



Purchasing Division
100 City Hall, 411 W. 1st Street
Duluth, MN 55802-1189
TEL. 218-730-5340
purchasing@duluthmn.gov

INVITATION TO BID

STRUCTURAL FIREFIGHTING TURNOUT GEAR

BID NUMBER: 18-0384

BID OPENING: TUESDAY, MAY 15, 2018 AT 2:00 PM

PROJECT DESCRIPTION: The City of Duluth, MN seeks sealed bids for turnout gear for the Duluth Fire Department. This bid will be for a three (3) year purchase agreement, with an estimated 50 sets to be ordered in 2018. Please see the attached specifications for more information.

QUESTIONS: Please submit any questions regarding this project via e-mail to purchasing@duluthmn.gov. Responses will be provided to all interested bidders as an addendum to this solicitation.

INSTRUCTIONS TO BIDDERS

By submitting a bid, Bidders are acknowledging that they have read the City of Duluth General Bid Specifications, which are included in this bid package.

Sealed bids must be received in Purchasing before 2:00 PM local time on the bid opening date specified above. The City Purchasing Agent or her designee will conduct a public bid opening in Room 100 immediately following receipt of the bids.

No alternatives to the specification will be considered unless specifically requested.

The City of Duluth reserves the right to split the award where there is a substantial savings to the City, to waive informalities and to reject any and all bids.

The following documents must be submitted with your bid:

1. **Acknowledgment of Addendum** – any changes to this solicitation will be announced via Addendum. Bidders must indicate that they have reviewed any addendum(s) by initialing and dating on the bid form where indicated. Failure to acknowledge addendum(s) may result in your bid being deemed non-responsive.
2. **Affidavit of Non-Collusion** – The successful bidder shall be required to execute the attached affidavit stating that he/she has not entered into a collusive agreement with any other person, firm, or corporation in regard to any bid submitted.

The City of Duluth is an Equal Opportunity Employer. Contractor shall comply with all applicable Equal Employment Opportunity laws and regulations.

CITY OF DULUTH

Amanda Ashbach
Purchasing Agent



GENERAL BID SPECIFICATIONS

Purchasing Division
100 City Hall, 411 W. 1st Street
Duluth, MN 55802-1189
TEL. 218-730-5340
purchasing@duluthmn.gov

1. General. This document covers bids requested by the City of Duluth ("City"), including those requested on behalf of its Agents and Authorities. Each authority may issue their own purchase order or contract and will be responsible for it. The City of Duluth Authorities are as follows:

- a. Duluth Airport Authority
- b. Spirit Mountain Recreational Area Authority
- c. Duluth Entertainment and Convention Center
- d. Duluth Transit Authority
- e. Duluth Economic Development Authority
- f. Duluth Housing and Redevelopment Authority

2. Investigation by Bidders. Bidders are responsible for thoroughly reading and understanding the information, instructions, and specifications contained in this Invitation for Bids, and for investigating the site conditions at the Project location(s), if applicable. At the time of the opening of bids, each bidder will be presumed to have read and to be thoroughly familiar with the plans, specifications and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve the bidder from any obligation in respect to their bid.

3. Bidder Questions. Responses to general questions regarding the Invitation for Bids may be made at the discretion of the City. Every request for such interpretation should be in writing and delivered via e-mail or postal mail to the Purchasing Division before the deadline indicated on the Invitation for Bids, or if no deadline is specified, at least five (5) days prior to the scheduled bid opening. Responses will be issued in writing in the form of an Addenda or e-mail to prospective bidders.

4. Changes, Corrections & Withdrawal of Bids. Erasures or other changes to the bid must be initialed and dated, however no special conditions shall be made or included on the bid form by the bidder.

Bidders may make requests to withdraw/replace their bids by notifying the Purchasing Division in writing prior to the bid opening.

5. Unit Pricing. If the total bid price is based on unit pricing, the City will verify the extended bid price for each item (obtained by multiplying the unit bid price by the bid item quantity). If any item is incorrectly calculated, the City will use the unit bid price to recalculate the extended item price and the total bid price.

6. Sales Tax. The City has a sales tax exemption certificate, which will be provided upon request.

7. Bid Submission. All bids must be complete, signed, and transmitted in a sealed envelope plainly marked with the bid number, subject matter, and opening date.

Bids may be mailed to the Purchasing Office, City Hall, 411 West 1st Street, Room 100, Duluth, MN 55802 or dropped off in person at the same address. Bids must be received by Purchasing before 2:00 PM local time on the date specified. Bids will not be accepted via e-mail unless specifically stated in the Invitation for Bids.

8. Non-Collusion Clause. By submitting a bid, the bidder, their agent and/or employee(s) hereby affirm that the attached bid or bids have been arrived at by the bidder independently and have been submitted without collusion with, and without agreement, understanding or planned common course of action with any other vendor of materials, supplies, equipment or services described in the Invitation for Bids, designed to limit independent bidding or competition.

9. Award. Award, if made, will be to the responsible bidder submitting the lowest bid which complies with the conditions of the Invitation for Bids and specifications. A bid summary will be posted on the City website immediately following the bid opening. Awards for construction services and parts /supplies over \$100,000 must be approved by City Council.

10. Bidder Qualifications. Per Sec 41.23(e) of Duluth City Code, price may not be the only consideration for award. The City will make such investigations as deemed necessary to determine the ability, capacity

and skill of the bidder to perform the work and perform it in the time specified without delay or interference, the reputation and experience of the bidder, the quality of the bidder's performance of previous contracts or services, and the sufficiency of the financial resources, equipment available and ability of the bidder to perform the contract. Bidders shall furnish to the City all such information and data for this purpose, when requested.

Minnesota law requires that, in order to transact business in the State, including submitting a response to this request for bids/proposals, a corporate entity of any kind must either be organized under Minnesota law or have a Certificate of Authority from the Minnesota Secretary of State to do business in Minnesota (M.S. 303.03). By submitting this bid/proposal as a corporation, you are certifying that the responding corporation complies with this requirement.

11. Bid Opening. The City Purchasing Agent or her designee will conduct a public bid opening in Room 100 immediately following receipt of the bids. Results will be posted online at <http://www.duluthmn.gov/purchasing/bids-request-for-proposals/> once all bids have been reviewed.

12. Rejection of Bids. The City of Duluth reserves the right to reject any and all bids and to waive any informalities or irregularities in bids received whenever such rejection or waiver is in its best interests.

The City reserves the right to reject any bid if the evidence obtained by the City through such investigation fails to satisfy the City that the bidder is properly qualified to carry out the obligations of the contract and to complete the work as required by the plans and specifications.

13. Liquidated Damages for Failure to Enter into Contract. The successful bidder, upon their failure or refusal to accept a purchase order or execute and deliver the contract, proof of insurance and bonds required within 10 days after receipt of a notice of the acceptance of their bid, shall forfeit to the City, as liquidated damages for such failure or refusal, the security deposited with their bid (if required).

14. Equal Employment Opportunity. Contractor will be required to comply with all applicable Equal Employment Opportunity (EEO) laws and regulations. Affirmative action must be taken to insure that the employees and applicants for employment are not discriminated against because of their race, color, creed, sex or national origin. The City of Duluth is an equal opportunity employer.

15. Quantities. The City reserves the right to increase or decrease the quantities of items within reason, unless otherwise noted.

16. Prevailing Wages. Per Sec 2-26 of Duluth City Code, payment of not less than the prevailing wage and salary rates specified in the contract documents and the conditions of employment with respect to certain categories and classifications of employees is required for all "Public Works" type projects estimated to exceed \$2,000. This does not apply to off-site production and manufacturing of parts and supplies.

17. Validity of Bids. All bids must remain firm for 60 days from the date of bid opening, unless another period is noted in bid documents or if an extension is agreed upon, in writing prior to the end of the 60-day period.

18. Insurance. All vendors doing work on City property, except vendors making routine deliveries, shall submit an insurance certificate verifying insurance coverage as per current city requirements.

19. Reports. Contractors will be required to provide all data required by the city, state or federal funding source(s) for reporting purposes; including, but not limited to job creation and retention data, itemized invoices, payroll records, certifications and licenses.

BID FORM
BID # 18-0384
STRUCTURAL FIREFIGHTING TURNOUT GEAR

ITEM	PRICE
Turnout jacket; per the attached specifications	\$
Turnout pants; per the attached specifications	\$
Total Price Per Set	\$

TOTAL PRICE PER SET IN WRITING

ACKNOWLEDGMENT OF ADDENDA

ADDENDUM # _____	INITIAL/DATE _____
ADDENDUM # _____	INITIAL/DATE _____

Signature _____ Date _____

Name/Title _____

Company Name _____

Address _____

City, State, Zip _____

Tel. _____ E-Mail _____

If your organization is certified as a Disadvantaged Business Enterprise, please check here: ☐

AFFIDAVIT AND INFORMATION REQUIRED OF BIDDERS

Affidavit of Non-Collusion:

I hereby swear (or affirm) under penalty of perjury:

- 1) That I am the bidder (if the bidder is an individual), a partner in the bidder (if the bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the bidder is a corporation);
- 2) That the attached bid or bids have been arrived at by the bidder independently and have been submitted without collusion with and without agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment or services described in the invitation to bid, designed to limit independent bidding or competition;
- 3) That the contents of the bid or bids have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid or bids and will not be communicated to any such person prior to the official opening of the bid or bids;
- 4) That a family relationship between a City of Duluth employee and bidder/proposer are in non-collusion; and
- 5) That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed: _____

Firm Name: _____

Subscribed and sworn to me before this _____ day of _____, _____

NOTARY PUBLIC _____

My commission expires: _____

Bidder's Federal Identification Number _____

City of Duluth Fire Department

Request for Proposal – Structural Firefighting Turnout Gear

04/13/2018

This bid is for a three (3) year contract. Prices may be adjusted annually by mutual agreement; however prices shall increase no more than 10% over the term of the agreement.

Scope: This specification details design and materials criteria to afford protection to the upper and lower body; excluding head, hands, and feet, against adverse environmental effects encountered during structural firefighting. All materials and construction will meet or exceed NFPA 1971 Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting (2018 Edition).

Outer Shell Material- Jacket and Pant: The outer shell shall be constructed of 'PBI Max/PBI 7oz' PBI/Kevlar blend material, gold or natural in color.

Thermal Insulating Layer: The minimum thermal liner shall be 3.6 oz/yd² Glide Ice™ face cloth consisting of 60% DuPont™ Nomex® filament and 40% DuPont™ Nomex®/Lenzing FR spun yarns quilted as 7.4 oz. Glide Ice 2-Layer which is Glide Ice quilted to 2 layers of DuPont™ Nomex® E89™ spunlace - 2.3 oz./yd² and 1.5 oz./yd².

OR

An upgrade option of a Center Cut Liner or an Equivalent Product consisting of Glide Ice™ face cloth quilted to 1.5oz Araflo® Dri. 5.0oz CROSSTECH® black Nomex® IIIA woven pajama check substrate laminated to a PTFE membrane. 3.0oz Nomex® IIIA Chambray Dri face cloth.

Moisture Barrier: CROSSTECH® BLACK (Type 2F): NOMEX® substrate laminated to a lightweight breathable, Teflon membrane; weighing 4.7 oz/yd²

Jacket Design and Features: The jacket shall be the 'Lion V-Force or Morning Pride Tails' style, with the following features.

- Jacket shall be enclosed with zippers
- Two microphone tabs, one on each side
- One radio pocket w/left side antennae cutout and one Survivor LED Streamlight flashlight holder on the chest (left or right placement to be determined by individuals during fitting)
- Thumb strap wristlet
- Pockets shall be Kevlar lined and reinforced with 'Ara Shield' or an equivalent product on the outside lower portion
- Hand warmer pockets shall be provided which are fleeced lined, front and back

- Detachable name plate for the rear jacket bottom
- Jacket liner shall be fastened to the bottom/ rear of the outer shell in order to prevent "ride up"

Pant Design and Features: The pant shall be the 'Lion V-Force or Morning Pride Tails' style, with the following features.

- The pant shall be equipped with a 'Class One Escape Belt'
- Belt loops shall open with Velcro or snaps to allow the 'Class One Escape Belt' to be easily removed from the pants for laundering.
- Morning Pride Dyna-Fit Suspender or Lion Rainier EZ H-back quick adjust non-stretch style suspender shall be included
- Pockets shall be Kevlar lined and reinforced with 'Ara Shield' or an equivalent product on the outside lower portion and the flap on the bailout pocket.
- The right side pocket shall be a combination pocket consisting of a standard pocket with a 'bailout' rope feature
- The knee shall be a Biflex Heat Channel Knee or double layered Lite-N-Dri system or Silicone padding or an equivalent product attached to the liner at the knees
- Knees shall be reinforced with 'Ara Shield' or an equivalent product
- Pant cuffs shall be recessed at the heel and reinforced with 'Ara Shield' or an equivalent product
- Pant cuffs shall have a wear patch made with 'Ara Shield' or an equivalent product, located on the inner ankle of each leg of the pants. The patch will be 3" high x 3" wide, located between the lower pant hem and the leg Scotchlite trim.

Reflective Trim Design: Jacket and pant shall be trimmed in 3 inch '3M Scotchlite Triple Trim' Lime/Yellow with silver center. Jacket and pant shall be trimmed out in the NYC style

Coat trim shall be applied as follows: New York Pattern: One 3" strip shall be set full circumference at the bottom sweep of the outer shell; one 3" strip shall be set around each sleeve approximately 2" above the cuff; one 3" strip shall be set around each sleeve just above the elbow; one 3" strip shall be set full circumference at the chest. Pant trim shall be applied as follows: New York Pattern: One 3" strip shall be set full circumference around the bottom of the cuff 3" from the bottom cuff.

Sizing: A complete and accurate representation of the turnout gear requested in this specification, 'v-force or tails' will be used for sizing and measurements. Sizing set must be available for men and women specific and be considered a full and complete set of sizing gear.

**CITY OF DULUTH
MINIMUM SPECIFICATIONS FOR
TURNOUT COAT and PANT**

Bids to meet or exceed specifications listed below. Any deviations or substitutions must be approved by the City of Duluth and the Duluth Fire Department.

SECTION ONE: GENERAL REQUIREMENTS

A. Standard

All garments shall meet or exceed the criteria set forth in the current edition of NFPA 1971 PROTECTIVE CLOTHING FOR STRUCTURAL FIRE FIGHTING, FED-OSHA CFR 1910, Subpart L, OSHA 29 CFR Part 1910.1030 and/or the requirements of CALOSHA title 8, Article 10.1, Para. 3406, and applicable sections of FED-OSHA CFR 1910. All components and composites used in the construction of garments shall be third party tested, certified and listed for compliance to NFPA 1971. The label of the third party tester shall denote certification. The manufacturer shall be registered to the ISO Standard 9001 to assure a satisfactory level of quality.

B. User Guide Information

Each garment shall include a User Information Guide with information required by NFPA 1971. This guide shall include:

1. Pre-use information
 - Safety considerations
 - Limitations of use
 - Garment marking recommendations and restrictions
 - A statement that most performance properties of the garment cannot be tested by the user in the field
 - Warranty information
2. Preparation for use
 - Sizing/adjustment
 - Recommended storage practices
3. Inspection
 - Inspection frequency and details
4. Don/Doff
 - Donning and Doffing procedures
 - Sizing and adjustment procedures
 - Interface issues
5. Use
 - Proper use consistent with NFPA 1500, Standard on Fire Department Occupations Safety and Health Program, and 29 CFR 1910.132
6. Maintenance and Cleaning

- Cleaning instructions and precautions with a statement advising users not to use garments that are not thoroughly cleaned and dried
- Inspection details
- Maintenance criteria and methods of repair where applicable
- Decontamination procedures for both chemical and biological contamination

7. Retirement and Disposal

- Retirement and disposal criteria and considerations

8. Drag Rescue Device (DRD)

- Use, inspection, maintenance, cleaning and retirement of the DRD

C. Tracking Label System

There shall be a PDF417, two-dimensional bar code label permanently affixed to each garment for tracking purposes. The bar code shall be able to withstand customary wash and wear cycles and must incorporate a minimum of a 30 percent "error correction" capability.

- The bar code shall contain the following information at a minimum:
- Unique serial number
- Item description (brand, model, material color)
- Lot information (date of mfg., size, etc.)
- Material description
- The standard to which the garment is compliant
- The name of the firefighter to which the garment is assigned

D. Warranty

The manufacturer's written warranty must be provided with the bid. Each garment shall have a limited lifetime warranty against defects in material and workmanship.

E. High Temperatures Thermal Insulating Materials Requirement

Because thermally stable materials are essential to maximizing protective performance in firefighters' PPE, and because NFPA only states "minimum" performance requirements, all thermal liner or thermal-enhancing materials used in the garments shall meet the following criteria after the 500 degree F oven test:

- Material shall remain intact and flexible.
- No portion of the material shall crack, crumble, flake, or tear.

In addition, the Thermal Protective Performance (TPP) shall be no less than a rating of 38 and the Total Heat Loss (THL) shall be no less than 252.

F. Breathability Requirement

Excluding where required by NFPA standard, necessary for functionality, or where specifically called out in the "Custom Option" section, all materials used in the construction of the garments shall be breathable, and all moisture barrier material must be as specified in the following materials section, or must be of W.L. GORE "CROSSTECH® " Black NOMEX® substrate.

The breathability requirement includes but is not limited to: collar, chinstrap, storm shield, fly, waterwells, front coat facings, labels, and reinforcement cushioning where applicable.

Areas where non-breathability is allowed (absent "Custom Option" specifications): trim, hook and loop fastening, hardware or hardware backing, and external pocketing.

G. Conductive and Compressive Heat Resistance (CCHR)

Using breathable materials as outlined in the section titled "Breathable Materials," there shall be a minimum area of 4" x 4" at the shoulders and elbows that provide a minimum of 25 CCHR at 2 psi, and a minimum 6" x 6" area at the knees that provide 25 CCHR at 8 psi. All three compression areas shall be constructed of high temperature fiber based materials.

H. Stress Points

All outer shell stress points, including top and bottom corners, pocket flap corners, and top and bottom of storm flap/fly shall be reinforced using a 42-stitch minimum bar tack.

I. Custom Sizing and Tailoring Requirements

The City of Duluth Fire Department shall require the following measurements be obtained and utilized in manufacturing custom tailored turn out gear for the individual firefighter to which it is assigned:

Coat	Pant
Chest Size	Waist
Shoulder Length	Hip
Back Length	Crotch Rise
Sleeve Length	Inseam
Hip	Suspenders

Individuals with body proportions outside the typical dimensions or other fit challenges shall be measured in further specific detail so as to accommodate him/her by providing an equal level of functionality, comfort, and protection.

Stock, alpha, or generalized sizing (such as small, medium, large, extra-large) shall not be considered, nor shall women's garments cut to men's patterning. Pattern tailoring to custom fit the neck, bicep, leg/knee, hip/seat, and/or thigh circumferences shall also be provided. A full range of women's sizing, on women's patterns, shall be available.

A complete and accurate representation of the turnout gear requested in this specification, 'v-force or tails' will be used for sizing and measurements. Sizing set must be available for men and women specific and be considered a full and complete set of sizing gear.

J. Seams

All moisture barrier seams must be sealed at no less than 600 degrees F and in accordance with the manufacturer's guidelines. To ensure minimum seam abrasion, the moisture barrier seams shall be oriented with the stitching toward the inside of the thermal barrier.

K. Thermal Reinforcement

Thermal material shall be included on the liner behind all sleeve trim, reinforcements,

and patches unless validated testing shows this is not required due to the advanced technology of the trim, reinforcement, or patches, such as with ventilated trim.

L. Complete Set of Turnout Gear

A complete set of turnout gear will be provided to the Duluth Fire Department by the manufacturer, which will include all items and options requested within this specification, after the bid is awarded. The department may change any items or options on the turnout gear, after viewing the customized complete set of turnout gear, before any other sets of turnout gear are purchased. The manufacturer will then continue to make modifications to this set until the customized set is acceptable by the department and further purchases of turnout sets can be made.

M. Inaccuracies During Purchase

When a set of customized turnout gear is purchased, the items and options included must be agreed upon by the vendor and the department. If the turnout gear comes back with inaccurate items or options, the vendor will refund 15% of the purchase price of this set of turnout gear to the department.

N. Labeling

Each garment shall have a garment label(s) permanently and conspicuously attached stating at least the following language, as well as detailed warning instructions provided by the manufacturer.

Do Not Remove This Label

**THIS GARMENT MEETS THE GARMENT REQUIREMENTS OF NFPA 1971,
STANDARD ON PROTECTIVE ENSEMBLE FOR STRUCTURAL FIRE
FIGHTING, 2018 EDITION**

MADE IN THE U.S.A.

O. Packaging

Each Coat and Pant shall be packaged in a dark plastic bag in order to provide protection during shipping and prior to first use.

P. Fire Academy

Online training shall be available, meeting NFPA 1500 training requirements on the safe use of the turnout gear. This online training shall include:

- Personal Responsibility of the Individual Fire Fighter
- Purpose and Limitations
- Structural PPE Construction, Features, and Functions
- Routine Inspection
- Donning and Doffing
- Proper Fit and Overlap
- Using Your PPE Safely
- How Fire Fighting Affects the Body
- Routine Cleaning of PPE
- Assembly and Disassembly of PPE
- Storage

- Useful Life and Retirement of PPE

Additionally, online training satisfying NFPA 1851 training requirements on advanced inspection, advanced cleaning and basic repairs (turnouts and helmets) shall be available.

SECTION TWO: TURNOUT COAT

In addition to the requirements listed above, Turnout Coats must comply with the following specifications:

Coat Model / Design

The coat will be either a 'Lion V-Force or Morning Pride Tails' style coat.

A. Thermal Liner

The thermal liner shall be constructed of 3.6 ounce per square yard Glide Ice face cloth consisting of 60% DuPont Nomex® filament and 40% Nomex®/LENZING FR® blend spun yarn quilted to two layers of DuPont Nomex® E89 spunlace – 2.3 oz/yd² and 1.5 oz/ yd². The total weight will be no more than 7.4 oz/ yd².

If available, the Center Cut Liner or an Equivalent Product should be included as an optional available upgrade. This system includes: Glide Ice™ face cloth quilted to 1.5oz Araflo® Dri. 5.0oz CROSSTECH® black Nomex® IIIA woven pajama check substrate laminated to a PTFE membrane. 3.0oz Nomex® IIIA Chambray Dri face cloth. The thermal barrier shall be completely detachable from the outer shell for ease of cleaning by using snaps, zipper, and/or hook and loop.

The liner shall have one internal pocket no less than 8"x8" and all edges of the pocket shall be surged to prevent unraveling. The NFPA compliant labeling shall be applied to the thermal liner pocket. The pocket shall be located on the inward left side of the coat liner.

B. Moisture Barrier

The moisture barrier shall be constructed of W.L. GORE "CROSSTECH®" Black NOMEX® substrate laminated to a lightweight breathable, Teflon membrane; weighing 4.7 oz./ The moisture barrier material shall meet all moisture barrier requirements of NFPA 1971, which includes water penetration resistance, viral penetration resistance, and common chemical penetration resistance. The moisture barrier shall be bound along the edges with Bias-Cut Neoprene-coated cotton/polyester binding. Any references in this document to "Specified Moisture Barrier" shall refer to this section.

C. Outer Shell Material

The outer shell will be "PBI Max" or an equivalent product. The outer shell shall be constructed of a nominal 7.0 oz/ yd² of 60/40 para-aramid/PBI modified plain weave outer shell fabric. The outer shell material shall be reinforced with a network of yarns, each containing one ply of 400 to 600 denier para-aramid filament and one ply of 60/40 para-aramid/PBI spun yarn. If available, please add as an option to include a durable

water repellant finish, such as Teflon or an equivalent water repellant finish. The color shall be gold or natural.

In the event that the specified outer shell material should be discontinued, the City of Duluth shall have the option to switch to another appropriate outer shell material of the City's choosing, upon the agreement of both parties. Such a change may not increase the price of the garment.

D. Assembly Attachments

The design shall be compatible with the outer shell so that the liner does not buckle, pull, or otherwise restrict body motion. The left and right fronts of the moisture barrier/thermal liner shall be attached to the facings at the front closure of the outer shell. The neck of the moisture barrier/thermal liner shall be secured to the neck of the outer shell collar such that when donning the coat an arm cannot become accidentally caught between the outer shell and its inner linings along the neck between the armholes. An assembly attachment such as a reinforced snap shall be located at the center rear of the coat to provide attachment of the outer shell to the liner system so as not to create a collection of the materials while seated in the apparatus. Flame resistant hook and loop tape or reinforced snap fasteners will attach the liner to the outer shell and keep it completely hidden when properly installed. In addition, there shall be a means for ensuring proper alignment of the liner system to the outer shell.

E. Water Wells and Coat Wristlets

Liquid resistant water wells shall be sewn into the sleeve ends to prevent liquids and other hazardous materials from entering beneath the moisture barrier when the arms are raised. This water well shall be constructed of moisture barrier material. A layer of thermal liner shall extend over and past the water well to provide continuous thermal protection on the inside of the outer shell. Two or more leather tabs with snap fasteners shall be set in the cuff to attach the outer shell to liner. In addition, any appropriate fasteners shall be employed to attach outer shell to liner in an effort to prevent liner pull out.

The wristlet shall be constructed of a double layer of water resistant knit Nomex®/Kevlar® and be no less than 7"-8" extending completely over the mid/upper palm with a thumb strap to prevent it from sliding back. The wristlet shall be permanently attached to the liner system. The thumb strap shall be reinforced and/or cross tacked to the knit material. The aforementioned assembly shall be interface capable with the appropriate gloves to provide wrist protection in accordance with NFPA 1971.

The combination liner sleeve ends shall be inserted into the outer shell sleeve ends by means of lining up the snaps then attaching the loop fastener of the combination liner sleeve end with the hook fastener on the outer shell sleeve. This method of combination liner attachment shall prevent any gaps from occurring between the combination liner and sleeve well during a full range of motion. The combination liner shall extend to within 1" of the sleeve end.

F. Reflective Trim

The 3M Scotchlite® reflective trim shall be of the yellow/lime and silver 3" triple trim New York Pattern design in accordance with NFPA 1971.

Coat trim shall be applied as follows: New York Pattern: One 3" strip shall be set full circumference at the bottom sweep of the outer shell; one 3" strip shall be set around each sleeve approximately 2" above the cuff; one 3" strip shall be set around each sleeve just above the elbow; one 3" strip shall be set full circumference at the chest.

It shall be the bidder's discretion as to which means of current technological advances that shall be employed to prevent any thermal insult as a result of stored energy under the trim material. Bidder must supply detailed specifications/illustrations of the technology to be employed for City consideration.

G. Drag Rescue Device

The manufacturer shall supply an NFPA required and certified Drag Rescue Device with each coat. The device shall be designed to fit each individual chest size and function with the City of Duluth Fire Department's SCBA's. Each strap will be properly labeled with pertinent information. The device shall provide mechanical leverage for dragging a downed and incapacitated firefighter from a life-threatening environment. The design of the harness shall enable the rescuer to drag the downed firefighter in line with axis of the skeletal frame. Soft and pliable Kevlar webbing, stored in between the shell and liner, shall wrap around each of the wearer's arms/shoulders and incorporate into a grab handle positioned at the rear of the upper torso. The grab loop shall extend upward and pass through a reinforced slot in the coat outer shell just below the center rear of the collar seam where it will exit the outer shell, it will then be covered by an outer shell tunnel. The protruding grab loop shall then fold back down over the top of the tunnel and be stowed by flame resistant hook and loop tape. There shall be an outer shell flap sewn below the collar that will fold down over the stored grab loop and held in place with flame resistant hook and loop tape to reduce the chances of snagging the grab handle by accident. Flimsy, rope-style ORD straps will not be considered.

H. Coat Collar

The coat collar shall be of layered construction, consisting of two layers of outer shell material fully lined with the aforementioned waterproof moisture barrier. The collar shall not exceed 3" high and incorporate a natural contour that will allow proper fit and performance so as not to interfere with SCBA face masks or helmet. Collar closure systems shall fasten with a flame resistant hook and loop tape system. It shall not buckle, pull or otherwise restrict body motion. All bids shall comply with NFPA 1971 and have passed any associated water penetration resistance tests such as Underwriters Laboratory's standards.

I. Throat Closure System

The City will entertain bids without a throat tab, but bids must include a detailed description (with possible illustrations) of whatever throat closure system is being bid.

If bidding a throat tab closure system, the following specification applies:

The throat tab shall be of layered construction identical to that of the collar configuration described in the previous paragraph. The throat tab shall be of a crescent shaped design so as to contour to the shape of an SCBA facemask. It will close from right to left, employing a flame resistant hook and loop tape system. Additional flame resistant hook and loop tape shall be provided to store the throat tab, folded in half, in the open position. All bids shall comply with NFPA 1971 and have passed any associated water penetration resistance tests such as Underwriters Laboratory's standards.

J. Liner Inspection System

The liner inspection system shall be no less than 11" and shall provide the ability to completely invert the coat liner to properly view the integrity of the entire liner system. The edges of the opening shall be reinforced with bar tacks to prevent release of the seams upon liner inversion. To secure the opening in the "closed" position flame resistant hook and loop tape or reinforced snap fasteners will attach the liner to the outer shell and keep it completely hidden when properly installed. Additionally, there shall be a means for ensuring proper alignment of the liner system to the outer shell.

Primary preference will be given to liner inspection system at the center right front of the liner, with secondary preference to liner inspection system at the lower center rear.

K. Coat Cuff Reinforcements

The sleeve cuffs shall be reinforced with an extra layer of outer shell material or equivalent material (such as black polymer coated Kevlar®), folded in half, approximately one half inside and one half outside the sleeve end for greater strength and abrasion resistance. Coats finished with a turned and stitched cuff do not provide the same level of abrasion resistance and will be considered unacceptable. Two or more leather tabs with snap fasteners and/or flame resistant hook and loop tape shall be set in the cuff to attach the outer shell to liner.

L. Coat Elbow

The sleeve shall provide a natural bend. The design of the elbows shall be designed to allow freedom of movement with few restrictions.

M. Coat Closure System.

The closure system shall be a Chicago Style bi-swing of no less than 3" storm flap.

The jacket shall be closed by means of a heavy duty, high-temp smooth-gliding black oxide coated brass zipper or a thermoplastic zipper with a 1 3/4" polymer coated aramid tab on the jacket front panels and flame resistant hook and loop tape extending the length of the storm flap. The teeth of the zipper shall be mounted on black Nomex (or equivalent material) tape and shall be sewn into the respective jacket facings. A black polymer coated Kevlar® (or equivalent material) pull tab shall be installed at the bottom of the zipper. The storm flap shall close from right to left with flame resistant hook and loop tape that extends the full length of the flap, eliminating all exposure of the zipper. There shall be continuous thermal and moisture protection around the entire torso including the storm flap.

N. Coat Pockets and Accessories

All pockets shall be lined with Kevlar® material and have, at a minimum, one (1) or two

(2) brass eyelets to provide sufficient drainage.

Turn Out Coat Pockets and Location

(2) Fully lined Semi-Bellow and Hand warmer combination pockets with flap opening secured by flame resistant hook and loop tape. Pockets shall be fully functional and accessible while wearing an SCBA.

Location: Front bottom, Left and Right

Turn Out Radio Pocket and Location

(1) 3.5"x8"x2.5" Fully lined radio pockets with flap opening, constructed of outer shell material, secured by flame resistant hook and loop tape with antenna notch left rear side.

Location: Left or Right chest based on the individual Firefighter preference

Flashlight Tab

Fastener that will properly hold a Duluth Fire Department issue Streamlight Survivor Flashlight; SKU: STG90540. The flashlight will be secured by a flame resistant hook and loop enclosure that will be able to be easily unsecured by a gloved hand.

Location: Left or Right Chest based on the individual Firefighter preference

Microphone Tabs (Fabric Universal Strap) and Location

(2) 1"x3" Triple layer outer shell material microphone straps, attached at the ends only, to accommodate radio cords.

Location: Left or Right shoulder above radio pocket and above the flashlight tab

Lettering Patches and Attachment and Location

The hanging letter patch shall be constructed of a double layer of outer shell material. The patch will attach to the rear inside hem of the jacket. The name patch will be removable and will have 3" yellow/lime sewn on reflective letters in the name of the assigned firefighter, first initial and last name. Example: J. (period) Doe
(In the event of a lengthy name, the option of 2" lettering may be utilized.)

Location: Rear hem of coat

Hanger Loop

An external 80-pound tear strength hang-up loop shall be provided at the outside of the coat at the center rear collar seam. It may be constructed of triple layer outer shell material, or bidder's discretion of an equivalent system for hanging; webbing is not acceptable.

Coat Shell Attachment

There shall be a 1" x 2" self-fabric strap with one end sewn to the coat shell & opposite end loose with one female non-logo snap. One male snap shall be centered on the liner

at the bottom rear panel to align with the female snap.

Sewn On Lettering

There shall be 3" lime yellow Scotchlite letters, sewn-on to the back of the coat as follows; Line 1 across the yoke in an arch to read - DULUTH; Line 2 across the yoke to read – FIRE.

SECTION THREE: TURNOUT PANT

In addition to the requirements listed above, Turnout Pant must comply with the following specifications:

Pant Model / Design

The pants will be either a 'Lion V-Force or Morning Pride Tails' style pant.

A. Thermal Liner

The thermal liner shall be constructed of 3.6 ounce per square yard Glide Ice face cloth consisting of 60% DuPont Nomex® filament and 40% Nomex®/LENZING FR® blend spun yarn quilted to two layers of DuPont Nomex® E89 spunlace – 2.3 oz/ yd² and 1.5 oz/ yd². The total weight will be no more than 7.4 oz/ yd².

If available, the Center Cut Liner or an Equivalent Product should be included as an optional available upgrade. This system includes: Glide Ice™ face cloth quilted to 1.5oz Araflo® Dri. 5.0oz CROSSTECH® black Nomex® IIIA woven pajama check substrate laminated to a PTFE membrane. 3.0oz Nomex® IIIA Chambray Dri face cloth.

The thermal barrier shall be completely detachable from the outer shell for ease of cleaning by using snaps, zipper, and/or hook and loop. The NFPA compliant labeling shall be applied to the thermal liner.

B. Moisture Barrier

The moisture barrier shall be constructed of W.L. GORE "CROSSTECH®" Black NOMEX® substrate laminated to a lightweight breathable, Teflon membrane; weighing 4.7 oz./sq. yd. The moisture barrier material shall meet all moisture barrier requirements of NFPA 1971, which includes water penetration resistance, viral penetration resistance, and common chemical penetration resistance. The moisture barrier shall be bound along the edges with Bias-Cut Neoprene-coated cotton/polyester binding. Any references in this document to "Specified Moisture Barrier" shall refer to this section.

C. Outer Shell Material

The outer shell will be "PBI Max" or an equivalent product. The outer shell shall be constructed of a nominal 7.0 oz/ yd² of 60/40 para-aramid/PBI modified plain weave outer shell fabric. The outer shell material shall be reinforced with a network of yarns, each containing one ply of 400 to 600 denier para-aramid filament and one ply of 60/40 para-aramid/PBI spun yarn. If available, please add as an option to include a durable water repellant finish, such as Teflon or an equivalent water repellant finish. The color shall be gold or natural.

In the event that the specified outer shell material should be discontinued, the City of Duluth shall have the option to switch to another appropriate outer shell material of the City's choosing, upon the agreement of both parties. Such a change may not increase the price of the garment.

D. Assembly Attachments

The design shall be compatible with the outer shell so that the liner does not buckle, pull, or otherwise restrict body motion. The left and right leg portions of the moisture barrier/thermal liner shall be secured to the outer shell in the crotch area. In addition, the waist portion of the moisture barrier/thermal liner shall be secured to the waist portion of the outer shell material such that when donning the pant a leg cannot become accidentally caught between the outer shell and its inner linings. Flimsy flame resistant hook and loop tape used to secure the two systems together in the crotch area will be unacceptable and a more secure means of attachment must be utilized. In addition, there shall be a means for ensuring proper alignment of the liner system to the outer shell.

E. Liner Inspections System

There shall be an opening, no less than 10" located on the pant liner system to the right side of the waist separating the thermal barrier and moisture barrier. The edges of the opening shall be reinforced with bar tacks to prevent release of the seams upon liner inversion. This opening will provide the ability to completely invert the pant liner to view the integrity of the entire liner system. The liner inspection system shall be completely hidden when the liner is properly installed into the outer shell.

F. Pant Fly Closure

The fly front shall be part of the pant closure system resulting in; maximum strength and durability, proportional to waist size and crotch rise in both length and width as a result of custom tailoring/sizing. In combination with the liner, the system shall offer 360-degree protection without gaps during movement of the outer shell moisture barrier and thermal liner.

The outer shell shall have a vertical, overlapping, triple bar tacked fly front running the full length of the fly on the right side. The right side fly front shall be constructed of outer shell material lined with a moisture barrier/thermal liner. The inside of the left side fly closure shall be of similar construction as the right side.

A heavy duty, high-temp smooth-gliding black oxide coated brass zipper, in combination with flame resistant hook and loop tape, will secure the fly system in a "closed" position. The zipper parts shall be bar tacked at the top and bottom for reinforcement. The aforementioned flame resistant hook and loop tape shall be quadruple stitched along the full length and throughout the shell material only; stitching shall not penetrate the moisture barrier insert between the two layers to insure greater thermal protection and reduced water penetration.

No snap fasteners shall be utilized on the exterior due to the escape bailout belt assembly becoming the final step in the pant fly closure system (unless required per UL standards).

WAISTBAND: The waist of the pants shall be reinforced on the inside with one ply of

outer shell fabric material not less than 1.5" in width. The pant waist shall be contour shaped for better comfort and hemmed to provide strength with the independent waistband, which shall then be double stitched to the outer shell.

G. Take Up Straps

Location of the take-up straps shall not interfere with the escape bailout belt assembly. The fabric and dimensions of the take up straps are merely a suggestion and the bidding companies will be allowed to modify as they see fit with consideration to the escape bailout belt as the primary priority.

A take up strap constructed of Nomex® webbing with a thermoplastic buckle or double layered outer shell material with a nickel-plated metal loop will be sewn to the outer shell at each hip. The take up straps will pull forward to tighten. Flame resistance hook and loop tape may be utilized to affix the loose strap ends in a stored position.

H. Liner Attachment Leg Tabs

The moisture barrier and thermal liner assembly shall be attached to the outer shell at the cuff by means of two black leather leg tabs (or equivalent material) with snap fasteners. The snaps shall be positioned and bar tacked no more than 2" up from the bottom edge on the inside pant cuff with non-standard placement; one located at the front and one located at the rear.

I. Pant Knee Reinforcement and Padding

Any combination of options shall be used for added protection, comfort and increased thermal insulation at the contact points of the knee and shall be no less than a depth of 1/4." Cushion type material, such as double layered Lite-N-Dri or Silicone padding, are preferable but not mandatory. The padding shall be encased in moisture barrier, graded in width and installed proportionate to the pant inseam, and contoured to the natural/anatomically correct bend of the knee thus creating increased freedom of movement, few restrictions and maximum flexibility. Proper semi-circumferential coverage when bending, kneeling, and crawling shall be required.

It shall be the bidder's discretion as to which current technological advances will be employed to prevent any thermal insult and/or conductive compression heat related injuries as a result of stored energy, so long as bidder's knee reinforcement and padding meets or exceeds NFPA 1971 CCHR. Bidder must supply detailed specifications/illustrations for evaluation of the shoulder reinforcement layer.

KNEE: The knee shall be a Biflex Heat Channel Knee or an equivalent. The knee shall have an insert throughout all layers that shall provide a natural bend in the leg. This knee shall include cut outs, shaped pieces, and darts to create free movement with few restrictions. The insert shall consist of black poly-coated aramid for abrasion resistance and thermal protection. For added thermal protection, an additional layer of uninterrupted 1/8" thick, fire retardant closed-cell foam or an equivalent shall be positioned between the moisture barrier and thermal liner. For additional extended thermal protection, three layers of uninterrupted 1/8" thick, fire retardant closed-cell foam or an equivalent shall be also be positioned between the reinforcement layer and outershell.

A. Pant Cuff Reinforcement

The pant cuffs shall be reinforced with an extra layer of equivalent material (such as black polymer coated Kevlar®) folded in half, approximately one half inside and one half outside the pant end for greater strength and abrasion resistance. Pants finished with a turned and stitched cuff do not provide the same level of abrasion resistance and will be considered unacceptable.

Any form of pant cuff water well or synched elastic-type system will not be considered and will be unacceptable.

The cuff area of the pant shall be reinforced with a binding of black polymer coated aramid not less than 2" in total width for greater strength, abrasion resistance, and thermal protection. In addition, a 3" x 3" piece of reinforcement material shall be sewn on the inseam area of the pant leg above the pant cuff and below the pant trim, in order to provide extra abrasion protection. The material used on the kick shield shall match the material used on the pants cuffs.

B. Boot Cut

The back portion of the cuff will curve upward from each side seam to a maximum of 2" at the center back of the pant leg to prevent wear on the back of the cuff.

C. Reflective Trim

The reflective trim shall be of the yellow/lime and silver 3" triple trim *New York Pattern* design in accordance with NFPA 1971.

It shall be the bidder's discretion as to which means of current technological advances that shall be employed to prevent any thermal insult as a result of stored energy under the trim material. Bidder must supply detailed specifications/illustrations of the technology to be employed for City consideration.

Pant trim shall be applied as follows: one strip set full circumference around the bottom of the cuff 3" from the bottom cuff.

D. Suspender Attachments

The suspender attachment system shall be reinforced in such a way as to accommodate the added weight of the escape bailout belt assembly and prevent any tearing and/or ripping damage, etc. resulting in failure and shall prevent any unnecessary/undue future repair needs. The attachment points will be snap closures, not metal clips.

It shall be the bidder's discretion as to which current technological advances will be employed to securely and comfortably attach the suspenders to the pant. The suspenders must not easily or accidentally detach from the pants during normal use. It is recommended that all suspender attachment points have a layer of leather material in addition to any outer shell material, bar tacked, so as to provide reinforcement. Bidder must supply detailed specifications/illustrations for evaluation of the shoulder reinforcement layer.

E. Suspenders

Morning Pride Dyna-Fit Suspender or Lion Rainier EZ H-back quick adjust non-stretch style suspender shall be included. Evaluation of the suspenders will include if the suspenders are easily/accidentally detachable and if the "H back," "V back," or "X back" is positioned too high (above the shoulder blade area) so as to cause undue stress on the neck of the wearer.

The suspenders shall employ some form of padding in the neck/shoulder area for comfort and be constructed of a sturdy strap webbing or cotton type of material. Flimsy elastic suspender material will not be allowed and will be considered unacceptable.

F. Pant Pockets and Accessories

All pockets shall be lined with Kevlar® material and have, at a minimum, one or two brass eyelets to provide sufficient drainage.

Left Turnout Pocket and Location:

(1) Fully lined Bellows expansion pocket no less than W9" x L9" x 2" with two-layer outer shell material flap opening secured by flame resistant hook and loop tape. Reinforcement material shall be approximately 5" up from the bottom of the three exterior sides of the pocket with black polymer coated Kevlar® or an equivalent material for abrasion resistance and improved strength. Corners reinforced with bar tacking. Pockets shall be fully functional and accessible while wearing a bailout escape belt system. Pocket cover will be 5" in length to accommodate equipment in the pocket. The edge will have an "easy grab" edge, such as a rolled edge.

Location: Left outer leg, thigh high

Right Turnout Egress Pocket with Rope Storage and Location:

(1) Fully lined pocket 9"x9"x2" with a flap made of black polymer coated Kevlar® or an equivalent product covering the opening, secured by flame resistant hook and loop tape. The lower edge of the flap shall have an "easy grab" edge, such as a rolled edge. Reinforcement material shall be approximately 5" up from the bottom of the three exterior sides of the pocket with black polymer coated Kevlar® or an equivalent material for abrasion resistance and improved strength. Pockets shall be fully functional and accessible while wearing a bailout escape belt system. The pocket shall house escape rope then cradle and separate the Fire Innovations Core, Auto-Locking Descent Control Device above the rope for easy deployment. In addition, the pocket shall store a Fire Innovations Talon in a tool division slot for quick access. The hook pocket shall be ¾" pleated x 6" deep x 6" wide. Lid should fully extend to the bottom of the pocket with 45° cuts at the corner 2" from the corner. The lid will be secured with hook and loop closures on each edge side of the length of the pocket.

Preference will be given to the design that best:

Distributes the weight of the rope, descender device, and hook evenly across the leg through the hip and suspenders and up to the wearer's shoulders by utilizing surface area advantageously.

Allows for additional storage area on the right side for hand tools without compromising the bailout escape system/pocket or overly encumbering the wearer.

Location: Right front/outer leg, thigh high that allows the Fire Innovations Core, Auto-Locking Descent Control Device to deploy reliably to the front and center of the wearer yet attached to the bailout escape harness system. Note that the location of the egress pocket shall not hinder the firefighter when in the seated position while driving or riding in fire apparatus (e.g., altering the anatomically correct seated posture due to poor egress pocket placement that is semi-under the wearer's thigh, bottom, or backside).

Miscellaneous Strap

A 100% Kevlar® miscellaneous strap device shall provide a means of connecting the wearer to a ladder and/or functioning as a rescue strap via the bailout escape belt. The device shall not extend greater than 24" in total length including connection hardware, carabineer and buckle, on each end when measured from the surface of the belt to the inside of the connector device at the greatest distance from the belt when, for example, connected circumferentially to a ladder rung (per NFPA). Although, when the miscellaneous strap is being utilized as a rescue strap, and therefore not in circumferential positioning, the length may exceed 24." The Miscellaneous strap shall be constructed of dual layered one and three quarter inch (1.75") Kevlar® webbing with 138 bonded twisted Kevlar® thread. The strap shall be at the most 44"-48" long with a rated Shane sewn loop handle at one end and a forged steel alloy "O Ring" at the other. Five Kevlar® 42 count stitch bar tacks secure the ends of the strap. The O ring shall have a 2 stage forged steel alloy NFPA carabineer option. Additional, a snap adjuster buckle is used to adjust the strap when used in Ladder operations and rescue operation; all buckles shall be constructed of forged alloy steel and at the minimum 100% proof load tested at 2500 lbs. All webbing used in construction shall be UL tested and certified to NFPA 1983-2012 edition standards.

Integrated Escape Belt

An NFPA-rated, 100% Kevlar® escape belt shall be integrated in the turnout pant and a non-ferrous hook and "D" ring harness closure system will serve as the final step in the secure closure for the pant fly. The Kevlar® belt shall securely attach to the waist portion of turnout pant with six or more outer shell (or equivalent material) belt loops, no less than 1.25" wide, whether the belt system is external, internal or a combination thereof. Systems that allow excessive movement, slouching or sagging of the harness system; which could result in poor deployment of the Fire Innovations Core, Auto-Locking Descent Control Device® and systems that do not securely attach the belt to the pants will be rejected. The harness system shall be removable for the purpose of laundering the turnout pant.