section.

3. DEFINITIONS

3.1 The following definitions apply in this standard:

Abrasion Resistance (Résistance à l'abrasion)

The ability of a fibre or rope to withstand surface wear and rubbing because of motion against other fibres of rope components (internal abrasion) or a contact surface such as a fairlead (external abrasion).

Coefficient of Friction (Coefficient de frottement)

A factor for calculation that quantifies the reluctance to slip or slide. Generally, the higher the value, the lower the tendency to slide over an adjacent surface.

D (D)

The critical or smallest diameter of the fitting, drum or other system component.

Diameter (*d*) (Diamètre [*d*])

Measured diameter of the rope under the reference tension.

End for End Splice (Épissure bout à bout)

The joining of two separate pieces of rope to make one rope.

Initial Break (Rupture initiale)

The parting of one or more load-bearing components.

Load-bearing Component (Élément porteur)

The portion of the rope that provides tensile strength.

Minimum Warning Time Stretch (Délai minimal d'avertissement avant la rupture complète)

The minimum allowable warning time stretch that the rope shall undergo with at least one design component still intact.

Non-load-bearing Component (Élément non porteur)

The portion of the rope that provides functions other than tensile strength, such as the protective jacket, fillers and marker tape.

Parting Speed (Vitesse de séparation)

The rate of separation of the two fixed ends of the rope.

Recoil (Recul)

The tendency of broken ends of a tensioned rope to draw back rapidly after breaking.

Reduced Recoil Rope (Câble à recul amorti)

Rope designed to sequentially break at or above the minimum rated breaking strength. When the rope does part completely, the rope ends shall fall within the confines of the terminations from which tension was applied.

Reference Tension (Tension de référence)

For the purpose of measuring and testing, the reference tension is 1.38 d^2, where d is in millimetres and the load is in newtons.

Sequential Break (Rupture séquentielle)

A series of two or more breaks confining the release of the stored energy and providing a time delay between initial break and complete parting of the load-bearing components.

Thousand Cycle Load Level (*TCLL*) (Charge à mille cycles [*CMC*])

The approximate load which would cause failure of a 25 mm (1 in.) diameter rope after 1000 cycles.

Warning Time Stretch (Délai d'avertissement avant la rupture complète)

The stretch for a particular size of rope, from the point of first break to the point at which the last design component breaks.

4. CLASSIFICATION

4.1 The rope shall be supplied in the following types, as specified (par. 9.1).

4.1.1 ***Types***

Type 1 — intended to be used where high strength, low elongation properties are required

Type 2 — intended to be used where lower strength, medium elongation properties are required

Type 3 — intended to be used where low strength, high elongation properties are required.

5. GENERAL REQUIREMENTS

5.1 Each finished rope shall be continuous, with no end for end splice in its ordered length. Lengths of rope for non-load-bearing components are permitted to have strand interchanges. A maximum of two strand interchanges are permitted for load-bearing components within a length of 300 m (984 ft.).

5.2 The rope, when spliced according to the manufacturer's written instructions, shall be spliceable by a qualified rigger in not more than one hour per splice.

5.3 **Handling Properties** — The rope shall be capable of being wound in a figure eight when used on a double bollard with double bits, shall be able to be wrapped on a capstan or winch for heaving-in purposes, and shall be torque tolerant.

5.3.1 The rope shall maintain its handling properties over a temperature range of -40 to +50°C.

5.4 **Abrasion Resistance** — Load-bearing fibres shall be protected from abrasion by jackets, strand jacketing, coatings or other proven methods.

5.5 **Weathering** — Load-bearing fibres shall be protected from UV degradation by jackets, coatings or other proven methods.

5.6 **Resistance to Chemical Degradation** — The components shall resist degradation from exposure to common substances found in a shipboard environment, such as petroleum products, solvents and detergents.

5.7 **Workmanship** — The furnished rope shall be free of cuts, kinks, soft spots caused by lay or pitch length change, hockles, chafed or damaged sections, or broken, loose projecting ends in the rope or the strands.

5.7.1 The unspliced ends of the rope shall be cut off squarely and securely whipped, taped or heat sealed.

6. DETAILED REQUIREMENTS

6.1 **Reduced Recoil Properties** — The rope shall demonstrate reduced recoil properties and shall maintain those properties over the useful life of the rope when tested in accordance with CI 1502.

6.2 **Nominal Diameter and Minimum Breaking Strength** — The initial break shall occur at or above the minimum rated breaking strength when tested in accordance with CI 1502. Table 1 represents the nominal diameter (mm) and the corresponding minimum breaking strengths (kN) of the reduced recoil rope dependant on the suitable type of material used to achieve the minimum breaking strength for the specified nominal diameter.

Note: *TABLE 1 is provided for guidance only. It is recommended that the end-user specify the rope design, the working load, the minimum breaking strength and the rope diameter in accordance with the desired safety factor. There are a range of possible break strengths achievable for any given diameter dependant upon the materials of construction and the rope design.*

6.3 **Minimum Warning Time Stretch** — The rope, when tested in accordance with CI 1502, shall sequentially break so that there shall be a time delay of at least 10 s between the initial break and the complete parting of the load-bearing components. Table 2 indicates the parting speed and the minimum warning time stretch requirement of the rope.

6.4 **Performance in Fairleads** — The rope shall be useable at a minimum D/*d* ratio of 3:1 when used in fairleads or similar fittings.

6.5 **Performance on Winch Systems** — The rope shall be useable at a minimum D/*d* ratio of 8:1 when used on winch systems.

6.6 **Diameter Tolerance** — The tolerance is ±5% of the nominal diameter *d* at reference tension.

TABLE 1

Nominal Diameter		Type 1 Minimum Breaking Strength		Type 2 Minimum Breaking Strength		Type 3 Minimum Breaking Strength	
mm	(in.)	kN	(lb.)	kN	(lb.)	kN	(lb.)
6	1/4	22	4 900	*	*	5	1 100
10	3/8	45	10 200	*	*	13	3 000
12.5	1/2	76	17 100	*	*	18	4 100
14	9/16	*	*	*	*	25	5 500
16	5/8	112	25 200	109	24 500	32	7 100
19	3/4	160	36 000	129	28 900	42	9 450
20	13/16	*	*	151	34 000	*	*
22	7/8	212	47 700	181	40 700	*	*
25	1	261	58 900	214	48 200	70	15 700
29	1-1/8	352	79 200	274	61 500	*	*
30	1-1/4	396	89 100	306	68 700	105	23 600
32	1-5/16	444	99 900	341	76 600	*	*
35	1-3/8	492	111 000	*	*	*	*
38	1-1/2	547	123 000	421	94 700	149	33 500
41	1-5/8	679	153 000	499	112 100	*	*
44	1-3/4	803	181 000	590	132 700	214	48 100
51	2	911	205 000	671	150 800	248	55 800
54	2-1/8	991	223 000	805	180 900	*	*
57	2-1/4	1287	290 000	947	212 600	338	76 000
64	2-1/2	1411	318 000	1 073	241 200	*	*
67	2-5/8	1566	353 000	1 105	248 400	407	91 500
70	2-3/4	1698	383 000	1 207	271 400	*	*
76	3	1978	446 000	1 515	340 700	516	116 000
79	3-1/8	2118	477 000	*	*	*	*
83	3-1/4	2298	518 000	*	*	*	*
89	3-1/2	2637	594 000	*	*	*	*
92	3-5/8	2797	630 000	*	*	*	*
95	3-3/4	2977	671 000	*	*	*	*

** Not a commonly manufactured diameter. Contact manufacturer for availability.*

TABLE 2

Parting Speed		Minimum Warning Time Stretch
kt	m/s (ft./s)	m (ft.)
0.3	0.1 (0.4)	1.3 (4.2)
0.5	0.3 (0.8)	2.6 (8.4)
0.8	0.4 (1.3)	3.8 (12.6)
1.0	0.5 (1.7)	5.1 (16.8)
1.3	0.6 (2.1)	6.4 (21.0)
1.5	0.8 (2.5)	7.7 (25.2)
1.8	0.9 (2.9)	9.0 (29.4)
2.0	1.0 (3.4)	10.2 (33.6)
2.3	1.2 (3.8)	11.5 (37.8)
2.5	1.3 (4.2)	12.8 (42.0)
2.8	1.4 (4.6)	14.1 (46.2)
3.0	1.5 (5.0)	15.4 (50.4)

7. SERVICE LIFE

7.1 Cyclic Load Test

7.1.1 ***Specimen Condition*** — The specimen shall not have been previously loaded to more than 10% of its breaking strength nor have been intentionally cycled or maintained under load to improve its condition.

7.1.2 ***Load Tolerances*** — The tolerance for cyclic load level shall be within 1% of average initial break. The tolerance of reference load shall be within 0.5% of average initial break. Not more than 5% of the load cycles shall have upper or lower load limits outside of the tolerance bands.

7.1.3 ***Rate of Loading*** — The load rate for the 50% load level should be such that one cycle of the test machine lasts between 20 and 60 s. For subsequent load levels, adjust the load rate to keep the same rate of strain. Report the average rate of loading and the average cyclic period. When these have varied more than 10% throughout the test at any one-load level, report the average and range. A single, unavoidable interruption lasting 1 h is allowed for each load level.

7.1.4 ***Initial Loading Level and Number of Cycles*** — Begin by cyclic loading the specimen from the reference tension to 50% of initial break. Before the first cycle and during and after the tenth cycle, measure the lengths and load extension curves on the gauge length and record as prescribed for the initial setting cycles, except the cyclic load level shall be 50% of initial break. Continue cyclic loading at this 50% load level until the specimen fails or for 1000 cycles. The initial setting cycles shall be considered part of these total load cycles at 50% load levels.

7.1.5 ***Continuation of Cyclic Loading*** — Increase the cyclic load level to 60% of initial break. Continue cyclic loading at this load level until the specimen fails or for 1000 cycles. If the specimen survives the indicated number of cycles, increase the cyclic load level to 70% of initial break. Then continue cyclic loading at this load level until the specimen fails or for the same number of cycles. If the specimen survives the indicated number of cycles, increase the cyclic load level to 80% for initial break. Then continue cyclic loading at this load level until the specimen fails or for the same number of cycles. After 2000 cycles at the 80% load level, the test may be stopped. If the test is stopped at the 80% load level as specified above, load the specimen to break to determine residual breaking strength by destroying the rope in accordance with CI 1502.

7.1.6 ***Equivalent Cycles at Higher Load Levels*** — When the load level is increased to a higher load level after applying 1000 cycles at a lower load level, then a number of cycles, as given below, equivalent to the effect of the cycles at the lower load level may be added to the cycles applied at the higher load level:

1000 cycles at 50% = 251 cycles at 60%
1000 cycles at 50% + 1000 cycles at 60% = 215 cycles at 70%
1000 cycles at 50% + 1000 cycles at 60% + 1000 cycles at 70% = 113 cycles at 80%

For example, if a specimen survives 1000 cycles at 50% and then 1000 cycles at 60% but fails at 430 cycles at the 70% load level, the total equivalent cycles is 215 + 430 = 640 cycles at 70%.

7.1.7 ***Determination of Thousand Cycle Load Level (TCLL)*** — For each test, calculate the load level at which failure would occur in 1000 cycles. Calculate the *TCLL* as a percentage of initial break by the following formula:

$$TCLL = 100 - \frac{6.91(100 - TLL)}{In\ CTF}$$

where:

TLL = test load level, percentage of initial break, the load level at which *CTF* was determined

In = natural log, base *e*

CTF = cycles to failure at test load level

Then calculate the average *TCLL* for the two or more tests.

7.2 **Retention of Reduced Recoil Properties Test** — The confirmation of retention of reduced recoil properties is a two-part process.

7.2.1 The first part consists of testing a specimen in accordance with par. 7.1 Cyclic Load Test, to determine the *TCLL* value that will be used in the second part to test the retention of reduced recoil properties specified in par. 6.1, 6.2 and 6.3.

7.2.2 The second part consists of testing to measure reduced recoil properties of prototypes, and the retention of reduced recoil properties.

7.2.2.1 *Test Specimens* — The smallest and largest diameter ropes for each rope design shall undergo prototype testing. If ropes with a diameter less than 25 mm (1 in.) are to be manufactured, the minimum test length shall be 15 m (50 ft.).

7.2.2.2 *Reduced Recoil Properties* — Test specimens as specified in CI 1502, par. 8.3 to 8.8. If a rope design changes, repeat the testing.

7.2.2.3 *Retention of Reduced Recoil Rope Properties and Test Procedure* — Subject a new rope specimen to 500 cycles at the determined *TCLL* value (par. 7.2.1), then test in accordance with CI 1502, par. 8.6.2 to 8.8.6.

7.2.2.4 The manufacturer shall provide documentation of prototype testing and retention of reduced recoil properties in accordance with CI 1502.

8. PREPARATION FOR DELIVERY

8.1 **Product Identification** — Unless otherwise specified (par. 9.1), the manufacturer shall identify all ropes by inserting a continuous-ribbon water-repellent internal marker in accordance with ASTM D 882. The manufacturer's name, "Reduced Recoil Rope," and the year of manufacture of the rope shall be clearly printed on the internal marker at intervals of not more than 2 m (6.6 ft.).

8. 2 **Packaging** — Unless otherwise specified (par. 9.1), the rope shall be supplied on non-returnable reels (spools) in the diameters and maximum lengths specified in Table 3. The reels shall be wound so that each turn and layer is free from entanglement.

TABLE 3

Diameter and Length Per Reel

Diameter		Maximum Length ±2.5%	
mm	(in.)	m	(ft.)
6 to 12	(.25 to .50)	800	(2625)
14 to 18	(.55 to .70)	600	(1968)
20 to 88	(.80 to 3.50)	400	(1312)
96 to 120	(3.80 to 4.70)	200	(656)
128 to 168	(5.00 to 6.60)	100	(328)

8.3 **Labelling** — In addition to complying with the labelling requirements of any relevant acts or regulations, each reel of rope shall be clearly labelled to show the following information:

Contractor's name or registered trademark
Country of origin
Nominal diameter of rope
Manufacturer's minimum breaking strength
Delivered length of rope
Net weight of rope
Standard number and title: CAN/CGSB-40.20-2008, Reduced Recoil Rope.

9. NOTES

9.1 **Options** — The following options may be specified in the application of this standard:

a. Types (par. 4.1.1)
b. Information on the internal marker (par. 8.1)
c. Packaging details, if other than as specified (par. 8.2).

9.2 **Sources of Referenced Publications**

9.2.1 The publication referenced in par. 2.1.1 may be obtained from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, U.S.A, telephone 610-832-9585, Web site www.astm.org or from IHS Canada, 1 Antares Drive, Suite 200, Ottawa, Ontario K2E 8C4, telephone 613-237-4250 or 1-800-267-8220, fax 613-237-4251, Web site www.global.ihs.com.

9.2.2 The publication referenced in par. 2.1.2 may be obtained from The Cordage Institute, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087, telephone 610-971-4854, Web site www.ropecord.com.

(This appendix does not form a mandatory part of the standard).

ORDERING INFORMATION

A1. CERTIFICATE OF COMPLIANCE

A1.1 A certificate of compliance may be requested of the manufacturer or contractor certifying that samples have been tested, inspected and documented as required by this standard and that all requirements in this rope standard have been met.

A2. PROCUREMENT DOCUMENTS

A2.1 The following criteria may be included in procurement documents:

a. NATO stock number
b. Quality assurance provisions (e.g. ISO 9001:2000)
c. Marking and labelling
d. Preparation for delivery
e. Packaging (e.g. commercial or industry common practice)
f. Inspection (e.g. test methods, samples, supplier qualification requirements)
g. Environmental considerations
h. Length
i. Type
j. Colour
k. Size (diameter) and breaking strength
l. Coefficient of friction, as required by the purchaser or contract documents
m. Finishing requirements, as appropriate
n. Repairability
o. Floatation properties (eg. specific gravity 0.98, not to exceed 1.4).

Note: *The above list is not exhaustive.*

Government of Canada
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Canadian General Standards Board
Office des normes générales du Canada

CAN/CGSB-40.11-95

ICS 59.080.50

WITHDRAWAL

January 2005

Hawserlaid Polyester Rope

This standard is hereby withdrawn. As far as can be determined it is no longer being used in quantities that would warrant its continued maintenance.

RETRAIT

Janvier 2005

Cordage de polyester à torons commis en aussière

Cette norme est retirée par le présent avis. Dans la mesure où il est possible de le constater, elle n'est plus utilisée en quantité suffisante pour la maintenir en vigueur.

CGSB ONGC

Canadian
General
Standards
Board

CAN/CGSB-40.11-95

Supersedes 40-GP-11M

Hawserlaid Polyester Rope

National Standard of Canada

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The STANDARDS COUNCIL OF CANADA is the co-ordinating body of the National Standards System, a federation of independent, autonomous organizations working towards the further development and improvement of voluntary standardization in the national interest.

The principal objectives of the Council are to foster and promote voluntary standardization as a means of advancing the national economy, benefiting the health, safety and welfare of the public, assisting and protecting the consumer, facilitating domestic and international trade, and furthering international co-operation in the field of standards.

A National Standard of Canada is a standard which has been approved by the Standards Council of Canada and one which reflects a reasonable agreement among the views of a number of capable individuals whose collective interests provide, to the greatest practicable extent, a balance of representation of producers, users, consumers and others with relevant interests, as may be appropriate to the subject in hand. It normally is a standard that is capable of making a significant and timely contribution to the national interest.

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The responsibility for approving National Standards of Canada rests with the:

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45 O'Connor Street
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NATIONAL STANDARD OF CANADA

CAN/CGSB-40.11-95

Supersedes 40-GP-11M
August 1978

HAWSERLAID POLYESTER ROPE

This new edition supersedes 40-GP-11M, August 1978. Technical changes include revisions of the requirements for product identification and labelling.

Prepared by the
Canadian General Standards Board CGSB

Approved by the
Standards Council of Canada

Published September 1995 by the
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Acknowledgment is made for the translation of this National standard of Canada by the Translation Bureau of the Department of the Secretary of State.

CANADIAN GENERAL STANDARDS BOARD

HAWSERLAID POLYESTER ROPE

1. SCOPE

1.1 This standard specifies requirements for three-strand, hawserlaid, polyester fibre rope.

1.2 This rope is for general purpose use and may not be suitable for some specific applications.

1.3 The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate health and safety practices in conjunction with any existing applicable regulatory requirements prior to its use.

2. APPLICABLE PUBLICATIONS

2.1 The following publications are applicable to this standard:

2.1.1 Canadian General Standards Board (CGSB)

40-GP-1M — Methods of Sampling and Testing Cordage.

2.1.2 Cordage Institute

Terminology — Cordage Directory and Catalogue.

2.2 Reference to the above publications is to the latest issues, unless otherwise specified by the authority applying this standard. The sources of these publications are shown in the Notes section.

3. GENERAL REQUIREMENTS

3.1 Workmanship shall be in accordance with good commercial practice. The individual strands and the finished rope shall be free from kinks. There shall be no broken or loose ends projecting from the surface of the rope, and no other manufacturing imperfections that may affect the serviceability of the rope.

3.2 The yarn used in the manufacture of the rope shall be high tenacity, bright, continuous filament polyester fibre. Under no circumstances shall other than virgin polyester fibre be used.

3.3 **Colour** — Unless otherwise specified (par. 7.1), the rope shall not be dyed. If dyeing is specified, it shall not adversely affect the durability or physical properties of the rope.

3.4 **Resistance to Ultraviolet Light** — The polyester shall be appropriately protected against degradation by ultraviolet light.

4. DETAILED REQUIREMENTS

4.1 Construction

4.1.1 The finished rope shall consist of three strands, each having sufficient yarns to produce a rope conforming to the requirements of this standard.

4.1.2 The rope shall be made from balanced three or more ply and/or simple twisted yarns and shall have an equal number of yarns in each strand. Ropes 8 mm in diameter or larger can employ up to two single yarns per strand in the core to meet the requirements for linear density in Table 1.

4.1.3 Heat-setting of the rope shall not be permitted.

4.2 **Product Identification** — All ropes 14 mm in diameter and larger shall have a blue man-made multifilament marker yarn in each two strands. Unless otherwise specified (par. 7.1), smaller ropes shall not have marker yarns.

4.3 **Direction of Lay** — Unless otherwise specified (par. 7.1), the rope shall be right-hand or Z lay.

4.4 **Length of Lay (Turn)** — The length of rope having ten complete turns of one strand shall not exceed the length specified in Table 1 when measured in accordance with CGSB standard 40-GP-1M, Method 6.

4.5 **Lubrication** — Weighting or loading matter shall not be used. A lubricant may be added, but the total solvent-extractable material shall not be more than 3.0% of the mass of the finished rope when tested in accordance with CGSB standard 40-GP-1M, Method 7.

4.6 **Diameter** — The diameter shall be as specified in Table 1 when measured under force F in accordance with CGSB standard 40-GP-1M, Method 3.

4.7 **Linear Density** — The linear density of the rope shall be as specified in Table 1 when measured under force F in accordance with CGSB standard 40-GP-1M, Method 4.

4.8 **Breaking Strength** — The minimum breaking strength of the new rope shall be as specified in Table 1 when tested in accordance with CGSB standard 40-GP-1M, Method 5.

4.9 **Length of Put-Up** — Unless otherwise specified (par. 5.2 and 7.1), the rope shall be supplied in the following lengths with the following plus tolerances. No minus tolerance shall be permitted, unless specified (par. 7.1). Each coil shall be one continuous length with no splices.

Diameter (mm)	Length (m)	Plus Tolerance (%)
5 to 12	370	10
14 to 25	370	5
28 and over	370	5

4.10 **Condition of Rope Ends** — The ends of the rope shall be secured in a manner that will prevent them from unlaying and all fag ends shall be cut off before delivery.

5. PREPARATION FOR DELIVERY

5.1 **Labelling** — In addition to the labelling requirements of any relevant Acts or Regulations, each coil or package shall bear a label showing fibre content, nominal diameter, net mass, and the name or registered trademark of the contractor. Stencilling of the above information on reel heads shall be an acceptable alternative. Each coil shall also bear a label giving the breaking strength of the rope and criteria for determining the safe working load.

5.2 **Packaging and Packing** — Unless otherwise specified (par. 7.1), packaging and packing shall conform to normal commercial practice. All rope 57 mm in diameter or larger shall be supplied on non-returnable wooden reels.

6. INSPECTION

6.1 **Sampling** — Unless otherwise specified (par. 7.1), sampling for inspection and testing shall be in accordance with CGSB standard 40-GP-1M, Method 1.

6.2 **Conditions for Testing** — Tests to determine compliance with this standard may be carried out under prevailing atmospheric conditions. In cases of dispute, however, tests shall be made on samples that have been exposed to a standard atmosphere of 65 ± 2% RH and 20 ± 2°C for 72 h.

6.3 The purchaser shall accept the original mass/length of any coil or reel of rope that is shortened as a result of test specimens being cut from its length.

7. NOTES

7.1 **Options** — The following options must be specified in the application of this standard:

a. Colour, if required (par. 3.3)

b. Whether marker yarns required, small sizes (par. 4.2)

c. Direction of lay, if other than Z (par. 4.3)

d. Length, if other than specified (par. 4.9)

e. Packaging and packing details, if normal commercial practice is not suitable (par. 5.2)

f. Sampling, if other than as specified (par. 6.1)

g. Diameter (Table 1).

7.2 **Sources of Referenced Publications**

7.2.1 The publication referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, Canada K1A 1G6. Telephone (613) 941-8703 or 1-800-665-CGSB (Canada only). Fax (613) 941-8705.

7.2.2 The publication referred to in par. 2.1.2 may be obtained from the Cordage Institute, 350 Lincoln Street, Hingham, MA 02043, U.S.A. Telephone (617) 749-1016. Fax (617) 749-9783.

TABLE 1

Diameter mm	Diameter Tolerance ± mm	Force F* daN	Length of Lay Maximum cm	Linear Density ±5% ktex (g/m)	Breaking Strength Minimum daN
5	0.5	3	16	20	450
6	1.0	4	19	27	600
8	1.0	9	26	51	1 100
10	1.0	14	32	75	1 600
12	1.0	20	38	103	2 100
14	1.0	27	45	143	2 900
16	1.5	36	51	187	3 500
19	1.5	51	61	255	4 900
22	1.5	68	70	346	6 600
25	2.0	68	80	434	8 200
28	2.0	110	90	556	10 700
31	2.0	135	99	704	13 400
34	2.5	160	109	852	16 200
37	2.5	190	118	1 006	19 100
41	2.5	235	131	1 265	24 000
45	3.0	285	144	1 540	29 300
51	3.0	365	163	1 925	36 600
57	3.5	455	182	2 420	43 600
63	4.0	555	202	2 915	52 500
69	4.0	665	221	3 465	62 200
75	4.5	785	240	4 070	73 300
81	4.5	920	259	4 875	88 000

**Force to be applied when determining diameter and linear density.*

Government of Canada
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Canadian General Standards Board
Office des normes générales du Canada

CAN/CGSB-40.16-95

ICS 59.080.50

WITHDRAWAL

January 2005

Double-Braided Man-Made Fibre Rope

This standard is hereby withdrawn. As far as can be determined it is no longer being used in quantities that would warrant its continued maintenance.

RETRAIT

Janvier 2005

Cordage de fibres synthétiques à double tressage

Cette norme est retirée par le présent avis. Dans la mesure où il est possible de le constater, elle n'est plus utilisée en quantité suffisante pour la maintenir en vigueur.

CGSB ONGC

Canadian
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CAN/CGSB-40.16-95

Supersedes 40-GP-16M

Double-Braided Man-Made Fibre Rope

National Standard of Canada

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NATIONAL STANDARD OF CANADA

CAN/CGSB-40.16-95

Supersedes 40-GP-16M
May 1978

DOUBLE-BRAIDED MAN-MADE FIBRE ROPE

This new edition supersedes CGSB standard 40-GP-16M, May 1978. Technical changes include the addition of classes, the revision of Table 1 and the addition of Table 4.

Prepared by the
Canadian General Standards Board CGSB

Approved by the
Standards Council of Canada

Published April 1995 by the
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Acknowledgment is made for the translation of this National Standard of Canada by the Translation Bureau of the Department of the Secretary of State.

CANADIAN GENERAL STANDARDS BOARD

DOUBLE-BRAIDED MAN-MADE FIBRE ROPE

1. SCOPE

1.1 This standard specifies requirements for three types of double-braided ropes consisting of braided core and braided cover, for general use.

1.2 **Intended Uses**

1.2.1 ***Type 1*** — Type 1 rope is intended to be used where high strength, high elongation and nonfloating properties are required. Suggested uses: ocean towing, light-jackstay rig, anchor lines, helicopter slings and pendent cargo slings, buoy suspension ropes, berthing lines, grapnel lines, single point mooring system, block-and-tackle work, boat falls, heaving lines and boat rope.

1.2.2 ***Type 2*** — Type 2 rope is intended to be used where slightly lower strength, medium elongation and floating properties are required. Suggested uses: halyards, mooring lines, slings, block-and-tackle work, ocean towing and boat rope.

1.2.3 ***Type 3*** — Type 3 is intended to be used where medium strength, low elongation and nonfloating properties are required.

1.2.4 ***Class A*** — Class A rope is intended for use where special lengths of all types of rope are required for the Canadian Forces and other marine applications (Table 3).

1.2.5 ***Class B*** — Class B rope is intended for shorter lengths of all types of rope and untwisted yarns may be used in the core for the smaller diameter ropes (Table 4).

1.3 The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any existing applicable regulatory requirements prior to its use.

2. APPLICABLE PUBLICATIONS

2.1 The following publications are applicable to this standard:

2.1.1 Canadian General Standards Board (CGSB)

3-GP-357 — Steam Turbine Lubricating Oil

CAN/CGSB-4.2 — Textile Test Methods:

No. 2 — Conditioning Textile Materials for Testing

No. 15 — Nonfibrous Materials on Textiles

40-GP-1 — Methods of Sampling and Testing Cordage.

2.1.2 Cordage Institute

Terminology Cordage Directory and Catalogue.

2.2 Reference to the above publications is to the latest issues, unless otherwise specified by the authority applying this standard. The sources of these publications are shown in the Notes section.

3. CLASSIFICATION

3.1 Double-braided rope shall be supplied in the following types and classes, as specified (par. 8.1).

3.1.1 *Types*

Type 1 — Nylon core and nylon cover

Type 2 — Polypropylene core and nylon cover

Type 3 — Polyester core and polyester cover.

3.1.2 *Classes*

Class A — Marine

Class B — Commercial.

4. GENERAL REQUIREMENTS

4.1 Braided rope shall be of good workmanship, and free from imperfections and blemishes that may affect appearance or serviceability.

5. DETAILED REQUIREMENTS

5.1 Materials

5.1.1 ***Type 1*** — Yarns for both core and cover shall be high tenacity, bright, continuous filament nylon.

5.1.2 ***Type 2*** — Yarns for the core shall be continuous multifilament polypropylene, and for the cover shall be high tenacity, bright, continuous filament nylon.

5.1.3 ***Type 3*** — Yarns for both core and cover shall be high tenacity, bright, continuous filament polyester.

5.2 Construction

5.2.1 The rope shall be double-braided. The cover shall be braided over an inner core, both of which shall be of hollow construction.

5.2.2 All cover strands and all core strands shall be one size. The minimum number of strands for the cover and core shall be as specified in Table 1.

TABLE 1

Construction Requirements

Construction	Diameter	Ends/Carrier		Picks/cm × Diameter* mm	
	mm	Min.	Max.	Min.	Max.
Cover (Twill)					
16 Strand Twill	up to 14 incl.	2	3	19	22
20 Strand Twill	12 to 18 incl.	2	2	22	25
24 Strand Twill	16 to 60 incl.	2	2	24	28
28 Strand Twill	40 to 60 incl.	2	2	27	31
32 Strand Twill	40 to 168 incl.	1	2	29	34
Core Strands Min.					
8 Strand Plain	up to 14 incl.	2	6	5	6
	16 to 60 incl.	3	6	5	6
12 Strand Twill	up to 14 incl.	1	4	8	10
	16 to 168 incl.	2	4	8	10

**The picks/centimetre and diameter shall be measured under force F (table 2), as described in par. 7.2.1.*

5.2.3 Types 1 and 3 shall have not more than 55% core or cover by mass. Type 2 shall have not less than 46% and not more than 52% polypropylene core by mass.

5.2.4 The ends/carrier and picks/centimetre × diameter shall be as specified in Table 1. When twisted yarns are used, they shall be braided in a manner that will reduce the twist in their components.

Class A — One half of the strands in both the cover and the core shall have "S" twist and the other half "Z" twist.

Class B — For sizes up to and including 12.5 mm diameter, flat untwisted yarns shall be used in the core.

5.2.5 Heat-setting of double-braided rope or any of its twisted components shall not be permitted.

5.2.6 Lengths of rope as specified in Table 3 or Table 4, or short lengths if specified (par. 8.1), shall not have more than two braider splices or two strand interchanges in the core or in the cover.

5.3 **Physical Requirements**

5.3.1 ***Diameter*** — The diameter shall be as specified in Table 2, when measured under force F in accordance with CGSB standard 40-GP-1, Method 3.

5.3.2 ***Breaking Strength*** — The initial breaking strength shall be as specified in Table 2. Once the minimum breaking strength requirement is reached, it is not necessary to continue the test until the rope breaks when tested in accordance with CGSB standard 40-GP-1, Method 5 and Method 1.

5.3.3 ***Elongation at Minimum Breaking Strength*** — The elongation shall be measured at the point when the minimum breaking strength is reached. The initial length of the specimen shall be measured under force F. The elongation shall not exceed 35% for Type 1, 40% for Type 2 and 30% for Type 3.

5.3.4 ***Linear Density*** — The linear density of the rope shall be as specified in Table 2, when tested in accordance with CGSB standard 40-GP-1, Method 4.

TABLE 2

Physical Requirements

Diameter mm	Diameter Tolerance mm	Force F* daN	Breaking Strength (Force)			Linear Density		
			Type 1	Type 2 kN Min.	Type 3	Type 1 ktex	Type 2 g/m	Type 3 ±5%
6	0.5	5.6	8.2	7.0	8.2	22.5	20.0	27.0
7.5	0.5	8.7	12.8	10.7	12.8	35.2	31.2	42.2
9	0.5	12	18.4	15.3	18.4	50.6	45.0	60.8
10.5	0.5	17	25.1	20.6	25.1	68.9	61.2	82.7
12	0.5	22	32.8	28.0	32.8	90.0	80.0	108
14	0.5	30	44.6	38.0	43.4	122	109	147
16	0.5	40	58.2	49.0	55.8	160	142	192
18	0.5	50	73.7	62.0	69.7	202	180	243
20	0.5	62	91	77.0	84.9	250	222	300
22	0.5	75	110	93.0	102	302	269	363
24	1.0	90	131	110	120	360	320	432
26	1.0	105	154	127	139	422	376	507
28	1.0	122	178	145	160	490	436	588
30	1.0	140	205	165	182	562	500	675
32	1.0	160	233	185	206	640	569	768
34	1.0	180	263	210	230	722	642	972
36	1.0	200	295	230	256	810	720	972
40	1.5	250	364	280	313	1 000	889	1 200
44	2.0	300	434	340	374	1 210	1 076	1 452
48	2.0	360	510	400	440	1 440	1 280	1 728
52	2.0	420	591	460	512	1 690	1 502	2 028
56	2.0	490	678	530	588	1 960	1 742	2 352
60	2.5	560	770	605	670	2 250	2 000	2 700
64	2.5	640	867	686	756	2 560	2 276	3 072
68	2.5	720	970	772	848	2 890	2 569	3 468
72	2.5	810	1 080	862	944	3 240	2 880	3 888
80	3.0	1 000	1 310	1 060	1 100	4 000	3 556	4 800
88	3.5	1 210	1 560	1 270	1 320	4 840	4 302	5 808
96	4.0	1 440	1 830	1 510	1 550	5 760	5 120	6 912
104	4.5	1 690	2 130	1 760	1 810	6 760	6 009	8 112
112	4.5	1 960	2 440	2 030	2 080	7 840	6 969	9 408
120	5.0	2 250	2 770	2 320	2 360	9 000	8 000	10 800
128	5.0	2 560	3 120	2 630	2 670	10 240	9 102	12 288
136	5.0	2 890	3 490	2 960	2 990	11 560	10 276	13 872
144	5.5	3 240	3 880	3 310	3 330	12 960	11 520	15 552
152	6.0	3 610	4 280	3 670	3 690	14 440	12 836	17 328
160	6.0	4 000	4 710	4 060	4 060	16 000	14 222	19 200
168	6.5	4 410	5 150	4 450	4 450	17 640	15 680	21 168

**Force to be applied when determining diameter and linear density.*

5.4 **Finish** — No extraneous material shall be added for the purpose of weighing the rope (par. 5.2). The extractable matter of the finished rope shall not be more than 7%, when tested in accordance with CAN/CGSB-4.2 No. 15.

5.5 **Put-Up** — Unless otherwise specified (par. 8.1), the rope shall be supplied on nonreturnable reels (spools) in the lengths specified in Table 3 or Table 4. The ends of all ropes shall be cut squarely and be securely whipped, taped or heat-sealed. The reels (spools) shall be wound so that each turn and layer is free from entanglement.

TABLE 3

Class A Rope — Lengths

Diameter mm	Length per Reel m	
	Min.	Max.
6	720	800
7.5	720	800
9	720	800
10.5	720	800
12	720	800
14	360	400
16	360	400
18	360	400
20	360	400
22	360	400
24	360	400
26	360	400
28	360	400
30	360	400
32	360	400
34	360	400
36	360	400
40	360	400
44	360	400
48	360	400
52	360	400
56	360	400
60	360	400
64	360	400
68	360	400
72	360	400
80	360	400
88	360	400
96 to 120	180	200
128 to 168	90	100

TABLE 4

Class B Rope — Lengths

Diameter mm	Length per Reel m	
6 to 88	183 ± 5%	
	Min.	Max.
96 to 120	180	200
128 to 168	90	100

5.6 **Product Identification** — Unless otherwise specified (par. 8.1), the manufacturer shall identify all ropes larger than 12.5 mm nominal diameter by inserting a continuous-ribbon water-repellant marker between the braids. The manufacturer's name, fibre content and year of manufacture shall be clearly printed on the marker at intervals of 30 m. The printing shall not be affected by exposure to salt water or oil, when tested as specified in par. 7.2.3.

6. PREPARATION FOR DELIVERY

6.1 **Labelling** — In addition to complying with the labelling requirements of any relevant Acts or Regulations, each reel of rope shall bear a label showing the type, fibre content, nominal diameter, length, net mass and the name or registered trademark of the contractor.

6.2 **Packaging, Packing and Marking** — Unless otherwise specified (par. 8.1), normal commercial practice shall be acceptable.

7. INSPECTION

7.1 **Sampling** — Unless otherwise specified (par. 8.1), sampling shall be in accordance with CGSB standard 40-GP-1, Method 1.

7.2 **Testing**

7.2.1 ***Picks per Centimetre*** — While the rope is under force F, and subsequent to the diameter measurement, mark off ten complete picks. Measure, to the nearest millimetre, the distance between the marks. Repeat this procedure at least three times in different positions, not less than 300 mm apart. Calculate the average picks per centimetre as follows:

$$\text{Picks/cm} = \frac{100 \times \text{number of measurements}}{\text{total of the measured distances}}$$

7.2.2 ***Fastness of Printed Matter*** — Take three lengths of the marker, each approximately 500 mm long; retain one as control. Immerse one for 2 h in synthetic sea water, composed of an aqueous solution of 0.3% sodium chloride; soak the other for 2 h in lubricating oil conforming to CGSB standard 3-GP-357. The fastness of the printed matter shall be considered satisfactory, if no perceptible change in colour or legibility is noted during a visual comparison of the exposed specimens with the control specimen, following removal from the respective environments.

8. NOTES

8.1 **Options** — The following options must be specified in the application of this standard:

a. Type and class (par. 3.1)

b. Lengths of rope required (par. 5.2.6 and 5.5)

c. Diameter (Table 2)

d. Put-up, if other than as specified (par. 5.5)

e. Product identification, if other than as specified (par. 5.6)

f. Packaging, packing and marking details, if normal commercial practice is not acceptable (par. 6.2)

g. Sampling plan, if other than as specified (par. 7.1).

8.2 **Sources of Referenced Publications**

8.2.1 The publications referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, Canada K1A 1G6. Telephone (613) 941-8703 or 1-800-665-CGSB (Canada only). Fax (613) 941-8705.

8.2.2 The publication referred to in par. 2.1.2 may be obtained from the Cordage Institute, 350 Lincoln Street, Hingham, MA 02043. Telephone (617) 749-1016. Fax (617) 749-9783.

All other terms and conditions remain the same.