

SECTION 6.0 SCHEDULE OF DESIGN REQUIREMENTS

6.1 SCOPE OF WORKS

The works to be performed under this contract are listed hereunder:

- 6.1.1. To supply, delivery, installation, testing and commissioning of the following equipment at **PEMBINAAN IPD HULU TERENGGANU, TERENGGANU** that include :

Complete Shooting Range System c/w Equipment, Target, Baffles System, Ventilation System, CCTV System, Integrated PA System, Intercom System, Air-Conditioning System, Card Access System, Electrical Work, etc.

- 6.1.2. Servicing and maintaining the above-mentioned system for a period of one year from the date of its handing over to the Jabatan Kerja Raya in good operating condition.

- 6.1.3 Deviation

Any deviation from the specifications shall not be made without prior consent of the Superintending Officer.

6.2 SYSTEM DESIGN REQUIREMENTS

The works to be carried out under Shooting Range System and Ancillary equipment shall comprise but not limited to the supply, delivery to site, installation, testing and commissioning and maintenance of the following equipment and principal services, including all associated minor works and items:

6.2.1 Shooting Range Equipment

Item	Description of Equipment	Requirement
1.	Target System a. Overhead Retrievable System b. Flipping Target c. Target Board	1 m/sec Adjustable Polypropylene Sheet
2.	Bullet Containment / Catcher a. Bullet Traps b. Shooting Booth c. Backing Target System	Floor Standing 9mm Mild Steel Plate High Laminated Glass/Acrylic 2 Layers 95% Premium Rubber Curtain -10 & 6mm (t) each curtain

6.2.2 Internal Finishes

Item	Description of Equipment	Requirement
1.	Ceiling a. Acoustic Ceiling b. Ceiling Baffles Steel c. Ceiling Baffles Rubber Tiles	Mineral Fibre 6mm Mild Steel Plate 25mm (t) 1200kg/m3 Shredded Rubber
2.	Wall a. Wall (Rubber Tiles) b. Acoustic Wall	25mm (t) 1200kg/m3 Shredded Rubber Wood Panel with 2" 2lb Rockwool
3.	Floor a. Floor (Rubber Tiles) b. Floor Baffles Steel Plate c. Floor Baffles Rubber Block	25mm (t) 1200kg/m3 Shredded Rubber 4mm Mild Steel Plate 250mm (t) 1200kg/m3 Shredded Rubber
4.	Acoustic Door	Min 50mm Acoustic Metal
5.	Anti-Shattered Glass	Double Layer of 10mm off glass sealants without air gap

6.2.3 Ventilation & Air-Cooled System

Item	Description of Equipment	Requirement
1.	Fresh Air Fan	26,000 cfm 4" wg Centrifugal Cabinet Fan c/w inverter control
2.	Exhaust Air Fan	30,000 cfm 5" wg Centrifugal Cabinet Fan c/w inverter control
3.	Spot Cooling Unit	100,000 btu/hr Air Cooled Split Ducted c/w R410A/R407C
4.	Primary Air Filter (Washable)	80% – 85% Dust Extraction

5.	Secondary Air Filter (HEPA)	< 99.97% Dust Extraction
6.	Carbon Air Filter	Min 80% Dust spot efficiency
6.	Silencer	Fresh & Exhaust air ductwork
7.	Ductworks (for Exhaust & Fresh Air)	G.I Sheet Metal c/w Internal Insulation (PU Foam)
8.	Ductworks (for Spot-Cooling)	1" 1lb PE Foam

6.2.4 CCTV System

Item	Description of Equipment	Requirement
1.	Digital Disk Recorder	16 Channels
2.	Fixed Lens Colour Camera	PAL: 520 Lines
3.	Multi Image Processor	Input 1 to 4 VGA-XGA, RGBHV Input
4.	Control Room, Pemerhati & Bilik VIP Display Shooting Booth Display	Min 40" LED Monitor Min 21" LED Monitor
5.	Computer	Intel Core i9 with latest OS, 16GB Ram and 8TB capacity

6.2.5 Card Access System

Item	Description of Equipment	Requirement
1.	Standalone Card Reader	Integrates Operation with main control system

6.2.6 Integrated PA and Intercom System

Item	Description of Equipment	Requirement
1.	Audio DSP Processor	Min. 8 Mic/Line
2.	Gooseneck Microphone	1 set at Bilik Kawalan
3.	Self-Power Speaker	4" woofer & tweeter
4.	Headset	8 nos. with flexible microphone - Highest, 50dB
5.	Control Processor	S-Video model

6.2.7 Monitoring & Test Equipment

Item	Description of Equipment	Requirement
1.	Gases Leak Monitoring Sensor	CO ² sensor c/w alarm strobe, twisted cable and link computerised to Integrated System at Bilik Kawalan
2.	LeadOff wipe, Lead Check Swabs and LeadOff Surface Cleaner	LeadOff wipe c/w bucket dispenser, used wipe container, and stand. LeadOff wipe refill roll - 500 wipes. Lead Check Swabs - 1 box (48 swabs). LeadOff Surface Cleaner - 0.5 Litres.

6.2.8 Lighting Equipment

Item	Description of Equipment	Requirement
1.	Sign light	Warning Light - "Shooting In Progress"
2.	Fluorescent Light	T5 28 w (Dimmer Blast Type)

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