



17833
Multipurpose Machine Gun (MPMG)



RANGE DESIGN GUIDE



RANGE AND TRAINING LAND PROGRAM – MANDATORY CENTER OF EXPERTISE

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

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General

This document contains information specific to a Multipurpose Machine Gun Range (MPMG), FCC 17833. The document includes references to other sections of the RDG for information that is general to multiple range types. The document describes the design and construction information that is specific to the range and is not contained in, or differs from, the general section. Use both the specific information in this section and the general sections referenced together for a complete, useable range.

Purpose

The Multipurpose Machine Gun (MPMG) range is used to train and test soldiers on the skills necessary to zero, detect, identify, engage and defeat stationary and moving infantry and armor targets in a tactical array. The range supports both light and heavy machine guns in both vehicle mounted and ground based configurations. The standard MPMG includes the Sniper Field Fire (SFF), FCC 17812, as an overlay and supports all sniper weapons in both known and unknown distance training.

Primary Features

This section provides the standard layout and a listing of the primary features that are standard on an MPMG; separated between Down Range and Range Operations and Control Area (ROCA). The tables include the number and/or size of each item included in a standard facility with [hyperlinks](#) to the RDG section with the general design and construction requirements.

Standard Layout

The following drawings depict the standard layout for the range. They are included at the end of this document.

- [MPMG Standard Layout](#)
- [MPMG Electrical Layout](#)

Down Range

NUMBER	FEATURE	RDG SECTION
20	Stationary Armor Target	SAT
24	Moving Infantry Target – 15M	MIT
34	Stationary Infantry Target	SIT
28	Double Target Arm - Stationary Infantry Target	SIT
22	Widened Stationary Infantry Target	SIT
28	Iron Maiden Target	SIT
8	Iron Maiden Pad	SIT
10	Target Boots	Target Boots
10	2-Man Fighting Position	Fighting Positions
4	Sniper Firing Pad	Fighting Positions

ROCA

NAME	SIZE	UoM	RDG SECTION
Control Tower – Small Arms	1	EA	Range Control Towers
Operations/Storage Building, Standard	800	SF	Ops/Stg Buildings
Classroom Facility	800	SF	Classroom and AAR Facilities Part 1 Classroom and AAR Facilities Part 2
Latrine: Vault (Latrine: Water)	330 (550)	SF	Latrines
Bleacher Enclosure	1	EA	Bleacher Enclosure
Covered Mess	800	SF	Covered Mess
Ammunition Breakdown Building	185	SF	Ammunition Breakdown Building

Design

Use the standard MPMG layout referenced above as the basis for the range.

The MPMG is a lane based qualification range. Each lane is a minimum of 20M wide at the baseline and widens to 100m wide at 800M downrange. The standard has two different lane configurations, four heavy and six light lanes. The standard shows the heavy lanes at the center, however, that is adjustable based on SDZ and/or land constraints. The light lanes extend to 800M and have a SIT target at 100M intervals. They support SAW and other light machineguns. The heavy lanes extend to 1500M and have a variety of SIT, MIT, SAT, and Iron Maiden targets at the 100M bands. The heavy lanes also include vehicle-firing pads and the SFF overlay.

General Range Design Requirements

This section contains references to the general range design sections of the RDG. Use both the general section for a specific item or structure and the design requirements in this document specific to the MPMG as the basis for the range design.

General

- [Fire Detection/Protection](#)
- [LEED](#)
- [Furniture](#)
- [ADA](#)
- [Utility Services](#)

Civil Range Design

- [Siting Considerations](#)
- [Roads/Trails/Parking](#)

- [Target Protection Design Curves](#)
- [Line of sight](#)
- [Topographic Surveying](#)
- [Surface Danger Zones](#)

Electrical Range Design

- [Data Termination Rack](#)
- [Downrange Power and Data Distribution – General](#)
- [Downrange Power and Data Distribution – Over 300M](#)
- [Target Feeder Voltage Drop Spreadsheet/Instructions](#)

ROCA

Refer to the ROCA-General section of the RDG for general design information. Base the ROCA for the MPMG on the Small Arms ROCA.

Firing Line

Provide fighting positions along the firing line for each lane. Fighting positions should be on slightly elevated ground and designated with numbered markers. Two-man fighting positions are required in each lane. The middle four (Heavy Machine Gun) lanes generally use the combination position. The combination position has foxhole, prone, and sniper positions along with an area for firing vehicle mounted weapons. Refer to the standard fighting positions shown in the Civil Details.

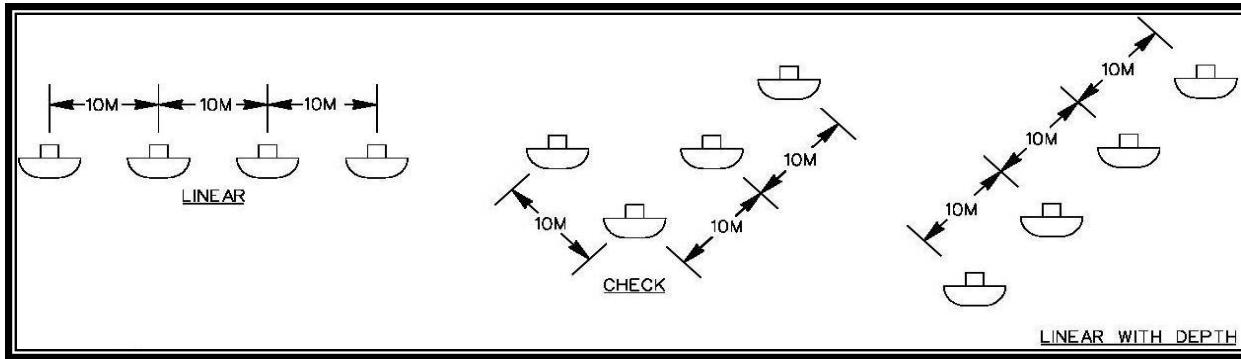
Down Range

Refer to standard drawing at the end of this document for a standard MPMG range layout. The range has 10 lanes, each 25 meters wide at the firing line, becoming wider as the distance from the firing line increases. Typical lane width at 800 meters from the firing line is 100 meters. Adjust the lane layout, if necessary, based on the terrain.

All 10 lanes support light machine gun qualification. Lanes 4-7 also support heavy machine gun and sniper training.

Use one of the three different emplacement configurations (check, linear, or linear) with depth for the SIT targets at 600 and 800. The configurations are: (see the Civil Details in the Appendix of this document). To make the best use of existing terrain, the lanes may, but do not have to, use the same configuration. Wire the arrays at these two distances, and other target groups where economically feasible, as clusters; refer to the SIT Cluster Section for additional information.

Keep the distance from the firing line to the target as close to the standard distance as possible. The distance may vary up to 5 meters in order to avoid undesirable locations such as depressions or drainage features without an exception to standard. Larger distance adjustments are possible especially at the longer distances, but require the approval of TCM Range, RTLP MCX, and the Installation. The targets in each lane should not line up; move them left and right within each lane to avoid bad locations, improve visibility, and increase training effectiveness.



Line of Sight

Provide Line of Sight from each firing position to all targets within that particular lane. Provide a view shed from the sniper positions for installation trainers to determine if sufficient areas are visible for placing iron maiden targets at unknown distances. Prepared positions may be required if sufficient areas are not visible. LoS is also required to the limit and lane markers. In addition, provide LoS from the control tower as required in the Control Tower Section of the RDG.

Refer to the Line of Sight Section of the RDG for LoS requirements, procedures, and submittal requirements.

Targetry

The MPMG used fully automated targets with event-specific, computer-driven target scenarios and scoring. The targetry computer in the Control Tower controls the targets through the target data network. The target data network is generally hard-wired out to 800 meters. The 1200 and 1500M are typically Radio Frequency (RF) controlled. Refer to the Electrical Range Design Section of the RDG for further information. The computer captures the scoring data, which is then available to the unit for after action review (AAR).

Requirement Documents

Refer to Training Circular TC 25-8, Training Ranges, for additional information and references to the FMs, ARTEPs, TCs, etc. that describe and require the training on this type of range. The latest TC 25-8 is available at Army Knowledge Online (www.us.army.mil) and the General Dennis J. Reimer Training and Doctrine Digital Library (www.train.army.mil).

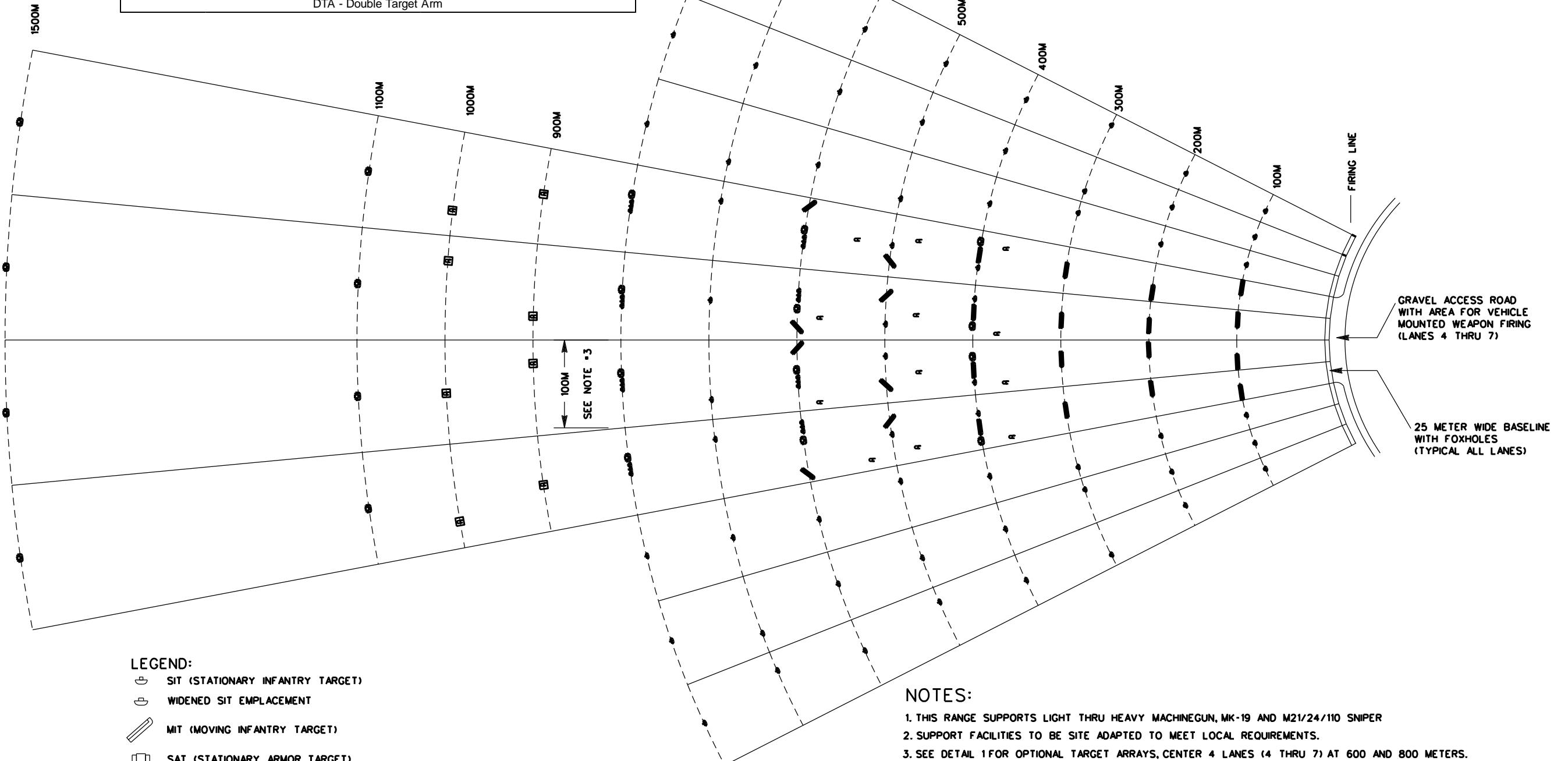
Additional Information

None



EMPLACEMENT TYPE		
DOWNRANGE DISTANCE (METERS)	OUTSIDE LANES	CENTER LANES
	1 thru 3	4 thru 7
	8 thru 10	
100	SIT	MIT
200	SIT	MIT
300	SIT	MIT
400	Widened SIT (2 SITs)	SAT, MIT, and SIT (DTA)
500	SIT (DTA)	MIT and Widened SIT (2 SITs)
600	SIT (DTA)	MIT, SAT and SIT Array (Detail 1)
700	SIT (DTA)	Widened SIT (2 SITs)
800	SIT (DTA)	SAT and SIT Array (Detail 1)
900		IM Pad
1000		IM Pad
1100		SAT
1500		SAT

DTA - Double Target A



LEGEND

 SIT (STATIONARY INFANTRY TARGET)

 WIDENED SIT EMBLACEMENT

 MIT (MOVING INFANTRY TARGET)

 SAT (STATIONARY ARMOR TARGET)

 IRON MAIDEN PAD

 IRON MAIDEN

NOTES:

1. THIS RANGE SUPPORTS LIGHT THRU HEAVY MACHINEGUN, MK-19 AND M21/24/110 SNIPER
2. SUPPORT FACILITIES TO BE SITE ADAPTED TO MEET LOCAL REQUIREMENTS.
3. SEE DETAIL 1 FOR OPTIONAL TARGET ARRAYS. CENTER 4 LANES (4 THRU 7) AT 600 AND 800 METERS.
4. SIT AND SIT(DTA) ARE STANDARD EMPLACEMENTS (CD-01); WIDENED SITs REFER TO THE
WIDENED SIT EMPLACEMENT FOR THE INSTALLATION OF 2 MECHANISMS (CD-02).

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**RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL**

**MULTIPURPOSE MACHINE GUN
TRANSITION RANGE**

FCC# 17833

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MGR-C-01

Sheet 1 of 1