कार्यालय पुलिस महानिरीक्षक, पीएसी, पश्चिमी जोन, मुरादाबाद।

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पत्रांकः पीएसी–डब्लूजैड–एचसी–4–2014(बी0पी0जैकेट) दिनांकः फरवरी 13, 2014

अल्पकालिक सूचना

उत्तर प्रदेश पुलिस के प्रयोगार्थ बुलेट प्रूफ जैकेट की आवश्यकता है। बुलेट प्रूफ जैकेट का क्रय भारत सरकार के उपक्रमों के माध्यम से क्रय हेतु शासनादेश संख्या 1783/18–5–08/32(एसपी)/2008 दिनांक 03–12–2008 द्वारा पुलिस विभाग को प्राधिकृत किया गया है। अतः पी0एस0यू0–एम0एम0टी0सी0 नई दिल्ली जैसे भारत सरकार के अन्य उपक्रमों से क्रय किया जाना प्रस्तावित है।

2– एम0एम0टी0सी0 एवं पी0ई0सी0 नई दिल्ली जैसे भारत सरकार के अन्य उपक्रम अपने सील्ड तकनीकी भाव पत्र एवं वित्तीय भाव पत्र तथा स्पेसिफिकेशन के अनुसार सैम्पिल निर्धारित समय सारणी की तिथि 22–02–2014 को समय 13:00 बजे तक कार्यालय पुलिस महानिरीक्षक, पीएसी, पश्चिमी जोन, मुरादाबाद को प्रेषित करें, जिससे उन पर विचारण किया जा सके। उपकरण की तकनीकी विशिष्टियां उत्तर प्रदेश पुलिस की वेबसाइट http://uppolice.gov.in/ एवं उत्तर प्रदेश सूचना विभाग की वेबसाइट www.upgov.nic.in से डाउनलोड की जा सकती है। इस सम्बन्ध में कोई भी जानकारी किसी भी कार्य दिवस में कार्यालय पुलिस महानिरीक्षक, पीएसी पश्चिमी जोन मुरादाबाद से **दूरभाष संख्या 0591–2412971 एवं मोबाइल न0 09454418842** पर भी प्राप्त की जा सकती है।

क्रम सं0	उपकरण का नाम	संख्या	आपूर्ति की अवधि	आपूर्ति का स्थान	विवरण
1	**Bullet Proof Jacket Level III+**	**409**	**25–03–2014 तक**	**23वीं वाहिनी, पीएसी, मुरादाबाद, उत्तर प्रदेश**	**स्पेसिफिकेशन के अनुसार**

समय सारणी निम्नवत् निर्धारित की गई हैः–

1–	तकनीकी भाव पत्र तथा वित्तीय भाव पत्र एवं सैम्पिल जमा करने की अन्तिम तिथि	22–02–2014 समय 13:00 बजे तक
2–	तकनीकी बिड का खोला जाना	22–02–2014 समय 14:00 बजे
3–	तकनीकी समिति की बैठक एवं उपकरणों का प्रदर्शन	22–02–2014 समय 15:00 बजे
4–	अर्ह पायी गयी फर्मो की फाइनेंन्सियल बिड खोले जाने की तिथि	तकनीकी समिति की आख्या प्राप्त होने पर निर्धारित की जायेगी।
5–	क्रय समिति की बैठक	उपरोक्तानुसार

(बृज भूषण)
पुलिस महानिरीक्षक, पीएसी,
पश्चिमी जोन, मुरादाबाद/
अध्यक्ष क्रय समिति

(COPY OF SPECIFICATION AFTER CORRECTION)

U.P. POLICE

SPECIFICATION FOR BULLET PROOF JACKETS Level III+ (360° Protection)

DESIGN PARAMETERS FOR BP JACKETS

A. Shall conform to NIJ Standard of Ballistic Resistance of Personal Body Armour and against Indian ordinance factory ammunition (NIJ Standard – 0101.04 updated revision 'A' & 'B'). Protection against all of the following weapons:

Level III+

(i) 9x19 mm cartridge fired through Sub Machine Gun (such as sten machine, MP5, Carbine, any other variant) and Indian Ordinance Factory ammunition from a distance of 5 meters to achieve a muzzle velocity 430±15 m/s and the weight of the bullet between 7.4 gm to 8.2 gm.

(ii) 7.62x51mm cartridge NATO ball ammunition fired through 7.62 mm SLR/bolt action rifle and Indian Ordinance Factory ammunition from a distance of 10 meters to achieve a muzzle velocity 830 m/s ± 15 m/s and the weight of the bullet 9.4 g to 9.6g.

(iii) 7.62x39 mm Indian Ordinance Factory Ammunition (Hard steel core bullet) cartridge fired through AK series rifles from a distance of 10 meters to achieve maximum attainable muzzle velocity and the weight as per specification.

(iv) 5.56 mm rounds fired from 10 meters from INSAS rifle to achieve maximum attainable muzzle velocity and the weight as per specification.

(V) 12 bore shot (solid slug) fired through full length shotgun from distance of 10 meters to achieve maximum attainable muzzle velocity and the weight as per specification.

B. **Vest:** should have the components mentioned in Para D below. Each component should be made of multi layers of same material. Each layer will be in single piece and of equal shape and size to maintain uniform thickness all over area up to edge level.

C. **SIZES OF SOFT ARMOUR PANEL (SAP):** STANDARD AND LARGE.

D. **AREAS OF COMPONENTS OF SOFT ARMOUR PANEL**

Minimum coverage area of the soft armour panel as per the sizes will be as under:

S. No.	PANEL	STANDARD SIZE (Sq.Mtr.)	LARGE SIZE (Sq.Mtr.)
1	FRONT	0.15	0.18
2	BACK	0.24	0.26
3	COLLAR (TOTAL)	0.06	0.06
4	SHOULDER (TOTAL)	0.04	0.04
5	GROIN	0.06	0.06
	TOTAL	0.55	0.60

(i) **Negative tolerance in terms of area measurement is not permissible.**
(ii) **Measurements will be made with the help of scaled drawing on graph paper and using planimeter.**

E. WEIGHT OF THE JACKET

Total weight of BP Jacket including HAPs, SAPs, trauma pads and outer carrier should not exceed as mentioned below:-

(i) Standard size - 7.7 kg

(iii)Large size - 8.0 kg

Note: The weight of the jacket as mentioned above should provide and ensure the protection against ammunition of Indian Ordinance Factory.

The weight of side penal (HAP) will be excluded from above weight and the same should not be more than 1.5 kg.

F. **SIZE OF HARD ARMOUR PANEL**-

- Front HAP: Multi curved, 1000 sq.cm (365mm x 305mm)
- Back Panel: 720 sq.cm (254mm x 305mm)

G. (1)-Shall consist of an outer carrier, removable Soft Armour Panels (SAP) of aramid fiber/ suitable material and Hard Armour Panel(HAP) should be of composite from Boron Carbide and made of High performance Polyethylene.

(2)-Coverage Area- Each layer of Ballistic material in any panel should be of the same Coverage Area as required for the complete panel. The coverage area will be measured from the Strike face.

H. BP JACKET - CONSTRUCTION:

(a) (i) It should be in the form of jacket to provide protection against 9mm bullet (Threat level IIIA of NIJ.) The bullet proof jacket should provide 360° degree all around body protection to front and back torso and groin, full sides, upper shoulders, neck and collar. The system should be flexible and allow complete freedom of movement without compromising the ability to acquire and neutralize threats from any firing position including when wearing a ballistic helmet. It should not restrict overall vertical movement of the neck of the wearer.

(ii) It should ensure snug fit that exactly fits the body contour. It should have hard armour panel flexible enough to follow the body contour thus ensuring that it does not hinder body movement and use of arms.

(iii) In case of emergency situation the jacket should have a special provision for instantaneous discard in one swift pull. It should be easy to open the vest in a sitting position and the jacket must split in two parts to get fast access to wounds. The jacket must have minimum two pull out/buddy straps.

(iv) The design and fitment of the BP Jacket should provide weight distribution over the waistline and shoulders instead of only shoulders, to enhance the wearer's comfort. Self suspending Ballistic system to keep ballistic panels in place, preventing sagging and/or bunching that can expose vulnerable areas.

(v) It should have provision to accommodate two HAP plates in front and back two side plates (as on requirement) as per dimensions specified in this documents. Shall be lightweight and comfortable, providing optimum mobility and speed.

(vi) Collar should be in double piece design and will give full round protection.

(vii) Groin protector will be attached to the jacket and having fasteners to fix in front when not in use.

(viii) Adjustable at the shoulders and waist with appropriate fasteners(Velcro's)

(ix) It should have double attachment system with closure fasteners in waist for better fitment.

(x) It should have provision to stop Rifle butt rest from Shoulder.

(xi) It should have a strong Drag handle on back panel at the upper neck position.

(xii) It should have provision of ventilation system for enhanced wearer comfort through use of 3-D fabric in the inner part for sweat absorption and breathability with good air circulation. The BP Jacket should have one cooling/ heating pack located at the back for the use in very cold or very hot ambient conditions.

(xiii) It should be designed to ensure proper height adjustment for the wearer. The Jacket should stay in position even when shoulder straps are off and wearer is jumping.

(xiv) It should have a flexible Harness Attachment System or MOLLE system on front and back of the vest to accommodate accessories and pouches if required. Space between two bar-tacks of MOLLE should be 3cm. It should have multipurpose side wings to secure the west around the waist, to provide adjustment and allow quick break away. Offers load attaching points for the sides of the west and to hold the side plate pouches which should be adjustable both vertically and horizontally.

(b) **VELCRO FASTENERS :** All the clothing flaps of the jackets should have high quality Velcro fasteners, so that it can be worn and taken off easily/quickly. The quality and report of Velcro including shears strength and peel strength should be as per Bureau of Indian Standards specification IS: 8156-1994. The IS: 8156-1994 may be available in the office of Bureau of Indian Standards. Vendors will submit test reports on Velcro from any NABL accredited lab or DMSRD (MoD), Kanpur.

(c) Pocket with Flaps:-The Jacket should be provided with two external pockets in outer carrier to house two magazines of 5.56 mm LMG in each pocket. Two pockets should also be

provided to accommodate on grenade (HE 36) in each pocket. The size of each magazine is 19 cm x 7.6 cm x 3.6 cm and size of HE 36 grenade is 110 mm x 65 mm.

(d) BELT/KAMARBANDH

An additional belt of nylon/polyester weaving with minimum width of 10 cm should be provided around the waist to properly secure the BP jackets with the body of the wearer around waist, so that weight of jacket is distributed on waist/shoulders. Kamarbandh should be of same materials as outer carrier with Velcro.

- Two pouches (one each on front and rear of outer carrier) should be provided to accommodate two HAPs as mentioned in specification so that jacket protects vital organs of body.
- Ballistic panels (SAPs and HAPs) shall be removable from outer carrier.
- Outer carrier shall be machine washable.

(e) Trauma pad for Trauma Attenuation: Trauma pad must be provided behind the SAPs so that it remains to body surface to provide proper cushioning.

- It must cover uniformly up to edge level of the SAPs.
- Back face signature (BFS) should not exceed 25 mm in plasticize block at 30± 2.9° centigrade temperature of plasticine.
- Drop test will be carried out as per NIJ standard against Indian Ordinance Factory ammunitions.

I. <u>MATERIALS</u>

- The outer carrier shall be made of high tenacity, heavy duty, abrasion proof and 100 % vest integrity fabric PU coated Nylon or 6.6 or suitable material
- The Fabric weight should not be less than 95 gm/m². The Fabric shall be treated for protection against water, fire (Fire retardant).
- Not Abrasive to skin.
- Inert to salt water and mud.
- The Fabric shall be treated for protection against water, fire (fire retardant) and ultra violet rays exposure.
- The Fabric must be suitable to wear in the Indian conditions of heart, rain and humidity.
- The inner side (body side) shall also be of a similar Fabric and shall be treated for moisture and water repellency.
- The cloth of the carrier must be pre-shrunk before stitching.
- BP jacket should be UV Proof.

Note:

(1) The methods of testing criteria for measuring the properties of outer carrier shall be as per IS: 11871-1986, IS: 3417-1979 (reaffirmed 1997), IS:392 -1989 and IS 391 – 1975.

SEWING THREAD

The thread used in sewing the vest carrier should be nylon or suitable material and the color of thread should match with the west following Indian standards.

Webbing and type

The webbing and tapes shall be constructed from robust strong material of good quality keeping in mind the use/miss use by personnel using the vest. All the cuts and ends should be heat sealed having no burrs or residual melts. Color fastness should match the relevant Indian standard.

The fabric must be suitable to wear in the Indian conditions of heat, rain and humidity. The inner side (body) shall also be of similar fabric and shall be shrunk before stitching. BP jackets should be UV resistant.

The tests specified will be conducted at a government institute, having required technical expertise. The institute will be selected by Technical Evaluation Committee in consultation with experts. All tests will be in accordance with the SOP. any changes in the SOP will be decided by Technical Evaluation Committee.

J. VEST FIT:

- The overall length of the BP jacket shall be such that there is no "ride up" while sitting.
- The overlapping degree of front and rear panels shall be such as to provide for maximum freedom of movement.

K. **COLOUR: CAMO**. The bidders will submit samples of BP Jackets of any camo color(Sand, Light green and dark brown)

L. **LABELLING:** The outer carrier and the two soft Armor panels must be labeled as per NIJ standards giving the following details.

Name of the Manufacturer:
Name of the Product:
Date of Manufacturing:
Date of Issue:
Threat level:
Size:
Serial No:
NIJ Standard:
Strike face of jacket should be clearly marked

M. SOFT ARMOUR PANEL (SAP)

- SAP shall be able to withstand NIJ threat level III A in respect of the caliber and the weapon selected for trial and other parameters such as weight & velocity of the bullet in ammunition selected for trials.
- Shall provide all round protection.
- Shall be made of 100% Aramid /suitable material.
- The weight of the Aramid/suitable Filament, denier and type of weave shall be so balanced as to make the SAP lightweight, soft and pliable.
- The aerial density of the panels shall be such as to provide the rated ballistic and Trauma protection.
- No tears, rips, worn spots, discolorations, loose or torn stitching and set wrinkles on the SAP shall be allowed.
- The panel shall be treated with approved and durable water repellant.
- The SAP shall be removable from outer carrier to allow for periodic cleaning.
- The SAP shall be placed in tightly sealed, water repellant and PU coated heavy duty fabric so as to make it completely waterproof.

  (a)Hydrostatic Head-Minimum 100 cms of water (Test Method IS:391-1975

  (b)Water penetration should be zero (Test Method IS:392-1989)
- In case the material used in Jacket is Aramid, the Aramid fiber layers shall be stitched in a rows and columns pattern with a distance gap of 12.5 ± 0.5 mm in case SAP is made of Aramid.
- Label should be stitched in the soft armour so that it should not be taken out easily from Panel.
- All layers must cover uniformly up to edge level.
- Thickness of the Soft Armour should not be more than 15 mm.
- Back face signature should not exceed 25 mm in plasticine block at 30 ± 2.9 degree centigrade temperature of plasticine.
- Drop test will be carried out as per NIJ standards.

Note: **Tenderers must declare number of layers and type of material (aerial density of material) used for fabricating Soft Armour Panel and Hard Armour Panel as per original manufacturer of the material. Raw Material Assurance Certificate (RAMC) must be given from original manufacturer in respect of material for SAP and HAP, valid for a period of six months from the closing date of tender. The vender has to declare the numbers of layers used for fabricating SAP and HAP of tender samples and they have to maintain the same in bulk supplies.**

N. HARD ARMOUR PLATE (HAP)

- Shall be made of composite materials made using a multi-curvature monolithic boron carbide ceramic tile and high performance polyethylene material to have comfortable body fit and light weight.
- The ceramic tile should be one piece and up to the edges of the HAP. There should be no joints/cracks in the ceramic plate.
- The ceramic tile should of density less than 2.6 g/cc. A certificate from the manufacturer of the ceramic used, certifying the same, must be enclosed.
- weight of the front HAP should not be more than 2.6 Kgs and of the back HAP should not be more than 1.9 Kgs.
- For Level III+ BP jacket, shall provide protection against all cartridge fired from the weapons mentioned in Para-A from a distance of 5 to10 meters in conjunction with soft armour penal.
- The jacket shall have 2 HAPs-for front & back.
- Shall be of minimum size as indicated below:-
    - Front HAP: Multi curved, 1000 sq.cm (365mm x 305mm)
    - Back Panel: 720 sq.cm (254mm x 305mm)
- The plates to cover the vital parts of the body.
- No negative tolerance will be acceptable.
- HAP shall be shielded in tightly sealed, water repellant and PU coated heavy-duty fabric so as to make it completely water proof.

Groin Hard Armour Plate (If required and provided)

The Hard Armour Plate will be provided of the same material as of the Front, back and sides Hard Armour Plates. And the same has to be provided as per the dimensions given below:

1. Size of the Groin HAP 150 mm x 180 mm.
2. Curvature of HAP will be curved suitably to fit body contour and plate has to be so placed in the groin pad so that it does not impede free movement of soldier during crawling and keeling positions.

O. ACCESSORIES

All accessories will be made in exact same fabric as outer carrier. Details are given below:

Single Magazine pouch	:	17.5 x 8.5x3 cm
Twin Magazine pouch	:	18x15x4 cm
Grenade pouch	:	11x10x4 cm
Radio set pouch	:	15x8x3 cm
Utility pouch	:	13x13x7 cm
Extra Rifle Magazine Pouch	:	17x12.5x7 cm

weight of Accessories is not included in above mentioned weight of jacket.

P. OTHER STIPULATIONS

JACKET STYLE	:	UP POLICE
SERVICEABILITY	:	10 YEARS (HAP, SAP & trauma pad)
GUARANTEE	:	The Outer Carrier along with trauma padding shall be guaranteed for a period of 2 years against all manufacturing defects
TEMPERATURE	:	-50 C to +50 C (Operating temperature)
HUMIDITY	:	95% at 40 C
STORAGE	:	Normal Room Temp should withstand operating temp. during open storage in field situations.

Q. IMMUNITY LEVEL:

(a) Hard Armor Plates: The HAPs are to be tested in conjunction with SAPs.

- The immunity levels are as indicated in Para A.

(b) Soft Armor Panels:

- Six shots fired through 9 mm Sub Machine Gun (Such as sten Machine, MP-5,Carbine any other variant) from a distance 5 meters, with a muzzle velocity 430 ± 15 m/s and the weight of the bullet 8.0 g ± 0.2 gm or 7.6 ± 0.2 (Indian make)

· **The velocities of bullets fired through weapons are given as follows:**

Armour Type	Test Bullet	Bullet weight	Reference Velocity (± 9.1 m/s)	Hits per Armor part at 0º angle of incidence	BFS* Depth Maximum	Shots per Panel
III A	9mm FMJ RN	8 g ± 0.2g	430± 15	4+2 at 30° angle	25 mm	6
	9mm FMJ RN (Indian make)	7.6 g ± 0.2 g	430± 15	4+2 at 30° angle	25 mm	6
III	7.62mm NATO FMJ	9.4g to 9.6g	838±15	6	25 mm	6
	7.62mm steel core (kirkee/IOF)	7.45g to 8.05g	715 ±15	6	25 mm	6
III +	7.62 SLR, 7.62 AK, 5.56 INSAS, 12 bore solid slug, Indian ball	Indian ball	Maximum attainable at prescribed distances	6	25 mm	6

- BFS – **Back Face Signature on Plasticine.**
- **Selected weapon and lot of ammunition, for which reference velocity has been once achieved, will remain the same throughout ballistic testing of all tender samples of various firms.**
- **All tests will be accordance with the SOP. Any changes in the SOP will be decided by Technical Evaluation committee.**

Testing Criteria

(i) Scientific inspection/ballistic trial of these BP jackets will be conducted as per NIJ standard 0101-04 incorporating revision 'A' & 'B' for BP jackets.

(ii) Groin Pad will be tested ballistic ally with 9 mm SMC. Three evenly spaced fair hits at zero degree angle of incidence shall be taken and BFS should not exceed 25 mm.

Miscellaneous

(i) The supplier/manufacturer shall provide one number of BP jackets of the ordered size along with HAP at their cost from the lot of every 500 numbers but minimum four nos. per lot of jackets for the purpose of the ballistic test/evaluation of the tendered specifications at the time of materializing the supply. These will be selected prior to dispatch at random in the factory premises.

(ii) While submitting the samples for tender, the supplier shall mention the exact area of SAP and HAP and give the template of the jackets as per the area, so that import of raw materials of the BP jackets will be allowed accordingly.

(iii) Five tender samples are required for technical evaluation from a firm.

(iv) Each model/brand of BP jackets should be submitted against a separate tender form.

(v) Testing facilities :

Ballistic trials as per the QRs will be held at TBRL/CFSL Chandigarh or any other facility as decided by Technical Evaluation Committee.

(Arun Kumar Sharma) Scientific Officer FSL Unit, Moradabad Range/Member Tech. Committee	(Abha Singh) Dy.Comdt.47th Bn.PAC, Ghaziabad/Member Tech.Committee	(Poonam Srivastava) Comdt.23rd Bn. PAC, Moradabad/Member Tech. Committee	(D.P.Srivastava) Comdt.49th Bn. PAC, GB Nagar/Member Tech. Committee	(B.R.Meena) Dy.Inspr.Genl. of Police, Moradabad Sector PAC/Member Tech.Committee