

QUALITATIVE REQUIREMENT AND TRIAL DIRECTIVES OF KILL HUT

Ser No	Parameters	Specifications	Trial Directives
1.	<u>General</u>	Modular structure facilitating various shooting practices with live amn upto 7.62 x 51 mm in a simulated close quarter battle environment. It will be designated as Kill Hut and would be equipped with an advanced target system. The air would be to carry out room clearance drills and hone skills of own operators in room intervention techniques, engagement of hostiles in a closed environment and hostage rescue training. Kill Hut should be able to provide space for room clearance, corridor and stairway clearance drill and permit safe shooting of weapons up to 7.62 x 51mm calibre. It should also facilitate use of Stun Grenade and explosive during door breaching.	During the TECT Stage BOO will personally visit the existing facility of the vendors and physically check the kill hut. In case of no existing facility the vendor to provide samples of all materials to be used in the kill hut. The same should be physically checked by the BOO. After the TECT stage the BOO will carry out physical On-Site Acceptance Test of the Kill Hut.
2.	<u>Inner Structure</u>	<p>(a) There should be minimum six rooms in the kill hut.</p> <p>(b) Dimensions of each room should be a minimum of 12 x 8 ft.</p> <p>(c) All walls should be made of panels composed of minimum 10mm AR 500 armoured plate, mild steel structural framing connection bolts and anchors and minimum 60mm armoured rubber adhered directly to the inside of the steel surface.</p> <p>(d) All bolts should be supplied with back nuts to ensure that they do not become loose during use of the kill hut.</p> <p>(e) The structure must allow expansion or reduction in total number of rooms. All adjacent plates should be placed in a tight fit without gaps. Gaps, if any should be covered on both sides by a min 1/4" mild steel plate.</p> <p>(f) The structure should be modular and permit a change in the layout with minimal effort. Each room should have two movable panels of dimensions 10 x 8 ft composed of same material as walls to facilitate a change in layout</p> <p>(g) All exposed steel surfaces i.e. those not covered by rubber tiles, should be covered by a coat of black enamel paint.</p>	<p>For Parameters (a), (c), (d), (f) & (g) Vendor to show existing facility to the BOO or provide samples of each during the TECT stage. BOO to physically check the specs during OSAT.</p> <p>For Parameter (b) Vendor to give undertaking during the TECT stage and the BOO to physically check during OSAT stage.</p> <p>For Parameter (c) Vendor to provide certification of the steel and the rubber panels duly certified by a National/International accredited lab during the TECT stage and the same to be authenticated by the BOO.</p>

<u>Door Panel</u>	<p>(a) Each room will have one door panel. Size of the door should be minimum 7 feet x 4 feet.</p> <p>(b) Doors will be Tactical Breach Doors having following features: -</p> <p>(i) Reusable. Each door must facilitate different types of forced entry including kick, rammer and explosives</p> <p>(ii) Should have certified rubber panelling/tiles capable of preventing ricochet and splash back of minimum 7.62 x 51 mm amn.</p>	<p>Sample of the door panel to be provided during the TECT stage and the BOO to fire 9mm, 5.56mm and 7.62mm ammunition on the samples to confirm the ballistic property.</p> <p>The same to be checked physically during the OSAT stage as well.</p>
<u>Window Panel</u>	<p>Each room will have one window panel. Size of the window should be minimum 4 x 3 ft. The windows should be composed of anti-ricochet material preventing any ricochet during use of 7.62 x 51 mm calibre amn.</p>	<p>Sample of the door panel to be provided during the TECT stage and the BOO to fire 9mm, 5.56mm and 7.62mm ammunition on the samples to confirm the ballistic property.</p> <p>The same to be checked physically during the OSAT stage as well.</p>
<u>Corridor</u>	<p>The corridor should run along the entire length of rooms and all rooms should have doors opening in the corridor. The corridor should be minimum 8 feet wide. The flooring of the corridor will be as same as the room and the walls would be made of similar materials having same ballistic properties as the room walls.</p>	<p>Sample of the door panel to be provided during the TECT stage and the BOO to fire 9mm, 5.56mm and 7.62mm ammunition on the samples to confirm the ballistic property.</p> <p>The same to be checked physically during the OSAT stage as well.</p>
<u>Flooring</u>	<p>(a) Providing the foundation of required size as a base for entire Kill Hut and 2 meters compound area all around the Kill Hut.</p> <p>(b) Specification of RCC base up to plinth level should be 1:1.5:3 (1 cement: 1.5 coarse for sand: 3 graded stone aggregates of 20mm size) column of size 300x 300mm with footing at base. Beam of size 300 x 450mm along S/W and L/W. Under floor 1:4:8 (1 cement :4 coarse sand: 8 graded stone aggregates of 40mm size) of thick 100mm and cement</p>	<p>To be physically checked by BOO during OSAT stage.</p> <p>Vendor to provide National/International accredited lab certification of the samples and the same to be authenticated by the BOO during the TECT stage.</p>

		<p>concrete flooring 50mm, 1:2:4 (1 cement: 2 coarse sand: 4 graded stone) finished with a floating court of neat cement 40mm thick.</p> <p>(c) Floor should be covered by certified anti ricochet tiles. Floor anti ricochet tiles should have a wear resistant coating with triple PUR layer. Thickness of Basement at least 50mm and PUR layer 4mm.</p> <p>(d) Should permit easy and wet cleaning. Tiles should be safe up to maximum kinetic energy of projective of 800 Joules. Tiles material should be preferable non-combustible materials A2-S1 do but not more than medium contribution to fire D-S1 do.</p>	<p>Sample to be physically checked by the BOO during the TECT stage. Vendor to provide national/international accredited lab certification certifying the PUR layer.</p> <p>Vendor to provide National/International accredited lab certification of the samples and the same to be authenticated by the BOO during the TECT stage.</p>
3.	<p><u>Outer Structure</u></p> <p><u>Catwalk</u></p> <p><u>Shed</u></p>	<p>A catwalk should be available on top of inner structure; so as to enable clear visual access to all rooms of the inner structure by a person standing on it. Should be constructed with weather resistant, heavy duty steel and should have a rugged design. Minimum width should be 4 ft and minimum load bearing capacity should be 500 kgs. Should have a rugged design with suitable rails for side protection. A staircase located outside the inner structure should permit access to the catwalk without entering the inner structure.</p> <p>A tubular open shed should cover the entire structure of the kill Hut with a gap of at least 10 ft from the highest point of the catwalk. The basic structure would be of tubular steel columns with galvanised corrugated iron sheets roofing system. The structure should be able to withstand 150 kmph wind load.</p>	<p>Material sample to provided during the TECT stage and the same to be also checked physically by the BOO during the OSAT stage.</p> <p>Material sample to provide during the TECT stage and the same to be also checked physically by the BOO during the OSAT stage.</p> <p>Vendor to provide OEM certificate certifying the wind velocity withstand capacity during TECT stage and the same to be authenticated by the BOO.</p>
4.	<p><u>Miscellaneous</u></p> <p><u>Lighting</u></p>	<p>Lighting should be uniform over the entire area of kill hut with external and internal lights. The lighting arrangement should consist of at least, two low wattage lights (coloured) and two white LED light panels in each room and 12 LED (white) lights in the corridor and adjoining areas. Four high mast sodium vapour lamps should be located in four corners of the external</p>	<p>Vendor to give undertaking as well as provide samples of the lighting system during the TECT stage.</p> <p>BOO to physically check the lighting system during OSAT stage.</p>

	<p><u>Fire Suppression System</u></p> <p><u>Rubber Panels</u></p> <p><u>CCTV System</u></p>	<p>structure. All lights will be controlled by the centralised control system. The light arrangements should be such that they can simulate all lighting conditions such as morning, day, dusk and night.</p> <p>Fire sprinkler system for fire suppression should be provided in all rooms throughout the Kill Hut including corridor and all rooms. The system should have manual external activation control located in the control room.</p> <p>(a) High density composite rubber panels to form dimensionally stable armoured panels and blocks with weight not less than 22 Kgs per cubic feet. Compression should be minimum 3000 PSI.</p> <p>(b) Should have minimum stopping power of 850 m/s on 9 to 10 gm bullet, striking with 4000 Joules.</p> <p>(c) Each indl rubber panel should have a surface life of minimum 2000 rounds distributed uniformly all over the panel area without disintegrating and deteriorating.</p> <p>(d) Material test certificates from an accredited laboratory showing classification of the reaction of fire behaviour according to EN 13501-1 and should be not less than classified non-combustible material A2-S1.</p> <p>The kill hut will have a complete CCTV system covering all rooms and all corridors with a minimum of two cameras in each room which can pan and tilt. The system will have recording and playback capability. A 54'LED screen should be provided in the control room for monitoring.</p>	<p>Vendor to give undertaking as well as provide samples of the sprinklers during the TECT stage. BOO to physically check the lighting system during OSAT stage.</p> <p>Vendor to provide national/international accredited lab certification certifying parameters (a) to (d). Also provide samples during the TECT stage.</p> <p>Vendor to give undertaking during TECT stage and the same to be physically checked by the BOO during OSAT.</p>
	<p><u>Ventilation System</u></p>	<p>The kill hut will have a suitable non-AC (other than control room) ventilation system based on exhaust fans. The system should be able to pump in fresh air and flush out gases to avoid lead poisoning as well and maintain fresh air in the inner structure. All controls for this system would be located in the control room.</p>	<p>Sample to be shown by the vendor during TECT stage and the same to be physically checked by the BOO during OSAT.</p>

	<u>Target System</u>	<p>All rooms will have one Wall Mounted/ceiling mounted Moving Target System (WMMTS) with minimum two tgts, one with linear and the other with horizontal motion. In addition, two 3D human size targets per room will also be provided. The 3D human sized targets will be made of steel with anti-ricochet material coating and will be movable manually. The characteristics of WMMTS would be as per the table given below: -</p> <p>(a) Targets of HIT Indication Facility (9mm, 5.56mm and 7.62 mm) and Self Sealing or enable repeated firing of at least 100 rounds at one go.</p> <p>(b) Two-way turning targets. Targets having flip /turning facility, pop up/drop target self-sealing or enable repeated of at least 100 rounds at one go.</p>	<p>Target samples to be provided by the vendor during TECT. HIT indication and self-sealing characteristic to be checked physically by the BOO during TECT by firing 9mm, 5.56mm and 7.62mm ammunition. A total of 100 rounds to be fired.</p> <p>Movement of the targets to be checked by the BOO during the TECT stage.</p>
5.	<u>Control Room</u>	<p>One air-conditioned room of minimum 12 x 10 x 10 feet dimension would be constructed adjacent to the inner structure. It should have following features master controls for the following facilities: -</p>	<p>Vendor to give undertaking during the TECT stage. The same to be physically checked by the BOO during the OSAT.</p>
		<p>(a) One master computer for shot analysis, capable of giving feedback for each WMMTS target along with a heavy-duty printer with spare computer. In addition, LCD/TFT monitor for instructor to watch feed from all CCTV cameras located in the facility.</p> <p>(b) Communication system for interface with each room which should also double as central announcement system.</p> <p>(c) The power backup system should be such that it should cater for all the requirements like operation of ventilation, lighting and control of target etc, in case of power requirement for all its operations. The power backup system firm should spell out its power requirement for the operation of control room. Overall backup for light and target should be designed so that uninterrupted supply is given to the targets. This backup should be designed keeping in view the power of motors attached to each target and other electric instruments /light points provided in indoor short firing range.</p>	

		<p>(d) The Centralized control computer should be able to control the targets and shooting program using a remote control. The system must enable modification with new software and applications and should be user friendly and easy to use. Following master controls should also be part of the overall control mechanism: -</p> <ul style="list-style-type: none">(i) Ventilation system.(ii) All WMMS targets.(iii) Lighting system.(iv) Communication system.(v) Power backup system.(vi) Fire suppression system.	
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