

Amendment to Agreement for Annual Supply of Tire Chains, Quote 2683

This Amendment is hereby entered into on this 15 day of December, 2011, by and between Thermo King Christensen, Inc., 7508 "F" Street, Omaha, NE 68127 (hereinafter "Contractor") and City of Lincoln (hereinafter "City"), for the purpose of amending an Agreement dated October 5, 2009, under E. O. No. 82604, (the "Contract"), for The Annual Supply of Tire Chains, Quote 2683, which is made a part hereof by this reference.

WHEREAS, the original term of the Agreement is September 1, 2009 thru August 31, 2010, with the option to extend for three (3) additional one (1) year periods upon written mutual consent of both parties; and

WHEREAS, the parties wish to extend the agreement for an additional one (1) year term (second renewal) beginning September 1, 2011 thru August 31, 2012; and

WHEREAS, the parties wish to amend the agreement to reflect a substitution of products to avoid a price increase for the term of the agreement as per Attachment A; and

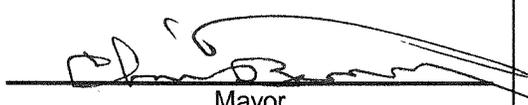
NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in the Contract, under City Executive Order No. 82507, and stated herein the parties agree as follows:

- 1) The Agreement shall be renewed for an additional one (1) year term beginning September 1, 2011 thru August 31, 2012.
- 2) The parties agree that the Contractor has a substitution of products to avoid a price increases listed on the Attachment A, which is attached hereto and made a part hereof by this reference.
- 3) All other terms of the Contract, not in conflict with this Amendment, shall remain in full force and effect.

The Parties do hereby agree to all the terms and conditions of this Amendment. This Amendment shall be binding upon the parties, their heirs, administrators, executors, legal and personal representatives, successors, and assigns.

IN WITNESS WHEREOF, the Parties do hereby execute this Amendment.

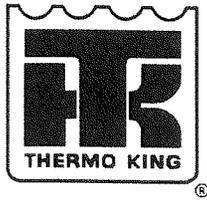
Official City Use Only

Dated this <u>13rd</u> day
of <u>Jan.</u> <u>2012</u> .
 _____ Mayor

Supplier, please sign and date. Mail back to our office; a faxed copy is not acceptable.

Dated December 15, 2011

Company Name: (PLEASE PRINT)	Thermo King Christensen
By: (PLEASE PRINT)	Kevin Jareske
By: (PLEASE SIGN)	<i>Kevin Jareske</i>
Title:	Director of Sales
Company Address: (PLEASE PRINT)	7508 'F' ST Omaha NE 68127
Company Phone & Fax: (PLEASE PRINT)	402-331-6116 402-331-9485
E-Mail Address: (PLEASE PRINT)	Kevin@TKCweb.Com



THERMO KING

CHRISTENSEN

December 8, 2011

Quote 2683

Current supplier is not able to honor quoted price.

New Prices Laclede

2742	\$504.84pr	
2715	\$208.32pr	Cross Chain 9/0
2245LG	\$49.42pr	
2216R	\$36.36pr	
2816R	\$44.35pr	
1854	not available	

SCC Chain Will Honor Old Quote Prices
Meets All NAMC Specifications.

QG9399 / 2742	\$415.50	
2615 / 2715	\$186.60	Cross Chain 11/0
2245LG	\$45.45	
QG2216	\$30.25	
QG2816	\$36.95	
QG1138	\$33.41	

Kevin Jareske
Director of Sales
402-935-1617

**AMENDMENT TO QUOTE 2683
AGREEMENT FOR CITY SECOND RENEWAL**

This Amendment is hereby entered into on this 19 day of July, 2011, by and between **Thermo King Christensen, Inc., 7508 "F" Street, Omaha, NE 68127** (hereinafter "Contractor") and **City of Lincoln** (hereinafter "City"), for the purpose of amending an Agreement dated October 5, 2009, under E. O. No. 82604, (the "Agreement"), for **The Annual Supply of Tire Chains, Quote 2683**, which is made a part hereof by this reference.

WHEREAS, the original term of the Agreement is September 1, 2009 thru August 31, 2010, with the option to extend for three (3) additional one (1) year periods upon written mutual consent of both parties; and

WHEREAS, the parties wish to extend the agreement for an additional one (1) year term (**second renewal**) beginning September 1, 2011 thru August 31, 2012; and

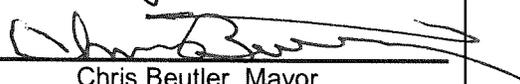
NOW, THEREFORE, IN CONSIDERATION of the mutual covenants stated herein the parties agree as follows:

- 1) The term of the Agreement shall be from September 1, 2011 thru August 31, 2012.
- 2) All other terms of the Agreement, not in conflict with this Amendment, shall remain in full force and effect.

The Parties do hereby agree to all the terms and conditions of this Amendment. This Amendment shall be binding upon the parties, their heirs, administrators, executors, legal and personal representatives, successors, and assigns.

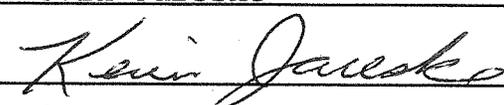
IN WITNESS WHEREOF, the Parties do hereby execute this Amendment.

Official City Use Only

Dated this <u>8th</u> day
of <u>August</u> 2011
 _____ Chris Beutler, Mayor

Supplier, please fill in the date and following information and mail back to our office; a faxed copy is not acceptable.

Executed this 19 day of July, 2011

Company Name: (PLEASE PRINT)	Thermo King Christensen
By: (PLEASE PRINT)	Kevin Jareske
By: (PLEASE SIGN)	
Title:	Director of Sales
Company Address: (PLEASE PRINT)	7508 "F" Street Omaha, NE 68127
Company Phone & Fax: (PLEASE PRINT)	402 331-6116 Fax: 402 331-9485
E-Mail Address: (PLEASE PRINT)	kevin@tkcweb.com

AMENDMENT TO QUOTE 2683 AGREEMENT FOR CITY FIRST RENEWAL

This Amendment is hereby entered into on this 12 day of JULY, 2010, by and between Thermo King Christensen, Inc., 7508 "F" Street, Omaha, NE 68127 (hereinafter "Contractor") and City of Lincoln (hereinafter "City"), for the purpose of amending an Agreement dated October 5, 2009, under E. O. No. 82604, (the "Agreement"), for The Annual Supply of Tire Chains, Quote 2683, which is made a part hereof by this reference.

WHEREAS, the original term of the Agreement is September 1, 2009 thru August 31, 2010, with the option to extend for three (3) additional one (1) year periods upon written mutual consent of both parties; and

WHEREAS, the parties wish to extend the agreement for the additional one (1) year term (**first renewal**) beginning September 1, 2010 thru August 31, 2011; and

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants stated herein the parties agree as follows:

- 1) The term of the Agreement shall be from September 1, 2010 thru August 31, 2011.
- 2) All other terms of the Agreement, not in conflict with this Amendment, shall remain in full force and effect.

The Parties do hereby agree to all the terms and conditions of this Amendment. This Amendment shall be binding upon the parties, their heirs, administrators, executors, legal and personal representatives, successors, and assigns.

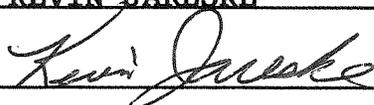
IN WITNESS WHEREOF, the Parties do hereby execute this Amendment.

Official City Use Only

Dated this <u>10th</u> day
of <u>Aug.</u> 2010
 <hr style="width: 100%;"/> Chris Beutler, Mayor

Supplier, please fill in the date and following information and mail back to our office; a faxed copy is not acceptable.

Executed this 12 day of JULY, 2010

Company Name: (PLEASE PRINT)	THERMO KING CHRISTENSEN
By: (PLEASE PRINT)	KEVIN JARESKE
By: (PLEASE SIGN)	
Title:	DIRECTOR OF SALES
Company Address: (PLEASE PRINT)	7508 F STREET
Company Phone & Fax: (PLEASE PRINT)	402 331-6116 FAX 402 331-9485
E-Mail Address: (PLEASE PRINT)	KEVIN@TKCWEB.COM

COPIES

CONTRACT DOCUMENTS

***City of Lincoln
Nebraska***

**Annual Supply of Tire Chains
Quote 2683 Addendum 1**

**Thermo King Christensen Inc.
7508 "F" Street
Omaha, NE 68127
Phone: 402.331.6116.3024**

**Contract Period:
September 1, 2009 thru August 31, 2010
(First year with the option to renew for three additional one-year periods.)**

City of Lincoln, Nebraska Contract Agreement

THIS CONTRACT, made and entered into this _____ day of _____ 2009, by and between **Thermo King Christensen, Inc., 7508 "F" Street, Omaha, NE 68127** hereinafter called contractor, and the City of Lincoln, Nebraska, a municipal corporation, hereinafter called the City.

WITNESS, that:

WHEREAS, the City has caused to be prepared, in accordance with law, Specifications, Plans, and other Contract Documents for the Work herein described, and has approved and adopted said documents and has caused to be published an advertisement for and in connection with said Work, to-wit:

Annual Supply of Tire Chains, Quote 2683 Addendum 1 and,

WHEREAS, the Contractor, in response to such advertisement, has submitted to the City, in the manner and at the time specified, a sealed Proposal in accordance with the terms of said advertisement; and,

WHEREAS, the City, in the manner prescribed by law has publicly opened, read aloud, examined, and canvassed the Proposals submitted in response to such advertisement, and as a result of such canvass has determined and declared the Contractor to be the lowest responsible bidder for the said Work for the sum or sums named in the Contractor's Proposal, a copy thereof being attached to and made a part of this Contract;

NOW, THEREFORE, in consideration of the sums to be paid to the Contractor and the agreements herein contained, the Contractor and the City have agreed and hereby agree as follows:

The Contractor agrees to (a) furnish all tools, equipment, supplies, superintendence, transportation, and other construction accessories, services, and facilities; (b) furnish all materials, supplies, and equipment specified to be incorporated into and form a permanent part of the complete work; (c) provide and perform all necessary labor in a substantial and workmanlike manner and in accordance with the provisions of the Contract Documents; and (d) execute construct, and complete all Work included in and covered by the City's award of this Contract to the Contractor, such award being based on the acceptance by the City of the Contractor's Proposal, or part thereof, as follows:

Agreement to full proposal.

The City agrees to pay to the Contractor for the performance of the Work embraced in this Contract, the Contractor agrees to accept as full compensation therefore, the following sums and prices for all Work covered by and included in the Contract award and designated above, payment thereof to be made in the manner provided by the City:

Contract amount to be purchased as needed at the Unit Price provided in the bid.

City of Lincoln, Nebraska Contract Agreement

The term of agreement shall be one (1) year from September 1, 2009 thru August 31, 2010; with option to renew for three (3) additional one (1) year terms.

GUARANTEE:

A performance bond and payment bond in the full amount of the contract shall be required for all construction contracts. These bonds shall remain in effect during the guarantee period as stated in the specifications.

The Contract Documents comprise the Contract, and consist of the following:

1. The Instructions to Bidders
2. The Accepted Proposal
3. The Contract Agreements
4. The Specifications
- *5. The Special Provisions, if applicable

City of Lincoln, Nebraska Contract Agreement

These Contract Agreements, together with the other Contract Documents herein above mentioned, form this Contract, and they are as fully a part of the Contract as if hereto attached or herein repeated.

The Contractor and the City hereby agree that all the terms and conditions of this Contract shall by these presents be binding upon themselves, and their heirs, administrators, executors, legal and personal representatives, successors, and assigns.

IN WITNESS WHEREOF, the Contractor and the City do hereby execute this contract.

EXECUTION BY THE CITY OF LINCOLN, NEBRASKA

ATTEST:

Jan E. Ruddy
City Clerk



CITY OF LINCOLN, NEBRASKA

[Signature]
Mayor

Approved by:

82604

Executive Order No. _____

EXECUTION BY CONTRACTOR

IF A CORPORATION:

ATTEST:

[Signature] (SEAL)
Secretary

THERMO KING CORPORATION
Name of Corporation
7508 F STREET, OWAMA NE 68127
Address
By: [Signature]
Duly Authorized Official
SEC TREAS
Legal Title of Official

IF OTHER TYPE OF ORGANIZATION:

Name of Organization

Type of Organization

Address
By: _____
Member
By: _____
Member

IF AN INDIVIDUAL:

Name

Address

Signature

City of Lincoln/Lancaster County (Lincoln Purchasing) Supplier Response

Bid Information		Contact Information		Ship to Information
Bid Creator	Shelly Hinze Buyer	Address	Purchasing\City & County	Address
Email			440 S. 8th St.	
Phone	1 (402) 441-8313		Lincoln, NE 68508	Contact
Fax	1 (402) 441-6513	Contact	Tom Kopplin Asst. Purchasing Agent	Department
Bid Number	2683 Addendum 1			Building
Title	Annual Supply of Tire Chains	Department		
Bid Type	Quote	Building		Floor/Room
Issue Date	08/21/2009			Telephone
Close Date	8/31/2009 12:00:00 PM CST	Floor/Room		Fax
Need by Date		Telephone	1 (402) 441-7414	Email
		Fax	1 (402) 441-6513	
		Email	tkopplin@lincoln.ne.gov	

Supplier Information

Company Thermo King Christensen Inc.
 Address 7508 "F" Street
 Omaha, NE 68127
 Contact Kevin Jareske
 Department Sales
 Building
 Floor/Room
 Telephone 1 (402) 3316116 3024
 Fax 1 (402) 9351636
 Email
 Submitted 8/31/2009 11:28:22 AM CST
 Total \$38,774.00

Signature _____

Supplier Notes

Bid Notes

Addendum 1 was added to extend bid and line 1 tire size has been changed from 18.4 x 38 to 18.4 x 42"

If you need assistance in preparing your bid, there are several options.

1) Click the the "Help" button in the upper right hand corner of any screen; 2) Contact our office for a training session in Purchasing or assistance over the phone; 3) View the PowerPoint presentation at <http://www.lincoln.ne.gov/city/finance/purch/spec/veninst.ppt>

Bid Messages

Please review the following and respond where necessary

#	Name	Note	Response
1	Specifications	I acknowledge reading and understanding the specifications.	Yes
2	Instructions to Bidders	I acknowledge reading and understanding the Instructions to Bidders.	Yes
3	Special Provisions for Commodity Term Contracts	I acknowledge reading and understanding the Special Provisions for Commodity Term Contracts.	Yes
4	Tire Chain Tables I & II	I acknowledge reading and understanding Tire Chain Tables I & II.	Yes
5	Term	I understand that if awarded this bid, an Annual Supply Contract will be issued for the supply of the bid items for the period from September 1, 2009 through August 31, 2010 with the mutually agreeable options for renewal for three (3) additional one year terms.	Yes
6	Term Clause of Contract	(a) Bid prices firm for the full contract period. YES or NO (b) Bid prices subject to escalation/de-escalation YES or NO (c) If (b), state period for which prices will remain firm: through _____	YES
7	Renewal is an Option	Contract Extension Renewal is an option.	Yes
8	Kindred Pricing	Kindred pricing for City, i.e., list percent off, catalog number, or other method approved by City. (XX% off of the (year) catalog)	LACLEDE 2009 JOBBER PRICE LIST LESS 60%
9	Estimated Quantities	I acknowledge understanding the quantities listed are estimates and that individual orders may be placed by different Departments on an as needed basis at the prices bid.	Yes
10	Delivery	I acknowledge that delivery should be F.O.B. to the ordering Departments, the bulk of which will be 901 North 6th Street, Lincoln NE 68508.	Yes
11	Electronic Signature	Please check here for your electronic signature.	Yes
12	Contact	Name of person submitting this bid:	KEVIN JARESKE
13	Agreement to Addendum No. 1	Respondent hereby certifies that the change set forth in this addendum has been incorporated in their proposal and is part of their bid. Reason: Addendum 1 was added to extend bid and line 1 tire size has been changed from 18.4 x 38 to 18.4 x 42"	Yes

Line Items

#	Qty	UOM	Description	Response
1	75	EA	Size - 18.4 x 42, Cross Chain - 11/0 (20 link), Side - Chain, 9/0, Design - (FTH) Swivelloyd, Approximate Weight -285 lb. per pair.	\$415.50

Manufacturer: Custom

Item Notes:

Supplier Notes: MADE IN USA LACLEDE #2742

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Manufacturer/Model		LACLEDE #2742

2	20	EA	Size - 14.00 x 24, Cross Chain - 9/0 (18 link), Side Chain - 7/0, Design - (O.T.R.) Swivelloyd, Approximate Weight - 100 lb. per pair.	\$186.60
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Manufacturer: Custom

Item Notes:

Supplier Notes: MADE IN USA LACLEDE #2715

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Manufacturer/Model		LACLEDE#2715

3	40	EA	Size - 10.00 x 20, Cross Chain - 6/0, Side Chain - 6/0, Design - (SH) NACM #2245CAM, Approximate Weight - 56 lb. per pair.	\$45.45
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Item Notes:

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Manufacturer/Model		LACLEDE #2245CAM

4	10	EA	Size - P235 x 75R15, Cross Chain - .234, Side Chain - .218, Design - (P) NACM #2216R, Approximate Weight - 21 lb. per pair.	\$30.25
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Item Notes:

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Manufacturer/Model		LACLEDE #2216R

5	25	EA	Size - P235 x 55R17, Cross Chain - .234, Side Chain - .218, Design - (RP) NACM #2816, Approximate Weight - 25 lb. per pair.	\$36.95
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Item Notes:

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Manufacturer/Model		LACLEDE #2816

6	25	EA	Size - P225 x 60R16, Cross Chain - .207, Side Chain - .192, Design - (RP) NACM #1854, Approximate Weight - 20 lb. per pair.	\$33.41
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Item Notes:

Supplier Notes:

Item Attributes: Please review the following and respond where necessary

#	Name	Note	Response
1	Manufacturer/Model		LACLEDE #1854

Response Total:	\$38,774.00
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Annual Supply of Tire Chains

1. SCOPE

- 1.1 This specification covers ladder type chain assemblies designed for use on tires that have been manufactured in accordance with the standards of the Tire & Rim Association, Inc., 3200 West Market St., Akron, Ohio 44313.
 - 1.1.1 All dual tire chains specified herein are designed for use on dual tires mounted in accordance with specifications covering their center to center spacing as outlined by the NACM Chain Clearance Charts.
 - 1.1.2 Oversized tires, snow tires, special service, or special traction tires, etc., may require chains of a larger size or of a size not specified herein.
- 1.2 Classification Tire chains described in this specification shall be of the following types as specified:
 - 1.2.1 Reinforced Tire Chains
 - 1.2.1.1 Type RP Reinforced Passenger Car Chains
 - 1.2.2.2 Type RS Reinforced Single Truck Chains
 - 1.2.2.3 Type RDT Reinforced Dual-Triple Truck Chains
 - 1.2.2 Regular Tire Chains
 - 1.2.2.1 Type P Passenger Car Chains
 - 1.2.2.2 Type PL Passenger Car Chains - Restricted Clearances
 - 1.2.2.3 Type SH Single Truck Chains
 - 1.2.2.4 Type SM Single Truck Chains - Mud Service
 - 1.2.2.5 Type DTH Dual-Triple Truck Chains
 - 1.2.2.6 Type DTM Dual-Triple Truck Chains - Mud Service
 - 1.2.2.7 Type DH Dual and Wide-Base Truck Chains
 - 1.2.2.8 Type OTR Off-the-Road Vehicle Chains
 - 1.2.2.9 Type FTH Farm Tractor Chains - Highway Service

2. APPLICABLE DOCUMENTS

- 2.1 The following documents, of the issue in effect on date of manufacture, form a part of this specification to the extent specified herein:
 - 2.1.1 SPECIFICATIONS
 - 2.1.1.1 NACM - TC SHEETS TC1-01 TO TC4-01 - NACM Tire Chain Specification Sheets
 - 2.1.2 STANDARDS
 - 2.1.2.1 ASTM - ASTM E18-74 - Standard Method for Rockwell Hardness Test
 - 2.1.3 MILITARY
 - 2.1.3.1 MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
 - 2.1.4 SAE
 - 2.1.4.1 SAE Recommended Practice J1232 - Traction Device Profile Determination & Classification.

3. DEFINITIONS

- 3.1 For purposes of this specification the following definitions shall apply.
- 3.1.1 Side Chain
- 3.1.1.1 Straight link, welded chain of specified length to complete one full circumference along the tire side wall.
- 3.1.2 Fastener
- 3.1.2.1 Any suitable connecting device, secured to one end of a side chain, so constructed that it can be easily closed (engaged or fastened) and be readily opened (released) by hand.
- 3.1.3 Reinforced Cross Chain
- 3.1.3.1 Twist link, welded chain, carburized with one or more reinforcements per link consisting of a lug, or lugs, electrically welded to all links except the end links in such a manner as to provide increased traction and additional resistance to abrasive wear.
- 3.1.3.2 Cross chains shall be of the specified length and shall provide ample drape over the tire tread.
- 3.1.4 Regular Cross Chain
- 3.1.4.1 Twist link, welded chain, carburized, without reinforcements
- 3.1.4.1.1 Cross chains shall be of the specified length and shall provide ample drape over the tire tread.
- 3.1.5 Cross Chain Hooks
- 3.1.5.1 Any suitable hook used to attach each cross chain to the side chains.
- 3.1.5.1.1 Hooks shall be constructed and assembled to prevent accidental detachment.
- 3.1.6 Pitch
- 3.1.6.1 The measured inside length of a chain component (bearing point to bearing point when in use).

4. REQUIREMENTS

- 4.1 Components
- 4.1.1 Tire chain assemblies shall consist of two side chains, or two outer- and one inner-side chain, with cross chains, cross chain hooks, and fasteners necessary to form a complete assembly in accordance with the NACM TC SHEETS specified herein (see 2.1).
- 4.2 Material
- 4.2.1 All side and cross chains and cross chain hooks shall be made of open hearth, electric furnace, or basic oxygen process steel.
- 4.3 Spacing of Cross Chains
- 4.3.1 The number of cross chains required per half pair of chains shall be in accordance with the applicable NACM TC SHEETS.
- 4.3.1.1 The first cross chain shall be attached to that link of each side chain nearest the fastener that will permit the fastener to lie in the proper plane when the assembled tire chain is applied to the tire.
- 4.3.1.2 On single tire chains the remainder of the cross chains shall be attached to the side chains at equal intervals of four links each.
- 4.3.1.3 On dual-triple tire chains the remainder of the cross chains shall be attached to the outer side chains at equal intervals of four links each, and to the inner side chain with opposing cross chains staggered at equal intervals of two links each.

- 4.4 Tolerances
- 4.4.1 Cross Chain Length
- 4.4.1.1 The inside length of all cross chains, including hooks held in the same plane, shall be within a tolerance of minus six percent to plus three percent of the specified length on applicable TC sheets.
- 4.4.1.1.1 The length shall be measured by hanging the cross chain vertically on a horizontal pin and measuring the inside-to-inside length.
- 4.4.1.1.2 The number of links in a cross chain may vary from the specified number by plus or minus one link.
- 4.4.2 Side Chain Length
- 4.4.2.1 The inside length of all side chains including fasteners shall not be less than the minimum length as specified on the applicable TC SHEETS.
- 4.4.2.1.1 The length shall be measured by hanging the side chain vertically from a horizontal pin on its closed fastener and measuring from the pin contact surface to the inside surface of the last side chain link.
- 4.4.2.1.2 If the variance of the cross chain length is in the range of minus six percent to minus three percent the specified side chain length shall be increased by the amount of the variance x 3.14.
- 4.4.3 Wire and Rod Sizes
- 4.4.3.1 Wire and rod sizes shall be subject to the following tolerances:
- 4.4.3.1.1 Material up to and including .192" (4.88mm) diameter - plus or minus .003" (.08 mm).
- 4.4.3.1.2 Material over .192" (4.88mm) diameter - plus or minus .016" (.41mm).
- 4.5 Component Dimensions
- 4.5.1 The tire chain component dimensions, used for design purposes by the NACM, are shown in Table I.
- 4.5.1.1 The dimensions of manufactured components may vary but the assembled tire chains must meet the tolerances specified in paragraphs 4.4.1, 4.4.2, and 4.4.3.
- 4.6 Finish
- 4.6.1 Type RP, P and PL shall have a rust resistant finish for protection in transit and storage.
- 4.6.2 All other types shall be finished in accordance with individual manufacturer's practice.
- 4.7 Physical Properties
- 4.7.1 Hardness
- 4.7.1.1 The surface hardness of cross chain shall be determined in accordance with ASTM E18-74 Standard Test Methods for Rockwell Hardness and shall meet one of the following levels of measurement: RC 53 min., RA 77.5 min., R15N 87 min., R30N 71 min., R45N 58.5 min.
- 4.7.2 Case Depth
- 4.7.2.1 The case depth of cross chain shall be as specified in Table II.
- 4.7.3 Workmanship
- 4.7.3.1 Workmanship shall be such as to produce chain assemblies free from scale, injurious defects such as burrs or sharp edges, and faulty welding.

5. **QUALITY PROVISIONS**

5.1 **Responsibility for Inspection**

5.1.1 Unless otherwise specified, the supplier is responsible for all inspection and testing specified herein.

5.2 **Quality Conformance-Inspection**

5.2.1 **Lot Formation**

5.2.1.1 A lot shall consist of all chains of one type, from an identifiable production period, submitted at one time for quality conformance inspection.

5.2.2 **Sampling for Examination and Testing**

5.2.2.1 Samples for quality conformance examination and testing shall be selected in accordance with inspection level S-3 of MIL-STD-105.

5.2.3 **Acceptable Quality Level**

5.2.3.1 Each sample selected in accordance with 5.2.2 shall be examined and tested for conformance to an acceptable quality level (AQL) of 6.5 based on percent defective.

5.2.4 **Defects**

5.2.4.1 For examination and testing purposes, defects shall be classified as any characteristic which does not meet the requirements specified herein.

5.3 **Test Procedures**

5.3.1 **Hardness**

5.3.1.1 To determine conformance to 4.7.1, cross chain shall be subject to the Rockwell hardness test as specified in the ASTM E18-74 Standard Test Methods for Rockwell Hardness.

5.3.2 **Case Depth**

5.3.2.1 To determine conformance to 4.7.2, a link of the cross chain shall be prepared by grinding on a suitable abrasive wheel one cross section perpendicular to the axis of the chain wire.

5.3.2.1.1 The test specimen shall be etched in a solution of one part chemically pure nitric acid and one part water by volume (specific gravity 1.217).

5.3.2.1.2 Specimen shall be etched for six seconds.

5.3.2.1.3 Width of dark ring revealed shall be measured microscopically at suitable magnification and recorded as depth of case.

6. **NOTES**

6.1 **Intended Use**

6.1.1 Tire chain assemblies covered by this specification are intended for use on passenger car tires, truck tires (single, dual and wide base), off-the-road service tires, and farm tractor tires.

6.1.2 Replacement cross chains are intended for repairing tire chain assemblies.

6.2 **Ordering Data**

6.2.1 Orders should specify the following:

6.2.1.1 Title, number, and date of this specification.

6.2.1.2 Type of chain assembly (see 1.2).

6.2.1.3 Tire size for chain assemblies (see NACM TC SHEETS, Table I & II).

6.2.1.4 Quantity of tire chain assemblies or cross chains required.

TABLE 1
NACM TIRE CHAIN DESIGN COMPONENT DIMENSIONS

<u>Type Component</u>	<u>Wire Dia.</u>	Nominal		<u>Pitch</u>			
		<u>in.</u>	<u>mm</u>			<u>in.</u>	<u>mm</u>
SIDE CHAIN	.162	4.11		1.250	31.75		
SIDE CHAIN	.177	4.50		1.250	31.75		
SIDE CHAIN	.192	4.88		1.296	32.92		
SIDE CHAIN	.218S	5.54		1.343	34.11		
SIDE CHAIN	.218L	5.54		1.390	35.31		
SIDE CHAIN	.281S	7.14		1.734	44.04		
SIDE CHAIN	.281L	7.14		1.812	46.02		
SIDE CHAIN	.312S	7.92		1.843	46.81		
SIDE CHAIN	.312L	7.92		1.921	48.79		
SIDE CHAIN	.375	9.53		2.172	55.17		
SIDE CHAIN	.437	11.10		2.250	57.15		
CROSS CHAIN	.177	4.50		1.180	29.97		
CROSS CHAIN	.207	5.26		.920	23.37		
CROSS CHAIN	.234	5.94		1.000	25.40		
CROSS CHAIN	.281	7.14		1.250	31.75		
CROSS CHAIN (Regular)	.312	7.92		1.090	27.69		
CROSS CHAIN (Reinforced)	.312	7.92		1.390	35.31		
CROSS CHAIN	.344	8.74		1.230	31.24		
CROSS CHAIN	.375	9.53		1.260	32.00		
CROSS CHAIN	.437	11.10		1.562	39.67		
CROSS CHAIN	.531	13.49		1.734	44.04		
C. C. HOOK	.177	4.50		1.06	26.92		
C. C. HOOK	.207	5.26		1.87	47.50		
C. C. HOOK	.250	6.35		1.56	39.62		
C. C. HOOK	.312	7.92		1.56	39.62		
C. C. HOOK	.375	9.53		1.75	44.45		
C. C. HOOK	.406	10.31		1.75	44.45		
C. C. HOOK	.437	11.10		2.37	60.20		

Table II
Case Depth of Cross Chain Links

<u>Wire Dia.</u>	Nominal		<u>Total Case Depth</u>			
	<u>in.</u>	<u>mm</u>	<u>Minimum</u>		<u>Maximum</u>	
	<u>in.</u>	<u>mm</u>	<u>in.</u>	<u>mm</u>	<u>in.</u>	<u>mm</u>
.177		4.50	.010	.25	.042	1.07
.207		5.26	.012	.30	.045	1.14
.234		5.94	.016	.41	.046	1.17
.281		7.14	.020	.51	.050	1.27
.312		7.92	.022	.56	.052	1.32
.375		9.53	.027	.69	.060	1.52
.437		11.10	.027	.69	.065	1.65
.531		13.49	.027	.69	.065	1.65