CHAPTER 28
WEAPON LAUNCHED GRENADE RANGES

INTRODUCTION

2801. **General**. These are purpose-built ranges to permit controlled firing of 40 mm Underslung Rifle Grenade (UGL) and Grenade Machine Gun (GMG).

2802. **Aim**. The aim of this chapter is to give the design and construction details for weapon launched grenade ranges. In particular it covers:

DANGER AREA

2803. **UGL.** The UGL WDA for the 40mm LV HE DP is shown at Figure 28 – 1 and the WDA for 40mm LV Prac rounds is shown at Figure 28 – 2.

2804. **GMG.** The ammunition for training includes Flash Bang Linked S429 fired into a controlled impact area, Target Practice Tracer S415A and Practice Impact Signature Marker both of which may be fired on any LFTTA. HE ammunition may only be fired into a Closed Impact Area. The WDA for the GMG is at Figure 28 – 5 and Prac at Figure 28-6.

SITING

2805. **Weapon launched grenades. UGL and GMG** ranges may be located on any designated training area or co-located with the Anti Tank range to enable the WDA templates to be overlapped thus making most economic use of available land. Practice grenades may be fired on other standard ranges and training areas subject to the Range Orders specifically allowing it. Consideration is to be given to any likely damage caused by the projectile and its 30 metre burst safety distance. The burst safety distance is required due to the fragmentation of the projectile on impact with hard surfaces. There is no HE content. The minimum range for engaging targets is 30 metres.

2806. **Blinds**. The grenade is relatively small and therefore consideration must be given to locating blinds where there is the potential for a residual hazard with practice rounds. Ranges should be sited in reasonably clear areas where scrub and grass can be effectively managed. For UGL HEDP rounds a Closed Impact Area is normally required. Where the ground is such that the location and clearance of blinds may be guaranteed (RAO Assessment) a controlled impact area may be applied. Attempts should be made to locate the range so that the target is engaged in a depression, thus minimizing the extent of exclusion fence required on closed impact areas. Minimum size of closed impact area for the UGL is 150 x 100m (see Figure 28-1). For details of impact areas see Chapter 2.

2807. **Co-location with an Anti Tank Range**. When co-located with NLAW the siting of the these ranges may be to the left or the right of the NLAW range depending on the suitability of the local topography. The UGL/GMG target must be sited outside the NLAW 'clear zone', while the UGL/GMG firing point should be positioned in line, but offset to, one side of the NLAW firing point.

CONSTRUCTION

2808. **Firing Point**. Where it is deemed necessary to provide a firing point, the design should enable standing, kneeling firing postures. It must also provide the firer and safety supervisor with sufficient protective cover from the effects of fragmentation and blast. The firing point is to comprise the following elements (see Figure 28-2):

a. **Earth Bank**. Protective cover is to be provided by a castellated earth bank constructed as follows:

(1) **Dimensions**. The bank is to have a thickness of 750 mm (C) at the crest and provide a height of 1.2 m (C) above the firing point floor surface. The overall width of the crest of the earth bank is to be 3.6 m (Min), divided as follows:

(a) A 2 m (C) wide section to provide sufficient protection to the safety supervisor and the firer adopting the standing posture.

(b) A 600 mm (C) wide opening to permit the kneeling postures to be adopted.

(c) A 1 m (C) wide section to provide sufficient protection to the safety supervisor when the kneeling postures are adopted.

(d) The remainder of the earth bank beyond the dimensions stated, is to be sloped away at the natural angle of repose for the soil type used.

(2) **Materials**. The bank is to be formed using compacted earth fill, with 150 mm (S) depth of topsoil to the surface. The topsoil is to be seeded to assist in retaining the correct thickness and profile of the protective cover.

b. **Retaining Structure**. The retaining structure is to be constructed so that the combined dead, imposed and live loads are sustained and transmitted to the ground safely.

c. **Floor Surface**. To permit the adoption of the standing, kneeling and prone firing postures without undue discomfort, the floor surface of the firing point is to be constructed as follows:

(1) **Dimensions**. The crest of the firing point floor surface is to be 450 mm (C) above the surrounding ground level with a 1:12 (C) fall from the crest board to the rear retaining board. The overall width of the floor surface is to be 3.6 m (C) with a depth of 2.45 m (typical (T)). The remainder of the ground surrounding the surfaced firing point floor area is to be sloped

away to meet the existing ground level at a slope of 1:6 (T).

(2) **Materials**. 10 mm (T) single sized rounded granite chippings to a thickness of 100 mm (T), laid on a suitably compacted, free-draining base. Chippings to be surrounded by treated timber boards, set on edge, to assist in retaining the shingle within the firing point area.

2809. **Targetry**. A target representing a bunker at an engagement distance of 150m or more for UGL HE DP is to be positioned within an impact area. Targets for the GMG are placed a minimum of 220 m from the firing point. The UGL target is to be of durable construction to ensure minimum maintenance while retaining a realistic appearance (see Figure 29-9). The target is to comprise the following elements:

a. **Armour Plate**. To provide suitable durability and minimum maintenance, the target face is to be constructed as follows:

(1) **Dimensions**. 2 m (T) wide, 1 m (T) high and 25 mm (T) thick, positioned approximately perpendicular to the ground level and LofF.

(2) **Materials**. Rolled Homogenous Armour (RHA) steel plate with suitable supports to the rear of the armour plate to provide stability. The front face of the armour plate is to be painted to give the impression of a sandbag bunker.

b. **Earth Bank**. An earth bank behind the armour plate to provide additional stability and to enhance the appearance may complicate the clearance of blinds should a grenade pass through a hole in the plate and not detonate. If a bank is considered necessary, it should be constructed clear of the steel plate so that blinds may be dealt with safely. To minimize the risk of UGL HE grenades getting under the steel plate as blinds, the plate should be buried up to 150 mm below the surface or the surface built up to achieve the same protection.

2810. UGL **Target Area.** To minimize the problems of locating blinds, the area around the target may be prepared to ensure detonation. For targets located 150m or more from the firing point a prepared area, illustrated in Figure 28-4 should be sufficient. A prepared area is one where all soft earth, reed and tall grass has been removed. In peaty areas imported stone or gravel will provide an adequate initiation surface. Imported stone or gravel should not contain large (> 30 mm) stone behind which blinds may lodge.

2811. **Initiating Stop Butt.** On ranges where depressed L of S with ground behind the target cannot be achieved, initiating stop butts may be constructed to capture rounds that miss the target. The dimensions of the initiating stop butt should be determined by the assessment of the RCO's ability to observe potential blinds that may fall behind the initiating stop butt. Where the RCO has an elevated observation point, an initiating stop butt should be constructed to the point where the RCO retains visibility of the impact area. Where the RCO will not be able to see the fall of rounds behind the target the initiating stop butt should be substantial to capture all shots. Advice from TAS(RE) should be sought for all new range or change proposals.

COMMUNICATIONS

2812. A means of summoning the emergency services, ideally a land laid telephone, is to be available.

MAINTENANCE

2813**. Responsibilities**. Maintenance is the responsibility of the RAU. Responsibilities may be divided as follows:

a. **Range Warden**. See Reference A1.

b. **Property Management**

(1) Grounds.

(2) Fencing and sign posting (See Chapter 2.)

(3) Structures, roads and drainage including stability of slopes and erosion control.

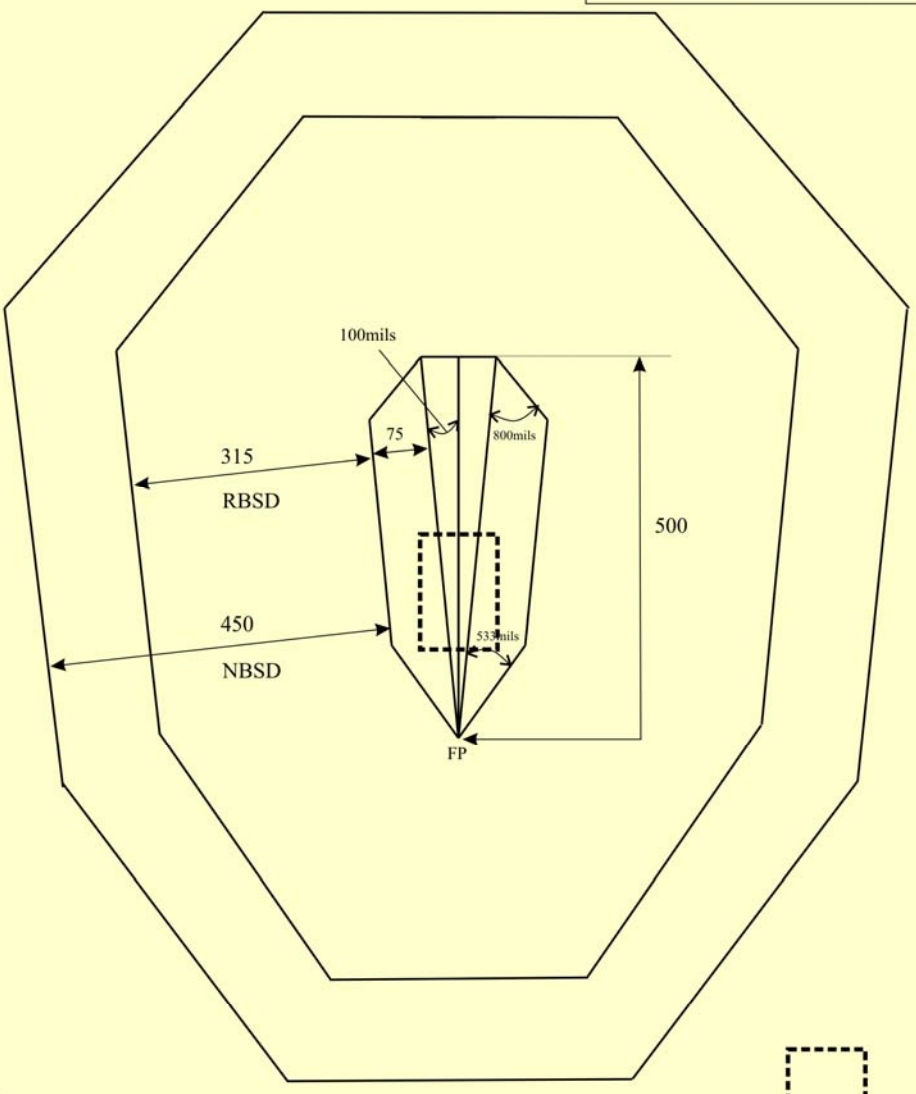
(4) Water and electricity supplies.

(5) Periodic refurbishment of the range structure.

c. **Equipment Management**. Repairing and servicing equipment installed by single Service contract.

2814. **Frequency**. Proper maintenance is dependent upon good liaison between the Range Warden and the RAU, and on properly scheduled maintenance periods. A heavily used range may need one day's maintenance each week plus one or two days' maintenance by the Range Warden each month. Two closed periods of a week or so may be needed each year for building and earthworks repair; this work should be combined with the contract repair of equipment.

Reference DOSG/02.012/003 dated 1 Mar 06



Notes:

1. ADH 1500ft
2. All measurements in metres unless otherwise stated
3. Grenade arms between 11 - 19m from muzzle.
4. As the FP will be inside the BSD a protected FP must be used.
5. All personnel involved in the firing must be behind protection when the grenade functions.
6. Closest target engagement is 150m.

Minimum closed impact area 150 x 100m box centered around target.

Figure 28-1. WDA Template, for SA80 40mm Underslung Grenade Launcher (UGL) LV HEDP

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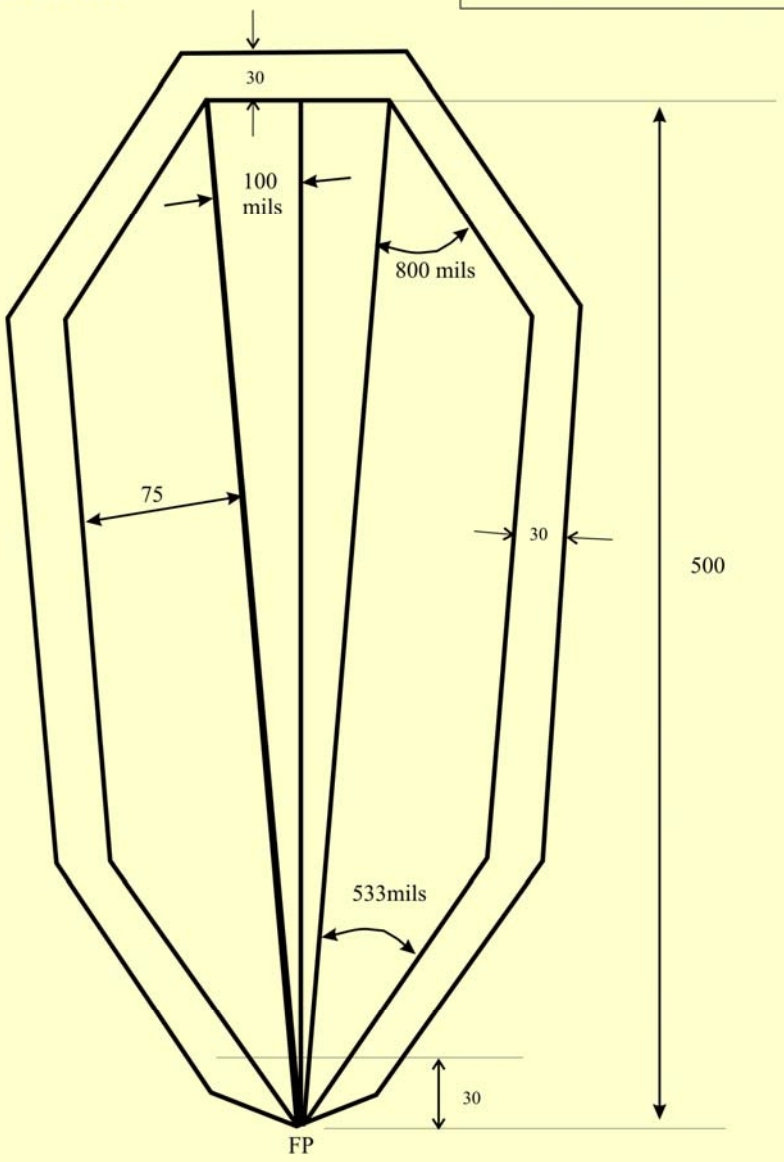
Reference D/DG DEF SC/DGM dated 27 Nov 07



Notes:

1. ADH 1500ft
2. All measurements in metres unless otherwise stated
3. Burst Safety Distance is 30m
4. Minimum engagement distance is 30m.

Figure 28-2. WDA Template, for SA80 40mm Underslung Grenade Launcher (UGL) L8A1 Practice Grenade

Reference: Type Drawing
SDS 040 Sheet 3

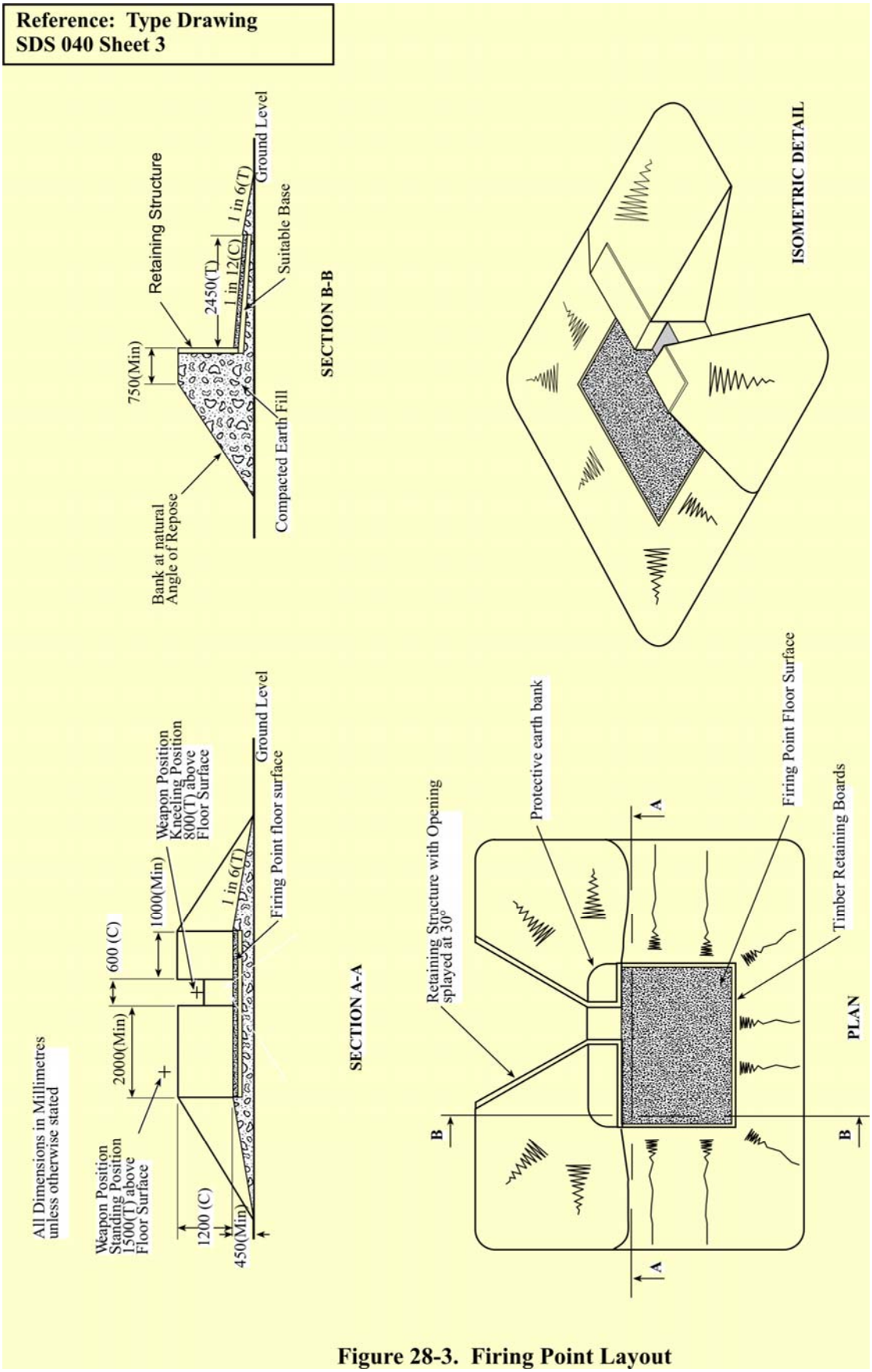


Figure 28-3. Firing Point Layout

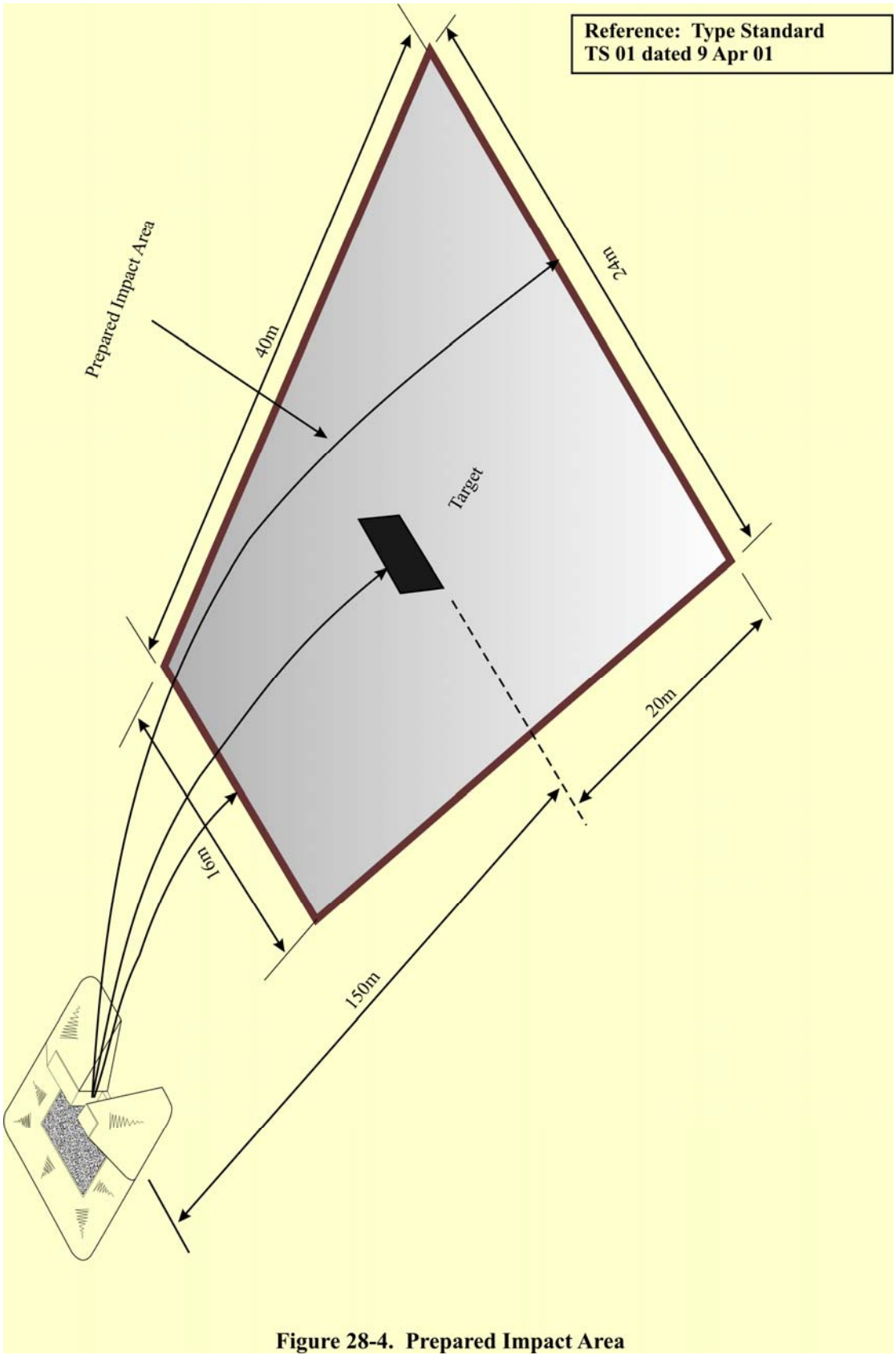


Figure 28-4. Prepared Impact Area

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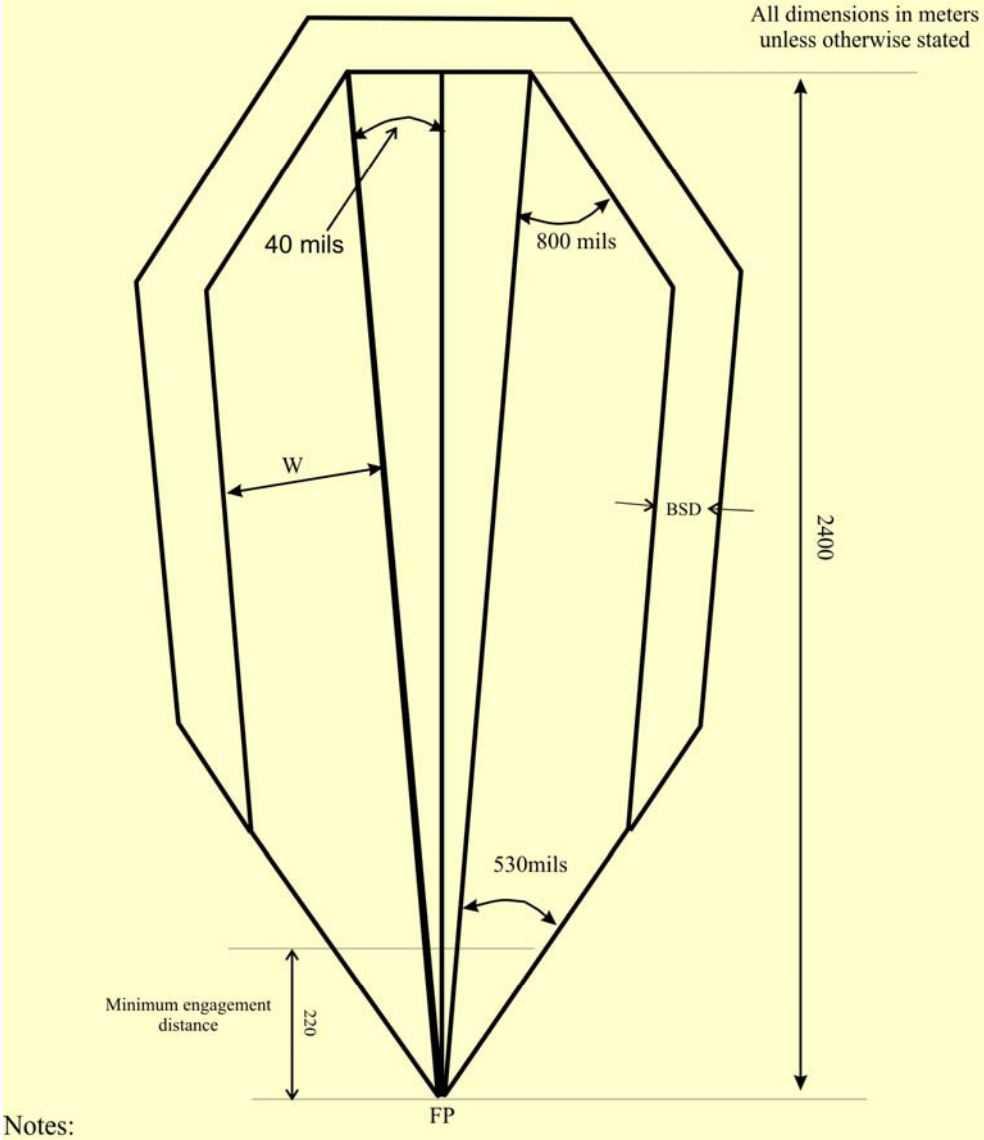
JSP 403 Volume II, Edition 3,

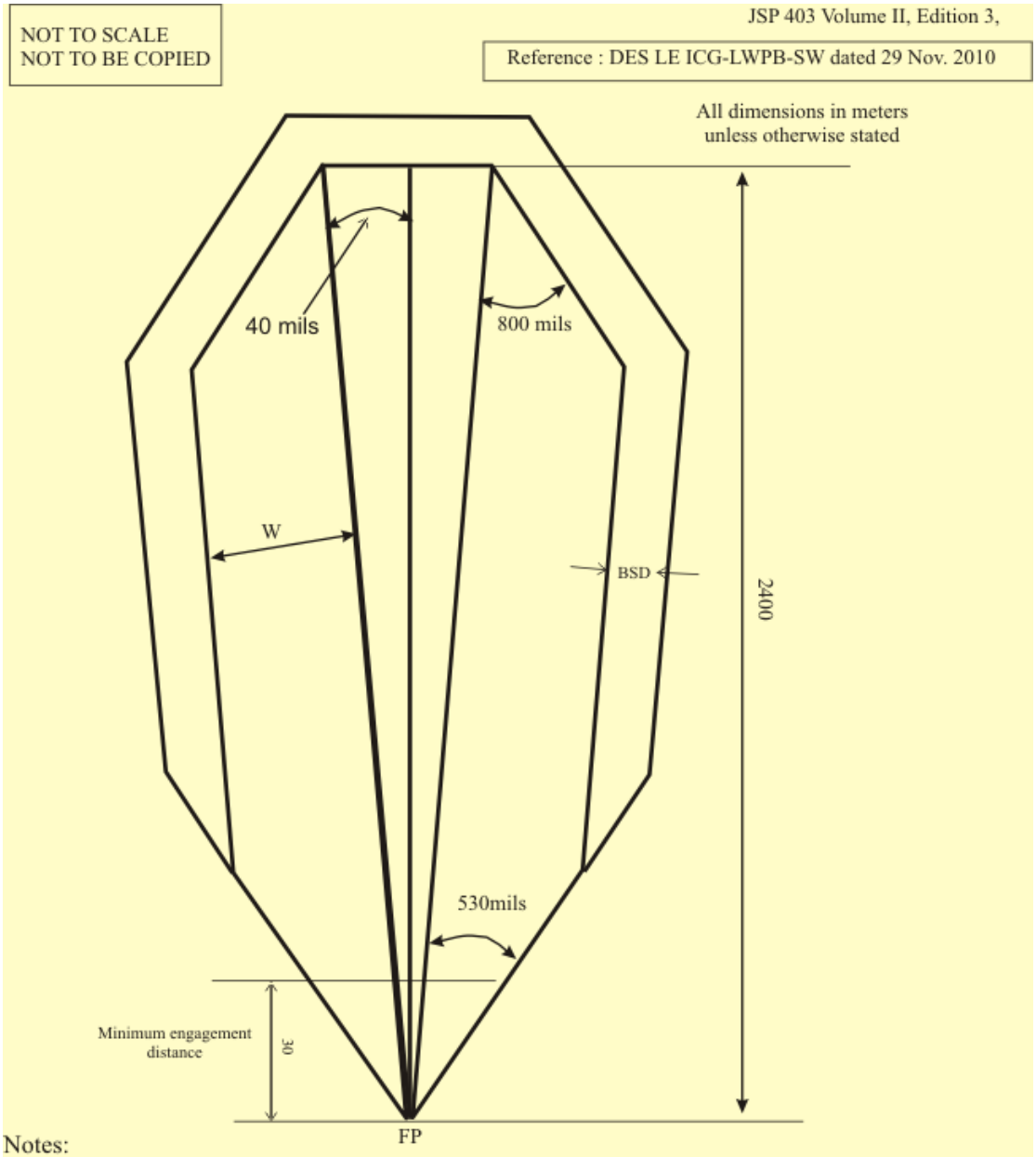
Reference : DES LE ICG-LWPB-SW dated 29 Nov. 2010



Notes:

1. ADH 3000ft
2. All measurements in metres unless otherwise stated
3. Burst Safety Distance is - Normal 310m
   Reduced 220m
4. Ricochet width (W) ground targets 300m
   Hard targets 600m
5. Minimum engagement distance is 220m.
6. This WDA has a QE restriction of 650mils.

Figure 28-5. WDA Template, for GMG 40 mm High Velocity grenade L134A1



Notes:

1. ADH 3000ft
2. All measurements in metres unless otherwise stated
3. Burst Safety Distance is 30m
4. Ricochet width (W) ground targets 300m
   Hard targets 600m
5. Minimum engagement distance is 30m.
6. This WDA has a QE restriction of 650mils.

Figure 28-6. WDA Template, for GMG 40 mm High Velocity L134A1 Practice Grenades