

BYZ1322 STRUCTURAL and PROXIMITY PROTECTIVE GEAR
Dallas Fire-Rescue Department (DFD)

- 1.0 INTRODUCTION:** It is the intent of this specification to establish a master agreement for structural and proximity protection clothing gear for the City of Dallas. The term for this agreement shall be three years.
- 1.1 SCOPE:** This specification is intended to set forth the requirements for structural and proximity fire fighting gear (i.e. coats, bunkers, helmets, boots, gloves, hoods and suspenders) and to provide the City of Dallas' firefighters with specified gear which **meet or exceed NFPA Standard #1971 (2013 revision) and OSHA for structural fire fighters protective clothing.**
- 1.2 METHOD OF AWARD:** Award of structural and proximity firefighting gear shall be made in the groups they are listed in. Award of this proposal will be made to the proposer deemed most advantageous to the City of Dallas while meeting specifications. All awards shall be based on the evaluation criteria for the three-year period.
- 1.3 PROPOSER QUALIFICATION:** The successful proposer(s) shall be an established Structural & Proximity Manufacturer Business with recent experience in similar size contracts. The successful proposer(s) shall possess and maintain the capability to provide the products and service necessary through the duration of the agreement. Upon notification from the City of Dallas, a site visit of your facility may be required. The proposer(s) shall maintain adequate inventory to satisfy the account without extended delivery time.
- 1.4 PROPOSAL PRICE:** Proposer(s) must quote firm delivered prices for each respective uniform group of the bid sheet. Bid pricing shall be for three – 12 month intervals. Firm pricing shall be established for each twelve-month period. The agreement shall commence on the date of award by the Dallas City Council. Prices for the 2nd and 3rd twelve-month periods shall be automatic. Successful proposer shall be allowed, with the approval of city procurement and the fire department, up to a 5% increase in year 2 and year 3 of contract bases upon the most recent published Producers Price Index. The manufacturer shall provide documentation with verifiable data to substantiate this increase request. There shall be no price increase approval for the first 12 months of contract.
- 1.5 PROPOSAL DUE DATE AND TIME:** All Proposals shall be received at the address below no later than 2:00 p.m. CST on February 13, 2013. All Proposals shall be addressed to:

RFP# BYZ1322 Structural and Proximity Protective Gear
Attn: Rebecca Parrish
1500 Marilla St., Ste 3FN
Dallas, TX 75201
214-671-9298
Rebecca.parrish@dallascityhall.com

Please include following forms along with your proposal:

Conflict of Interest Form	(Please include original signed copy)
Ethnic Workforce Composition Report	(BDPS-FRM-204)
Business Information Form	(BDPS-FRM-140)
Proposal Signature Page	(BDPS-FRM-116)

All Proposals shall be submitted in a sealed envelope clearly marked with RFP BYZ1322 Structural and Proximity Protective Gear and the Proposal Due Date and Time. All submittals shall include one complete, original proposal marked "ORIGINAL", seven complete copies of the original proposal, one electronic copy on a flash drive, and other related documentation required by this RFP. Any proposal received after the proposal due date and time will be unopened and returned to the respondent.

- 1.6 INQUIRIES ABOUT THE RFP:** Prior to the pre-proposal conference and after the pre-proposal conference, all inquiries and requests for information regarding this RFP shall be submitted in writing to:

RFP # BYZ1322 Proximity and Structural Protective Gear
Attn: Rebecca Parrish
Rebecca.parrish@dallascityhall.com

All requests for information shall be submitted prior to the established RFP cutoff date and time. Requests for information will not be honored beyond the established timeframe to allow sufficient time for distribution of the requested information to proposers. The City reserves the right to judge whether any questions should be answered. If responses are provided, the responses will be written and will be issued via Addendum. Addendums will be made available electronically on the City's procurement website: www.bids.dallascityhall.org. No proposal negotiations, decisions or actions initiated by any proposers as a result of any verbal discussion with any DFD employee shall be binding upon the City of Dallas.

All inquiries shall be directed to the buyer assigned to this procurement. Inquiries are not to be directed to any consultant or staff member of DFD. Such action may disqualify proposers from further consideration for a contract as a result of this RFP.

- 1.7 SUPPLIER DIVERSITY PROGRAM: Demonstrated inclusion and commitment to and understanding of the City's Business Inclusion and Development (BID) Plan – It is the policy of the City of Dallas to involve Minority and Women Business Enterprises (M/WBE) to the greatest extent feasible on the City's construction, procurement and professional services contracts.**

The following information shall be submitted with the proposal and shall include:

- **Submission of an Affirmative Action Plan or Policy – 1%**
- **Submission of the Ethnic Workforce Composition Report (BDPS-FRM-204) – 1%**
- **Submission of the RFP/RFQ Contractors Affidavit History of M/WBE Utilization Form (BDPS-FRM-205) documenting the history of M/WBE utilization on previous contracts – 4%**
- **Submission of the RFP/RFQ Contractors Affidavit Type of Work by Prime and Sub-consultant Form (BDPS-FRM-206) which includes a significant number of diverse M/WBE firms in meaningful roles on the project – 7%**

(1) The name, address and telephone number of each M/WBE

(2) The description of the work to be performed by each M/WBE; and

(3) The approximate dollar amount/percentage of the participation

Submission of the Business Inclusion and Development Affidavit (BDPS-FRM-203) which demonstrates the intent to comply with the policy and evidence of M/WBE inclusion to meet the BID goal for the project. The BID Affidavit exhibits evidence of acknowledgement of the City of Dallas' BID Plan – 2%.

1.8 TIMELINE: The following timeline is intended to illustrate the anticipated time line for the RFP.

<u>ACTIVITY</u>	<u>ANTICIPATED COMPLETION DATE</u>
Advertisement	January 17, 2013
Pre-proposal Conference	January 31, 2013
Written questions due	February 4, 2013 noon (local time)
Written responses posted online	February 6, 2013
Proposals due	February 13, 2013 2:00 pm (local time)
Council Approval	TBD
Contract Start Date	TBD

1.9 DELIVERY: The deliveries of the uniforms are a critical issue to the Dallas Fire Department. Orders for individual items in standard manufacturer sizes shall be completed within thirty days. Bulk orders (more than ten sets of items) excluding structural & proximity uniforms shall be completed within forty-five days after receipt of order by the department. Orders for custom sizes shall be completed within ninety days. The successful vendor shall be responsible for all delivery costs to include returns. Deliveries shall be FOB-destination, as the vendor shall prepay all shipping charges. Partial shipments shall be accepted only with the notification to the authorized City representative, but the order shall not be considered complete until such time as the total number of items ordered has been received.

1.10 ORDERS: Authorized city representative shall place orders for structural & proximity uniform gear, via phone / fax / email and shall provide a Delivery Order. After award of the bid, the department shall provide a listing of all authorized representative to the awardees prior to placing orders. Vendor should not accept orders without appropriate documentation numbers and billing information. Payments shall be made within thirty days of approved receipt of order and receipt of an accurate invoice. It shall be the responsibility of the awardees to insure that proper billing/remittance information is filed with the City of Dallas.

1.11 INVOICING: Invoices shall reflect pricing of the most recent manufacturer's catalog/list price provided to the City at the time the order is placed for structural & proximity uniform gear while invoicing for uniforms shall be based on the bid price. Invoices submitted for payment shall include the following:

- Vendor name and remit address as listed with the City of Dallas.
- Delivery address and Unit that requested product(s).
- Date of delivery.
- Delivery Order number
- Manufacturer's number and corresponding catalog ID number.
- Quality, unit cost and extended cost. (The City of Dallas does not pay sales tax.)
- Total cost of the order. (No delivery or freight charges shall be included.)

Invoices without proper order reference information shall be returned to the vendor for correction. Invoices and pack lists must have the quantity ordered, shipped, and back ordered clearly listed. Shipments without reference information shall delay payment.

- 1.12 PACKING:** items shall be received in the original packages from the manufacturer. When bulk packed for shipping, the items shall be packed in such a manner so as to afford adequate protection against physical damage during shipment and storage, and to insure carrier acceptance and safe delivery at the designated destination.
- 1.13 COMMUNICATION:** Written correspondence from the City of Dallas shall be answered within twenty-four hours. Phone calls from the City shall be responded to immediately. The successful vendor shall notify the City department of manufacturer price increases via a new manufacturer published price list. The City shall only accept revised prices beginning with orders placed on or after the date of receiving the revised price lists. Price increase shall not be effective on orders already in process with the vendor. The City shall not reprocess invoices on orders pending or that have been paid per old price lists due to the vendors failure to submit current price information.
- 1.14 QUANTITIES:** Quantities listed are estimates only. Past usage is no guarantee of future purchase quantities or usage. Items shall be purchased on an "as needed" basis with no regards to any minimum or maximum purchases. The bid price quoted on this request for bid shall be inclusive and no additional charges shall be allowed.
- 1.15 RETURN POLICY:** The City may return or exchange items purchased under this agreement regardless of when purchased at no cost to the City, provided the original tags are attached, are stock items (i.e. shorts, pants, shirts), without alterations or embroidery and are not specifically made (with logo) for the City of Dallas.
- 1.16 WARRANTY:** The warranty on items shall be no less than the minimum of what the manufacturer offers. The warranty period shall begin with the issuance of said item and not at time of purchase.
- 1.17 TRAINING:** The successful vendor(s) shall be required to train employees in the measuring and fitting of the clothing and safety shoes at no charge to the City.
- 1.18 INSURANCE REQUIREMENTS:** The awarded contractor must provide a certificate of insurance evidencing proof of General Liability, Automobile, and Workers' Compensation insurance coverage. The City shall be provided a Waiver of Subrogation on the Workers' Compensation policy. The City shall be shown as the certificate holder. This insurance must stay in force for the duration of the contract.
- 1.19 ADD-ONS:** The City reserves the rights to add, delete and/or acquire other product/services that the vendor can supply that are similar to, but not specifically called for in this bid. The procedure for such acquisitions shall be as follows: Procurement or the using department shall obtain from the Vendor a letter (on his/her letterhead) verifying the items to be added. The letter shall include the complete description of the item, the location (if applicable), the bid number, bid scheduled number, the price to the City and the applicable contract period; and upon receipt and approval by the Procurement Department shall automatically become part of the contract. The City, however reserves the right to accept or reject the letter and to acquire the supplies or materials in the open market.
- 1.20 REQUIREMENTS:** All protective clothing bid for **structural** and **proximity** fire fighting must meet or exceed current National Fire Protection Association standards (NFPA) and shall be

applicable to this bid. **NFPA Standard in Effect: NFPA 1971 – Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2013 Edition.**

- 1.21 SAMPLES:** Samples shall be requested from the most advantageous proposer. Samples must be provided within ten working days after request is made. In an instance where the most advantageous proposer is disqualified samples shall be requested from the next lowest proposer and so on. **Samples shall not be required prior to the bid opening.**
- 1.22 MEASUREMENT:** The successful vendor shall be responsible for providing a sample rack for future measurements. Sample rack of structural gear only should consist of a range of regular sizes from sizes 32 to 56 in men sizes. Samples may be made of the standard stock material. In addition, the vendor shall provide one day training to Clothing & Supply staff in measuring from the sizing rack.
- 1.23 EST RESULTS: THIRD PARTY TESTING AND LISTING PROGRAM:** All components used in the construction of these garments including proximity (exception: Suspenders) shall be tested for compliance to NFPA Standard #1971 (2012 revision) by Underwriters Laboratories (UL). Underwriters Laboratories shall certify and list compliance to that standard. The Underwriters Laboratories certification label shall denote such certification. The data required is TPP, THL, and CCHR values of the garments offered. **Bids submitted without 3rd Party Testing Results (Per NFPA Standard) shall be deemed non-responsive and shall not be evaluated.**
- 1.24 PERFORMANCE CRITERIA:** The helmet shall meet the requirements of NFPA 1971-2007 edition, US-OSHA (CFR 1920) NBSIR 1977, and CAL-OSHA. The request of only a Bourke lens on this helmet reduces the certification to US OSHA (CFR 1920) NBSIR 1977.
- 1.25 PERFORMANCE VERIFICATION DATA REQUIREMENT:** Response to this specification shall include a current, NFPA 1971-2007 Certificate of Conformance test report from an accredited test facility for the helmet offered. This certification testing is conducted annually as per NFPA requirements.
- 1.26 ISO CERTIFICATION / REGISTRATION:** The protective clothing manufacturer shall be certified, registered and compliant to ISO Standard 9001 to assure a satisfactory level of quality. The manufacturer shall not have pending unresolved issues with ISO standards.
- 1.27 PROPOSAL EVALUATION:** The categories of evaluation criteria are as follows:
- a) **Proposed Pricing - (30 points)**
 - b) **Specification Qualifications - (30 points)**
 - c) **BID - (15 points for meeting or exceeding the City's stated goals)**
 - d) **Experience - (10 points)**
 - e) **U.S. Manufactured Products - (10 points)**
 - f) **Delivery - (5 points)**

The procedures for evaluating the proposals against the evaluation criteria may be summarized as follows:

Recommendations will be awarded based on the evaluation criteria; the most advantageous proposal(s) may be selected.

Section II – PROPOSERS RESPONSIBILITIES:

- 2.0 COMPLIANCE:** Proposers shall comply fully with these specifications and be fully knowledgeable and comply with all applicable and current NFPA Standards, which pertain to all protective clothing for structural firefighting and proximity gear. **Note: All Items purchased during the term of this agreement shall meet and/or exceed specifications required by NFPA Standards in effect at time of delivery.**
- 2.1 MATERIALS:** The materials shall be new and of the quality conforming to current NFPA Standards. **Proposers shall submit (on request) all technical specifications/data, which identifies specific materials and physical composition of items bid.**
- 2.2 OMISSION OF DETAILS:** Any details of design, materials or construction not specifically stated in this specification are left to the discretion of the manufacturer provided they meet the requirements of all applicable NFPA Standards pertaining to the items for which the proposer submits a bid. Nothing in this specification shall be construed to exclude the use of materials, which exceed these specifications.
- 2.3 QUALITY ASSURANCE WORKMANSHIP (WARRANTY):** Successful Proposer(s) shall be held accountable that all protective clothing purchased during the term of this agreement shall be free from any defects in materials and workmanship, which may affect appearance for their serviceable life when properly, used and cared for. The service ability, shall be of uniform quality, and shall meet or exceed these specifications and the highest commercial standards of the industry for these types of clothing and equipment.
- 2.4 LABELING REQUIREMENTS:** Successful Proposer(s) shall verify that all clothing and equipment are labeled in accordance with applicable NFPA Standards prior to shipment(s). Appropriate warning label(s) shall be permanently affixed to each garment. Additionally, the label(s) shall include the following information:
- Compliance to NFPA Standard #1971 - 2012 edition
 - Underwriters Laboratories classified mark
 - Manufacturer's name
 - Manufacturer's address
 - Manufacturer's garment identification number
 - Date of manufacture
 - Size
 - Fiber contents
 - Member First & Last Name
- 2.5 MANUFACTURERS LOGOS:** The City of Dallas and Dallas Fire Rescue Department request that manufacturer product logo's visible to the public not be used, as neither the City nor the department want to give the appearance of product endorsement. The manufacturers must omit any exterior logos and/or embroidery.

Section III – FIRE FIGHTING GEAR SPECIFICATIONS:

Group 1
Firefighting Coat
Item #1 29" Female Coat
Item #2 32" Male Coat
Item #3 35" Male Coat

3.0 ITEM #1 Thru #3 Firefighting Coat

- 3.1 OUTER SHELL MATERIAL - JACKET:** The outer shell shall be constructed of "GEMINI™ XT", a 60/40 Kevlar®/PBI® modified plain weave outer shell fabric reinforced with a network of yarns each containing one ply of 400 denier high strength filament and one ply of 40/60 Kevlar®/PBI® spun yarn in a "Matrix Technology" with an approximate weight of 7.5 oz. per square yard. The shell material must be treated with **SST™ (SUPER SHELLTITE)** which is a durable water-repellent finish that also enhances abrasion resistance. Color of garments shall be natural/gold. **Bids offering this shell material without the SST™ shall not be considered.**
- 3.2 THERMAL INSULATING LINER - JACKET:** The thermal liner shall be constructed of "QUANTUM® SL2i", a nominal 7.7 osy quilted thermal barrier comprised of para-aramid filament filling yarns and spun FR rayon/para-aramid/nylon warp yarns in a Goldcheck™ pattern inherently wicking face cloth, quilted to one flat layer and one three dimensional layer of meta-aramid/para-aramid spunlace batt. A 7 inch by 9 inch pocket, constructed of self material and lined with moisture barrier material, shall be affixed to the inside of the jacket thermal liner on the left side by means of a lock stitch. The thermal liner shall be bound around it's perimeter with Bias-Cut Neoprene jacketed cotton/polyester binding. The thermal liner shall be attached to the moisture barrier. Further mention of "thermal liner" in this specification shall refer to this section.
- 3.3 MOISTURE BARRIER – JACKETS:** The moisture barrier material for the jacket shall be "CROSSTECH® black" (Type 2F), a 4.7 ounce per square yard two layer laminate comprised of an enhanced bicomponent membrane and 3.3 ounce per square yard Nomex® IIIA woven pajama check substrate. The moisture barrier shall have no change in breathability (moisture vapor transmission rate) when exposed to a 5 minute thermal exposure at 260°C (NFPA 1971, 2007 edition, heat and thermal shrinkage resistance test (section 8.6)). It shall come with a three and a half year limited warranty.
- 3.4 SEALED MOISTURE BARRIER SEAMS:** All moisture barrier seams shall be sealed with a minimum one inch wide sealing tape. One side of the tape shall be coated with a heat activated glue adhesive. The adhesive side of the tape shall be oriented toward the moisture barrier seam. The adhesive shall be activated by heat and the sealing tape shall be applied to the moisture barrier seams by means of pressure exerted by rollers for that purpose.
- 3.5 METHOD OF THERMAL LINER/MOISTURE BARRIER ATTACHMENT FOR JACKETS:** The thermal liner and moisture barrier shall be completely removable from the jacket shell. Two strips of 5/8 inch wide flame resistant hook and loop fastener tape shall secure the thermal liner/moisture barrier to the outer shell along the length of the neck line under the collar (see Collar section). The remainder of the thermal liner/moisture barrier shall be secured with a minimum of four snap fasteners appropriately spaced on each jacket facing and four snap fasteners at each sleeve end.

The thermal liner and moisture barrier shall be completely removable from the trouser shell. Nine

snap fasteners shall be spaced along the waistband to secure the thermal liner/moisture barrier to the shell. The legs of the thermal liner/moisture barrier shall be secured to the shell by means of two snap fasteners per leg.

- 3.6 THERMAL PROTECTIVE PERFORMANCE:** The assembled garment, consisting of an outer shell, moisture barrier, and thermal liner, shall exhibit a TPP (Thermal Protective Performance) rating of not less than 35.
- 3.7 STITCHING:** The outer shell shall be assembled using stitch type #301, #401, and #516. The thermal liners and moisture barriers shall be assembled using stitch type #301, #401, #504, #514, and #516. **Stitching in all seams shall be continuous. There shall be no joined stitching in midseam.** All major A outer shell structural seams, major B structural liner seams, shall have a minimum of 8 to 10 stitches per inch. **A ballpoint needle shall be used for stitching.** Using a ball point needle helps separate the fibers as opposed to cutting them, practically eliminating the potential of damaging the garment being sewn.
- 3.8 BODY:** The body of the shell and AXTION liner system shall be constructed of three separate panels consisting of two front panels and one back panel. The body panels shall be shaped so as to provide a tailored fit thereby enhancing body movement and shall be joined together by double stitching with Nomex[®] thread.
- 3.9 DRAG RESCUE DEVICE (DRD):** A Firefighter Drag Rescue Device shall be installed in each jacket. The ends of a 1½ inch wide Kevlar[®] strap shall be sewn together to form a continuous loop. The strap shall be installed in the jacket between the liner system and outer shell such that when properly installed shall loop around each arm. The strap shall be accessed through a portal between the shoulders on the upper back where it is secured in place by a hook and loop strap. The access port shall be covered by an outside flap with beveled corners designed to fit between the shoulder straps of an SCBA. The flap shall have a strip of compliant reflective trim sewn to the outside to clearly identify the feature.
- 3.10 SEPARATING LINER SYSTEM (JACKET):** The combined moisture barrier and the thermal liner shall be completely removable for the jacket. The thermal liner and moisture barrier layers of the AXTION liner system shall be constructed in such a way as to allow the layers to separate for improved air flow, drying and interior service and replacement. The thermal liner and moisture barrier layers shall be stitched together at the sleeve cuff ends and hem of the rear body panels only. The leading edges and hem of the left and right front body panels of the thermal liner and moisture barrier layers shall fasten together with snap fasteners. The snap fasteners shall be evenly spaced along the opening edge of the layers and set in bias-cut reinforcement fabric. The neck area of the liner system shall attach up inside the outer shell collar with two strips of ⅝ inch wide flame resistant FR Velcro[®] fastener tape on the front and rear of the collar. Loop fastener tape installed along the neck of the thermal liner shall secure to hook fastener tape installed along the front inside edge of the top collar. Hook fastener tape installed along the neck of the moisture barrier layer of the liner system shall extend upward into the underside of collar and attach to the loop fastener tape installed along the full length of the inside back layer of the collar. The outside perimeter of the AXTION liner moisture barrier and thermal liner layers shall be bound with a bias-cut Neoprene coated cotton/polyester binding for a finished appearance that prevents fraying and wicking of contaminants. Stitching used to secure the thermal liner and moisture barrier in place of the Neoprene shall not be considered since stitching is not able to provide the same level of abrasion resistance.
- 3.11 AXTION SLEEVES:** The sleeves shall be of two piece construction, having an upper and a lower sleeve. The sleeve seams shall be of a double needle seam construction and shall be contoured

to follow the natural flex of the arm at rest. Both the under and upper sleeve shall be graded in proportion to the chest size. For unrestricted movement, on the underside of each sleeve there shall be two outward facing pleats located on the front and back portion of the sleeve on the shell and thermal liner. On the moisture barrier, the system shall consist of two darts, rather than pleats, to allow added length in the under sleeve. The moisture barrier darts shall be seam sealed to assure liquid resistance integrity. The pleats shall expand in response to upper arm movement, and shall fold in on themselves when the arms are at rest. This expansion shall allow for greater multi-directional mobility and flexibility in the shoulder and arm areas, with little restriction or coat rise.

- 3.12 LINER ELBOW THERMAL ENHANCEMENT:** An additional layer of thermal liner material shall be sewn to the elbow area of the liner system for added protection at contact points and increased thermal insulation. The elbow thermal enhancement layers shall be sandwiched between the thermal liner and moisture barrier layers of the liner system and shall be stitched to the thermal liner layer only.
- 3.13 SLEEVE CUFF REINFORCEMENTS:** The sleeve cuffs shall be reinforced with a layer of Dragonhide™ material. The cuff reinforcements shall not be less than two inches in width and folded in half, approximately one half inside and one half outside the sleeve end for greater strength and abrasion resistance. The cuff reinforcement shall be double stitched to the sleeve end.
- 3.14 WRISTLETS / ELASTICIZED ADJUSTABLE SLEEVE WELLS WITH THUMB LOOPS:** Each jacket shall be equipped with Nomex® knit wristlets not less than four inches in length and of double thickness. A loop of 5/8 inch wide black Nomex shall be installed on each wristlet. This loop is designed to slip over the thumb and hold the wristlets from riding up the arm. Nomex® knit is constructed of 96% Nomex and 4% Spandex for shape retention. The wristlets shall be sewn to the end of the liner sleeves. Flame resistant neoprene coated cotton/polyester impermeable barrier material shall be sewn to the inside of the sleeve shell approximately five inches from the sleeve end and extending toward the cuff forming the sleeve well. The neoprene sleeve well shall form an elasticized cuff end with an FR Velcro® tab providing a snug fit at the wrist and covering the knit wristlet. This sleeve well configuration serves to prevent water and other hazardous elements from entering the sleeves when the arms are raised. The neoprene barrier material shall also line the inside of the sleeve shell from the cuff to a point approximately five inches back, where it joins the sleeve well and is double stitched to the shell. Four Nomex® snap tabs shall be sewn into the juncture of the sleeve well and wristlet. The tabs shall be spaced equidistant from each other and shall be fitted with female snap fasteners to accommodate corresponding male snaps in the liner sleeves. This configuration shall ensure there is no interruption in protection between the sleeve liner and wristlet.
- 3.15 COLLAR & FREE HANGING THROAT TAB:** The collar shall consist of a four-layer construction and be of two-piece design. The collar shall have a minimum of three rows of quilting. The outer layers shall consist of outer shell material, with two-layers of specified moisture barrier sandwiched in between (see Moisture Barrier section). The rear inside ply of moisture barrier shall be sewn to the collar's back layer of outer shell at the edges only. The forward inside ply of moisture barrier shall be sewn to the inside of the collar at the edges only. The multi-layered configuration shall provide protection from water and other hazardous elements. The collar shall be of two piece design with the left and right halves of all component materials joined in the center by stitching, thereby permitting the collar to retain its proper shape and roll. The collar shall be minimum 3½ inches high and graded to size. The leading edges of the collar shall extend up evenly from the leading edges of the jacket front body panels so that no gap occurs at the throat area. The collar's back layers of outershell and moisture barrier shall be joined to the body panels with two rows of stitching. Inside the collar, above the rear seam where it is

joined to the shell shall be a strip of 5/8 inch wide FR Velcro® hook fastener tape running the full length of the collar. The collar's front layers of moisture barrier and outershell shall have an additional strip of 5/8 inch wide hook fastener tape stitched to the inside lower edge and running the full length of the collar. These two inside strips of 5/8 inch wide FR Velcro® hook fastener tape sewn to the underside of the collar shall engage corresponding pieces of flame resistant loop fastener tape at the front and back neck area of the liner system.

The throat tab shall be a scoop type design and constructed of two plies of outer shell material with two center plies of moisture barrier material. The throat tab shall measure not less than 4 inches wide at the center tapering to two inches at each end with a total length of approximately 9 inches. The throat tab shall be attached to the right side of the collar by a one inch wide by 1½ inch long piece of Nomex® tshell webbing. The throat tab shall be secured in the closed and stowed position with flame resistant FR Velcro® fastener tape. The flame resistant FR Velcro® fastener tape shall be oriented to prevent exposure to the environment when the throat tab is in the closed position. Two 1½ inch by three inch pieces of FR loop fastener tape shall be sewn vertically to the inside of each end of the throat tab. Corresponding pieces of FR Velcro® hook fastener tape measuring one inch by three inches shall be sewn horizontally to the leading outside edge of the collar on each side, for attachment and adjustment when in the closed position and wearing a breathing apparatus mask. In order to provide a means of storage for the throat tab when not in use, a 1 inch by 3 inch piece of FR Velcro® hook fastener tape shall be sewn horizontally to the inside of the throat tab immediately under the 1½ inch by 3 inch pieces of FR Velcro® loop fastener tape. The collar closure strap shall fold in half for storage with the FR loop fastener tape engaging the FR Velcro® hook fastener tape. A hanger loop constructed of a double layer of outer shell material shall be sewn to the top of the collar at the center.

- 3.16 LINER SHOULDER AND UPPER BACK THERMAL ENHANCEMENT:** An additional layer of thermal liner material shall be used to increase thermal insulation in the upper back, front and shoulder area of the liner system. This thermal enhancement layer shall drape over the top of each shoulder extending from the collar to the sleeve/shoulder seam, down the front approximately 5 inches from the juncture of the collar down the back to a depth of 7½ inches. The upper back, front and shoulder thermal enhancement layers shall be sandwiched between the thermal liner and moisture barrier layers of the liner system and shall be stitched to the thermal liner layer only.
- 3.17 AXTION BACK:** The jackets shall include inverted pleats to afford enhanced mobility and freedom of movement in addition to that provided by the AXTION sleeves. The outer shell shall have two inverted pleats (one each side) installed on either side of the back body panel. The inverted pleats shall begin at the top of each shoulder and extend vertically down the sides of the jacket to the hem. Maximum expansion of the pleats shall occur at the shoulder area and taper toward the hem. The thermal liner shall have a single inverted pleat located at the upper middle of the back, corresponding to the added length in the shell provided by the AXTION back pleats. It shall be designed to expand with the outer shell pleats to provide maximum expansion. The moisture barrier shall be designed with darts corresponding to the added length in the shell provided by the AXTION back pleats. The darts are positioned at the shoulder blades of the moisture barrier, outside of the SCBA straps, and work together with the outer shell and the thermal liner pleats in the AXTION back providing maximum expansion.
- 3.18 JACKET FRONT:** The jacket shall incorporate separate facings to ensure there is no interruption in thermal or moisture protection in the front closure area. The facings shall measure 2½ inches wide, extend from collar to hem, and be double stitched to the underside of the outer shell at the leading edges of the front body panels. A breathable moisture barrier material shall be sewn to the jacket facings and configured such that it is sandwiched between the jacket facing and the inside of the

respective body panel. The breathable film side shall face inward to protect it. The thermal liner and moisture barrier assembly shall be attached to the jacket facings by means of snap fasteners.

- 3.19 STORM FLAP:** A rectangular storm flap measuring 3¼ inches wide and 24 inches long shall be centered over the left and right body panels to ensure there is no interruption in thermal or moisture protection in the front of the jacket. The outside storm flap shall be constructed of two plies of outer shell material with a center ply of breathable moisture barrier material. The outside storm flap shall be double stitched to the right side body panel and shall be reinforced at the top and bottom with bartacks.
- 3.20 STORM FLAP AND JACKET FRONT CLOSURE SYSTEM:** The jacket shall be closed by means of a 22 inch size #10 heavy duty high-temp polymer zipper on the jacket front and FR Velcro® fastener tape on the storm flap. The zipper shall be sewn using the “Clark County” placement. The teeth of the zipper shall be mounted on Nomex® cloth and shall be sewn into the respective jacket facings. The storm flap shall close over the left and right jacket body panels and shall be secured with flame resistant hook and loop fastener tape. A 1½ inch by 24 inch piece of FR Velcro® loop fastener tape shall be installed along the leading edge of the storm flap on the underside with four rows of stitching. A corresponding 1½ inch by 23 inch piece of FR Velcro® hook fastener tape shall be sewn with four rows of stitching to the front body panel and positioned to engage the loop fastener tape when the storm flap is closed over the front of the jacket.
- 3.21 CARGO/HANDWARMER EXPANSION (BELLOWS) POCKETS:** Each jacket front body panel shall have a 2 inch deep by 8 inch wide by 8 inch high expansion pocket double stitched to it and shall be located such that the bottom of the pockets are at the bottom of the jacket for full functionality when used with an SCBA. Retroreflective trim shall run over the bottom of the pockets so as not to interrupt the trim stripe. The lower half of each expansion pocket shall be reinforced with a layer of Kevlar material on the inside. Two rust resistant metal drain eyelets shall be installed in the bottom of each expansion pocket to facilitate drainage of water. The pocket flaps shall be rectangular in shape, constructed of two layers of outer shell material and shall measure 3 inches deeper than the pocket expansion and ½ inch wider than the pocket. The upper pocket corners and pocket flaps shall be reinforced with bartacks. The pocket flaps shall be closed by means of flame resistant hook and loop fastener tape. Two pieces of 1 ½ inch by 3 inch FR Velcro® hook fastener tape shall be installed vertically on the inside of each pocket flap (one piece on each end). Two corresponding pieces of 1 ½ inch by 3 inch FR Velcro® loop fastener tape shall be installed horizontally on the outside of each pocket near the top (one piece on each end) and positioned to engage the hook fastener tape. Bottom of pocket flap shall be reinforced with Silizone™ for easy grip. Additionally, a separate hand warmer pocket compartment shall be provided under the expandable cargo pocket. This compartment shall be accessed from the rear of the pocket and shall be lined with Nomex® Fleece for warmth and comfort.
- 3.22 ADJUSTABLE RADIO POCKET:** Each jacket shall have a pocket designed for the storage of a portable radio. This pocket shall be of box type construction, double stitched to the coat, and shall have one drainage eyelet in the bottom of the pocket. The pocket flap shall be constructed of two layers of outer shell material measuring approximately 5 inches deep and ¼ inch wider than the pocket. The pocket flap shall be closed by means of flame resistant hook and loop fastener tape. A 1½ inch by 3 inch piece of FR hook fastener tape shall be installed vertically on the inside of the pocket flap beginning at the center of the bottom of the flap. A 1½ inch by 3 inch piece of FR loop fastener tape shall be installed horizontally on the outside of the pocket near the top center and positioned to engage the hook fastener tape. In addition, the entire inside of the pocket shall be lined with neoprene coated cotton/polyester moisture barrier material to ensure that the radio is protected from the elements. The moisture barrier material shall also be sandwiched between the two layers of outer shell material in the pocket flap for

added protection. The radio pocket shall measure approximately 2 inches deep by 3½ inches wide by 10 inches high and shall be installed on the right chest. A 1½" wide strap with Velcro shall line the inside of the radio pocket to allow for different length radios, adjusting as needed.

- 3.23 NOTCHED RADIO POCKET FLAP:** The radio pocket flap shall have a window to accommodate the radio antenna to the right side as worn.
- 3.24 MICROPHONE STRAP:** A strap shall be constructed to hold a microphone for a portable radio. It shall be sewn to the coat at the ends only. The microphone strap shall be mounted above the radio pocket and shall be constructed of double layer outer shell material.
- 3.25 ID/PASS REVERSE SNAP:** Each jacket shall be equipped with an inward facing coat snap that shall be triple riveted in a vertical position to the upper chest. The snap shall be 1 inch from the storm flap and even with the top of the radio pocket on the left chest. (See picture)
- 3.26 UNIVERSAL CLIP:** A strap shall be configured to hold a personal alert device equipped with a clip holder, flashlight equipped with a clip holder, etc. The overall dimensions of the strap shall be approximately 4½ inches long by 1½ inches high and constructed of outer shell material. The outer shell material shall encase a piece of rigid leather measuring approximately $\frac{3}{16}$ inch thick by 3 inches long by 1¼ inches high and centered in the outer shell material. Each end of the strap shall be attached to the outer shell with two rows of stitching. This shall leave a usable area of 3 inches in length. The strap shall be mounted directly to the left of the reverse snap, with the top edge of the strap even with the bottom edge of the reverse snap (on the left chest).
- 3.27 HOLD DOWN STRAPS for PASS/FLASHLIGHT:** Self material straps measuring 1½ inches by 10½ inches with 1½ inch by 1½ inch hook and loop on each end and second strap measuring 1½ inches by 10½ inches with 1½ inch by 1½ inch hook and loop on each end. There shall be a 3" space in the rear of the hold down straps between the stitching to allow for use of the center of the straps. The straps shall be located on the left chest, one centered below the coat snap and one centered below the Universal Clip. The straps are to be set one inch above the trim on the left chest, below the reverse hook and the Universal Clip.
- 3.28 RETROREFLECTIVE FLUORESCENT TRIM:** The retroreflective fluorescent trim shall be 3" lime/yellow 3M Scotchlite™ Triple Trim (L/Y borders with silver center). Each jacket shall have an adequate amount of retroreflective fluorescent trim affixed to the outside of the outer shell to meet the requirements of NFPA #1971 (2007 edition) and OSHA.

The trim shall be in the following widths and shall be High Visibility (HV) style; 3 inch wide stripes - around the bottom of the jacket within approximately 1 inch of the hem. horizontally across the chest area approximately 3 inches below the armpit, around each sleeve below the elbow, around each sleeve above the elbow, across the shoulders on the back approximately 7½ inches below the neck seam, two vertical stripes on the back (one on each side) beginning at the top of the bottom band of trim and extending up to the bottom of the upper band of trim.

- 3.29 REINFORCED TRIM STITCHING:** All reflective trim is secured to the outer shell with Nomex® thread, using a locking chainstitch protected by TrimTrax™. This strip of 3/32-inch strong, durable, flame resistant black Kevlar® cord provides a bed for the stitching along each edge of the Retroreflective fluorescent trim surface and affords extra protection for the thread from abrasion. TrimTrax™ has been proven to be 5 to 7 times more durable than single or even double rows of stitching, significantly reducing maintenance costs and providing more value and a longer service life. Two rows of stitching used to attach the trim in place of the TrimTrax™ shall be considered an unacceptable alternative, since it has been proven that the two rows of

stitching has insignificant impact on wear life. All trim ends shall be securely sewn into a seam for a clean finished appearance.

- 3.30 SEWN ON RETROREFLECTIVE LETTERING:** Each jacket shall have: 3" lime/yellow Scotchlite™ lettering on Row A reading: DALLAS 2" or 3" lime/yellow Scotchlite™ lettering on patch on patch reading: Firefighter's Last Name
- 3.31 LETTER PATCH FR VELCRO® LETTER PATCH:** Lettering for names shall be installed on a 4" wide by 15" long FR Velcro® letter patch. The FR Velcro® letter patch shall be constructed of a double layer of outer shell material. The letter patch shall attach to the back of the jacket with a 1" FR Velcro® hook & loop fastener tape bordering the patch and installed directly above the lower trim band.
- 3.32 SIZING:** The jacket length shall be measured from the juncture of the collar and back panels to the hem of the jacket and shall measure 32 inches long with optional 29 inch and 35 inch lengths. The jacket shall be available in male and female patterns in even size chest measurements of two-inch increments, and shall range from a small size of 30 to a large size of 60. Generalized sizing, such as small, medium, large, etc., shall not be considered acceptable. Both male and female sizing samples shall be available.
- 3.33 TAKE UP STRAPS (JACKET):** The jacket shall be equipped with two take up straps. The straps shall be constructed of approximately 1/2 inch wide self material and be positioned in the waist area on the outside of the garment; one on each side. Each take up strap shall be comprised of two sub-component straps. The pull strap shall measure approximately 4 inches long, folded back through the metal buckle. The buckle shall point toward the front. The adjustment strap component shall measure 8 inches long (finished dimension). The adjustment strap component shall be inserted through the buckle and the ends shall be stitched to the jacket. The take up strap pull-tabs shall pull toward the front to tighten. This shall allow for approximately 4 inches of adjustment per strap (8 inches overall).

GROUP 1A
Fire Fighting Pant -
ITEM #4 IH READY PANTS W/ SERIES II INTERNAL HERNESS
ITEM #5 IH READY PANTS W/ ESCAPE BELT

ITEM #4 & #5 Firefighting Pants

- 3.34 OUTER SHELL MATERIAL - TROUSERS:** The outer shell shall be constructed of "**GEMINI™ XT**", a 60/40 Kevlar®/PBI® modified plain weave outer shell fabric reinforced with a network of yarns each containing one ply of 400 denier high strength filament and one ply of 40/60 Kevlar®/PBI® spun yarn in a "Matrix Technology" with an approximate weight of 7.5 oz. per square yard. The shell material must be treated with **SST™ (SUPER SHELLTITE)** which is a durable water-repellent finish that also enhances abrasion resistance. Color of garments shall be natural/gold. **Bids offering this shell material without the SST™ shall not be considered.**
- 3.35 THERMAL INSULATING LINER - TROUSERS:** The thermal liner shall be constructed of "**QUANTUM® SL2i**", a nominal 7.7 osy quilted thermal barrier comprised of para-aramid filament filling yarns and spun FR rayon/para-aramid/nylon warp yarns in a Goldcheck™ pattern inherently wicking face cloth, quilted to one flat layer and one three dimensional layer of meta-aramid/para-aramid spunlace batt. A 7 inch by 9 inch pocket, constructed of self material and lined with moisture barrier material, shall be affixed to the inside of the jacket thermal liner on the left side by means of a lock stitch. The thermal liner shall be bound around it's perimeter

with Bias-Cut Neoprene jacketed cotton/polyester binding. The thermal liner shall be attached to the moisture barrier. Further mention of "thermal liner" in this specification shall refer to this section.

3.36 MOISTURE BARRIER – TROUSERS: The moisture barrier material for the trousers shall be "CROSSTECH[®] 3-layer moisture barrier (Type 4A)", which is comprised of a CROSSTECH[™] membrane laminated to a 3.3 ounce per square yard Nomex[®] IIIA woven pajama check substrate and a 1.8 ounce per square yard Nomex[®] woven fabric. The CROSSTECH[™] membrane is an enhanced bicomponent membrane comprised of an expanded PTFE (polytetrafluoroethylene, for example Teflon) matrix having a continuous hydrophilic (i.e. water loving) and oleophobic (i.e. oil hating) coating that is impregnated into the matrix. The moisture barrier shall be sewn to the thermal liner and bound along the edges with bias-cut Neoprene-coated cotton/polyester binding. Further mention of "Specified Moisture Barrier" in this specification regarding trousers shall refer to this section.

3.37 SEALED MOISTURE BARRIER SEAMS TROUSERS: All moisture barrier seams shall be sealed with a minimum 1 inch wide sealing tape. One side of the tape shall be coated with a heat activated glue adhesive. The adhesive side of the tape shall be oriented toward the moisture barrier seam. The adhesive shall be activated by heat and the sealing tape shall be applied to the moisture barrier seams by means of pressure exerted by rollers for that purpose.

3.38 METHOD OF THERMAL LINER/MOISTURE BARRIER ATTACHMENT FOR TROUSERS: The thermal liner and moisture barrier shall be completely removable from the jacket shell. Two strips of 5/8 inch wide flame resistant hook and loop fastener tape shall secure the thermal liner/moisture barrier to the outer shell along the length of the neck line under the collar (see Collar section). The remainder of the thermal liner/moisture barrier shall be secured with a minimum of four snap fasteners appropriately spaced on each jacket facing and four snap fasteners at each sleeve end.

The thermal liner and moisture barrier shall be completely removable from the trouser shell. Nine snap fasteners shall be spaced along the waistband to secure the thermal liner/moisture barrier to the shell. The legs of the thermal liner/moisture barrier shall be secured to the shell by means of two snap fasteners per leg.

3.39 THERMAL PROTECTIVE PERFORMANCE TROUSERS: The assembled garment, consisting of an outer shell, moisture barrier, and thermal liner, shall exhibit a TPP (Thermal Protective Performance) rating of not less than 35.

3.40 STITCHING: The outer shell shall be assembled using stitch type #301, #401, and #516. The thermal liners and moisture barriers shall be assembled using stitch type #301, #401, #504, #514, and #516. **Stitching in all seams shall be continuous. There shall be no joined stitching in midseam.** All major A outer shell structural seams, major B structural liner seams, shall have a minimum of 8 to 10 stitches per inch. **A ball point needle shall be used for stitching.** Using a ball point needle helps separate the fibers as opposed to cutting them, practically eliminating the potential of damaging the garment being sewn.

3.41 BODY: The body of the shell shall be constructed of four separate body panels consisting of two front panels and two back panels. The body panels shall be shaped so as to provide a tailored fit, thereby enhancing body movement, and shall be joined together by double stitching with Nomex[®] thread. The body panels and seam lengths shall be graded to size to assure accurate fit in a broad range of sizes.

3.42 SEPARATING LINER SYSTEM (TROUSER): The thermal liner and moisture barrier layers shall

fasten together at the waist with snap fasteners and at the cuffs with full circumference FR hook & loop fastener tape and two snap fasteners. The snap fasteners shall be evenly spaced along the openings and set in bias-cut reinforcement fabric. The waist and cuff perimeters of the moisture barrier and thermal liner layers shall be bound along the edges with a neoprene-coated cotton/polyester binding for a finished appearance that prevents wicking of contaminants.

- 3.43 WAISTBAND:** The waist area of the trousers shall be reinforced on the inside with a separate piece of black aramid outer shell material not less than two inches in width. Neoprene coated cotton/polyester shall be sewn to the back of the waistband as a reinforcement to create a three-layer protection. The top edge of the waistband reinforcement shall be double stitched to the outer shell at the top of the trousers. The lower edge of the waistband shall be serged and unattached to the shell to accept the thermal liner and moisture barrier. The top of the thermal liner and moisture barrier shall be secured to the underside of the waistband reinforcement so as to be sandwiched between the waistband reinforcement and outer shell to reduce the possibility of liner detachment while donning and to avoid pass through of snaps from the outer shell to the inner liner. The independent waistband construction affords greater comfort and fit than a turned and stitched method. Trousers that do not include an independent waistband only serve to save the manufacturer both money and labor and shall be considered unacceptable.

INTERNAL SEAT HARNESS SYSTEM SHALL BE STANDARD ON BUNKER GEAR. THE ESCAPE BELT 3.37A SHALL BE AN OPTIONAL ITEM TO BE ADDED ON THE PANTS.

- 3.44A INTERNAL SEAT HARNESS - SERIES 2:** The internal seat harness shall be certified to NFPA 1983: Standard on Life Safety Rope and Equipment for Emergency Services, 2006 Edition as a Class II harness. The harness shall consist of a waist belt, internal leg loops, and an external hardware loop made from 2 inch wide black Kevlar® webbing. All ends of webbing shall be reinforced with neoprene or Arashield® to prevent raveling. The waist belt shall secure at the front with a hook and an adjustable D-ring closure which also acts as the positive front closure for the pants and shall be graded for the waist size of the pants. The leg loops shall be constructed without hardware and shall be graded for the circumference of the pant legs. The strap connecting each leg loop shall form a continuous loop at the front of the pants made from two combined layers of webbing that shall form an A-frame and connection point for the hardware. The leg loops shall be secured to the waist belts by means of a slot formed by an opening in the stitching combining the layers. These slots allow the leg loops to rest lower on the legs for less restriction when the harness is not loaded and snug up higher in the seat when the harness is loaded. The slots also allow the waist belt to be adjusted in size with the leg loops properly positioned between the front belt loops and the front harness closure. The right and left leg loops shall be installed between the outer shell fabric of the pants and the pants liner and the strap from each leg loop shall exit the outer shell behind the front belt loops on each side of the pants front closure. The center of the hardware loop shall be sewn down to narrow the width at its center and reinforced on the inside with a layer of Arashield® fabric. Sewn to the outside of the center of the hardware loop shall be a strap of Nomex® webbing sewn down at each end to form a loop to secure the pin of the specified ladder hook. The hardware loop shall be sized to form the required size A-frame, to allow the ladder hook to be secured to the keeper strap on the front left side of the pants, to connect to the hardware of the escape system stowed in the right pocket of the pants, to allow use of the ladder hook without deploying the escape system, and to allow the pants to be donned and doffed with all hardware installed by using only the front buckle closure. A D-ring with a sliding bar shall be attached to the hardware loop to connect to the escape system.

OPTIONAL

ESCAPE BELT W/BELT LOOP SHALL BE AN OPTIONAL ITEM TO BE ADDED ON THE

PANTS.

- 3.44B CLOSURE SYSTEM – ESCAPE BELT W/ BELT LOOPS (SEE ALSO OPTIONAL HARNESS SYSTEM for USAR & TRUCK COMPANY MEMBERS):** The trouser shall have an integrated Escape Belt, which is independently certified as meeting the belt requirements of NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services, 2006 edition. The Escape belt shall be comprised of Kevlar webbing with a hook and an adjustable D-ring closure, graded for the waist size of the pants. The hook and dee closure system of the Escape Belt also serves as the positive front closure for the pants, eliminating redundant closure systems. The pants shall be equipped with a series of approximately 3 inch by 3 inch outer shell material belt loops spaced around the waist to accommodate the Nomex[®] belt.
- 3.45 EXTERNAL / INTERNAL FLY FLAP:** The trousers shall have a vertical outside fly flap constructed of two layers of outer shell material, with a layer of moisture barrier material sandwiched between. The fly flap shall be double stitched to the left front body panel and shall measure approximately 2 ½ inches wide by 9½ inches long and reinforced with bartacks at the base. An internal fly flap constructed of one layer of outer shell material, thermal liner and specified moisture barrier, measuring approximately 2 inches wide by 9½ inches long, shall be sewn to the leading edge of the right front body panel. The inside of the right front body panel shall be thermally enhanced directly under the outside fly with a layer of moisture barrier and thermal liner material. The trousers shall close by means of a heavy duty zipper and 1½ inch wide by full length FR Velcro[®] hook & loop fastener tape. The teeth of the zipper shall be mounted on Nomex[®] cloth and shall be sewn into the leading edges of the respective left and right front body panels from the crotch area to the waist band. FR Velcro[®] hook & loop fastener tape shall close the flap. The FR Velcro[®] loop portion shall be sewn with four rows of stitching to the inside of the leading edge of the external fly flap. The corresponding portion of FR Velcro[®] hook fastener tape shall be sewn with four rows of stitching to the right front body panel positioned to engage the loop portion when the external fly flap is in the closed position. Appropriate male and female snap fastener halves shall be installed at the leading edge of the waistband for the purpose of further securing the trousers in the closed position.
- 3.46 AXTION SEAT:** The rise of the rear trouser center back seam, from the top back of the waistband to where it intersects the inside leg seams at the crotch, shall exceed the rise at the front of the trouser by 2½ inches. The longer rear center back seam provides added fullness to the seat area for extreme mobility without restriction when stepping up or crouching and shall be graded to size. This feature in combination with other design elements shall maintain alignment of the knee directly over the knee pads when kneeling and crawling.
- 3.47 AXTION KNEE:** The outer shell of the trouser legs shall be constructed with horizontal expansion pleats in the knee area with corresponding darts in the liner to provide added fullness for increased freedom of movement and maximum flexibility. Two expansion pleats measuring approximately 1½ inches deep, shall be installed along both the inseam and outseam on each leg in the knee area. The pleats shall be folded to open outwardly towards the side seams to insure no restriction of movement. The AXTION knee shall be installed proportionate to the trouser inseam, in such a manner that it falls in an anatomically correct knee location. The liner system shall be constructed with four darts per leg in the front of the knee. Two shall be located above the knee (one on each side) and two shall be located below the knee (one on each side). Each dart shall be approximately 2 inches long. The darts in the liner provide a natural bend at the knee. The darts in the liner work in conjunction with the expansion panels in the outer shell to increase freedom of movement when kneeling, crawling, climbing stairs or ladders, etc.
- 3.48 LINER KNEE THERMAL ENHANCEMENT:** An additional layer of specified thermal liner and

neoprene coated impermeable barrier material shall be sewn to the knee area of the liner system for added protection and increased thermal insulation at contact points. The knee thermal enhancement layers shall be sandwiched between the thermal liner and moisture barrier layers of the liner system and shall be stitched to the thermal liner layer only.

- 3.49 KNEE REINFORCEMENTS:** *The knee area shall be reinforced with a layer of black suede material. The knee reinforcement shall be slightly offset to the outside of the leg to insure proper coverage when bending, kneeling and crawling. The knee reinforcements shall measure 10 inches wide by 12 inches high and shall be double stitched to the outside of the outer shell in the knee area for greater strength and abrasion resistance.*
- 3.50 PADDING UNDER KNEE REINFORCEMENTS:** Padding for the knees shall be accomplished with one layer of **Silizone™** foam sandwiched between the shell and the knee reinforcement layers.
- 3.51 RETROREFLECTIVE FLUORESCENT TRIM:** The trousers shall have a stripe of retroreflective fluorescent trim encircling each leg below the knee to comply with the requirements of NFPA #1971 (2007 revision) in 3 inch lime/yellow 3M Scotchlite™ Triple Trim (L/Y borders with silver center).
- 3.52 REINFORCED TRIM STITCHING:** All reflective trim is secured to the outer shell with Nomex® thread, using a locking chainstitch protected by TrimTrax™. This strip of 3/32-inch strong, durable, flame resistant black Kevlar® cording provides a bed for the stitching along each edge of the retroreflective fluorescent trim surface and affords extra protection for the thread from abrasion. TrimTrax™ has been proven to be 5 to 7 times more durable than single or even double rows of stitching, significantly reducing maintenance costs and providing more value and a longer service life. Two rows of stitching used to attach the trim in place of the TrimTrax™ shall be considered an unacceptable alternative, since it has been proven that the two rows of stitching has insignificant impact on wear life. All trim ends shall be securely sewn into a seam for a clean finished appearance.
- 3.53 EXPANSION POCKETS:** Expansion pockets, measuring approximately 2 inches deep by 10 inches wide by 10 inches high shall be double stitched to the side of each leg straddling the outseam above the knee and positioned to provide accessibility. Two rust resistant metal drain eyelets shall be installed on the underside of each expansion pocket to facilitate drainage of water. The pocket flaps shall be rectangular in shape, constructed of two layers of outer shell material and shall measure 3 inches deeper than the pocket expansion and ½ inch wider than the pocket. The pocket flaps shall be closed by means of flame resistant Velcro® hook and loop fastener tape. Two pieces of 1½ inch by 3 inch FR Velcro® hook fastener tape shall be installed vertically on the inside of each pocket flap (one piece on each end). Two corresponding pieces of 1½ inch by 3 inch FR Velcro® loop fastener tape shall be installed horizontally on the outside of each pocket near the top (one piece on each end) and positioned to engage the hook fastener tape. The bottom of each pocket flap shall be reinforced with Silizone™ for easy grip.
- 3.54A 6 PACK TOOL COMPARTMENT:** A tool pocket constructed of black suede material and measuring approximately 8 inches high by 10 inches wide shall be installed on the inside of the left expansion pocket with double stitching. The front pockets shall measure 6 inches high. Two separate rows of stitching shall divide the tool pocket into six compartments, three in front (6 inches high) and three in back (8 inches high), measuring approximately 3 inches wide and set side-by-side.
- 3.54B LIFELINE POCKET:** Additionally, the right side expansion pocket shall be designed as a Life

Line pocket to store additional accessories for an Emergency Egress Harness system. The pocket and flap shall be split approximately 1/3rd and 2/3rds. The larger compartment shall be equipped with two straps with Velcro attachments. A strap measuring 1½ inches by 12 inches shall run the full vertical height of the pocket where it shall secure at the top with Velcro. A second strap measuring 1 inch by 4 inches shall run horizontally and attach at one end with Velcro. The straps are specially designed to secure the contents of the pocket and allow for quick release. The 1/3 pocket flap shall be notched to accommodate the radio antenna to the back side as worn. Bottom of pocket flap shall be reinforced with Silizone™ for easy grip.

3.54C ADJUSTABLE RADIO POCKET STRAP: A 1½" wide strap with Velcro shall line the inside of the smaller compartment of the Life Line pocket to allow for different length radios, adjusting as needed.

3.55 TROUSER CUFF REINFORCEMENTS: The cuff area of the trousers shall be reinforced with black Dragonhide™ material. The cuff reinforcements shall not be less than 2 inches in width and folded in half, approximately one half inside and one half outside the sleeve end for greater strength and abrasion resistance. The cuff reinforcement shall be double stitched to the end of the leg for a total of four rows of stitching. This independent cuff provides an additional layer of protection over a hemmed cuff. Trousers that are turned and stitched at the cuff, as opposed to an independent cuff reinforcement, do not provide the same level of abrasion resistance and shall be considered unacceptable.

3.56 PADDED RIP-CORD SUSPENDERS & ATTACHMENT: On the inside waistband shall be attachments for the standard "H" style "Padded Rip-Cord" suspenders. There shall be four attachments total – 2 front, 2 back. The suspender attachments shall be constructed of a double layer of black Nomex® measuring approximately ½ inch wide by 3 inches long. They shall be sewn in a horizontal position on the ends only to form a loop. The appearance shall be much like a horizontal belt loop to capture the suspender ends. A pair of "H" style "Padded Rip-Cord" suspenders shall be specially configured for use with the trousers. The main body of the suspenders shall be constructed of 2 inch wide black strap webbing. The suspenders shall run over each shoulder to a point approximately shoulder blade high on the back, where they shall be joined by a 2 inch wide horizontal piece of webbing measuring approximately 8-inches long, forming the "H". This shall prevent the suspenders from slipping off the shoulders. The shoulder area of the suspenders shall be padded for comfort by fully encasing the webbing with aramid batting and wrap-around black Nomex®. The rear ends of the suspenders shall be sewn to 2-inch wide elasticized webbing extensions measuring approximately 8-inches in length and terminating with thermoplastic loops. The forward ends of the suspender straps shall be equipped with specially configured black powder coat non-slip metal slides. Through the metal slides shall be the 9 inch lengths of strap webbing "Rip-Cords" terminating with thermoplastic loops on each end. Pulling on the "Rip-Cords" shall allow for quick adjustment of the suspenders. Threaded through and attached to the thermoplastic loops on the forward and rear ends of the suspenders shall be black Nomex® suspender attachments incorporating two snap fasteners. The Nomex® suspender attachments are to be threaded through the suspender attachment loops on the inside waistband of the trousers. The Nomex® suspender attachments shall then fold over and attach to themselves securing the suspender to the trousers. The suspenders shall have a stripe of retroreflective fluorescent trim 1½" inch lime/yellow Triple Trim (L/Y borders with silver center).

3.57 REVERSE BOOT CUT: The outer shell trouser leg cuffs shall be constructed such that the back of the leg is approximately 1 inch shorter than the front. The liner shall also have a reverse boot cut at the rear of the cuff and a concave cut at the front to keep the liner from hanging below the shell. This construction feature shall minimize the chance of premature wear of the cuffs and injuries due to falls as a result of "walking" on the trouser cuffs. Trousers that have "cut-outs" in

the back panel rather than a contoured boot cut shall be considered unacceptable.

- 3.58 SIZING:** The trousers shall be available in even size waist measurements of two inch increments and shall be available in a range of sizes from 24 to 68. The trouser inseam measurement shall be available in two inch increments. Generalized sizing, such as small, medium, large, etc., shall not be considered acceptable. Sizing specifically for women shall also be available. Both male and female sizing samples shall be available.

GROUP 1B

Series II Internal Harness for IH Ready Pants

ITEM #6 SERIES II INTERNAL HERNESS for IH READY PANTS sizes SMALL to 3X-LARGE

ITEM #6 Series II Internal Harness

INTERNAL HARNESS: THE INTERNAL HARNESS SHALL BE AVAILABLE TO BE PURCHASED SEPERATELY FROM THE PANTS.

INTERNAL SEAT HARNESS SYSTEM SHALL BE STANDARD ON BUNKER GEAR.

- 3.59 INTERNAL SEAT HARNESS - SERIES 2:** The internal seat harness shall be certified to NFPA 1983: Standard on Life Safety Rope and Equipment for Emergency Services, 2006 Edition as a Class II harness. The harness shall consist of a waist belt, internal leg loops, and an external hardware loop made from 2 inch wide black Kevlar® webbing. All ends of webbing shall be reinforced with neoprene or Arashield® to prevent raveling. The waist belt shall secure at the front with a hook and an adjustable D-ring closure which also acts as the positive front closure for the pants and shall be graded for the waist size of the pants. The leg loops shall be constructed without hardware and shall be graded for the

GROUP 1C

Escape Belt for - IH Ready Pants

ITEM #7 ESCAPE for IH READY PANTS sizes SMALL to 3X-LARGE

ITEM #7 Escape Belts

ESCAPE BELT: THE ESCAPE BELT SHALL BE AVAILABLE TO BE PURCHASED SEPERATELY FROM THE PANTS.

ESCAPE BELT W/BELT LOOP SHALL BE AN OPTIONAL ITEM TO BE ADDED ON THE PANTS.

- 3.60 CLOSURE SYSTEM – ESCAPE BELT W/ BELT LOOPS (SEE ALSO OPTIONAL HARNESS SYSTEM for USAR & TRUCK COMPANY MEMBERS):** The trouser shall have an integrated Escape Belt, which is independently certified as meeting the belt requirements of NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services, 2006 edition. The Escape belt shall be comprised of Kevlar webbing with a hook and an adjustable D-ring closure, graded for the waist size of the pants. The hook and dee closure system of the Escape Belt also serves as the positive front closure for the pants, eliminating redundant closure systems.

GROUP 2

Firefighting Helmets

Item #8 Helmet in colors White & Green

Item #9 Helmet in colors Red, Black, & Yellow

Item #10 Helmet Fronts in Multiple Colors
Item #11 Helmet Parts % off from Catalog

4.0 ITEM #8 Thru #11 Firefighting Traditional Helmets

4.1 HELMET SHELL: The helmet shell shall have a Traditional American Fire Service Style helmet shell, comprising a crown, with four (4) major ribs (front, back, left and right sides), and four minor ribs equidistant between each major rib, and a brim that has a short front visor continuing around the sides to a large rear brim area. The upper surface of the brim shall have the traditional fire service vine scroll-work molded into the surface of the composite.

The exterior of the helmets shell shall be completely coated with a color pigmented, high gloss, abrasion, high heat and chemical resistant paint finish that shall closely match the color of the composite shell. The shell color and matched paint finish shall be available in the standard color of white and green.

The helmet shell material is a DuraGlas[®] composite consisting of a high-temperature-, flame-, and chip-resistant, "through-colored" thermoset resin, reinforced with 1" and 2" chopped fiberglass, which is compression molded to form a one piece shell.

The helmet shell dimensions (with edge-trim) shall be 15.5" in length, 11.88" in width and a crown depth of 6.5". The shell shall have a nominal wall thickness of 0.065" in the crown and 0.080" in the brim.

The helmet colors for the Helmets shall be White and Green

The helmet colors of the shell which shall be completely coated with a color pigmented shall be Red, Black, and Yellow

The helmet shell shall be furnished with a formed brass carved eagle front incorporated with a "crush zone" to absorb impacts and shall be attached to the shells front main rib, and a thermoplastic, front-piece mounting bracket affixed to the center of the front visor of the brim. The carved eagle and bracket shall provide for positioning, support, and retention of a standard 6" fire department identification shield. .

The Red, Black, Yellow, and Green shell shall have black, and the White shell shall have a white high-temperature, flame-resistant, flexible edge trim composed of an aluminum-cored, thermoplastic rubber (TPR). The edge-trim is secured around the entire brim of the helmet by crimping the aluminum core, and secured at the mating ends with a high temperature adhesive and clamped by the helmet hanger clip at the edge of the rear brim.

The shell shall have a helmet hanger comprised of a 3/4", nickel plated "D" ring and a stainless steel clip. The helmet hanger shall be attached to the center rear of the brim.

4.2 IMPACT LINER: The helmet impact liner shall include an impact liner, which is comprised of rigid cell, high temperature urethane foam cap attached to a flame-resistant thermoplastic PPO inner liner. The impact liner shall be modular and field removable for periodic inspection of the foam's integrity. The impact liner is incorporated to provide increased thermal and impact protection.

4.3 HEAD SUSPENSION: The head suspension on the helmets shall consist of a 6-way head suspension system, attached to the impact cap. The head suspension system is comprised of

three (3) fixed 0.75" wide nylon straps mounted at six points on the impact liner and fastened at their intersection to form the 6-way overhead strap assembly. The straps are attached to the impact cap by means of a tubular plastic ring, joined at the ends by an elastomeric tube that locks the straps into a routed annular groove in the impact cap.

- 4.4 SIZING ADJUSTMENT:** The size of the headband may be adjusted to fit the wearer's head by means of a ratchet adjustment system. The headband shall have a head size range of 6-3/8 to 8-3/8, adjustable in 1/8 increments. The head band is attached to the sides of the impact cap liner by four (4) flexible retention tabs. The rear ratchet arms shall have three (3) adjustable positions so that the angle of the ratchet may be set to accommodate the nape of the wearer's head.
- 4.5 COMFORT LINER:** The helmets shall have a comfort liner, which consists of a headband cushion liner and a ratchet pad, which are both removable. Both components are produced from a foam core laminate system, which is comprised leather like deluxe version and backed by a soft loop material which shall be secured to the headband and the ratchet with hook fastener.
- 4.6 CHINSTRAP:** The chinstrap shall be constructed of three (3) pieces (or sections) of 3/4" wide, spun-Nomex[®] webbing, which are connected on the left side of the helmet by a high-temperature, super-tough, thermoplastic quick release buckle, and by a cast zinc postman's slide buckle on the right hand side of the helmet.

The chinstrap is attached at either end of the impact cap by means of the tubular plastic ring, joined at the ends by an elastomeric tube that locks the chinstrap into a routed annular groove in the impact cap.

The long, middle-section, with the female half of the quick release buckle sewn to the left end, shall pass through the postman's slide buckle on the right, and include hook and loop fastener for stowage of extra strap. The middle section shall be a minimum of 23.0" in length and the total length of the chinstrap shall be 35.0" at full extension, end to end.

- 4.7 SHELL RELEASE PROVISIONS:** The impact liner, complete with suspension system and chinstrap assembly (retained as described above) shall be retained to the helmet shell by means of two (2) thermoplastic retention clips mounted under the faceshield pivot hardware, and by four (4) pieces of hook and pile fastener sections between the impact liner and helmet shell in the crown area. This design shall enable the shell to be released from the helmet when impacted from below the brim, reducing the chance of being injured by the chinstrap, and leaves the impact cap on the wearer's head for continued thermal and impact protection.
- 4.8 EAR/NECK PROTECTION** The helmet shall be equipped with an ear/neck protector. The protector for the ear and neck protection shall be 6.5" wide, 19.0" long, full-cut earlap. The earlap consists of a 2.212 oz/yd PBI/Kevlar earlap outer-shell. The earlap shall be secured to the impact liner by pieces of hook and pile fastener in no less than five (5) locations. The earlap is machine washable. The ear and neck protector shall be removable without interfering with the overhead strap assembly in any way and without removing any part of the helmets suspension.
- 4.9A GOGGLE SYSTEM:** The helmets shall be equipped with the ESS S550 goggles. The goggle system shall be comprised of a high-temperature, flame- and impact-resistant goggle lens and frame, a flame-resistant, elastic goggle strap, and a goggle retention system. This retention system shall lock the goggle onto the helmet at the back brim, which shall prevent loss of the

goggle when it is stowed or in the donned position. The goggle can also be attached to the helmet with side mounted hardware. This shall allow the goggle to be stored in the front or back position of the helmet. The straps can be attached to the side hardware by means of lock down nuts through the straps or by a quick release fastener. Both inner and outer surfaces of the goggle lens shall have an anti-scratch and anti-fog coating. Both ends of the lens shall be reinforced with a fiberglass insulating label for extra durability at elevated temperatures. The lens shall be low profile, optically correct with a nominal thickness of 1/16". The goggle strap shall require a one time adjustment which facilitates donning while wearing gloves.

- 4.9B FACESHIELD OPTIONAL:** The faceshield shall be a wrap-around, Tough Shield high pivot design, 4.5" wide, 18.0" long, and 0.150" thick. The lens material shall be high performance, high temperature resistant thermoplastic. The lens shall be coated with a scratch resistant coating on both inner and outer surfaces to protect the lens from abrasions. **Bork Shields shall not be accepted and are not NFPA compliant in the state of Texas.**
- 4.9C FACESHIELD HARDWARE:** The faceshield shall be mounted to the helmet shell by means of two (2) glass-reinforced, high-temperature and flame-resistant thermoplastic bracket assemblies, with adjustable thermoplastic knobs one (1) on either side of the helmet shell. The brackets allow the faceshield to pivot above the helmet shell when it is not in use.
- 4.9D RETRO-REFLECTIVE TRIM:** The helmet shall have eight tetrahedron shaped pieces of Lime-Yellow, retro-reflective, fluorescent Scotchlite® trim around the exterior of the crown of the helmet shell for maximum daytime and nighttime visibility.
- 4.10 HELMET FRONTS:** The 6" leather fronts shall be ordered separate from the helmet and must fit the helmet being bid. The traditional helmet front must have the DFD logo in the center of leather front.
- 4.11 HELMET FRONT COLOR:** The leather fronts shall be available in the colors of White, Green, Red, Black, and Yellow to match the color of the helmet being ordered.
- 4.12 MANUFACTURER'S WARRANTY:** Helmets shall be warranted, for the lifetime of the helmet, to be free of defects in material and workmanship. The manufacturer shall guarantee, for a period of five (5) years from the date of manufacture that any helmet shell shall be replaced free of charge if it is damaged beyond use while worn during normal assigned fire ground activities. The manufacturer shall be relieved of any replacement liability under this guarantee if there has been a failure to follow the manufacturer's maintenance requirements supplied with each helmet. Please refer to the official warranty policy #3600-09 for details.
- 4.13 AINTENANCE, REPAIR and RETIREMENT:** Upon the customer's request, certification training shall be provided explaining the proper maintenance, repair and retirement of the helmet.
- 4.14 HELMET PARTS:** Proposer shall submit a % off list price sheet to enable DFD to purchase replacement parts as needed.

GROUP 3

Fire Fighting Boots:

Item #12 Boots Men's

Item #13 Boots Women's

Item #14 Fire Boot Resole Package
Item #15 Add Zipper Assembly Left or Right Boot
Item #16 Add Zipper Both Boots
Item #17 Fire Boot Resole Only
Item #18 Fire Boot Insoles
Item #19 Fire Boot Toe Cap Replacement

5.0 ITEM #12 Thru #19 Leather Boots

BOOT SPECIFICATIONS 11" STRUCTURAL BOOT

- 5.1 **INTENTIONS:** These specifications are intended to define the minimum requirements for Structural Firefighting Protective Footwear as well as Liquid Splash Protective Footwear for Hazardous Materials Emergencies.
- 5.2 **REQUIREMENTS:** These specifications are to meet or exceed the requirements for NFPA 1971 Standard on Protective Ensembles for Structural Firefighting, latest edition and NFPA 1992 Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies, latest edition.
- 5.3 **CONSTRUCTION:** Pull on bunker style with boot height measured at 11", measured in accordance with measurement requirements of NFPA 1971, latest edition.
- 5.4 **LEATHER:** All leather, hydrophobic (water cannot penetrate leather from the outside, but water vapor from foot perspiration can be released through the leather from the interior to the exterior of the boot), breathable, 2.5-2.7 mm thickness. Tested to be hydrophobic in a Penetrometer for a minimum of 120 minutes. Free of PCP, AZO and Chromium VI.
- Leather is treated to reduce the heating effect of the upper leather. Sunlight is reflected by the leather, keeping the leather and the feet cooler.
- Built in climate system that permits air circulation with every step – moist air is released and fresh air comes in through a minimum of 12 vent holes at the top of the boot.
- 5.5 **INNER LINER:** Waterproof inner liner of CROSSTECH®. Bloodborne pathogen and chemical resistant. Inner liner is firmly secured and sealed along with the upper leather beneath the sole for a liner that shall not pull out or wrinkle over time. Inner lining minimally glued to upper to prevent detachment and allow full breathability of the leather.
- 5.6 **LOOPS:** Two large pull on loops at both sides made from upper leather and reinforced with textile strip.
- 5.7 **THREAD:** NOMEX® threads, with a minimum thickness of 30/3, water repellent, yellow in color.
- 5.8 **BOOT SOLE:** Highly heat resistant rubber nitrile sole. Oil and fuel resistant, non-slip, and non-chalky. Self-cleaning round tread groove base. High voltage resistant to 14 KV.
- 5.9 **FOAM INJECTION:** Extremely low weight PU foam injected throughout sole interior for cold/heat insulation, shock absorption.
- 5.10 **LADDER SHANK:** Ladder shank with a thickness equal to or greater than 1.4 mm, stainless, 3 ruffles, deflection at 400 lbs not more than ¼" (6mm).
- 5.11 **MID SOLE STEEL:** Steel mid sole with a thickness equal to or greater than .5 mm; stainless.

Puncture resistance greater than 1212 N (272 lbf) with a flex cracking resistance greater than 1,500,000 flexes. Meets ASTM F2413 (Class 75), latest edition and CAN Z195 (Grade 1), latest edition.

- 5.12 **INSOLE:** Anatomically formed abrasion resistant insole. Removable and machine washable.
- 5.13 **HEEL COUNTER:** Fibrous leather heel counter, anatomically formed.
- 5.14 **TOE CAP:** Steel toe cap with rubber transient to avoid damage to the membrane which meets ASTM F2413 (Class 75), latest edition and CAN/CSA Z195 (Grade 1), latest edition.
- 5.15 **SCUFFUNG:** Profiled exterior rubber toe cap with furrowed seaming at the end to protect from scrubbing.
- 5.16 **SIZING:** Men's sizes 5-16 whole and half sizes. Women's sizes 5-12 whole and half sizes which shall include three widths: narrow, medium, and wide
- 5.17 **CARE, WARRANTY, AND LABELING:** Manufacturer User Guide relating to care and use of NFPA certified footwear should be provided and packaged with each pair of boots.
- 5.18 **WARRANTY:** A minimum of a 1 year warranty covering defect in workmanship and materials, including the CROSSTECH[®] moisture barrier, as long as boots are used and cared for in accordance with manufacturer instructions. A copy of manufacturer's warranty must be submitted with bid proposal.
- 5.19 **OUT OF WARRANTY REFURBISHMENT:** Out of warranty footwear can be refurbished with original factory parts which include repair or replacement of stitching, profiled rubber toe caps, soles, and insoles. Footwear can be cleaned and deodorized. Additional option of sole replacement only and profiled rubber toe cap replacement only.
- 5.20 **THIRD PARTY TESTING:** Boots should be tested and certified by Underwriter's Laboratories or Safety Equipment Institute (SEI). A current copy of manufacturer's certification must be submitted with bid proposal.
- 5.21 **LABELING:** Boots should be permanently and clearly labeled that boots meet NFPA 1971, current edition and NFPA 1992, current edition. And Boots must be clearly and permanently labeled with manufacturing information, including country of origin and manufacturing date. The following information below shall also be included:

Underwriters Laboratories classified mark
Manufacturer's name
Manufacturer's address
Manufacturer's garment identification number
Date of manufacture
Boot Size
Fiber contents
Serial number
Model Number
Lot Number

- 5.22 **RESOLE BOOT PACKAGE:** Fire Boot Resole Package Consist of:
 - Replace sole with original manufacturers' materials

- Any stitching necessary including replace back heel strip
- Replace or repair toe cap if necessary
- Replace any missing hardware (eyelets, lace hooks, etc.*)
- New manufacturer's insole
- Clean, shampoo, polish, deodorize
- Add zipper assembly, (indicate left, right or both on order form)

GROUP 4

Fire Fighting Gloves- *Item 1-Wristlet Style*

Item #20 Wristlet Glove

Item #21 Wristlet Glove with leather palm

6.0 ITEM #20 & #21 Wristlet Gloves

Specifications for Dual Certified Structural/Technical Rescue Recover Firefighting Gloves Wristlet

SERIES PROTECTIVE GLOVE FOR STRUCTURAL FIREFIGHTING: WRISTLET STYLE, ELK, KANGAROO, CROSSTECH & SERIES PROTECTIVE GLOVE FOR STRUCTURAL FIREFIGHTING: WRISTLET STYLE, ELK, KANGAROO, CROSSTECH WITH ELK PALM STRAP

- 6.1 PURPOSE AND SCOPE:** This specification defines the minimum requirements for a firefighter's structural glove. The purpose of the glove is to afford protection to the hand area of the firefighter against adverse environmental effects during fireground operations, as defined by the National Fire Protection Association's standard NFPA 1971, *Protective Ensemble for Structural Fire Fighting*, 2007 Edition (hereinafter referred to as NFPA 1971, except in the Applicable Documents section). In the absence of comment on a particular point, industry standard practice shall be presumed to prevail. Workmanship and material shall be first quality throughout. All exceptions to specifications must be clearly spelled out at the time of bid. In the absence of comment to a specific point, the proposer is required to furnish a wholly compliant element.
- 6.2 UNIT OF MEASURE:** Current NFPA standards applicable to this product specification express values for measurement requirements in SI (metric-based) units, followed by US (inch-pound) approximate equivalents in parentheses. For the convenience of the fire department, this product specification *reverses the order* and presents the more familiar US approximation first, followed by the SI requirement in parentheses.
- 6.3 CERTIFICATION:** The manufacturer must certify that the elements proposed in its bid meet or exceed all requirements of NFPA 1971 (**Structural Requirements**) and NFPA 1951 (**Rescue & Recovery Requirements**). The manufacturer must also list and label this product with Underwriters Laboratories Inc. (UL) as the third party certification organization prescribed in NFPA 1971. All certification testing and test preconditioning must have been performed by an ISO 17025-certified laboratory. UL or by a UL Authorized Client Authorized Test Data Program laboratory

The manufacturer shall be registered to ISO 9001, *Quality Management Systems – Requirements*, 2000.

- 6.4 **WARRANTY:** The manufacturer must provide a product lifetime warranty against defects in materials and workmanship with the bid package.
- 6.5 **PRODUCT COUNTRY OF ORIGIN:** For liability reasons, elements must be manufactured in the United States of America or Canada by companies with their assets and incorporation within the United States of America or Canada.
- 6.6 **LABELING REQUIREMENTS:** Labels shall be permanently and integrally printed on materials that meet all the requirements for labels of NFPA 1971. The element shall be clearly labeled to fully identify the material content, and shall be labeled with the FEMSA-style DANGER label.

The labeling on each element shall contain manufacturing information, which shall include.

- Underwriters Laboratories classified mark**
- Manufacturer's name**
- Manufacturer's address**
- Manufacturer's garment identification number**
- Date of manufacture**
- Glove Size**
- Fiber contents**
- Serial Number**
- Model Number**
- Lot Number**

- 6.7 **CARE INSTRUCTIONS:** The manufacturer shall provide a user information guide for the element, which complies with user information requirements of NFPA 1971, and shall reference that standard. Topics shall include, but not necessarily be limited to: pre-use information, preparation for use, inspection frequency and details, don/doff, use consistent with NFPA 1500, maintenance and cleaning, and retirement and disposal criteria and considerations.

This document shall be packaged with each element.

- 6.8 **TRACEABILITY PROGRAM:** The manufacturer shall **FURNISH TO THE END USER** and have in place a computer maintained traceability program which allows for the assignment of a production lot number to each element. The traceability program must be capable of tracing the element through assignment to the individual firefighter. When additional product traceability is requested in the Custom Options section, an additional label shall be attached to the element which contains an individualized serial number.

- 6.9 **PATENT CONSIDERATIONS:** Seller agrees to defend Buyer at Seller's own expense, in all suits, actions or proceedings in which Buyer is made a defendant for actual or alleged infringement of any United States of America or foreign letters patent resulting from Buyer's use of the goods purchased as a result of this Invitation to Bid. Seller further agrees to pay and discharge any and all judgments or decrees which may be rendered in any such suit, action or proceedings against Buyer.

Seller agrees to indemnify and hold harmless the Buyer from any and all licenses, royalty and proprietary fees or costs, including legal costs, which may arise out of Buyer's purchase and use of goods supplied by the seller. It is expressly agreed by Seller that these covenants are irrevocable and perpetual.

6.10 SIZE AVAILABILITY AND EXCHANGES: The manufacturer must offer gloves in eight distinct sizes: XX-Small, X-Small, Small, Medium, Large, X-Large, XX-Large and XXX-Large (Jumbo).

Upon request, the manufacturer shall provide custom sized or custom modified gloves at no additional cost. Standard lead times do not apply to these type gloves and custom made gloves cannot be exchanged. The manufacturer agrees to trade sizes of new, unused gloves (of the same design and current NFPA edition) with the purchaser at no charge, when necessary.

6.11 ASSET TRACKING SERVICES: When specified in the Section CUSTOM OPTIONS, the manufacturer shall provide a Windows-compatible software program for the tracking of care, cleaning and maintenance of the department's PPE. This tracking program shall meet or exceed all record-keeping requirements of NFPA 1851, *Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles*, Latest Edition.

The manufacturer shall be capable of providing onsite or internet training to department personnel who are involved with the daily use of this tracking program, AT NO COST TO THE CITY OF DALLAS and the DALLAS FIRE-RESCUE DEPARTMENT. And if there is an additional cost involved for this service, the Proposer must disclose those costs at the time of bid.

6.12 REPAIRS: The manufacturer shall describe its service facilities and equipment to make necessary repairs if it is deemed preferable to replacement.

6.13 APPLICABLE DOCUMENTS: The following standards in their active versions on the date of invitation for bid shall form a part of this specification to the extent specified herein.

<u>STANDARD</u>	<u>TITLE</u>
NFPA 1500, Latest Edition	Standard on Fire Department Occupational Safety and Health Program
NFPA 1851, Latest Edition	Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles
NFPA 1971, Latest Edition	Standard on Protective Ensemble for Structural Fire Fighting
NFPA 1951, Latest Edition	Standard on Protective Ensemble for Technical Rescue Operations

6.14 DESIGN CONCEPT (STYLING) AND CONSTRUCTION FOR THE FIREFIGHTING GLOVES: The element shall meet or exceed both the design and performance requirements as outlined in NFPA 1971.

The gloves shall be of a two dimensional Gunn cut design, featuring a wing thumb, and elasticized back gather at the wrist crease.

The gloves shall be of a two dimensional Gunn cut design, featuring a wing thumb, Palm Strap for added cut resistance and elasticized back gather at the wrist crease.

The gloves shall be of a wristlet style construction with the composite of the glove body extending at least 2.0 inches (5.0 cm) beyond the wrist crease. There shall be a minimum 3.5 inch (8.9 cm) double layer Nomex knit wrist sewn into the cuff opening. Provide a 2.5 inch (6.4 cm) long pull tab lock stitched to the underside of the wristlet, beginning at the wristlet seam the

tab shall be approximately 3.0 inches (7.6 cm) wide and taper to 2.0 inches (5.0 cm) before it is rounded off nearest the wristlet opening.

The gloves shall feature a hanger loop on the inside of the glove, made of outer shell material, stitched to the glove at the inside cuff.

6.15 ATTACHMENT OF LINER AND MOISTURE BARRIER TO GLOVE SHELL: *All layers of the glove shall be stitched together at the cuff and in the fingertips and thumb tip to prevent liner pullout, and then seam sealed at the fingertips for complete waterproofness. Gloves relying on adhesive liner attachment methods shall not be acceptable because of inherent detachment problems of adhesive methods in wet or hot environments.*

6.16 MATERIALS: The gloves body shall consist of an outer shell, a thermal lining, a moisture barrier, and a gauntlet. The gloves shall be made of the following materials:

OUTER SHELL FOR THE STANDARD GLOVE: *On the back of the hand the outer shell material shall be split suede, gold colored elk hide. On the palm the outer shell shall be navy blue grain kangaroo.*

OUTER SHELL FOR THE LEATHER PALM GLOVE: On the back of the hand and palm strap outer shell shall be split suede, gold colored elk hide. The palm shall be navy blue grain kangaroo.

MOISTURE BARRIER for the GLOVES: The moisture barrier insert shall be seamless (not penetrated by unsealed stitching at any point) It shall be made of Crosstech.

THERMAL LINER for the GLOVES: The inner lining shall be Kevlar/Nomex

6.17 CUSTOM OPTIONS for the GLOVES: Requirements or instructions in this section which conflict with earlier sections shall supersede the earlier requirements or statements.

GROUP 5

**Flashover Hood Carbon/High Strength Aramid, Carbon Shield
Item #22 Carbon Flash Over Hood**

7.0 ITEM #22 Flashover Hoods

FLAME RESISTANT FIRE FIGHTING KING COBRA HOOD SPECIFICATION FOR CARBON SHIELD™ ULTIMATE HOOD

7.1 FABRIC: Both outer shell and lining are a blend of Carbon/High Strength Aramid approx 6.5 oz sq yd. 1 x 1 rib knit fabric – knit to allow approx. 200% stretch for maximum stretch and recovery. Calendared to minimize laundry shrinkage.

7.2 STITCH TYPES AND SEAMS: All stitching conforms to federal Standard 751 Specifications (FED-STD-751). Major seams are flat seam assembled, stitch type 607. Elastic in face opening is serged in with stitch type 503 and reinforced with bottom cover-stitch, stitch type 406. Bound bottom is cover-stitched with 406 stitch type.

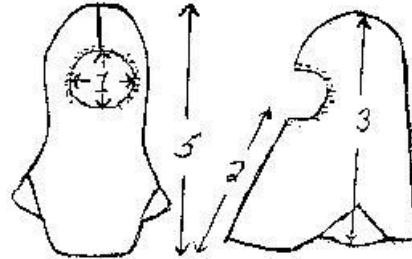
7.3 THREAD: All seams are sewn with 100% Nomex thread size 45/3.

7.4 CONSTRUCTION: Composed of two layers throughout. For a contoured fit the hood is seamed

from top of face opening to bottom back. Face opening is circular in shape and surged with x-heavy duty ½” wide elastic around the perimeter. The elastic is then folded back ½” and cover stitched. The face opening stretches a full 16” (which is 25% more than conventional hoods) for easy donning and a snug fit around face of SCBA mask. Face opening maintains original shape after repeated launderings. The bottom edge of hood is bound with self-material bias binding. Gusset added at side seams to provide complete shoulder coverage and smoother drape.

FINISHED HOOD MEASUREMENTS:

- (1) Face opening is circular and measures between 4.6” to 5.6” in diameter.
- (2) Length of hood below face opening approx. 12¼”.
- (3) Length of hood at side from top to bottom approx. 16¾”.
- (4) Length of hood at back from top to bottom approx. 19½”.
- (5) Length of hood at front top to bottom approx. 20”.



7.5 SIZE: One size hood fits all.

7.8 LABELING AND USER INFORMATION: Each hood is clearly labeled to identify material contents, NFPA acceptance, UL Classification, Date of Manufacture, Warning Statement and Care Instructions. 3” X 4 ¼” label is sewn on all 4 sides to exterior of hood near bottom front. Included with each hood is a complete user’s information guide.

7.9 MEETS OR EXCEEDS INDUSTRY STANDARDS: UL classified to meet or exceed NFPA 1971-2007 Edition; Compliant with CAL-OSHA, Sections 3406 and 3410(d) and OSHA Rule 29 CFR, Part 1910, 269; Compliant with NFPA 70E 2004 Edition and meets performance specifications of ASTM-F-1506. ARC Rating: 23.3 Hazard / Risk Category: 2.

GROUP 6

Suspenders – Quick Adjust H-Back Suspenders with reflective trim – for STRUCTURAL AND PROXIMITY FIREFIGHTING GEAR

Item #23 H-Back Suspenders with reflective trim

8.0 ITEM #23 H-Back Quick Adjust Suspenders

8.1 SUSPENDERS: A pair of “H” style “Padded Rip-Cord” suspenders shall be specially configured for use with the trousers. The main body run over each shoulder to a point approximately shoulder blade high on the back, where they shall be joined by a 2 inch wide horizontal piece of webbing measuring approximately 8-inches long, forming the “H”. This shall prevent the suspenders from slipping off the shoulders. The shoulder area of the suspenders shall be padded for comfort by fully encasing the webbing with aramid batting and wrap-around black Nomex®. The rear ends of the suspenders shall be sewn to 2-inch wide elasticized webbing extensions measuring approximately 8-inches in length and terminating with thermoplastic loops. The forward ends of the suspender straps shall be equipped with specially configured black powder coat non-slip metal slides. Through the metal slides shall be the 9 inch lengths of strap webbing “Rip-Cords” terminating with thermoplastic loops on each end. Pulling on the “Rip-Cords” shall allow for quick adjustment of the suspenders. Threaded through and attached to the thermoplastic loops on the forward and rear ends of the suspenders shall be black Nomex® suspender attachments incorporating two snap

fasteners. The Nomex® suspender attachments are to be threaded through the suspender attachment loops on the inside waistband of the trousers. The Nomex® suspender attachments shall then fold over and attach to themselves securing the suspender to the trousers. The suspenders shall have a stripe of retroreflective fluorescent trim 1½” inch lime/yellow Triple Trim (L/Y borders with silver center). THE MANUFACTURERS PART NUMBER ANS SIZE STATED BELOW SHALL BE AVAILABLE TO PURCHASE SEPERATELY FROM THE STRUCTURAL AND ROXIMITY GEAR.

Group 7 & 7A
Coat & Pants Proximity Gear
Item #24 Proximity Coat
Item #25 Proximity Pants

9.0 ITEM #24 & #25 Proximity Coat & Pants

**PROTECTIVE JACKET AND TROUSERS
FOR PROXIMITY FIRE FIGHTING**

- 9.1 SCOPE:** This specification details design and materials criteria to afford protection to the upper and lower body, excluding head, hands, feet, against adverse environmental effects during structural fire fighting. All materials and construction shall meet or exceed NFPA Standard #1971 (2007 revision) and OSHA for structural fire fighters protective clothing.
- 9.2 OUTER SHELL MATERIAL – JACKETS AND TROUSERS:** The ALUMINIZED PBI®/KEVLAR® outer shell shall be GENTEX STYLE #1098, constructed of a 70% Kevlar® Para-Aramid/30% PBI® blend ripstop knit with a weight of 5 oz./sq. yd, laminated to a 2 oz./sq. yd. aluminized reflective film, for a total weight of 7 oz./sq. yd. The Dual Mirror® technology, with its five-layer structure, was developed for the proximity market to combat radiant heat from high-intensity heat load environments such as aircraft rescue and industrial applications. Color of garments to be reflective silver.
- 9.3 THERMAL INSULATING LINER – JACKET AND TROUSERS:** The thermal liner shall be constructed of 7.2 oz. per square yard TENCATE “ARALITE® NP”; one layer of 3.8 oz. per square yard aramid blend non-woven needle-punch batt, quilt stitched to a 3.4 oz. per square yard spun meta-aramid face cloth, teal in color, with Wickwell™ Plus finish. A 7 inch by 9 inch pocket, constructed of self material and lined with moisture barrier material, shall be affixed to the inside of the jacket thermal liner on the left side by means of a lock stitch. . The thermal liner shall be attached to the moisture barrier and bound together by bias-cut Neoprene coated cotton/polyester around the perimeter. This provides superior abrasion resistance to the less expensive, less durable “stitch and turn” method. Further mention of “Thermal Liner” in this specification shall refer to this section.
- 9.4 MOISTURE BARRIER – JACKETS AND TROUSERS:** W.L.GORE “GORE™ RT7100 Type 3D” moisture barrier shall be GORE PTFE on a non-woven Nomex® substrate with an approximate weight of 4.6 oz. per square yard. The GORE PTFE Type 3D moisture barrier product incorporates GORE PTFE technology, with enhanced bicomponent technology, and shall be laminated to a non-woven substrate. This alternative product is intended as a thermally stable alternate to NFPA compliant polyurethane-based moisture barriers. The moisture barrier shall be sewn to the thermal liner at the edges only and bound with bias-cut Neoprene-coated cotton/polyester binding. Further mention of “Specified Moisture Barrier” in this specification shall refer to this section.

- 9.5 SEALED MOISTURE BARRIER SEAMS:** All moisture barrier seams shall be sealed with a minimum 1 inch wide sealing tape. One side of the tape shall be coated with a heat activated glue adhesive. The adhesive side of the tape shall be oriented toward the moisture barrier seam. The adhesive shall be activated by heat and the sealing tape shall be applied to the moisture barrier seams by means of pressure exerted by rollers for that purpose.
- 9.6 METHOD OF THERMAL LINER/MOISTURE BARRIER ATTACHMENT FOR JACKETS AND TROUSERS:** The thermal liner and moisture barrier shall be completely removable from the jacket shell. Two strips of 5/8 inch wide flame resistant hook and loop fastener tape shall secure the thermal liner/moisture barrier to the outer shell along the length of the neck line under the collar (see Collar section). The remainder of the thermal liner/moisture barrier shall be secured with a minimum of four snap fasteners appropriately spaced on each jacket facing and four snap fasteners at each sleeve end. The thermal liner and moisture barrier shall be completely removable from the trouser shell. Nine snap fasteners shall be spaced along the waistband to secure the thermal liner/moisture barrier to the shell. The legs of the thermal liner/moisture barrier shall be secured to the shell by means of two snap fasteners per leg.
- 9.7 THERMAL PROTECTIVE PERFORMANCE:** The assembled garment, consisting of an outer shell, moisture barrier, and thermal liner, shall exhibit a TPP (Thermal Protective Performance) rating of not less than 35.
- 9.8 STITCHING:** The outer shell shall be assembled using stitch type #301, #401, and #516. The thermal liners and moisture barriers shall be assembled using stitch type #301, #401, #504, #514, and #516. **Stitching in all seams shall be continuous. There shall be no joined stitching in midseam.** All major A outer shell structural seams, major B structural liner seams, shall have a minimum of 8 to 10 stitches per inch. **A ball point needle shall be used for stitching.** Using a ball point needle helps separate the fibers as opposed to cutting them, practically eliminating the potential of damaging the garment being sewn.

GROUP 7 ITEM #24 PROXIMITY COAT CONSTRUCTION

JACKET CONSTRUCTION

- 9.9 BODY:** The body of the shell and AXTION liner system shall be constructed of three separate panels consisting of two front panels and one back panel. The body panels shall be shaped so as to provide a tailored fit thereby enhancing body movement and shall be joined together by double stitching with Nomex[®] thread.
- 9.10 DRAG RESCUE DEVICE (DRD):** A Firefighter Drag Rescue Device shall be installed in each jacket. The ends of a 1½ inch wide strap, constructed of black Kevlar[®] with a red Nomex[®] center stripe, shall be sewn together to form a continuous loop. The strap shall be installed in the jacket between the liner system and outer shell such that when properly installed shall loop around each arm. The strap shall be accessed through a portal between the shoulders on the upper back where it is secured in place by a FR Velcro[®] strap. The access port shall be covered by an outside flap of shell material, with beveled corners designed to fit between the shoulder straps of an SCBA.
- 9.11 SEPARATING LINER SYSTEM (JACKET):** The combined moisture barrier and the thermal liner shall be completely removable for the jacket. The thermal liner and moisture barrier layers of the AXTION liner system shall be constructed in such a way as to allow the layers to separate for improved air flow, drying and interior service and replacement. The thermal liner and moisture barrier layers shall be stitched together at the sleeve cuff ends and hem of the rear body panels

only. The leading edges and hem of the left and right front body panels of the thermal liner and moisture barrier layers shall fasten together with snap fasteners. The snap fasteners shall be evenly spaced along the opening edge of the layers and set in bias-cut reinforcement fabric. The neck area of the liner system shall attach up inside the outer shell collar with two strips of 5/8 inch wide flame resistant FR Velcro® fastener tape on the front and rear of the collar. Loop fastener tape installed along the neck of the thermal liner shall secure to hook fastener tape installed along the front inside edge of the top collar. Hook fastener tape installed along the neck of the moisture barrier layer of the liner system shall extend upward into the underside of collar and attach to the loop fastener tape installed along the full length of the inside back layer of the collar. The outside perimeter of the AXTION liner moisture barrier and thermal liner layers shall be bound with a bias-cut Neoprene coated cotton/polyester binding for a finished appearance that prevents fraying and wicking of contaminants. Stitching used to secure the thermal liner and moisture barrier in place of the Neoprene shall not be considered since stitching is not able to provide the same level of abrasion resistance.

9.12 AXTION SLEEVES: The sleeves shall be of two piece construction, having an upper and a lower sleeve. The sleeve seams shall be of a double needle seam construction and shall be contoured to follow the natural flex of the arm at rest. Both the under and upper sleeve shall be graded in proportion to the chest size. For unrestricted movement, on the underside of each sleeve there shall be two outward facing pleats located on the front and back portion of the sleeve on the shell and thermal liner. On the moisture barrier, the system shall consist of two darts, rather than pleats, to allow added length in the under sleeve. The moisture barrier darts shall be seam sealed to assure liquid resistance integrity

The pleats shall expand in response to upper arm movement, and shall fold in on themselves when the arms are at rest. This expansion shall allow for greater multi-directional mobility and flexibility in the shoulder and arm areas, with little restriction or coat rise. Neither stove-pipe nor raglan-style sleeve designs shall be considered acceptable.

9.13 LINER ELBOW THERMAL ENHANCEMENT: An additional layer of thermal liner material shall be sewn to the elbow area of the liner system for added protection at contact points and increased thermal insulation in this high compression area. The elbow thermal enhancement layers shall be sandwiched between the thermal liner and moisture barrier layers of the liner system and shall be stitched to the thermal liner layer only. Finished dimension shall be 5" x 7". All edges shall be finished. Thermal scraps shall not be substituted for full-cut fabric padding.

9.14 SLEEVE CUFF REINFORCEMENTS: The sleeve cuffs shall be reinforced with an extra layer of outer shell material. The cuff reinforcements shall not be less than 2 inches in width and folded in half, approximately one half inside and one half outside the sleeve end for greater strength and abrasion resistance. The cuff reinforcement shall be double stitched to the sleeve end for a total of four rows of stitching. This independent cuff provides an additional layer of protection over a turned and stitched cuff. Coats finished with a turned and stitched cuff do not provide the same level of abrasion resistance and shall be considered unacceptable.

9.15 WRISTLETS / ELASTICIZED ADJUSTABLE SLEEVE WELLS WITH THUMB LOOPS: Each jacket shall be equipped with Nomex® knit wristlets not less than 4 inches in length and of double thickness. A loop of 5/8 inch wide black Nomex tshall shall be installed on each wristlet. This loop is designed to slip over the thumb and hold the wristlets from riding up the arm. Nomex® knit is constructed of 96% Nomex and 4% Spandex for shape retention. The wristlets shall be sewn to the end of the liner sleeves. Flame resistant neoprene coated cotton/polyester impermeable barrier material shall be sewn to the inside of the sleeve shell approximately 5 inches from the sleeve end and extending toward the cuff forming the sleeve well. The neoprene sleeve well shall form an elasticized cuff end with an FR Velcro® tab providing a snug fit at the wrist and covering the knit

wristlet. This sleeve well configuration serves to prevent water and other hazardous elements from entering the sleeves when the arms are raised. The neoprene barrier material shall also line the inside of the sleeve shell from the cuff to a point approximately 5 inches back, where it joins the sleeve well and is double stitched to the shell. Four Nomex[®] snap tabs shall be sewn into the juncture of the sleeve well and wristlet. The tabs shall be spaced equidistant from each other and shall be fitted with female snap fasteners to accommodate corresponding male snaps in the liner sleeves. This configuration shall ensure there is no interruption in protection between the sleeve liner and wristlet.

9.16 COLLAR & FREE HANGING THROAT TAB: The collar shall consist of a four-layer construction and be of two-piece design. The collar shall have a minimum of 3 rows of quilting. The outer layers shall consist of outer shell material, with two-layers of specified moisture barrier sandwiched in between (see Moisture Barrier section). The rear inside ply of moisture barrier shall be sewn to the collar's back layer of outer shell at the edges only. The forward inside ply of moisture barrier shall be sewn to the inside of the collar at the edges only. The multi-layered configuration shall provide protection from water and other hazardous elements. The collar shall be of two piece design with the left and right halves of all component materials joined in the center by stitching, thereby permitting the collar to retain its proper shape and roll. The collar shall be minimum 3½ inches high and graded to size. The leading edges of the collar shall extend up evenly from the leading edges of the jacket front body panels so that no gap occurs at the throat area. The collar's back layers of outershell and moisture barrier shall be joined to the body panels with two rows of stitching. Inside the collar, above the rear seam where it is joined to the shell shall be a strip of 5⁄8 inch wide FR Velcro[®] hook fastener tape running the full length of the collar. The collar's front layers of moisture barrier and outershell shall have an additional strip of 5⁄8 inch wide hook fastener tape stitched to the inside lower edge and running the full length of the collar. These two inside strips of 5⁄8 inch wide FR Velcro[®] hook fastener tape sewn to the underside of the collar shall engage corresponding pieces of flame resistant loop fastener tape at the front and back neck area of the liner system.

The throat tab shall be a scoop type design and constructed of two plies of outer shell material with two center plies of moisture barrier material. The throat tab shall measure not less than 4 inches wide at the center tapering to 2 inches at each end with a total length of approximately 9 inches. The throat tab shall be attached to the right side of the collar by a 1 inch wide by 1½ inch long piece of Nomex[®] tshall webbing. The throat tab shall be secured in the closed and stowed position with flame resistant FR Velcro[®] fastener tape. The flame resistant FR Velcro[®] fastener tape shall be oriented to prevent exposure to the environment when the throat tab is in the closed position. Two 1½ inch by 3 inch pieces of FR Velcro[®] loop fastener tape shall be sewn vertically to the inside of each end of the throat tab. Corresponding pieces of FR Velcro[®] hook fastener tape measuring 1 inch by 3 inches shall be sewn horizontally to the leading outside edge of the collar on each side, for attachment and adjustment when in the closed position and wearing a breathing apparatus mask. In order to provide a means of storage for the throat tab when not in use, a 1 inch by 3 inch piece of FR Velcro[®] hook fastener tape shall be sewn horizontally to the inside of the throat tab immediately under the 1½ inch by 3 inch pieces of FR Velcro[®] loop fastener tape. The collar closure strap shall fold in half for storage with the FR Velcro[®] loop fastener tape engaging the FR Velcro[®] hook fastener tape. A hanger loop constructed of a double layer of outer shell material shall be sewn to the top of the collar at the center.

9.17 LINER SHOULDER AND UPPER BACK THERMAL ENHANCEMENT: Two additional layers of thermal liner material shall be used to increase thermal insulation in the upper back, front and shoulder area of the liner system. This full-cut thermal enhancement layers shall drape over the top of each shoulder extending from the collar to the sleeve/shoulder seam, down the front approximately 5 inches from the juncture of the collar down the back to a depth of 7½ inches to provide greater CCHR protection in this high compression area. The upper back, front and

shoulder thermal enhancement layers shall be sandwiched between the thermal liner and moisture barrier layers of the liner system and shall be stitched to the thermal liner layer only. The thermal enhancement layers shall have finished edges. Thermal scraps shall not be substituted for full-cut fabric padding. Smaller CCHR reinforcements shall not be considered acceptable since they provide far less area of coverage.

- 9.18 AXTION BACK:** The jackets shall include inverted pleats to afford enhanced mobility and freedom of movement in addition to that provided by the AXTION sleeves. The outer shell shall have two inverted pleats (one each side) installed on either side of the back body panel. The inverted pleats shall begin at the top of each shoulder and extend vertically down the sides of the jacket to the hem. Maximum expansion of the pleats shall occur at the shoulder area and taper toward the hem. The thermal liner shall have a single inverted pleat located at the upper middle of the back, corresponding to the added length in the shell provided by the AXTION back pleats. It shall be designed to expand with the outer shell pleats to provide maximum expansion. The moisture barrier shall be designed with darts corresponding to the added length in the shell provided by the AXTION back pleats. The darts are positioned at the shoulder blades of the moisture barrier, outside of the SCBA straps, and work together with the outer shell and the thermal liner pleats in the AXTION back providing maximum expansion.
- 9.19 JACKET FRONT:** The jacket shall incorporate separate facings to ensure there is no interruption in thermal or moisture protection in the front closure area. The facings shall measure 2½ inches wide, extend from collar to hem, and be double stitched to the underside of the outer shell at the leading edges of the front body panels. A breathable moisture barrier material shall be sewn to the jacket facings and configured such that it is sandwiched between the jacket facing and the inside of the respective body panel. The breathable film side shall face inward to protect it. The thermal liner and moisture barrier assembly shall be attached to the jacket facings by means of snap fasteners.
- 9.20 STORM FLAP:** A rectangular storm flap measuring 3¼ inches wide and 24 inches long shall be centered over the left and right body panels to ensure there is no interruption in thermal or moisture protection in the front of the jacket. The outside storm flap shall be constructed of two plies of outer shell material with a center ply of breathable moisture barrier material. The outside storm flap shall be double stitched to the right side body panel and shall be reinforced at the top and bottom with bartacks.
- 9.21 STORM FLAP AND JACKET FRONT CLOSURE SYSTEM:** The jacket shall be closed by means of a 22 inch size #10 heavy duty high-temp smooth-gliding YKK Vislon™ zipper on the jacket fronts and flame resistant FR Velcro® fastener tape on the storm flap. The teeth of the zipper shall be mounted on black Nomex® tape and shall be sewn into the respective jacket facings. The storm flap shall close over the left and right jacket body panels and shall be secured with flame resistant FR Velcro® fastener tape. A 1½ inch by 24 inch piece of FR Velcro® loop fastener tape shall be installed along the leading edge of the storm flap on the underside with four rows of stitching. A corresponding 1½ inch by 23 inch piece of FR Velcro® hook fastener tape shall be sewn with four rows of stitching to the front body panel and positioned to engage the loop fastener tape when the storm flap is closed over the front of the jacket.
- 9.22 CARGO/HANDWARMER EXPANSION (BELLOWS) POCKETS:** Each jacket front body panel shall have a 2 inch deep by 8 inch wide by 8 inch high expansion pocket double stitched to it and shall be located such that the bottom of the pockets are at the bottom of the jacket for full functionality when used with an SCBA. Two rust resistant metal drain eyelets shall be installed in the bottom of each expansion pocket to facilitate drainage of water. The inside of the expansion pockets shall be fully lined with a Kevlar tshell pouch. The pocket flaps shall be rectangular in

shape, constructed of two layers of outer shell material and shall measure 3 inches deeper than the pocket expansion and ½ inch wider than the pocket. The upper pocket corners shall be reinforced with proven backtacks, and pocket flaps shall be reinforced with bartacks. The pocket flaps shall be closed by means of flame resistant FR Velcro® fastener tape. Two pieces of 1 ½ inch by 3 inch FR Velcro® hook fastener tape shall be installed vertically on the inside of each pocket flap (one piece on each end). Two corresponding pieces of 1 ½ inch by 3 inch FR Velcro® loop fastener tape shall be installed horizontally on the outside of each pocket near the top (one piece on each end) and positioned to engage the hook fastener tape. Additionally, a separate hand warmer pocket compartment shall be provided under the expandable cargo pocket. This compartment shall be accessed from the rear of the pocket and shall be lined with Nomex® Fleece for warmth and comfort.

- 9.23 RADIO POCKET:** Each jacket shall have a pocket designed for the storage of a portable radio. This pocket shall be of box type construction, double stitched to the coat, and shall have one drainage eyelet in the bottom of the pocket. The pocket flap shall be constructed of two layers of outer shell material measuring approximately 5 inches deep and ¼ inch wider than the pocket. The pocket flap shall be closed by means of flame resistant FR Velcro® fastener tape. A 1½ inch by 3 inch piece of FR Velcro® hook fastener tape shall be installed vertically on the inside of the pocket flap beginning at the center of the bottom of the flap. A 1½ inch by 3 inch piece of FR Velcro® loop fastener tape shall be installed horizontally on the outside of the pocket near the top center and positioned to engage the hook fastener tape. In addition, the entire inside of the pocket shall be lined with neoprene coated cotton/polyester impermeable barrier material to ensure that the radio is protected from the elements. The impermeable barrier material shall also be sandwiched between the two layers of outer shell material in the pocket flap for added protection. The radio pocket shall measure approximately 2 inches deep by 3½ inches wide by 10 inches high and shall be installed on the right chest.
- 9.24 NOTCHED RADIO POCKET FLAP:** The radio pocket flap shall have a window to accommodate the radio antenna on the right side as worn.
- 9.25 MICROPHONE STRAP:** A strap shall be constructed to hold a microphone for a portable radio. It shall be sewn to the coat at the ends only. The microphone strap shall be mounted above the radio pocket and shall be constructed of a double layer of outer shell material.
- 9.26 SIZING:** The jacket shall be available in male and female patterns in even size chest measurements of two inch increments, and shall range from a small size of 30 to a large size of 68. Generalized sizing, such as small, medium, large, etc., shall not be considered acceptable.
- 9.27 SHOULDER REINFORCEMENT:** The tops of the shoulders (front yoke) of the outer shell shall be reinforced on the outside with an extra layer of outer shell material. The additional shoulder reinforcement layer shall also serve to increase thermal insulation to the shoulder area. The reinforcements shall be double stitched to the shell and shall measure approximately 4 inches wide near the collar and approximately 6 inches wide at the juncture of the sleeve and body panels.

GROUP 7A ITEM #25 PROXIMITY PANTS
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TROUSER CONSTRUCTION

- 9.28 BODY:** The body of the shell shall be constructed of four separate body panels consisting of two front panels and two back panels. The body panels shall be shaped so as to provide a tailored fit, thereby enhancing body movement, and shall be joined together by double stitching with Nomex[®] thread. The body panels and seam lengths shall be graded to size to assure accurate fit in a broad range of sizes.
- 9.29 LINER ACCESS OPENING (TROUSER):** The combined moisture barrier and the thermal liner shall be completely removable for the pant. The thermal liner and moisture barrier layers of the liner system shall be stitched together and bound around the top waist and cuffs with Bias-Cut Neoprene coated cotton/polyester binding for a finished appearance that prevents fraying and wicking of contaminants. The liner system shall have a reinforcement of black Nomex[®] T shall sewn to the bottom of the fly opening. This reinforcement shall serve to prevent the liner from tearing in that area from the constant donning and doffing of the trousers. The liner system of the trouser shall incorporate an opening at the right side of the waist, a minimum of 11 inches, for the purpose of inspecting the integrity of the trouser liner system.
- 9.30 WAISTBAND:** The waist area of the trousers shall be reinforced on the inside with a separate piece of black aramid outer shell material not less than two inches in width. Neoprene coated cotton/polyester shall be sewn to the back of the waistband as a reinforcement to create a three-layer protection. The top edge of the waistband reinforcement shall be double stitched to the outer shell at the top of the trousers. The lower edge of the waistband shall be serged and unattached to the shell to accept the thermal liner and moisture barrier. The top of the thermal liner and moisture barrier shall be secured to the underside of the waistband reinforcement so as to be sandwiched between the waistband reinforcement and outer shell to reduce the possibility of liner detachment while donning and to avoid pass through of snaps from the outer shell to the inner liner. The independent waistband construction affords greater comfort and fit than a turned and stitched method. Trousers that do not include an independent waistband only serve to save the manufacturer both money and labor and shall be considered unacceptable.
- 9.31 NOMEX[®] BELT WITH BELT LOOPS:** Each pant shall include a 2" wide belt constructed of Nomex[®] webbing material with an adjustable hi-temp thermoplastic Delrin buckle serving as the exterior primary positive locking closure. This buckle shall also provide a quick-release mechanism for donning and doffing. The pants shall be equipped with a series of approximately 3 inch by 3 inch outer shell material belt loops spaced around the waist to accommodate the Nomex[®] belt.
- 9.32 EXTERNAL / INTERNAL FLY FLAP:** The trousers shall have a vertical outside fly flap constructed of two layers of outer shell material, with a layer of moisture barrier material sandwiched between. The fly flap shall be double stitched to the left front body panel and shall measure approximately 2 ½ inches wide by 9½ inches long and reinforced with bartacks at the base. An internal fly flap constructed of one layer of outer shell material, thermal liner and specified moisture barrier, measuring approximately 2 inches wide by 9½ inches long, shall be sewn to the leading edge of the right front body panel. The inside of the right front body panel shall be thermally enhanced directly under the outside fly with a layer of moisture barrier and thermal liner material. The trousers shall close by means of a brass zipper and 1½ inch wide by full length flame resistant hook and loop fastener tape. The teeth of the zipper shall be mounted on Nomex[®] cloth and shall be sewn into the leading edges of the respective left and right front body panels from the crotch area to the waist band. Flame resistant hook and loop fastener tape shall close the flap. The FR loop portion shall be sewn with four rows of stitching to the inside of the leading edge of the external fly flap. The corresponding portion of FR hook fastener tape shall be sewn with four rows of stitching to the right front body panel positioned to engage the loop portion

when the external fly flap is in the closed position. Appropriate male and female snap fastener halves shall be installed at the leading edge of the waistband for the purpose of further securing the trousers in the closed position.

- 9.33 AXTION SEAT:** The rise of the rear trouser center back seam, from the top back of the waistband to where it intersects the inside leg seams at the crotch, shall exceed the rise at the front of the trouser by 2½ inches. The longer rear center back seam provides added fullness to the seat area for extreme mobility without restriction when stepping up or crouching and shall be graded to size. This feature in combination with other design elements shall maintain alignment of the knee directly over the knee pads when kneeling and crawling.
- 9.34 AXTION KNEE:** The outer shell of the trouser legs shall be constructed with horizontal expansion pleats in the knee area with corresponding darts in the liner to provide added fullness for increased freedom of movement and maximum flexibility. Two expansion pleats measuring approximately 1½ inches deep, shall be installed along both the inseam and outseam on each leg in the knee area. The pleats shall be folded to open outwardly towards the side seams to insure no restriction of movement. The AXTION knee shall be installed proportionate to the trouser inseam, in such a manner that it falls in an anatomically correct knee location. The liner system shall be constructed with four darts per leg in the front of the knee. Two shall be located above the knee (one on each side) and two shall be located below the knee (one on each side). Each dart shall be approximately 2 inches long. The darts in the liner provide a natural bend at the knee. The darts in the liner work in conjunction with the expansion panels in the outer shell to increase freedom of movement when kneeling, crawling, climbing stairs or ladders, etc.
- 9.35 LINER KNEE THERMAL ENHANCEMENT:** An additional layer of specified thermal liner and neoprene coated impermeable barrier material shall be sewn to the knee area of the liner system for added protection and increased thermal insulation at contact points. The knee thermal enhancement layers shall be sandwiched between the thermal liner and moisture barrier layers of the liner system and shall be stitched to the thermal liner layer only.
- 9.36 KNEE PADDING:** Padding for the knees shall be accomplished with one layer of **Silizone™** foam on the liner knee.
- 9.37 EXPANSION POCKETS:** An expansion pocket, measuring approximately 2 inches deep by 10 inches wide by 10 inches high shall be double stitched to the side of each leg straddling the outseam above the knee and positioned to provide accessibility. The inside of each expansion pocket shall be lined with a full Kevlar tshall pouch. Two rust resistant metal drain eyelets shall be installed on the underside of each expansion pocket to facilitate drainage of water. The pocket flaps shall be rectangular in shape, constructed of two layers of outer shell material and shall measure 3 inches deeper than the pocket expansion and ½ inch wider than the pocket. The pocket flaps shall be closed by means of flame resistant Velcro® hook and loop fastener tape. Two pieces of 1½ inch by 3 inch FR Velcro® hook fastener tape shall be installed vertically on the inside of each pocket flap (one piece on each end). Two corresponding pieces of 1½ inch by 3 inch FR Velcro® loop fastener tape shall be installed horizontally on the outside of each pocket near the top (one piece on each end) and positioned to engage the hook fastener tape.
- 9.38 TROUSER CUFF REINFORCEMENTS:** The cuff area of the trousers shall be reinforced with an extra layer of outer shell material. The cuff reinforcements shall not be less than 2 inches in width and folded in half, approximately one half inside and one half outside the leg cuff for greater strength and abrasion resistance. The cuff reinforcement shall be double stitched to the end of the leg for a total of four rows of stitching. This independent cuff provides an additional layer of

protection over a hemmed cuff. Trousers that are turned and stitched at the cuff, as opposed to an independent cuff reinforcement, do not provide the same level of abrasion resistance and shall be considered unacceptable.

- 9.39 PADDED RIP-CORD SUSPENDERS & ATTACHMENT:** On the inside waistband shall be attachments for the standard “H” style “Padded Rip-Cord” suspenders. There shall be four attachments total – 2 front, 2 back. The suspender attachments shall be constructed of a double layer of black Nomex[®] measuring approximately ½ inch wide by 3 inches long. They shall be sewn in a horizontal position on the ends only to form a loop. The appearance shall be much like a horizontal belt loop to capture the suspender ends. A pair of “H” style “Padded Rip-Cord” suspenders shall be specially configured for use with the trousers. The main body of the suspenders shall be constructed of 2 inch wide black strap webbing. The suspenders shall run over each shoulder to a point approximately shoulder blade high on the back, where they shall be joined by a 2 inch wide horizontal piece of webbing measuring approximately 8-inches long, forming the “H”. This shall prevent the suspenders from slipping off the shoulders. The shoulder area of the suspenders shall be padded for comfort by fully encasing the webbing with aramid batting and wrap-around black Nomex[®]. The rear ends of the suspenders shall be sewn to 2-inch wide elasticized webbing extensions measuring approximately 8-inches in length and terminating with thermoplastic loops. The forward ends of the suspender straps shall be equipped with specially configured black powder coat non-slip metal slides. Through the metal slides shall be the 9 inch lengths of strap webbing “Rip-Cords” terminating with thermoplastic loops on each end. Pulling on the “Rip-Cords” shall allow for quick adjustment of the suspenders. Threaded through and attached to the thermoplastic loops on the forward and rear ends of the suspenders shall be black Nomex[®] suspender attachments incorporating two snap fasteners. The Nomex[®] suspender attachments are to be threaded through the suspender attachment loops on the inside waistband of the trousers. The Nomex[®] suspender attachments shall then fold over and attach to themselves securing the suspender to the trousers.
- 9.40 REVERSE BOOT CUT:** The outer shell trouser leg cuffs shall be constructed such that the back of the leg is approximately 1 inch shorter than the front. The liner shall also have a reverse boot cut at the rear of the cuff and a concave cut at the front to keep the liner from hanging below the shell. This construction feature shall minimize the chance of premature wear of the cuffs and injuries due to falls as a result of “walking” on the trouser cuffs. Trousers that have “cut-outs” in the back panel rather than a contoured boot cut shall be considered unacceptable.
- 9.41 SIZING:** The trousers shall be available in even size waist measurements of two inch increments and shall be available in a range of sizes from 24 to 68. The trouser inseam measurement shall be available in two inch increments. Generalized sizing, such as small, medium, large, etc., shall not be considered acceptable. Sizing specifically for women shall also be available. Both male and female sizing samples shall be available.
- 9.42 THIRD PARTY TESTING AND LISTING PROGRAM:** All components used in the construction of these garments shall be tested for compliance to NFPA Standard #1971 (2007 revision) by Underwriters Laboratories (UL). Underwriters Laboratories shall certify and list compliance to that standard. Such certification shall be denoted by the Underwriters Laboratories certification label.
- 9.43 LABELS:** Appropriate warning label(s) shall be permanently affixed to each garment. Additionally, the label(s) shall include the following information.

Compliance to NFPA Standard #1971 – 2007 edition
Underwriters Laboratories classified mark
Manufacturer’s name

Manufacturer's address
Manufacturer's garment identification number
Date of manufacture
Size
Fiber contents
Member First & Last Name

- 9.44 ISO CERTIFICATION / REGISTRATION:** The protective clothing manufacturer shall be certified and registered to ISO Standard 9001 to assure a satisfactory level of quality. Indicate below whether the manufacturer is so certified and registered by checking either "Yes" or "No" in the space provided.
- 9.45 BETTER BUSINESS BUREAU:** The manufacturer is accredited by the Better Business Bureau, showing a commitment to ethical and principled business practices.
- 9.46 WARRANTY:** The manufacturer shall warrant these jackets and trousers to be free from defects in materials and workmanship for their serviceable life when properly used and cared for.
- 9.46 EXCEPTIONS TO SPECIFICATIONS:** Any and all exceptions to the above specifications must be clearly stated for each heading. Use additional pages for exceptions, if necessary.
- 9.47 COUNTRY OF ORIGIN:** The Garments shall be manufactured in the United States. Bids offering garments manufactured outside the U.S. shall not be considered.

Group 8
Proximity Helmet Bonnet, Shroud and Face Shield Ensemble –
Item #26 Proximity Helmet Ensemble
Item #27 Proximity Bonnet
Item #28 Proximity Shroud
Item #29 Proximity Face Shield

10.0 Item #26 Thru #29 Proximity Helmet Ensemble & Accessories

PURCHASING SPECIFICATION
1971-2007 REVISION

- 10.1 HELMET SHELL:** The helmet shell shall have a Traditional American Fire Service Style helmet shell, comprising a crown, with four (4) major ribs (front, back, left and right sides), and four minor ribs equidistant between each major rib, and a brim that has a short front visor continuing around the sides to a large rear brim area. The upper surface of the brim shall have the traditional fire service vine scroll-work molded into the surface of the composite. The helmet shell material is a DuraGlas[®] composite consisting of a high-temperature-, flame-, and chip-resistant, "through-colored" thermoset resin, reinforced with 1" and 2" chopped fiberglass, which is compression molded to form a one piece shell.

The shell dimensions (with edge-trim) shall be 15.5" in length, 11.88" in width and a crown depth of 6.5". The shell shall have a nominal wall thickness of 0.065" in the crown and 0.080" in the brim. The helmet colors red, black, and yellow. The Red, Black, Yellow, and Green shell shall have black, and the White shell shall have a white high-temperature, flame-resistant, flexible edge trim composed of an aluminum-cored, thermoplastic rubber (TPR). The edge-trim is secured around the entire brim of the helmet by crimping the aluminum core, and secured at the mating ends with a high temperature adhesive and clamped by the helmet hanger clip at the

edge of the rear brim. The shell shall have a helmet hanger comprised of a 3/4", nickel plated "D" ring and a stainless steel clip. The helmet hanger shall be attached to the center rear of the brim.

- 10.2 IMPACT LINER:** The helmet shall include an impact liner, which is comprised of rigid cell, high temperature urethane foam cap attached to a flame-resistant thermoplastic PPO inner liner. The impact liner shall be modular and field removable for periodic inspection of the foam's integrity. The impact liner is incorporated to provide increased thermal and impact protection.
- 10.3 HEAD SUSPENSION:** The helmet shall consist of a 6-way head suspension system, attached to the impact cap. The head suspension system is comprised of three (3) fixed 0.75" wide nylon straps mounted at six points on the impact liner and fastened at their intersection to form the 6-way overhead strap assembly. The straps are attached to the impact cap by means of a tubular plastic ring, joined at the ends by an elastomeric tube that locks the straps into a routed annular groove in the impact cap.
- 10.4 SIZING ADJUSTMENT:** The size of the headband may be adjusted to fit the wearer's head by means of a ratchet adjustment system. The headband shall have a head size range of 6-3/8 to 8-3/8, adjustable in 1/8 increments. The head band is attached to the sides of the impact cap liner by four (4) flexible retention tabs. The rear ratchet arms shall have three (3) adjustable positions so that the angle of the ratchet may be set to accommodate the nape of the wearer's head.
- 10.5 COMFORT LINER:** The helmet shall have a comfort liner, which consists of a headband cushion liner and a ratchet pad, which are both removable. Both components are produced from a foam core laminate system, which is comprised leather like deluxe version and backed by a soft loop material which shall be secured to the headband and the ratchet with hook fastener.
- 10.6 CHINSTRAP:** The chinstrap shall be constructed of three (3) pieces (or sections) of 3/4" wide, spun-Nomex[®] webbing, which are connected on the left side of the helmet by a high-temperature, super-tough, thermoplastic quick release buckle, and by a cast zinc postman's slide buckle on the right hand side of the helmet.

The chinstrap is attached at either end of the impact cap by means of the tubular plastic ring, joined at the ends by an elastomeric tube that locks the chinstrap into a routed annular groove in the impact cap.

The long, middle-section, with the female half of the quick release buckle sewn to the left end, shall pass through the postman's slide buckle on the right, and include hook and loop fastener for stowage of extra strap. The middle section shall be a minimum of 23.0" in length and the total length of the chinstrap shall be 35.0" at full extension, end to end.

- 10.7 SHELL RELEASE PROVISIONS:** The impact liner, complete with suspension system and chinstrap assembly (retained as described above), shall be retained to the helmet shell by means of two (2) thermoplastic retention clips, mounted under the faceshield pivot hardware, and by four (4) pieces of hook and pile fastener sections between the impact liner, and helmet shell in the crown area. This design shall enable the shell to be released from the helmet when impacted from below the brim, reducing the chance of being injured by the chinstrap, and leaves the impact cap on the wearer's head for continued thermal and impact protection.
- 10.8 EAR/NECK PROTECTION:** The helmet shall be equipped with an ear/neck protector. The protector for the ear and neck protection shall be 6.5" wide, 19.0" long, full-cut earlap. The

earlap consists of a 2.212 oz/yd PBI/Kevlar earlap outer-shell. The earlap shall be secured to the impact liner by pieces of hook and pile fastener in no less than five (5) locations. The earlap is machine washable. The ear and neck protector shall be removable without interfering with the overhead strap assembly in any way and without removing any part of the helmets suspension.

- 10.9 RETRO-REFLECTIVE TRIM:** The helmet shall have eight tetrahedron shaped pieces of Lime-Yellow, retro-reflective, fluorescent Scotchlite® trim around the exterior of the crown of the helmet shell for maximum daytime and nighttime visibility.
- 10.10 PROXIMITY FIRE FIGHTING HELMET OPTION:** The helmet shall be made available with optional components to enable the helmet to be used as a proximity fire fighting helmet. The necessary component shall include a proximity bonnet, a proximity shroud, and faceshield. Use of these components shall enable the Invader 664 helmet to be compliant with the proximity fire fighting helmet requirements of NFPA 1971, 2007.
- 10.11 PROXIMITY BONNET:** The proximity bonnet shall be custom made to specifically fit over the helmet being bid. The proximity bonnet shall consist of an outer aluminized PBI/Kevlar layer, and an inner moisture barrier and thermal liner. The proximity bonnet, when attached to the helmet, shall allow a faceshield to be attached to the helmet over the proximity bonnet.
- 10.12 PROXIMITY SHROUD:** The proximity shroud shall be custom made to interface specifically with the proximity bonnet. The proximity shroud shall consist of an outer aluminized PBI/Kevlar layer, and an inner moisture barrier and thermal liner. The proximity shroud, when used in conjunction with the proximity bonnet, shall provide continuous radiant reflective protection for the head, face, and neck areas that do not receive primary protection from the helmet or faceshield.
- 10.13 FACESHIELD:** The faceshield used in the proximity system shall be a gold coated, 6” faceshield. The faceshield shall provide radiant reflective protection to the head, face, and neck areas that do not receive primary protection from the helmet or proximity bonnet or proximity shroud.
- 10.14 MANUFACTURER’S WARRANTY:** Helmets shall be warranted, for the lifetime of the helmet, to be free of defects in material and workmanship. The manufacturer shall guarantee, for a period of five (5) years from the date of manufacture that any helmet shell shall be replaced free of charge if it is damaged beyond use while worn during normal assigned fire ground activities. The manufacturer shall be relieved of any replacement liability under this guarantee if there has been a failure to follow the manufacturer’s maintenance requirements supplied with each helmet. Please refer to the official warranty policy #3600-09 for details.
- 10.15 PERFORMANCE CRITERIA & VERIFICATION DATE REQUIREMENT:** The helmet shall meet the requirements of NFPA 1971-2007 edition, US-OSHA (CFR 1920) NBSIR 1977, and CAL-OSHA.
Response to this specification shall include a current NFPA 1971-2007 Certificate of Conformance test report from an accredited test facility for the helmet offered. This certification testing is conducted annually as per NFPA requirements.

Group 9
Proximity Boots –
Item #30 Proximity Boot Men
Item #31 Proximity Boot Women

11.0 ITEM # 30 & #31 Proximity Boots

Specifications for Proximity Fire Fighting 14” Pull-On Boots Footgear Proximity 14” Pull-On

NFPA 1971 (Proximity and Structural) and NFPA 1992 Compliant

Meets or exceeds NFPA 1971, *Standard on Protective Ensembles for Structural Firefighting and Proximity Firefighting, 2007 Edition* for Proximity Fire Fighting and Structural Fire Fighting and NFPA 1992, *Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies, 2005 Edition*.

- 11.1 GENERAL DESIGN:** 14” Pull-On athletic footwear (cement construction) boot, black flame-resistant and waterproof leather, double-stitched leather joining seams, silver reflective trim, leather-trimmed webbing pull straps, padded leather collar, padded leather flex joints in the shaft above vamp and heel, liquid and chemical resistant breathable bootie liner, aluminized shield liner situated under the leather shell, two layers of thermal protective bootie-shield liner situated between the aluminized shield liner and the barrier bootie, composite safety toe cap, composite shank, composite penetration-resistant insole barrier, molded shin guard, flame-resistant synthetic rubber molded cup outsole and toe bumper, 3D lasting board, molded heel counter, internal heel fit system, and removable molded footbeds including a second thicker pair. Rubber boots shall not be acceptable.
- 11.2 SLIP RESISTANCE:** Boots must exceed the minimum test values for slip resistance of left and right foot as detailed below to provide superior performance in dry, wet, and frosted rough ice conditions. Boots that do not exceed these minimums in all conditions shall not be acceptable. Proposers must promptly supply a Technical Services Report from a recognized independent testing laboratory upon request showing that the boots bid meet this requirement.

Test Method:	SATRA TM144:2007 Slip Resistance of Footwear and Floorings Load = 500 N
Clay Quarry Tiles:	Heel Dry = 1.00 Heel Wet = 0.80 Forepart Dry = 1.10 Forepart Wet = 0.80
Frosted Rough Ice:	Heel = 0.30 Forepart = 0.35

- 11.3 FLEXIBILITY:** Boots must reach the Maximum Flex Angle of 50 degrees without exceeding the critical bending moment with a resulting stiffness Index not to exceed 10.0 as detailed below to provide maximum flexibility. Boots that do not meet this requirement shall not be acceptable. Proposers must promptly supply a Technical Services Report from a recognized independent testing laboratory upon request showing that the boots bid meet this requirement.

Test Method:	SATRA TM194:2004 Longitudinal stiffness of footwear
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11.4 FIRESTORM LEATHER: Heavy-duty, flame-resistant and waterproof full-grain cattle hide leather measuring 2.0 – 2.2 mm of thickness for durable tear and puncture resistance. Tumbled full-grain cattle hide leather in collar and flex areas for mobility. Leather is chrome tanned to withstand high temperature with minimal shrinkage, re-tanned to impart water resistance and low water absorption, and finished to retain maximum breathability. Leather meets or exceeds the following physical tests:

Water Penetration	ASTM D2009	15,000 flex minimum
Dynamic Water Absorption	ASTM D2009	10% maximum
Static Water Absorption	ASTM D6015	30% maximum
Slit Tearing Strength	ASTM D2212	30 pound minimum
Moisture Vapor Transmission	ASTM D5052	350 g/meter ² /24 hours minimum
Flame Resistance	NFPA 1971	afterflame no more than 2.0 sec, not melt or drip, no burn through

11.5 ALUMINIZED SHIELD LINER: A full-height shield liner shall be situated between the leather outer shell and the bootie-shield liner layers. The liner shall be made from 7.0 oz/yd² Aluminized PBI[®] fabric consisting of a knit fabric substrate of 30% PBI[®] and 70% Para-Aramid fibers laminated with aluminized reflective silver film component certified to NFPA 1971. Boots that do not have an Aluminized shield liner shall not be acceptable.

11.6 BOOTIE-SHIELD LINER: Two full-height layers of a protective bootie-shield of 65% NOMEX[®], 35% KEVLAR[®] fiber stitchbonded non-woven batting weighing 4.0 oz/yd² are positioned between the aluminized shield and the barrier bootie to provide additional thermal protection. Boots that do not have additional protective bootie-shield layers shall not be acceptable.

11.7 ENHANCED EXPANDED POLYTETRAFLUOR OETHYLENE (EPTFE BARRIER BOOTIE: A full-height bootie liner made from a package of Cambrelle[®], 300g insulation, and enhanced Eptfe barrier to provide liquid and chemical protection as defined by the specified NFPA standards.

11.8 ATHLETIC FOOTWEAR (CEMENT) CONSTRUCTION: Contoured outsoles are bonded to the bottom and sides of the upper using a 2-part cross-linking adhesive that forms a bond stronger than the materials it attaches. This attachment process is far more flexible than welted construction. Goodyear welt or direct attach construction methods are not be acceptable.

11.9 VIBRAM[®] SYNTHETIC RUBBER CONTOURED CUP OUTSOLE: Molded synthetic rubber outsole wraps onto the upper for athletic shoe performance. Flame, abrasion, oil, acid, and slip resistant compound engineered for high-traction, cold-weather resistance, and durability. Siping lines cut into flat areas open up when flexed to provide additional traction on water and ice. Self-cleaning lugs and omni-direction tread pattern designed for superior performance in all terrains and when working on ladders.

11.10 LENZI[®] PUNCTURE PROTECTION: High performance penetration protection made from multiple layers of HT ceramic fabric (PEOX blended with silicates). Far more flexible than a steel plate and doesn't transmit heat or cold. Exceeds NFPA standards for safety. Metal plates shall not be acceptable.

11.11 3D COMPOSITE LASTING BOARD: Boot uppers are lasted to a molded and contoured dual-density lasting board with a built-in flex zone in the forefoot and a torsionally stable heel.

- 11.12 **COMPOSITE SHANK:** Lighter than steel, doesn't transmit heat or cold, and springs back to shape better. Metal shank shall not be acceptable.
- 11.13 **COMPOSITE SAFETY TOE CAP:** Lighter than steel and doesn't transmit heat or cold. Exceeds NFPA standards for safety. Metal toe caps shall not be acceptable.
- 11.14 **MOLDED HEEL COUNTER:** A rugged heel counter is individually molded to fit each size perfectly.
- 11.15 **PADDED SHIN GUARD:** Padded polymer shin guard provides extra protection when you are working on a ladder.
- 11.16 **SYNTHETIC RUBBER TOE BUMPER:** Molded synthetic rubber toe bumper provides abrasion resistance when crawling. Cemented and 2-needle stitched to the vamp.
- 11.17 **3M SCOTCHLITE™ REFLECTIVE MATERIAL:** Flame-resistant silver 3M SCOTCHLITE™ reflective material sewn to both sides of the shaft for added visibility.
- 11.18 **WEBBING PULL-STRAPS:** NOMEX® webbing pull-straps with leather trim are securely attached to the leather uppers by inserting into to collar seam to minimize stitching through the leather and to keep them on for good. Pull strength must be a minimum of 120 lbs when tested with a single handle.
- 11.19 **INTERNAL FIT SYSTEM:** Anatomical foam insert wraps around the top and sides of the heel with an opening to fit and hold the back of the heel securely while cushioning the ankle.
- 11.20 **3D MOLDED FOOTBED:** Removable urethane foam footbeds are contoured to cradle and cushion the bottom of the foot and to provide arch support. Moisture-wicking and anti-microbial fabric top layer.
- 11.21 **CUSTOM FIT SYSTEM:** A second pair of 3D Molded Footbeds that are thicker in the forefoot is provided with every pair for a custom fit. This thicker footbed provides a snugger fit.
- 11.22 **SIZES:** Boots must be available in Men's 5 – 12.5 (full and half sizes), 13 – 15 (full sizes only) in Medium, Wide, and X-Wide widths. Boots must also be available in a Wide Calf model in the same size range that shall provide an additional 3 inches in circumference at the calf to fit those with larger calves. Boots must be available in Women's 5 – 10 (full and half sizes) in Medium, Wide, and X-Wide widths.
- 11.23 **RESOLING SERVICE:** Boots must be able to be resoled at the factory with new outsoles as needed.
- 11.24 **SIZES: Men's:** 5-12.5 (full and half sizes), 13-15 (full sizes only) in Medium, Wide, and X-Wide widths.
Women's: 5-10 (full and half sizes) in Medium, Wide, and X-Wide widths.
- 11.25 **COUNTRY OF ORIGIN:** Made in USA.

Group 10
Proximity ARFF Gloves
Item #32 Proximity ARFF Glove

12.0 ITEM #32 Proximity Gloves

SPECIALTY GLOVES PROXIMITY GLOVE WITH STEAMBLOCK® FIREWALL ARFF GLOVES

SPECIFICATIONS:

- 12.1 OUTER SHELL:** 7 oz. Aluminized PBI/Kevlar Knit .025 in. thick (.063 cm)
Flexible Pleat on Back of Hand
- 12.2 PROTECTIVE BARRIER:** Gore (PTFE) RT7100 Glove Barrier Fabric. Barrier is combined (laminated) to the thermal liner. Breathable barrier/thermal liner glove system is individually graded and produced in as many size. Barrier/Thermal liner glove systems are sized proportional to human hand sizes.
- 12.3 GRIP PATCHES & STEAMBLOCKER:** 3-3.5 oz. Black FR Split Cowhide Patches on Palm Side Firewall Steamblock® Insulative pad shall be a fire retardant silicone foam elastomer with an integral skin on the top and bottom surfaces and be attached in the side seams of the glove. The Firewall Steamblock® Insulated pas shall extend on the back of the glove from the bottom/wrist of the glove to approximately ¼” below the crotch of the fingers.
- 12.4 WRISTLET:** Nomex 10.5 oz per yard, Double ply, 4” Wristlet.
- 12.5 WRIST PULL THREAD:** 3: x 3 ½” Round Leather Pull, Sewn to Wristlet & Glove Body Sewn with High burst Strength Kevlar 30/5 Lock stitch, 8-10 Stitches per inch. Compliant to NFPA 1976/1991, 2007 edition.
- 12.6 ORIGIN:** All products shall be made in U.S.A.
- 12.7 SIZES:** Generously Sized: Small, Medium, Large, X-Large, & Jumbo
- 12.8 DESIGN & CONSTRUCTION:** Glove shall be a gunn cut pattern with wing thumb construction. Front, back and all sides of the glove and fingers are of Aluminized PBI/KEVLAR Knit and have grip patches on palm, thumb and all fingers. Back of the glove shall be oversized with expandable pleat, allowing for more room and insulative air across back of hand. Glove body shall extend 1½” circumferentially beyond the wrist crease. Glove liner or liner/barrier system shall be permanently sewn in at fingertips. No glue shall be used to attach liner/barrier system inside glove.

Group 11
DFD firefighting gear Duffel Bag –
Item #33 DFD Duffel Bags – Navy Blue

13.0 ITEM #33 DFD Firefighting Duffel Gear Bag

Duffel Bag – The manufacture of the bag is Condor, the part/item number is #CONDOR59112.

- 13.1 **DESCRIPTION:** Dallas Fire-Rescue Duffel Bag 1680D Nylon with PU
- 13.2 **BAG MATERIAL:** 1000 denier nylon,
- 13.2 **WEBBING:** PP heavy duty webbing & straps.
- 13.3 **BAG CLOSURES:** YKK zippers
- 13.4 **ZIPPER:** YKK RC
- 13.5 **BAG OVERALL DIMENSIONS:** 32.5”L x 14”W x 17.5”H
- 13.6 **BAG MAIN COMPARTMENT:** 22”L x 14”W x 17.5”H
- 13.7 **BAG LEFT SIDE COMPARTMENT:** 14”L x 8”W x 17.5”H
- 13.8 **BAG RIGHT SIDE COMPARTMENT:** 14”L x 2.5”W x 17.5”H
- 13.9 **BAG COLOR:** Navy blue
- 13.10 **BAG LOGO:** The DFD Logo shall be embroidered on the front side of the bag pocket. The size of the logo shall be 5 1/2” x 5 1/2”.
- 13.11 **ORDER QUANTITY:** Identify pieces per order
- 13.12 **PACKING:** Each piece shall be packed in polybag with hangtag & UPC sticker. 1pc UPC sticker place in polybag. 12pcs in a master carton with order/style UPC sticker.

ATTACHMENT 12A: The attachment has brief information pertaining to each group and item number.