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फाइल नं० 52/04/2018-Mod (W) Pt. I
भारत सरकार Government of India
गृह मंत्रालय Ministry of Home Affairs
पुलिस अमसंधनान एवा वित्त ब्यूरो
Bureau of Police Research & Development

MOST IMMEDIATE
NH-8, New Delhi-37

Date :- दिनांक **June, 2019**

To

Director General : BSF, CRPF, CISF, ITBP, SSB, NSG and Assam Rifles.
Director: BIS, TBRL Chandigarh, GFSU Ahmedabad, Gujarat

Subject : Qualitative Requirements (QRs) and Trial Directives (TDs) of Tactical Ballistic / Hit / Flank Shield.

Sir(s)/Ma'am(s),

The Qualitative Requirements and Trial Directives of Tactical Ballistic Shield / Hit / Flank Shield which will provide the protection against 7.62 x 54 R API and 7.62 x 39 mm (Hard Steel Core) on striking face and non striking face respectively, as per enclosed as **Annexure** has been approved by the competent Authority in BPR&D in accordance to MHA letter no. F. No. 11012/02/2009-Fin-I/Prov-1.17 dated January 2, 2018.

2. Tactical Ballistic Shield / Hit / Flank Shield is protective gear and therefore, putting detail QRs of such item on web site may not be in the interest of nation keeping in view of its security. However, while floating tenders / RFP, utmost care needs to be taken to have effective transparency in the procedure, keeping in view the guidelines used by the CVC on the subject.

Yours Sincerely,

Encl: **Annexure**


(Karuna Sagar)

IG/Director (Mod)

Email:- igmod@bprd.nic.in

Copy for information to:-

JS (PM), MHA, 26 Man Singh Road, Jaisalmer House, New Delhi.

QUALITATIVE REQUIREMENTS (QRs) AND TRIAL DIRECTIVES
OF TACTICAL BALLISTIC /HIT / FLANK SHIELD

1. General

1.1 Ballistic shields are used primarily by law enforcement agencies in situations where there is an expected ballistic threat, including high-risk warrant entry, tactical entry, barricaded subject response, officer/victim rescue, active shooter response, and negotiations. The shield is carried until the ballistic threat is eliminated, and then the shield is discarded, due to its weight, until the mission is completed. Ballistic shields are also routinely used during explosive breaching entry to protect from secondary fragments, such as door and structure fragments, resulting from the explosion. Ballistic shields are sometimes used in suicide bomber approach and explosive device perimeter activities; however, it is suggested/advisable, not to use ballistic shield to get the protection against fragmentation or blast overpressure from an explosive device.

1.2 This standard prescribe the minimum performance requirements of ballistic shields for protection against small arms ammunitions. The scope of these QRs are limited to physical and ballistic evaluation of ballistic shields against in service small arms ammunition used by the Indian Armed Forces, Centre Armed Police Forces (CAPFs) and other Law Enforcement Agencies (LEAs).

1.3 The specifications covers only the basic design of ballistic shields and provide guidelines for its evaluation. Specific requirements in terms of design, protection area, additional attachments, storage arrangements etc. are to be defined by the user organizations.

2. Material

2.1 Ballistic shields are usually made from Aramid, Polyethylene, En (steel) material or Composite Materials (with various types of ceramic/steel/steel alloy). If the shield incorporates a view port, the lens is usually made from transparent polycarbonate, acrylic, or similar plastic and bullet resistant glass. In modern ballistic shields, high resolution camera (with recording system), display screen is also being provided to get the frontal view under varied functional and climatic conditions.

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Note:

1. As regards to the specifications of camera (with recording system, display screen extra, the user organizations may define the same in details in their tender documents according to their functional/ operational requirements)
2. The manufacturers/suppliers/vendors must submit a declaration of construction of ballistic shield to the user organization during tendering process).

2.2 The signed declaration (sample) as given below to be submitted to the user organization.

(Insert Company Name here) hereby declare that all ballistic shield produced as model number _____ as a result of successful Compliance Testing to (Name of the organization floated the tender) standards will be of the same construction, using the same materials (from the same manufacturers/suppliers) and fabricated patterns as the test sample/s listed above is in accordance with qualitative requirements of (Name of the organization floated the tender).

2.3 The declaration must be on company-headed paper. In addition a full technical file for the ballistic shield must be submitted detailing the carrier (if required), any handles, fixings and any other accessories. The shield must have a permanently fix label containing the following information

- Name and legal address of the supplier.
- Address of manufacturing location (city, state/province, country).
- Date of manufacture (i.e., month and year).
- Model number/ Nomenclature of the product
- Level of protection.
- Serial number.
- Mark of conformity indicating certification by an accredited certification body.
- Expiry date.

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3. Physical/Functional Evaluation

(Table-1)

S.No	Description and Qualitative Requirements	Trial Directives
1.	<p>Ergonomics</p> <p>(a) The total weight and weight distribution of the shield must not negatively impact the user's ability to perform tasks required during tactical operations.</p> <p>(b) Grips and supports must allow the user to comfortably hold and position the shield.</p>	<p>Board of Officers (BOO)/ Committee select five personnel of different ranks and body stature for holding the ballistic shield and undertake them for various tactical positions/movements (Tactical moves like room intervention, rescue ops, tactical movement alongwith shield in urban buildings, airports, hotels, metro trains and life firing from different positions i.e. standing and kneeling)</p> <p>Views/comments be obtained from each individual. Based on their comments, BOO/ Committee will draw the inferences that shield is not negatively impacting the user's ability while undertaking the above tactical positions/movements.</p>
2.	<p>Design Parameters</p> <p>(a) Ballistic shield should have an ambidextrous design.</p> <p>(b) Ballistic shield should provide physiologically designed shock absorbing support system with quick release attachment.</p>	<p>Board of Officers to check.</p> <p>Board of Officers to check the grips, supports, carrying straps, padding etc. BOO/Committee to ensure all handles and fixing mechanism are securely attached, not damaged and fully functioning.</p>

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	<p>(c) Ballistic shield should have a quick detachable carrier and load bearing integrated system for easy movement and allow the user to keep the hands free for holding and firing the weapon without any discomfort to the user.</p> <p>(d) Ballistic shield should provide on both side weapon barrel resting port to help soldier fire actively while having other hand holding the shield.</p> <p>(e) Soldier should be able to change the ammunition magazine from weapon without losing the ballistic shield protection in front.</p>	<p>Board of Officers/Committee to check physically and ensure that the ballistic shield does not rattle / shaken. Integrated Load Carrying System should allow virtually "Hand Free" support of the ballistic shield in both a perpendicular and articulated position.</p> <p>BOO/Committee to check physically.</p> <p>BOO/Committee to check physically.</p>
3.	<p>Workmanship</p> <p>Ballistic shield should be free from wrinkles, blisters, cracks or fabric tears, crazing, chipping or sharp corners or other evidence of inferior workmanship.</p>	<p>Board of Officers (BOO) should examine the quality of workmanship of ballistic shield on a large flat clean surface with adequate lighting.</p> <p>If any tear or deformity found, Board of Officers reject the sample.</p>
4.	<p>Dimensions & Weight</p> <p>As per Appendix 'A'</p>	<p>BOO/Committee will check.</p>
<p><i>Note: The design and dimensional parameters suggested in this QRs may be used by the Law Enforcement Agencies as guidelines. However, user organization may define their own parameters considering their functional/operational requirements.</i></p>		

5.	<p>Operational Aids: Ballistic Shield</p> <p>(a) Should have the provision of High resolution camera with capability to function effectively during day and night.</p> <p>(b) Should have display screen on the rear side of the ballistic shield facing the user/soldier to get the real time frontal view.</p> <p>(c) Camera should have the facility to record the real time video with storage capacity for 45 minutes.</p> <p>(d) Should have the provision of infrared illuminator (optional).</p> <p>(e) Should have the self-standing capability (eg. Shield with kick stand) (optional).</p>
<p><i>Note: The design and specifications for camera and other operational aids mentioned above may be defined by the user organizations /Law Enforcement Agencies considering their functional/operational requirements.</i></p>	

4. Protection Level

(Table-2)

Ser No.	Ammunition	Bullet Weight (g)	Bullet type	Impact Velocity (m/s)	Distance of impact (m)
1.	7.62 x 39 mm	7.45-8.05	HSC	700±15	10±0.5
2.	7.62x54 R API	10.3-10.5	API	830±15	10±0.5

Note: API: Armour Piercing Incendiary, HSC: Hard Steel Core

5. Radiographic/Thermographic Test

X Ray images are to be taken to inspect cracks, delamination or any other defects on the surface of ballistic shield by the testing agency. If any crack or defect found on the surface, Testing Agency will declare the spot as weak point and one shot must be fired on this weak point during ballistic testing. If, Ballistic Shield is perforated then sample will be considered as rejected. However, this test will also ensure that ceramic layer, if any, is provided evenly up to the edges.

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6. Ballistic Testing (Single Shot Test) only for Striking Face

(Table-3)

Ammunition	Minimum no. of shots (in Nos) at 0°	Minimum range (in Meters)	Impact Velocity (m/s)
7.62x54 R API	06	10±0.5	830±15

Minimum 25 mm (Edge (striking face) to Shot)
Minimum 51mm (Shot to Shot)

Fair hit or Strike: A fair hit is that which adheres to all the rules set out below:-

- Shots must be minimum of 25 mm from the edges of the striking face.
- All shots must be minimum of 51 mm from any other shots.
- The velocity must be within the tolerances set out in Table.

If a shot does not meet these criteria, it will be classed as an unfair hit or strike. Unfair hits or strikes may be accepted according to the criteria for "accepted hit or strike"; otherwise they will be repeated.

Accepted hit or strike: An accepted hit or strike will conform to the criteria for a "fair hit or strike". Unfair hits or strike will also be accepted if;

- The shot is closer than 25 mm to the edges and the bullet is held by the Ballistic Shield but not perforated/ pierced.
- The shot is closer than 51 mm to the other shot and the bullet is held by the Ballistic Shield but not perforated/ pierced.
- The impact velocity is above the specified test limits and the bullet is held by the Ballistic Shield but not perforated/ pierced.
- The impact velocity is below the specified test limits, resulting in a perforation/ pierced.

Any shots that do not meet these criteria will be classed as rejected and must be repeated (Maximum 10 number of shots on striking face of ballistic shield will be acceptable. Beyond 10 rounds a fresh ballistic shield to be used for ballistic testing).

Notes:

- *The testing agency should be selected by the user organization/Law Enforcement Agencies.*
- *Discontinuities or Points of apparent weakness must be identified by the testing agencies before ballistic testing, vendors/manufacturers/suppliers must submit a build sheet and diagram/drawing of construction for the shield sample. Testing agency will ensure that any attachments and attachment points of the shield must be tested and demonstrate that protection is not reduced nor any secondary projectile produced.*
- *In view of the above, the pattern of shots shall be defined by the testing agency prior to ballistic testing and the specified pattern of shot must be uniformed for all the samples submitted by vendors/manufacturers/suppliers.*

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7. Ballistic Testing (Single Shot Test) only for Non Striking Face

(Table-4)

Ammunition	Minimum no. of shots (in Nos) at 0°	Minimum range (in Meters)	Impact Velocity (m/s)
7.62x39 mm (HSC)	04	10±0.5	700±15
Points of aim one each on top, bottom, left and right side of Non Striking face of ballistic shield to be selected by testing agency. Testing agency will ensure the uniform criteria for all samples.			
Minimum 25 mm (Outer Edge of non-striking face to Shot)			
Any shots that do not meet this criteria will be classed as rejected and must be repeated (Maximum 8 number of shots including unfair shots (one additional shot on each side i.e. top, bottom, left and right) on non-striking face of ballistic shield will be acceptable, maintaining the shot to shot distance 51 mm. Beyond 8 rounds a fresh ballistic shield to be used for ballistic testing).			

8. Ballistic Testing (Multi Shots Test) OPTIONAL

(Table-5)

Ser No.	Ammunition	Minimum no. of shots (in Nos) at 0°	Minimum range (in Meters)	Reference Velocity (m/s)	Shot Pattern
1.	7.62 x 39 mm (HSC)	10	10±0.5	700±15	Two Bursts of 03 rounds & one Bursts of 04 rounds
<i>Note: The clause of shot to shot and edge to shot shall not be applicable in case of multi shot test. All the shots should be held by the ballistic shield, in case of any perforation/pierced the sample will be considered as failed. However, velocity of each round may not be recorded during bursts firing.</i>					

9. Wet Test (Optional, and tested against 7.62 x 39 mm, HSC, Multi Shot Test) for Striking Face

Before the sample is tested it shall be fully submerged in water (at 15° C to 20° C) for a period of one hour. It shall then be removed and allowed to dry for three minutes in a room held at a temperature of approximately 21±5° C, and 50 per cent to 70 per cent humidity. The first burst shall impact within ten minutes of the completion of the drying period, and the final burst fired within one hour.

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10. **Extreme Temperature Test (Optional, and tested against 7.62 x 39 mm, IISC, Multi Shot Test) for Striking Face**

Before the sample is tested it shall be heated to 50° C ± 3° C for a period of 1 hour. The first burst should impact within ten minutes and last burst fired within one hour of removal of ballistic shield from the heating chamber.

11. **Serviceability:** Five Years shelf life.

12. **Storage:** Ballistic Shield should be stored at normal room temperature either hung on brackets or leaned against a vertical surface. In any condition the no weight/pressure should be on the striking face of the ballistic shield. The ballistic shield should not be placed in such a manner that the striking face of the shield is touching the floor/ground.

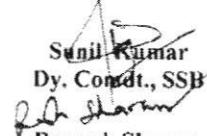
13. **User Manual:** User manual should be provided by a supplier with each Ballistic Shield containing the following information:

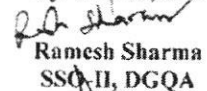
- Identification and description of the type of threat protection provided.
- Design and drawing mentioning all the dimensions and weight.
- Complete construction details.
- Coverage - area of coverage, curvature, and shape of shields.
- Complete details of all accessories and their usability.
- Care and maintenance guidance.
- Accessory wise warranty period.
- Any other relevant information.

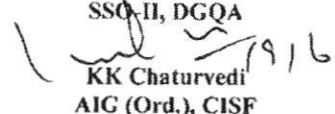
14. **Testing Facilities:** Ballistic trials as per the QRs will be held either at CFSL, TBRL, Chandigarh and GFSU or any other facility as decided by Technical Evaluation Committee/User organizations.

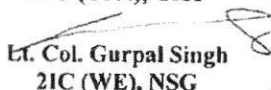
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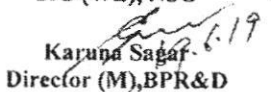
- The QRs are dynamic/live and may be amended only on the approval of competent authority.
- The QRs have been drawn jointly with the association of CAPFs, State Police Forces, DRDO (TBRL, DIPAS, DMSRDE Kanpur), GFSU, CFSL Chandigarh, AIIMS Delhi, IIT Delhi, BIS and DGQA.
- The level of protection is limited to ammunitions mentioned in QRs.

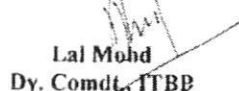

Sunil Kumar
Dy. Comdt., SSB



Ramesh Sharma
SSO-II, DGQA

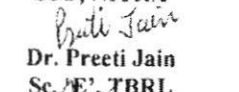

KK Chaturvedi
AIG (Ord.), CISF

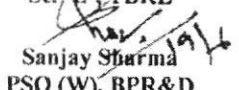

Lt. Col. Gurpal Singh
2IC (WE), NSG


Karuna Sagar
Director (M), BPR&D

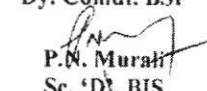

Lal Mohd
Dy. Comdt, TBFP

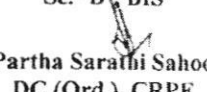

Neha Kapil
SSO, NITRA


Dr. Preeti Jain
Sc. 'E', TBRL

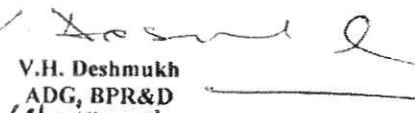

Sanjay Sharma
PSO (W), BPR&D

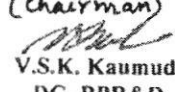

Tarun Ravi
Dy. Comdt. BSF


P.N. Murah
Sc. 'D', BIS

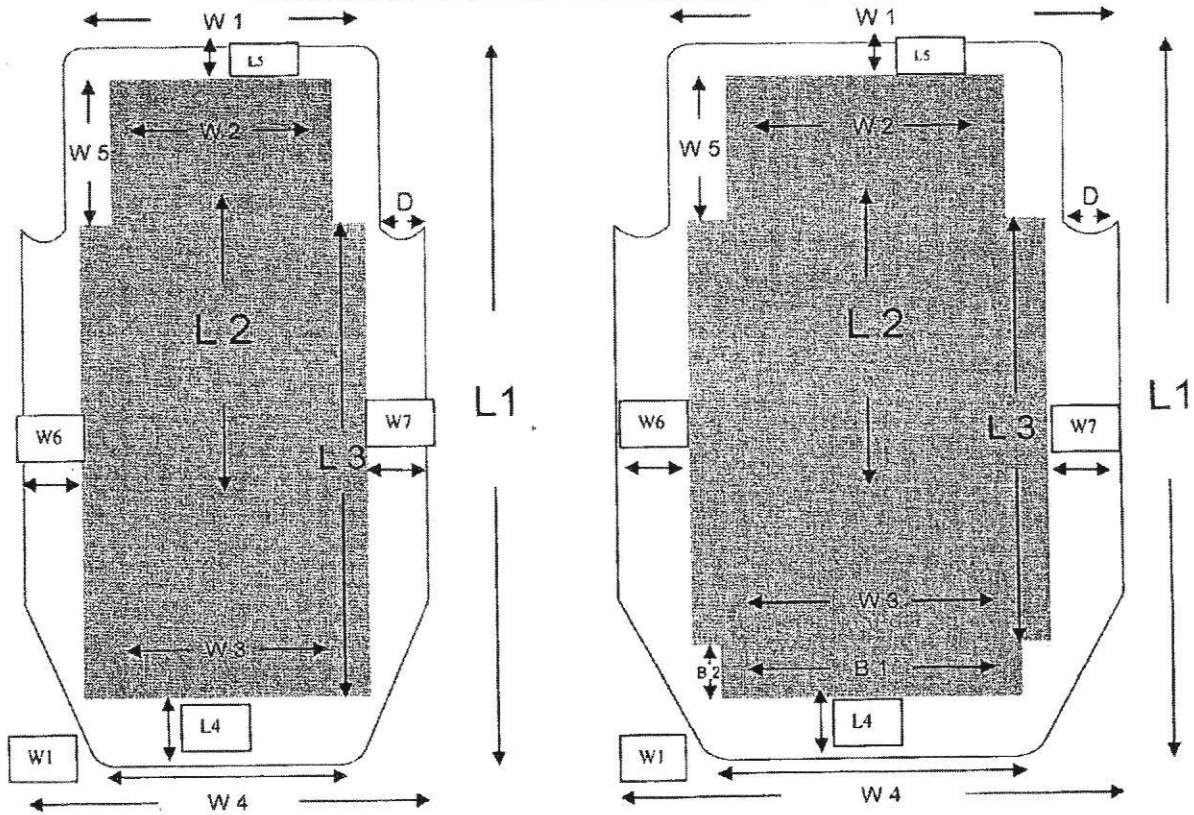

Partha Sarathi Sahoo
DC (Ord.), CRPF


Major Anshul Kumar
NSG


V.H. Deshmukh
ADG, BPR&D
(Chairman)


V.S.K. Kaumudi
DG, BPR&D

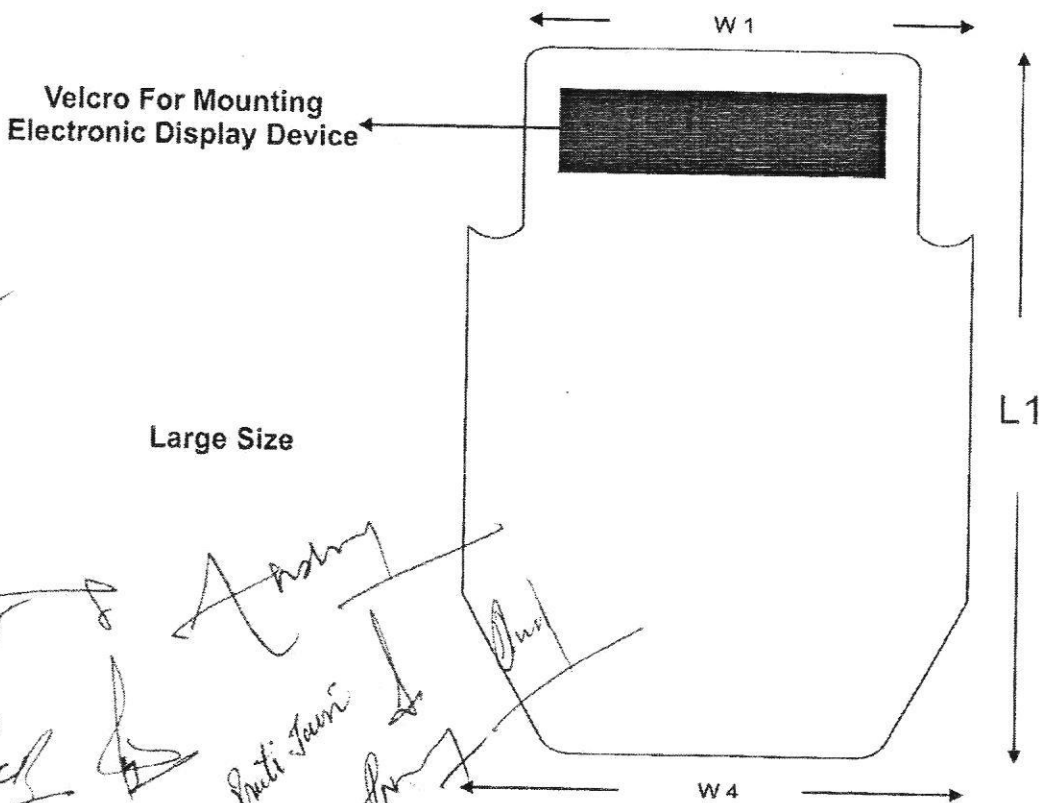
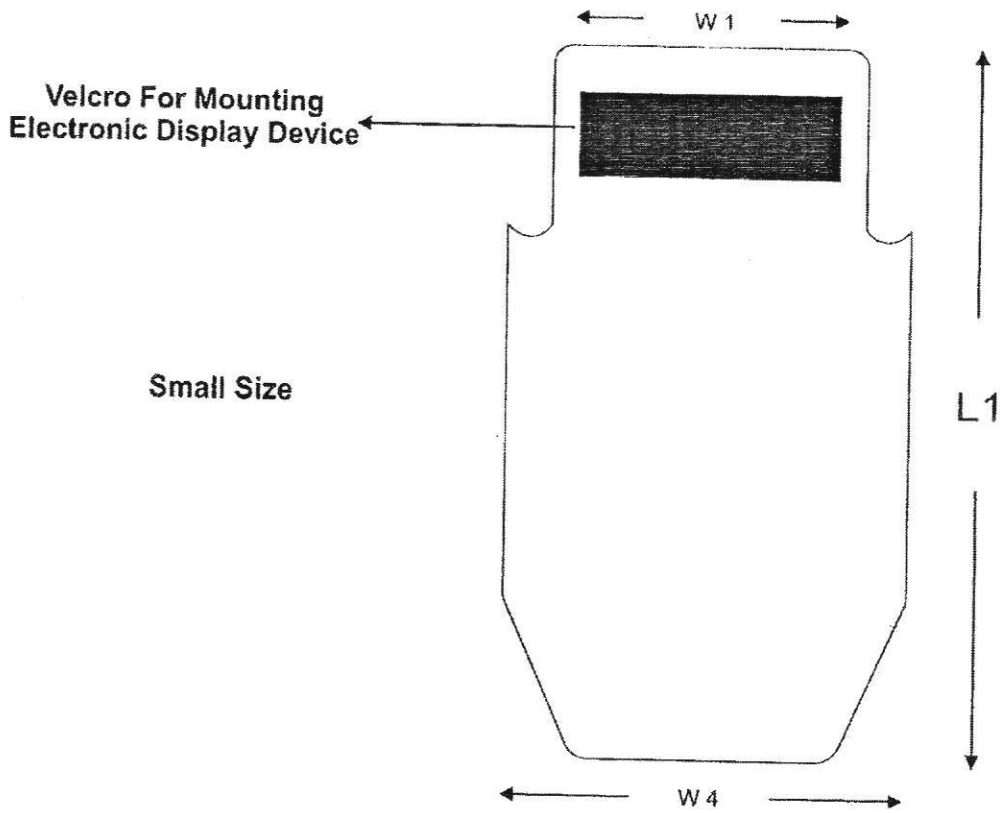
Front View of Ballistic Shield



Scaled Dimensions	Small Size	Large Size
L 1	76 cm	86 cm
L 2	61 cm	76 cm
L 3	40 cm	50 cm
L 4	7.5 cm	5.0 cm
L 5	7.5 cm	5.0 cm
W 1	26 cm	39 cm
W 2	20 cm	31 cm
W 3	30 cm	41 cm
W 4	39 cm	52 cm
W 5	21 cm	21 cm
W 6	4.5 cm	5.0 cm
W 7	4.5 cm	5.0 cm
D	6 cm	6 cm
B 1	NA	20 cm
B 2	NA	5 cm
Weight	12 kg (inclusive of all Accessories fixed on shield)	18 kg (inclusive of all Accessories fixed on shield)
Location of camera is suggestive, same can be fixed by the user organization as per their requirement.		
Negative tolerance in dimensions is not permissible.		
Shaded Area (Striking Face) should provide the protection against 7.62X54R API.		
Unshaded Area (Non Striking Face) should provide the protection against 7.62X39mm (HSC).		

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Back View of Ballistic Shield



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- Signature *Bob Shan*
- Signature *Pauli Janni*
- Signature *Paul*
- Signature *Paul*

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