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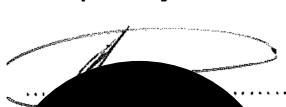
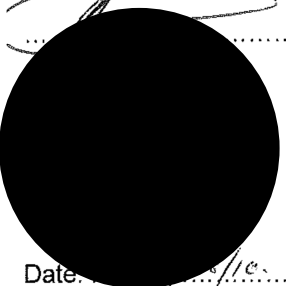
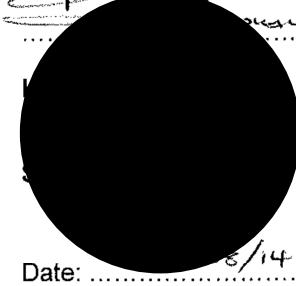
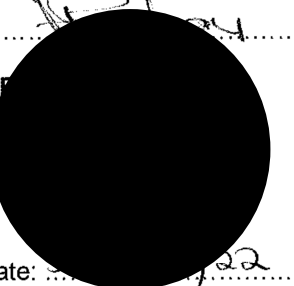
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1. Introduction

The purpose of this standard is to give guidance on the peremptory requirements for the erection of suitable permanent bullet-resistant guard facilities and/or temporary/ mobile guard facilities for use at Eskom installations. This standard includes the precautionary measures for maximum reduction of possible harm to persons. Guard houses shall be erected at manned Eskom sites where security officers are required and utilised 24/7 for site protection and where use of such facilities are deemed feasible.

2. Supporting Clauses

2.1 Scope

This standard sets out Eskom's technical and functional requirements for bullet-resistant guard facilities.

2.1.1 Purpose

The purpose of this standard is to document the technical supporting processes that specify functional performance and other requirements that the equipment and materials shall meet to satisfy the need for quality permanent and temporary bullet-resistant guard facilities at Eskom installations.

2.1.2 Applicability

This standard shall apply throughout Eskom Holdings SOC Limited.

2.1.3 Effective date

Indicate the date from which the document is effective if different from the authorisation date. The effective date means that from this date all training, artefacts and supporting systems required for compliance to the document requirements shall have been established and implemented

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems
- [2] PW 371 Specification of Materials and Methods to be used
- [3] PW Drawings Type Guard House (Provisional), Drawing Number 003, dated 18/11/2009
- [4] SANS 1263 – Part 3 Class RB Bullet-resistant Glazing Materials
- [5] British G3 Standard for Security Doors

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- [6] Interior Doors SANS 545:1989 Class 1. Wooden Doors
- [7] SANS 10389 – 2:2007 Edition 1.1. Exterior Security Lighting
- [8] Act 60 of 2000, Firearms Control Act
- [9] Act 75 of 1969, as amended, Arms and Ammunition Act
- [10] Act 53 of 1985, Control of Access to Public Premises and Vehicles Act
- [11] Act 68 of 1995, South African Police Service Act
- [12] Act 6 of 1959, Trespass Act
- [13] Act 85 of 1993, Occupational Health and Safety Act
- [14] Act 56 of 2001, Private Security Industry Regulation Act.

2.2.2 Informative

- [15] SABS 1222: Protection of Enclosures
- [16] SABS 1200: Standardised Specifications for Civil Engineering Construction
- [17] Eskom Drawing 0.54/5007: Earthing Standard
- [18] Specific security design and layout drawings as compiled by the Security Division.

2.3 Definitions

- 2.3.1 Controlled disclosure:** controlled disclosure to external parties (either enforced by law or discretionary).
- 2.3.2 Joint Planning Committee (JPC):** a committee established by the owner of a national key point in collaboration with the local security services, SA Police Service, and Civil Defence to coordinate plans and allocate responsibilities.
- 2.3.3 PSIRA registration:** registration with the Private Security Industry Regulatory Authority is necessary for the provision of all security services in respect of all Eskom installations in terms of the following legal requirements:

“All security designs, plans, proposals, and tender documents **MUST** be completed by PSIRA-registered personnel/ companies and must be approved by the Security Division, prior to implementation

2.4 Abbreviations

Abbreviation	Explanation
BRG	Bullet-resistant glazing
BTU	British thermal units
BU	Business unit
CCTV	Closed-circuit television

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Abbreviation	Explanation
DB	Distribution box
DCP	Dry chemical powder
Ltd	Limited
Lux	Unit of luminance or illumination in SI system
Mpa	Megapascal
NKP	National key point
PSIRA	Private Security Industry Regulatory Authority
Pty	Proprietary
SABS	South African Bureau of Standards
SANS	South African National Standard
SI	Systems International
WC	Water cistern

2.5 Roles and Responsibilities

2.5.1 Procurement Officials must refer to this standard in their purchasing documents and require that equipment and material offered for purchase meet the requirements of this standard.

2.5.2 Security Division is responsible for the maintenance and upkeep of this standard.

2.5.3 Security Managers are responsible for the development of procedures and performance measures to ensure that the standard is implemented and maintained.

2.6 Process for Monitoring

Eskom processes shall be adhered to at all times. The contractor shall be responsible for the provision of all services associated with the concept and implementation of a programme for quality assurance control.

2.7 Related/Supporting Documents

Not applicable

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3. Document Content

3.1 Structural design and dimensions for permanent bullet resistant guard facilities

The design of the above-ground protective structures and hardening measures against small arms will assist to reduce the damage to critical assets or functions, namely – equipment, people, materials, structures, etc.

The facilities will protect against weapons effects such as:

- bullet penetration from small arms; considered here are pistols, rifles, sub-machine guns, and small machine guns;
- fire hazards from incendiary devices; and
- destruction from physical violence.

Structural design: according to SANS 10400 Code of Practice for the application of National Building Regulations.

- **Dimensions:** approximately 6.0 m x 3.4 m = 20.4 m².
- **Height:** according to SANS 10400 Code of Practice for the application of the National Building Regulations.

3.2 Material

3.2.1 Walls

According to **SANS 10400 Code of Practice** for the application of the National Building Regulations:

- Double brick and mortar with plaster and paint or face brick to suit the location.
- Thickness: 230 mm (outer and inner walls).
- To provide ballistic protection against 7.62 mm x 51 mm (R1/.308).
- Portholes should be installed for guards, to enable them to return fire if necessary.
- The interior shall be insulated and soundproofed along the entire inner surface area with a Sondor-type “soundseal” or *similar approved* to ensure flame and dust resistance.

[Refer to Sondor Industries (Pty) Ltd.]

3.2.2 Glass

- BRG glazing to comply with **SANS 1263 – Part 3 Class RB** or any similar approved international performance standard.
- The panes of all BRG must be permanently marked to comply with:

SANS 1263:2007 Part 3 paragraphs 4, 4.1, a, b, and c by the manufacturer in such a manner that the markings are visible in individual panes after installation.

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- The BRG and frame must be designed and manufactured to industry acceptable standards by a **SAGGA/SAGI**-registered BRG manufacturer.
- Drawings must include a glazing and reinforced frame schedule identifying the location of each bullet-resistant window, bullet-resistant screen, and bullet-resistant door opening in relation to the site-specific plan layout.
- Elevation drawings must illustrate the frame profiles, sizes, anchor types, glass thickness, and glass type (BRG or composite BRG). The drawings must be submitted with the tender document for perusal and approval prior to the manufacturing of the bullet-resistant window, frame, screen, and door.
- The manufacturer of the bullet-resistant window, frame, screen, and door assembly must submit an independent test report from the SABCS or any other acceptable international standard. The test report information must specify compliance with the required ballistic protection level or class that will comply with **SANS 1263:2007 Part 3 Class RB** or any similar approved international performance standard.
- The bullet-resistant window, screen, frame, and door assembly must be manufactured with materials consistent with the ballistic threat level. The assembly must be strong, rigid, neat in appearance, square, and free of defects, warp, or buckle. The trim of frames must be welded and finished smoothly. The frame must be corrosion resistant and reinforced and must be consistent with the specific ballistic threat level or class.
- There must be no exposed fasteners on the threat side of the opening. The BRG must be mounted from the secure side of the opening. Glazing sealants, neoprene, or silicon and setting blocks must be provided by the supplier of the BRG.
- Glazing must provide protection against *7.62 mm x 51 mm (R1/.308)*.
- Recommended sizes: 900 mm x 900 mm or 1 200 mm x 900 mm or 600 mm x 1 200 mm (approximate). Minimum three (3) windows depending on site location.
- A one-way mirror-type glass can be used to ensure the concealment of the occupants.
- The glass must be slanted/ angled away at approximately fifteen (15) to twenty (20) degrees to the vertical to prevent reflections of light-coloured objects obstructing the guard's view of the outside. See Appendix B SANS 10389-2 2007 Edition 1.1.

3.3 Doors

3.3.1 Entrance door

One security door with BRG view panel. Glazing must provide protection against *7.62 mm x 51 mm (R1/.308)*, and the door must comply with the **British G3** standard, fitted with a security key registered deadlock.

Should the need arise to house a server, the server room is to be fitted with a “30 minutes” fire rating door and a security key registered deadlock.

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3.3.2 Interior doors

Solid wooden door – control room; with ventilation grille – bathroom; **SANS 545:2009** Edition 3.4.

- Resistance of **Class 1** wooden doors to weathering.

3.4 Illumination

All illumination at the guard house must be in compliance with **SANS 10389 – 2:2007** Edition 1.1.

A number of important aspects pertaining to lighting are, however, highlighted in paragraphs 8.8.1 to 8.8.4.

- Lux levels for security, domestic, and emergency illumination to conform to Act 85 of 1993, Occupational Health and Safety Act.

3.4.1 Inside the guard house

Illumination is important, and it is essential that the illumination level inside the guard house is lower than on the outside.

The interior paint finish shall be in a dark colour and the lighting of the work surface well shielded.

3.4.2 Outside the guard house

- The use of low-brightness down lights away from the main tinted window is recommended to prevent the fitting creating bright spots on the window.
- “BRICKLIGHT”-type fittings around the guard house at approximately 350 mm above finish floor level to “wash” the area should additionally be installed. [Refer to Radiant Lighting Manufacturing Co Ltd/Radiant Lighting.]
- A bright spotlight/floodlight to illuminate the area in front of the guard house should be installed on the outside of the guard house. Make sure that the surrounding lights outside the guard house are brighter than inside at night time.
- Installation of a day/night light sensor must be located in an elevated spot, clear of any adjoining obstacles, preferably on one of the outside walls of the guard house.

3.4.3 Checkpoint lighting

- The illumination of entry/exit areas (checkpoints) shall be significantly higher than that of the adjacent areas or perimeter fence and designed to allow easy identification of persons in vehicles or on foot and comprehensive checking of motor vehicles, goods, and documents.
- The lighting shall be arranged on both sides of the entrance to ensure adequate cover all around the motor vehicle. The use of street lighting luminaries is recommended to avoid glare causing a hazard to drivers when ingress or egress from the premises takes place or to security personnel in the execution of their duties.

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- Vandal-proof bulkhead or fluorescent luminaries, mounted above the guard house window, will enable security personnel to see into the driver's cab.
- By coating the road surface with a light-coloured paint, light will be reflected upward and facilitate inspection of the underside of vehicles.

3.5 Roof

- Roof finish and pitch, metal or tiles to suit locality/site-specific.
- Roof tiles/metal roof sheeting as specified in PW 371 Specification of Materials and Methods to be used.
- Roof to provide ballistic protection against 7.62 mm x 51 mm (R1/.308).

3.6 Floor

- Rubber/non-slip, durable, fire-retardant floor covering in all areas.
- Synthetic rubber "Saar Floor Noppe Stud Tile" [refer to Polyflor Ltd 2010] or similar approved.
- The tile shall be anti-static and easily cleanable.
- Tile to be of a dark colour. A material sample shall be presented for approval at tender submission.

3.7 Paint

- External paint colour and finish to suit locality/site-specific requirements.
- Internal paint should be non-reflective.
- Colour samples for both external and internal paint shall be presented for approval at tender submission.

3.8 Gutters and downpipes

- Gutters and downpipes are required.

3.9 Air conditioner

- One (1) x AC/heater combo with wall mount control unit inside control room (relevant BTU would be determined by size of work area).

3.10 Kitchenette

- Melamine utility counter. Dimensions to be determined.
- Standard-type, powder-coated steel kitchen cupboard sink unit with sit-on type stainless steel sink with steel sliding doors.
- Taps to be determined.
- Hydroboil [refer to Franke SA; www.zip.co.za] 2.5 litre or similar.

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- Tiled splash-back, 300 mm high.
- Additional cupboard above sink. Type to be determined.
- Integrated odour removal system/ventilation system as “fresh flow” or similar.
- Dedicated electrical power sockets (220/240 VAC).
- Light.

3.11 Bathroom

- Approximately 2.4 m².
- Stainless steel WC pan with pressed flushing rim and integral stainless steel 110 mm “P” trap and back-entry flush pipe inlet, complete with stainless steel cistern, seat, and lid.
- Integrated odour removal system/ventilation system as “fresh flow” or similar.
- Stainless steel wall-mounted wash hand basin, complete with taps.
- Stainless steel towel rail.
- Stainless steel lockable toilet paper dispenser.
- Stainless steel liquid soap dispenser.
- Dustbin.
- Two standard sheet metal lockers: epoxy-coated hasp-staple lock.
- Ventilation grill/airbricks.
- Light.

3.12 Control room

- Approximately 6.5 m².
- Granite countertop. Dimensions to be determined. “U” or “L” shapes to be considered.
- Under counter top (storage shelf), 300 mm.
- Two-channel, two-cover power skirting above counter with dedicated socket outlets.
- Two (2) powder-coated steel drawer units/cupboard combo; one (1) each on either side under counter.
- Additional cupboard and/or shelves (provided space exists).
- Fixed three-rifle safe to SABS specifications fixed to wall (recess) and floor. Safe (approximately 1 448 mm x 350 mm x 300 mm) to accommodate two assault rifles with extended butt, shelf for handguns and ammunition. The fixed template to secure the rifle safe must be in compliance with the Firearms Control Act (Act 60 of 2000).
- Intercom system.
- Mounted 4.5 kg DCP fire extinguisher.
- Mounted first aid kit.
- Notice board (1 000 mm x 1 000 mm).
- Emergency light.
- Light.
- Work light (dimmable).
- Airbricks.

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- Mounting panels for CCTV monitors and two-way radio, intercom, and telephone.
- Conduit/sleeves and fixing brackets to allow for the securing of wiring for radio communication system, chargers for electrical torches, antennae (roof), CCTV system, access control and security systems, fence energiser, power reticulation, etc.
- Electrical DB.
- Network communication points
- Rifle ports to be in relation to site requirements.
- A spotlight shall be fitted on top of the guard house. The spotlight shall be operated from within the house with a circumference of 360°. The light shall be hand-operated from the inside and protrude at least 150 mm above the roof.

3.13 Server room (it or systems equipment room)

- The room should be accessible from outside with own door and air conditioner. Provision should be made for shelving and fixing brackets, sleeves, etc.
- A removable and externally fitted IT cabinet with IP 65 rating [refer to Envirorack] or similar product can be considered to optimise space.

3.14 Concrete apron

- 1 000 mm x 100 mm concrete apron around guard house.

3.15 Temporary/ mobile guard facilities

Mobile guard booth facilities used at sites must be suitable for use by security personnel (at least a two-man facility with area 2.2m x 2.2m x 2.2m/ not less than 30M2), that is structurally sound and must be equipped with a quality integrated security system as follows:

- CCTV
- PA System
- Illumination (interior and exterior)

A built in ablution facility will be advantageous.

SABS/ SANS certification is applicable for structure and bullet resistance capability.

Mobile guard booths must be strategically positioned and erected within a protected area on the site.

3.15.1 Use of a Trailer facility

The trailer must be a welded steel frame with a 2.5 x 2.4mm bed, and shall have a tread plate platform, swing down step, tongue jack, corner jacks for levelling, running lights and safety chains. The trailer must be double-axle and have capability to handle the weight of the structure. The

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trailer must be fully licensed and must have valid DOT vehicle identification numbers. The unit must be completely mobile and capable of rapid deployment at short notice.

3.15.2 Bullet resistant capability

When deployed in medium- high crime risk areas, the unit must have bullet resistance capability 7.62mm x 51mm R1/.38 doors, walls, windows and roof.

3.15.3 Power requirements

The unit must be AC powered and energy efficient with alternative battery power (for up to 12 hours) and or solar panels.

3.15.4 Lighting

The facility must be well ventilated and must have sufficient interior and exterior lighting suitable for day and night use. Energy efficient lighting must be utilised and the use of LED floodlights with motion detection/ sleep mode must be considered for exterior lighting purposes.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
MD Strauss	Senior Manager, Security
A Govender	Middle Manager, Security
R Moodley	Middle Manager, Security
M Heath	Middle Manager, Security
J Cheerkoot	Middle Manager, Security
F Diergaardt	Middle Manager, Security
M de Jenga	Middle Manager, Security
M Murugen	Middle Manager, Security
R Rajpal	Middle Manager, Security
JM Mogaswa	Middle Manager, Security

5. Revisions

Date	Rev.	Compiler	Remarks
January 2011	0	JP Thomaides	First draft
May 2015	1	K Pillay	Document updated for business purposes

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6. Development Team

The following people were involved in the development of this document:

- Security Design and Advisory Section, Security Division

7. Acknowledgements

- South African Police Service Division Protection and Security Services (August 2014)
- South African Police Service Security Advisory Service (version 03/2012).

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Appendix A – DESIGN OF HARDENING MEASURES AGAINST BULLETS

A.1 LEVEL OF PROTECTION

Defining the level of protection for the specific functions to be protected is of paramount importance. The levels of protection can be defined as follows:

- Level 1 Protection against a single shot of a ball bullet
- Level 2 Protection against repeated shots of ball bullets
- Level 3 Protection against a single shot of an armour-piercing bullet
- Level 4 Protection against repeated shots of armour-piercing bullets

MATERIAL AND THICKNESS OF ELEMENTS

Based on practical experience, the following thicknesses of several materials to provide full protection against bullet penetration are presented in the matrix for safe thicknesses of material in Appendix D.

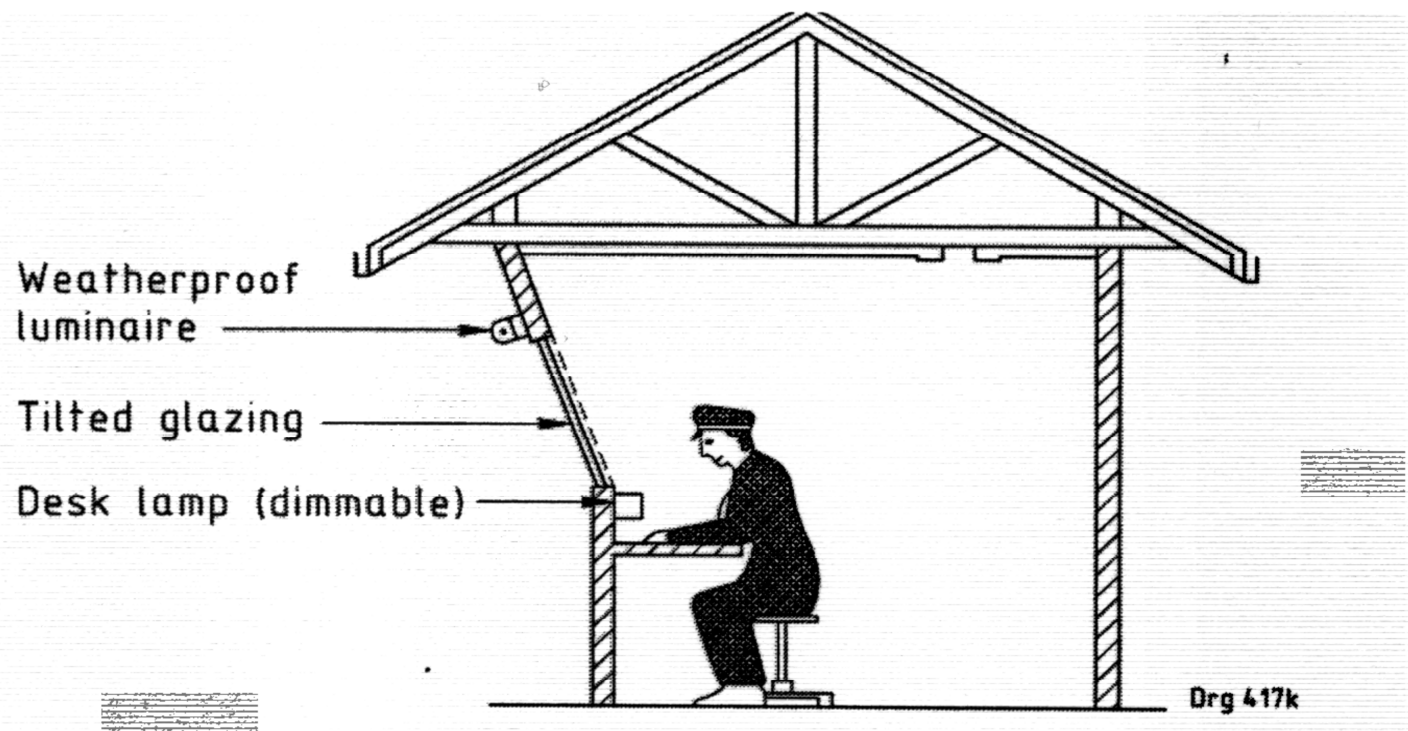
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Appendix B

B.1 Paragraph 3.2.2 SANS 10389-2 2007 Edition 1.1. Figure 7 P.17

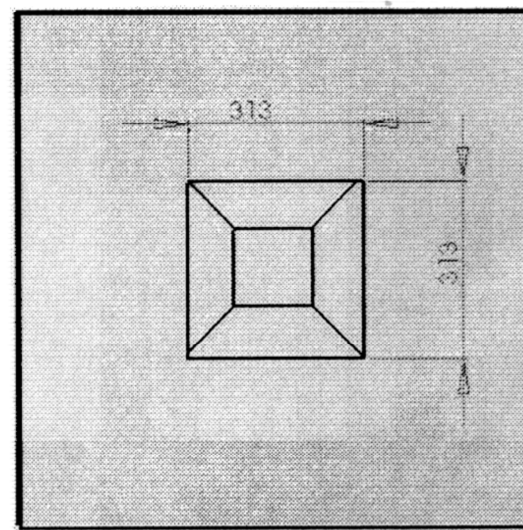
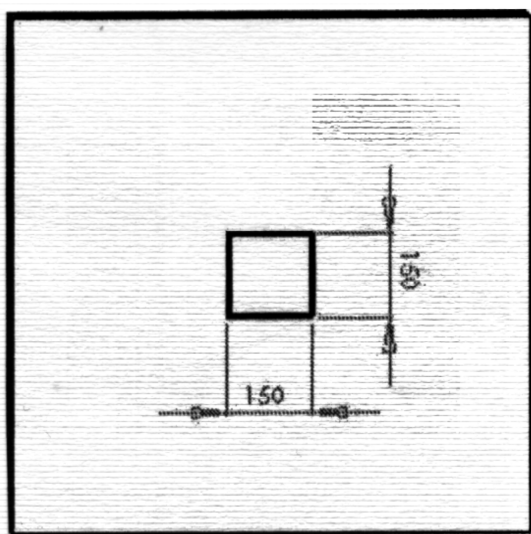


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Appendix C: RIFLE PORT



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Appendix D: MATRIX FOR SAFE THICKNESSES OF MATERIAL (mm)**SAFE THICKNESS OF MATERIAL FOR PROTECTION AGAINST BULLET PENETRATION**

MATERIAL	PROTECTION	PROTECTION	PROTECTION	PROTECTION
	LEVEL A	LEVEL B	LEVEL C	LEVEL D
Armour plate	6	10	12	14
Mild steel	10	14	20	24
Reinforced concrete (30 Mpa)	150	180	200	250
Brick masonry	200	250	300	370
Gravel	250	300	350	400
Sand	300	350	400	500
Soil	600	650	700	800

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