General Specifications

PROTECTIVE JACKET AND PANTS FOR STRUCTURAL FIRE FIGHTING

Catoosa County, Georgia

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 firefighting. All materials and construction will meet or exceed NFPA Standard #1971 and OSHA for structural fire fighters protective clothing.

_____Comply _____Exception

OUTER SHELL MATERIAL - JACKETS AND PANTS

The outer shell shall be constructed of TENCATE **"AGILITY™ with ENFORCE™ technology"** Kevlar®/PBO/ Nomex® blend material with an approximate weight of 6.6 oz. per square yard in a twill weave. The shell material must be treated with **SST™ (SUPER SHELLTITE)** which is a durable water-repellent finish that also enhances abrasion resistance. Color of the garments shall be black. **Bids offering this shell material without the SST™ will not be considered.**

_____Comply _____Exception

THERMAL INSULATING LINER - JACKET AND PANTS

The thermal liner shall be constructed of TENCATE **"CALDURA® ELITE SL2i"**; with an approximate weight of 7.7 oz. per square yard. This thermal liner consists of one layer of 1.5 oz. and one layer of 2.3 oz. per square yard Nomex® E-89™ spunlaced Nomex®/Kevlar® aramid blend, quilt stitched to a Kevlar® filament and FR rayon/para-aramid/nylon inherently wicking Caldura® face cloth. 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.

_____Comply _____Exception

MOISTURE BARRIER - JACKETS AND PANTS

The moisture barrier material shall be W.L. GORE **CROSSTECH® black moisture barrier** - Type 2F, which is comprised of a CROSSTECH® membrane laminated to a 3.3 ounce per square yard Nomex® IIIA woven pajama check substrate. 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. CROSSTECH® moisture barrier seams shall be sealed with GORE-SEAM® tape using a Series 6000 (or higher) GORE-SEAM™ sealing machine to afford comparable bacteriophage penetration resistance performance. Further mention of "Specified Moisture Barrier" in this specification shall refer to this section.

_____Comply _____Exception

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.

_____Comply _____Exception

METHOD OF THERMAL LINER/MOISTURE BARRIER ATTACHMENT FOR JACKETS AND PANTS

The thermal liner and moisture barrier shall be completely removable from the jacket shell. Two strips of 5/8 inch wide FR 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 snap fasteners appropriately spaced on each jacket facing and Are-Shield® snap fasteners at each shell sleeve end. There shall be one Ara-shield® snap tab in the liner in addition to snap fasteners to correspond with color coded snap tabs for ease of matching the liner system to the outer shell after inspection or cleaning is completed.

The thermal liner and moisture barrier shall be completely removable from the pant shell. Nine snap fasteners shall be spaced along the waistband to secure the thermal liner to the shell. The legs of the thermal liner/moisture barrier shall be secured to the shell by means of Ara-Shield® snap fasteners, 2 per leg. The Ara-shield® snap tabs shall be color coded to a corresponding color-coded snap tab in the liner for ease of matching the liner system to the outer shell after inspection or cleaning is completed.

_____Comply _____Exception

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.

_____Comply _____Exception

STITCHING

The outer shell shall be assembled using stitch type #301, #401, #514 and #516. The thermal liners and moisture barriers shall be assembled using stitch type #301, #401, #504, #514, and #516. Major A outer shell structural seams, major B structural liner seams and shall have a minimum of 8 to 10 stitches per inch. All Major A seams shall be sewn with ball point needles only. All seams shall be continuously stitched only.

_____Comply _____Exception

JACKET CONSTRUCTION

BODY

The body of the shell and 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. One-piece outer shells shall not be acceptable.

_____Comply _____Exception

SIZING

The jacket length shall be sloping in design and measured from the juncture of the collar and back panels to the hem of the jacket and shall measure

27 inches in the front/31 inches long in the back. (women's)
29 inches in the front/33 inches long in the back. (standard)
32 inches in the front/36 inches long in the back.
35 inches in the front/39 inches long in the back.

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., will not be considered acceptable.

_____Comply _____Exception

DRAG RESCUE DEVICE (DRD)

A Firefighter Drag Rescue Device (DRD) shall be installed in each jacket. The ends of a 1-inch wide strap, constructed of Kevlar®, 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 will loop around each arm. The strap will be accessed through a portal between the shoulders on the upper back where it is secured in place by an FR strap. The DRD shall be removable for laundering. The access port shall be covered by an outside flap of shell material, designed to fit between the shoulder straps of an SCBA. The flap will have a NFPA-compliant 3M Scotchlite™ reflective logo patch sewn to the outside to clearly identify the feature as the DRD (Drag Rescue Device). The DRD shall not extend beyond the outside flap. This device provides a quickly deployed means of rescuing a downed firefighter. Flimsy, rope-style DRD straps will not be considered.

_____Comply _____Exception

LINER ACCESS OPENING - JACKET

The liner system of the jacket shall incorporate an opening at the leading edges of the right front panel. This opening shall run a minimum of 11 inches for the purpose of inspecting the integrity of the jacket liner system. When installed into the outer shell the Liner Access Opening will be covered and protected by the overlap of the outer shell facing.

_____Comply _____Exception

LOGOS

The garment brand shall be identified by means of red FR Nomex thread embroidery on the top of the left collar denoting the manufacturer. There shall be a reflective label specific to the garment style, measuring 1 inch wide by 4 inches long, installed on the left pocket flap.

_____Comply _____Exception

RETROREFLECTIVE FLUORESCENT TRIM

The retroreflective fluorescent trim shall be 3M Comfort 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 and OSHA. The trim shall be in the following widths and shall be **NFPA Basic style**; 3-inch-wide stripes - around the bottom of the jacket within approximately 1 inch of the hem and around the back and chest area approximately 3 inches below the armpit, around each sleeve below the elbow.

_____Comply _____Exception

REINFORCED TRIM STITCHING

All reflective trim is secured to the outer shell with Nomex® thread, using a locking chainstitch protected by 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. Two rows of stitching used to attach the trim in place of shall be considered an unacceptable alternative. All trim ends shall be securely sewn into a seam for a clean finished appearance.

_____Comply _____Exception

SEWN ON RETROREFLECTIVE LETTERING

Each jacket shall have

3" lime/yellow 3M Scotchlite™ lettering on Row A reading: CATOOSA

_____Comply _____Exception

LETTER PATCH

Hanging Letter Patch
The Hanging letter patch shall be constructed of a double layer of outer shell material. The letter patch will attach to the rear inside hem of the jacket with a combination of snap fasteners and FR hook and loop fastener tape. 3" letters for firefighter's name shall be sewn on.

_____Comply _____Exception

COLLAR & FREE HANGING THROAT TAB

The collar shall consist of a minimum four-layer construction and be of one-piece design. The outer layers shall consist of one layer of specified outer shell material on outside and a layer of PCA black Advance™ as standard on the inside and two layers of specified moisture barrier. The rear inside ply of aramid pajama check 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 a minimum of 3 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 outer shell and moisture barrier shall be joined to the body panels with two rows of stitching. The collar's front layers of moisture barrier and outer shell shall have a strip of ⅝ inch wide FR hook fastener tape stitched to the inside lower edge and running the full length of the collar. The inside strip of ⅝ inch wide FR hook fastener tape sewn to the underside of the collar shall engage a corresponding piece of FR loop fastener tape on the neck extension of the liner system. A self-material fabric hanger loop shall be sewn at the top of collar.

The throat tab shall consist of a minimum 4-layer construction and it shall be of 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 3½ inches wide at the center tapering to approximately 2 inches at each end with a total length of approximately 9 inches. The throat tab will be attached to the right side of

the collar by a 1 inch wide by 1½ inch long piece of Nomex® twill webbing. The throat tab shall be secured in the closed and stowed position with FR hook and loop fastener tape. The FR hook and loop fastener tape shall be oriented to prevent exposure to the environment when the throat tab is in the closed position. A 1½ inch by 3-inch piece of FR loop fastener tape shall be sewn horizontally to each end of the throat tab and a 1 inch by 3-inch piece of FR hook fastener tape shall be sewn horizontally to the throat tab. A corresponding piece of FR hook fastener tape measuring 1 inch by 3 inches shall be sewn horizontally to the leading outside edge of the collar on the left side, for attachment and adjustment when in the closed position and wearing a breathing apparatus mask. The collar closure strap shall fold in half for storage with the FR loop fastener tape engaging the FR hook fastener tape.

_____Comply _____Exception

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 approximately 3 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. There shall be wicking barrier constructed of Crosstech 2F moisture barrier material installed on the front closure system on the left and right side directly below the front facings to ensure continuous protection and overlap. The wicking barrier shall extend no more than a maximum of ¾ inch beyond the inner facing and false facing shall be unacceptable. The thermal liner and moisture barrier assembly shall be attached to the jacket facings by means of snap fasteners.

_____Comply _____Exception

STORM FLAP

A rectangular storm flap measuring approximately 3¼ inches (6 inches for hook and dee inside/FR hook and loop fastener tape outside closure; aka #7C) wide and a minimum of 21 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 backtacks.

_____Comply _____Exception

STORM FLAP AND JACKET FRONT CLOSURE SYSTEM

The jacket shall be closed by means of a 20-inch size #10 heavy duty high-temp smooth-gliding YKK Vislon® zipper on the jacket fronts and FR hook and loop 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 fronts. The storm flap shall close over the left and right jacket body panels and shall be secured with FR hook and loop fastener tape. A 1½ inch piece of FR 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 piece of FR

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.

_____Comply _____Exception

SEMI-EXPANSION (BELLOWS) POCKETS

Each jacket front body panel shall have a 8 inch wide by 8 inch high semi-expansion pocket double stitched to it and shall be located to provide accessibility. The leading edge of the pockets shall be sewn flush with the jacket. The rear of the pockets shall expand to a depth of 2 inches. *The semi-expansion pocket shall be reinforced with a layer of Kevlar® approximately 5 inches up on the inside of the pocket*. Two rust resistant metal drain eyelets shall be installed in the bottom of each semi-expansion pocket to facilitate drainage of water. The pocket flaps shall be constructed of two layers of outer shell material and shall measure approximately 3 inches deeper than the pocket expansion and ½ inch wider than the pocket. The pocket flaps shall be angled with the front edge 1" shorter than the back edge, the upper pocket corners shall be reinforced with proven backtacks, and pocket flaps shall be reinforced with backtacks. The pocket flaps shall be closed by means of FR hook and loop fastener tape. Two pieces of 1½ inch by 3-inch FR 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 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 will be provided under the expandable cargo pocket. This compartment will be accessed from the rear of the pocket and shall be lined with Nomex® fleece for warmth and comfort.

_____Comply _____Exception

SLEEVES

The sleeves shall be of two-piece construction and contoured, having an upper and a lower sleeve. 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 will consist of two darts, rather than pleats, to allow added length in the under sleeve. The moisture barrier darts will 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 jacket rise. Neither stove-pipe nor raglan-style sleeve designs will be considered acceptable.

_____Comply _____Exception

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-inch 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; a single row of stitching shall be considered unacceptable. This independent cuff provides an additional layer of protection as compared to a turned and stitched cuff. Jackets finished with a turned and stitched cuff do not provide the same level of abrasion resistance and will be considered unacceptable.

_____Comply _____Exception

WRISTLETS / SLEEVE WELLS

Each jacket shall be equipped with **Nomex® knit wristlets with thumb loop** not less than 4 inches in length and of double thickness. Nomex® knit is constructed of 96% Nomex® and 4% Spandex for shape retention. A loop of ½ inch wide black 6.0 oz. Brigade material shall be installed on each wristlet. This loop is designed to slip over the thumb and hold the wristlets from riding up the arm. The color of the wristlets shall be grey.
The wristlets shall be sewn to a piece of self-material leader that is then stitched into the cuff. Four Ara-shield® snap tabs will be sewn into the juncture of the sleeve well and wristlet. The tabs will be spaced equidistant from each other and shall be fitted with female snap fasteners to accommodate corresponding male snap fasteners and one color coded Ara-shield® snap tab sewn onto the liner sleeves. One of the Ara-shield® snap tabs on the shell shall be a different color to correspond with color coded snap tabs for ease of matching the liner system to the outer shell after inspection or cleaning is completed. This configuration will ensure there is no interruption in protection between the sleeve liner and wristlet.

_____Comply _____Exception

LINER SHOULDER THERMAL ENHANCEMENT WITH TRAPPED AIR CHANNELS

A minimum of one additional layer of thermal liner material shall be used to increase thermal insulation in the 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, and 5 inches to the front, 2 inches to the back of the shoulder cap. The 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 layer shall have finished edges by means of overedging. Raw or unfinished edges shall be considered unacceptable. 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.

_____Comply _____Exception

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 jacket 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 3 inches longer than the depth of the pocket and approximately ¼ inch wider than the pocket. The pocket flap shall be closed by means of FR hook and loop fastener tape. A 1½ inch by 3-inch piece of FR hook fastener tape shall be installed 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 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 3.5 inches wide by 8 inches high and shall be installed on the left chest.

_____Comply _____Exception

MICROPHONE STRAP

A strap shall be constructed to hold a microphone for a portable radio. It shall be sewn to the jacket at the ends only. The size of the microphone strap shall be 1-inch x 3 inches. The microphone strap shall be mounted above the radio pocket and shall be constructed of double layer outer shell material.

_____Comply _____Exception

HELMET SNAP w/SELF STRAP AND HOOK & LOOP STRAP

Each jacket shall be equipped with a Helmet Snap & Strap. An inward facing safety hook, attached to a double layer self-material strap, shall be double stitched in a vertical position to the upper chest. Below the safety hook will be a strap constructed of outer shell material measuring approximately 1 inch by 12 inches and shall hold the barrel of the flashlight. The strap will be equipped with a 1 inch by 3 inches FR hook and loop closure at front of the strap to facilitate easy removal of the flashlight. There shall be approximately 6 inches between the safety hook and strap. The helmet strap shall be located on the right chest.

_____Comply _____Exception

SUNLANCE FLASHLIGHT HOLDER

_____Comply _____Exception

EMBROIDERED AMERICAN FLAG – RIGHT SLEEVE

Each jacket shall have a Nomex® embroidered American flag that measures approximately 2½ inches high by 3½ inches wide. Per Military protocol the field of stars shall be to the top right corner for installation on the right sleeve. Flags made of fabric other than Nomex® shall be considered unacceptable.

_____Comply _____Exception

PANT CONSTRUCTION

BODY

The pant design facilitates the transfer of the weight of the pant to the hips instead of the shoulders and suspenders.

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.

The front body panels shall be wider than the rear body panels to provide more fullness over the knee area. This is accomplished by rolling the side leg seams (inside and outside) to the rear of the pant leg beginning at the knee. The slight taper shall prevent premature wear of the side seams by pushing them back and away from the primary high abrasion areas encountered on the sides of the lower legs.

_____Comply _____Exception

SIZING

In order to ensure that every member of the department can safely perform to the maximum of their ability without extra bulk and without restriction, Pants shall be available in all sizes and dimensions as follows:

Pants:

Gender:	Gender specific Men's and Women's patterns
Waist:	Even sizes ranging from 24 to 56
Body Shape:	Relaxed and Regular
	Note: Relaxed is a fuller cut in the hips and thighs, like relaxed jeans.
Inseam:	Even sizes

Pants available in only one standard shape shall not be acceptable. Generalized sizing, such as small, medium, large, etc., shall not be considered acceptable.

_____Comply _____Exception

PANT LINER SYSTEM

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 body of the liner system (thermal liner & moisture barrier) shall be of a four-piece design to match the cut of the shell to include the rolled back side seams. The design of the liner system shall incorporate darts in the knee area providing a contour to the leg and shall also have a reverse boot cut at the rear of the liner cuff and a concave cut at the front to keep the liner from hanging below the shell.

_____Comply _____Exception

LINER ACCESS OPENING - PANT

The thermal liner and moisture barrier layers of the pant liner system shall be constructed in such a way as to allow an access opening for interior inspection, service and replacement. The thermal liner and moisture barrier layers shall be stitched together for security and prevention of inadvertent use of one layer without the other. The liner system shall have a reinforcement material 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 pants.

The liner system of the pant shall incorporate an opening along the back of the waistline for ease in inspecting the inner layers and to facilitate performing the complete Liner Inspection. The thermal liner and moisture barrier shall be individually bound with a neoprene coated bias cut tape and joined together on each of the front panels, along the waistband from the front fly opening to side seam. The back of the liner system shall be allowed to remain open with two snaps on either side of the back seam to attach the moisture barrier layer to the thermal liner layer. As described previously, the pant thermal layer system snaps directly to the independent waistband by means of nine snap fasteners. There shall be no hook and loop used to close the liner access opening.

_____Comply _____Exception

WAISTBAND

The waist area of the pants shall be reinforced on the inside with a separate piece of black aramid outer shell material, cut on the bias (diagonally). The reinforcement shall be folded in half, for a finished bottom edge and shall have a finished width of not less than approximately 1½ inches. The top edge of the waistband reinforcement shall be double stitched to the outer shell at the top of the pants. The lower edge of the waistband shall be 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 by means of nine snaps, spaced equidistant along the length of the waistband reinforcement. Inserting the liner system between the waistband reinforcement and outer shell serves to reduce the possibility of liner detachment while donning and doffing. The independent waistband construction affords greater comfort and fit than a turned and stitched method. Pants that do not include an independent waistband or are not cut on the bias shall not provide the same amount of stretch to the garment and shall be considered unacceptable.

_____Comply _____Exception

EXTERNAL/INTERNAL FLY FLAP

The pants 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 2½ inches wide, with a length graded to size based on waist measurement 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, with a length graded to size based on waist, 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 underside of the outside fly flap shall have a 1½ inch wide piece of FR loop fastener tape quadruple stitched along the full length and through the shell material only; stitching shall not penetrate the moisture barrier insert between the two layers to insure greater thermal protection and reduced water penetration. A corresponding strip of 1½ inch wide piece of FR hook fastener tape shall be quadruple stitched to the outside right front body panel securing the fly in a closed position.

Appropriate snap fastener halves shall be installed at the leading edge of the waistband for the purpose of further securing the pants in the closed position.

_____Comply _____Exception

RETROREFLECTIVE FLUORESCENT TRIM

The pants shall have a stripe of retroreflective fluorescent trim encircling each leg below the knee to comply with the requirements of NFPA #1971 in 3-inch lime/yellow 3M Comfort Trim™.

Bottom of trim band shall be located approximately 3” above cuff.

_____Comply _____Exception

REINFORCED TRIM STITCHING

All reflective trim is secured to the outer shell with Nomex® thread, using a locking chainstitch protected by 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. Two rows of stitching used to attach the trim in place of shall be considered an unacceptable alternative. All trim ends shall be securely sewn into a seam for a clean finished appearance.

_____Comply _____Exception

CARABINER HOLD DOWN STRAP

The pant shall be equipped with a carabiner hold down strap. The strap shall be constructed of double layer black Ara-Sheild® material, consisting of two separate portions to form a strap with an opening of approximately 3 inches. Each portion of the strap shall measure approximately 1¾ inches wide by 3½ inches long. The lower portion of the strap shall be double needle stitched in the vertical position, opening upwards. There shall be a piece of 1½ by 2½ inch hook FR fastener tape single needle stitched to the strap approximately ¼ inch up from the bottom. The upper portion of the strap shall be double needle stitched in the vertical positon, opening downwards to interface with the lower portion of the strap. There shall be a piece of corresponding 1½ by 2½ inch loop FR fastener tape single needle stitched to the strap approximately ½ inch down from the top of the strap. On both the upper and lower portions of the strap, there shall be a bartack centered between the double needle stitching. The strap shall be located behind the left front belt loop.

In the event the IH Pant is ordered with the Escape Belt, there shall be an additional carabiner hold down strap, added to the right front belt loop.

_____Comply _____Exception

INTERNAL SEAT HARNESS SERIES 2

The internal seat harness shall be independently certified to NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services, as a Class II harness. The harness shall consist of a 1¾ inches Kevlar® waist belt with an external hardware loop made from 2-inch-wide black Kevlar® webbing. All ends of webbing shall be reinforced with a coated fabric to prevent raveling. The waist belt, graded to waist size, shall secure at the front with a hook and an adjustable D-ring closure. This closure system is also the positive front closure for the pants. Attached to the waist belt are a left and a right 2-inch Kevlar® webbing leg loop, constructed without hardware, and graded for the circumference of the pant legs. The external hardware loop connecting each individual leg loop is constructed from two combined layers of webbing which form an A-frame and a connection point for the hardware. The leg loops shall be secured to the waist belt by means of a slot formed by an opening in the stitching combining the layers. This construction allows the leg loops to rest lower on the legs for less restriction when the harness is not loaded, but with the ability to snug up higher against the body when the harness is loaded. The slot openings 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 under the front belt loops on each side of the pants

front closure. The center of the hardware loop shall be sewn to narrow the width at its center and reinforced on the outside with a layer of Ara-Shield® material. Sewn to the inside of the center of the hardware loop shall be a 1-inch webbing, which forms a ring to secure the pin of the specified ladder hook. The A-frame hardware loop shall be sized to permit the ladder hook to be secured to the keeper strap located on the front left side of the pants. This hardware loop must be positioned so as to allow the use of the ladder hook without deploying the escape system, and to accommodate donning and doffing of the pants with all hardware installed. A D-ring with a sliding bar shall be attached to the hardware loop to connect to the escape system in the right pocket.

_____Comply _____Exception

YATES CARABINEER

The ladder hook shall be a **YATES** ANSI Ladder Carabineer (blue in color) and shall be third party certified to NFPA 1983 and ANSI Z359.12-11 (Fed OSHA requires compliance with ANSI Z359.12-11 for "Positioning Lanyards"). The gate shall open by pushing the gate away from self and twisting the gate 45 degrees, requiring only one hand for operation when attached to the harness. The escape system (locking carabineer, rope, descender, and hook) is not supplied with the pants.

_____Comply _____Exception

SEAT

The rise of the rear pant 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 pant by approximately 8 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.

_____Comply _____Exception

EXPANSION (BELLOWS) POCKETS (Left) with THREE PACK KEVLAR TOOL POUCHES

One 2-inch-deep by 10-inch-wide by 10-inch-high bellows pocket shall be placed over the outer leg seams at thigh level. The pocket shall be sewn to the pant with two rows of lock stitching and shall provide two aluminum eyelets, installed at the bottom of the pocket, for water drainage. *The pocket shall be reinforced with an additional layer of Kelvar material sewn to the inside.* The pocket flap shall be rectangular in shape, constructed of two layers of outer shell material and double stitched to the outer shell. Two pieces of 1½ inch by 3-inch FR hook fastener tape shall be installed on the inside of the pocket flap vertically on each end of the flap. Two pieces of corresponding 1½ inch by 3-inch FR loop fastener tape shall be installed horizontally on the outside of each end of pocket near the top and positioned to engage the hook fastener tape. Each pocket flap shall be reinforced with backtacks at the uppermost corners.

_____Comply _____Exception

EXPANSION (BELLOWS) IH ROPE POCKET (Right)

One 2-inch-deep x 10-inch-wide x 10-inch-high bellows pocket shall be placed over the outer leg seam at thigh level. The pocket shall be sewn to the pant with two rows of lock stitching and shall provide two eyelets, installed at the bottom of each pocket, for water drainage. *The pocket shall be reinforced with an additional layer of outer Kevlar® material sewn to the inside.* The pocket flap shall be rectangular in shape and measure a minimum of 6 inches by a minimum of 11 inches, constructed of two layers of outer shell material and double stitched to the outer shell. Six pieces of 1½ inch by 3-inch FR hook fastener tape shall be installed vertically on the inside of each pocket flap – the six pieces shall form three rows, one each side and one in the middle, each row consisting of two pieces of FR hook fastener tape. Three pieces of1 ½ inch by 3-inch FR loop fastener tape shall be installed horizontally on the outside of the pocket near the top and positioned to engage the hook fastener tape. The pocket flap shall be reinforced with backtacks at the uppermost corners. A 2-piece loop constructed of a double layer of black outer shell material shall be installed under the front edge of the pocket flap. The top and bottom of the loop shall attach to each other with a 1-inch x 1-inch FR hook and loop fastener tape sewn to ends. Inside the pocket, a strap constructed of black outer shell material measuring approximately 1 inch by 9 inches (when hook and loop is engaged) shall run the full vertical height of the pocket where it shall secure at the top with hook and loop fastener tape. A second strap shall be installed horizontally at the top front corner of the pocket. This strap shall be constructed of black outer shell material and measure approximately 1 inch by 4 inches and shall be sewn at one end and attach at the other end with hook and loop fastener tape. The straps are specially designed to secure the contents of the pocket and allow for quick release.

_____Comply _____Exception

EXPANSION POCKET REINFORCEMENTS

The lower half of the expansion pockets shall be reinforced on the outside with a layer of black Dragonhide® material.

_____Comply _____Exception

KNEE

The outer shell of the pant 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. The pleats shall be folded to open outwardly towards the side seams to insure no restriction of movement. The knee shall be installed proportionate to the pant inseam, in such a manner that it falls in an anatomically correct knee location.

The thermal liner shall be constructed with four darts per leg in the front of the knee. Two darts shall be located above the knee (one on each side) and two shall be located below the knee (one on each side). On the moisture barrier, the system shall consist of two darts, rather than pleats, to allow added length in the under knee. 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.

_____Comply _____Exception

LINER KNEE THERMAL ENHANCEMENT

A minimum of one additional layer of specified thermal liner and one additional layer of moisture barrier material, measuring a minimum of 9 inches by 11 inches, shall be sewn to the knee area of the liner system for added CCHR protection and increased thermal insulation in this high compression area. 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. The thermal enhancement layer shall have finished edges by means of overedging. Raw or unfinished edges shall be considered unacceptable. 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.

_____Comply _____Exception

KNEE REINFORCEMENTS

The knee area shall be reinforced with a layer of black Dragonhide® material.

The knee reinforcement shall be centered on the leg to insure proper coverage when bending, kneeling and crawling. The knee reinforcements shall measure approximately 9 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. Knee reinforcements of a smaller size do not provide the same protective coverage and shall be considered unacceptable. The knee reinforcement specified shall be removable for replacement without opening Major A seams of the outer shell of the pant.

_____Comply _____Exception

PADDING UNDER KNEE REINFORCEMENTS

Padding for the knees shall be accomplished with one layer of **Silizone**® foam, sandwiched between the thermal liner and moisture barrier. The placement of Silizone® padding on the thermal versus the shell reduces bulk in the shell and also serves to protect the padding from abrasion and other wear issues that the outer shell is subject to. Pants with Silizone® knee padding on the shell as opposed to on the liner, do not provide the same level of bulk reduction and abrasion resistance and are not recommended.

_____Comply _____Exception

PANT CUFF REINFORCEMENTS

The cuff area of the pants shall be reinforced with a layer of black Dragonhide® material

The cuff reinforcement shall not be less than 2 inches in width and folded in half, approximately one half inside and one half outside the end of the legs for greater strength and abrasion resistance. The cuff reinforcement shall be double stitched to the outer shell for a minimum of two rows of stitching. This independent cuff provides an additional layer of protection over a hemmed cuff. Pants 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.

_____Comply _____Exception

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 in front, 2 in back. The suspender attachments shall be constructed of black Ara-Shield® material 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 pants. The main body of the suspenders shall be constructed of 2-inch-wide black webbing straps. 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 aramid.

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 with teeth. 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 aramid suspender attachments incorporating two snap fasteners. The aramid suspender attachments are to be threaded through the suspender attachment loops on the inside waistband of the pants. The aramid suspender attachments shall then fold over and attach to themselves securing the suspender to the pants.

_____Comply _____Exception

REVERSE BOOT CUT

The outer shell pant 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 pant cuffs.

_____Comply _____Exception

THIRD PARTY TESTING AND LISTING PROGRAM

All components used in the construction of these garments shall be tested for compliance to NFPA Standard #1971 by Underwriters Laboratories (UL). Underwriters Laboratories shall certify and list compliance to that standard. Such certification shall be denoted by the Underwriters Laboratories certification mark.

_____Comply _____Exception

LABELS

Appropriate warning label(s) shall be permanently affixed to each garment. Additionally, the NFPA Certification label shall include the following information.

Compliance to NFPA Standard #1971
Underwriters Laboratories classified mark
Manufacturer's name
Manufacturer's address
Manufacturer's garment identification number
Date of manufacture
Size

_____Comply _____Exception

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.

_____Yes _____No

WARRANTY

The manufacturer shall warrant these jackets and pants to be free from defects in materials and workmanship for their serviceable life when properly used and cared for.

_____Comply _____Exception

HOOK AND LOOP SUPPORT PROGRAM

Support program shall cover hook or loop tape that has begun to fray or otherwise degrade from normal wear. This program shall remain in effect for a period of five years from the original date of manufacture of the garment. This support program shall cover the repair or replacement, without charge, of any hook and/or loop on the garments produced by the manufacturer providing the garments are otherwise serviceable.

This support program does NOT cover damage from fire, heat, chemicals, misuse, accident or negligence. Failure to properly care for garments will serve to void this support program.

_____Comply _____Exception

SIZING BY VENDOR

Both male and female sizing samples shall be available and shall be used for measuring firefighters. The vendor shall be available to perform all sizing requirements within 96 hours of written notice.

Vendor shall provide on-site measuring for a total of three days, giving each firefighter an opportunity to be measured on their shift day. Sizing samples shall be used for measuring firefighters for proper fit.

_____Comply _____Exception

GARMENT TRAINING AND SUPPORT

OSHA requires employees be trained on the capabilities and limitations of their Personal Protective Equipment. The selected vendor shall provide the following:

Three on-site training classes on the Knowing the Limits of Your PPE shall be provided at no charge. The training shall also include care and maintenance education for the entire PPE including helmets, gloves and footwear. One class will be provided for each shift.

_____Comply _____Exception

BAR-CODE/RECORD KEEPING INTERFACE

A 1-dimensional barcode, in the interleaved 2 of 5 format shall be printed on the label of each separable layer of the garment.

This barcode shall represent the serial number of the garment. The manufacturer shall be able to provide a detailed list of each asset of a drop-shipped order, and shall include the following:

- Brand
- Order Number
- Serial Number
- Style Number
- Color
- Description
- Chest/Waist Size
- Jacket/pant Length
- Sleeve Length
- Date of Manufacture
- Mark-For Data

This information shall be able to be imported into the manufacturers web-based system designed to facilitate the organization and tracking of assets in accordance with the cleaning and inspection requirements of OSHA and NFPA 1851.

_____Comply _____Exception

PPE RECORD KEEPING

The manufacturer shall make available and no-charge, a password protected data based backed website that does not care whose brand of PPE assets are being recorded. The website shall have the functionality to allow the manufacturer to import all of the pertinent data into the department's account so that the initial data entry by fire department personnel is eliminated.

The website shall allow for the department to use a barcode scanner, if desired, to scan the Interleaved 2 of 5 barcode found in the gear by going to the Search the Serial Number page in PPE record keeping program and scanning the asset's barcoded serial number.

_____Comply _____Exception

EXCEPTIONS TO SPECIFICATIONS AND BID SAMPLE

Any and all exceptions to the above specifications must be clearly stated for each heading. Use additional pages for exceptions, if necessary. If not meeting the specifications exactly, ***a sample jacket and trousers proposed with any exceptions listed shall be delivered at the time of the bid.***

_____Comply _____Exception

LOANER GEAR PROGRAM

Manufacturer shall offer loaner gear for no charge for use when jackets or trousers are sent back for warranty repair or replacement. This program should also be available for rental when emergencies occur, and the Department needs bunker gear immediately.

_____Comply _____Exception

COUNTRY OF ORIGIN

Jackets and Pants shall be manufactured in the United States.

_____Comply _____Exception