



17860/17867/17868

(Digital) Multipurpose Range Complex



RANGE DESIGN GUIDE



RANGE AND TRAINING LAND PROGRAM – MANDATORY CENTER OF EXPERTISE

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

HUNTSVILLE, ALABAMA

256-895-1534

[EMAIL RTLP](#)

General

This document contains information specific to the Digital Multipurpose Range Complex (DMPRC) and the Multipurpose Range Complex (MPRC), both Heavy (MPRC-H) and Light (MPRC-L). The document includes references to 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 MPRC/DMPRC satisfies the individual and collective training and qualification requirements for armor, infantry, and aviation crews/platoons. This complex supports dismounted infantry tactical live fire operations independently and with supporting vehicles. This range supports individual and collective training and qualification for platoons, sections, teams, and crews on the skills necessary to detect, identify, engage, and defeat stationary and moving armor and infantry targets in a tactical array. With all fully automated targets, the event-specific target scenarios are computer driven and scored from the range control tower. Captured audio/video are then compiled and available to the unit during the AAR. The Digital or Instrumented version has the same downrange features, but adds the Digital Range Training System (DRTS) instrumentation. The term MPRC in this document refers to the MPRC-H. The MPRC-L is a rarely used version not covered in detail in the RDG.

Primary Features

This section provides the standard layout and a listing of the primary features that are standard on a MPRC/DMPRC; separated into Range and the 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.

- [DMC-C-01 \(Digital\) Multipurpose Range Complex](#)

Range

The table below includes the features for the threshold with features included in the objective area in parentheses.

NUMBER	FEATURE	RDG SECTION
12 (3)	Moving Armor Target	MAT
80 (10)	Stationary Armor Target	SAT
7	Infantry Cluster (6SIT – 40M MIT)	MIT
38	Infantry Cluster (6SIT – 15M MIT)	SIT
1	Urban Cluster (5 Buildings)	Urban Cluster-Breach Wall

1	Urban Cluster (7 Buildings)	<u>Urban Cluster-Breach Wall</u>
8	Facade	
4 (Note 1)	Breach Wall	
4	Trench	
4	Machine Gun Bunker	
2	Breaching Obstacle	
12 (6)	Vehicle Battle Positions - Defilade	
12	Vehicle Battle Positions - Hasty	
2-4 (Note 2)	Camera Towers	

Notes

1. Breach walls are only included when range will be used to train Stryker MGS
2. The number of Camera Towers is site dependent, determined during the design of the project.

ROCA

NAME	SIZE	UoM
Control Tower – Instrumented Ranges (Note 1)	1	EA
Operations/Storage Building, Large (Note 2)	1800	SF
Latrine: Vault (Latrine: Water)	330 (550)	SF
Bleacher Enclosure	1	EA
Covered Mess	800	SF
Instrumented Range After Action Review Building (Note 3)	3024	SF
Ammunition Loading Dock	1	EA
Vehicle Instrumentation Dock (Note 4)	1	EA
Battery Storage – Charging Building (Note 5)	600	SF
Bivouac Area	1	EA
Unit Staging Area	1	EA

Notes

1. MPRC substitutes Control Tower - Non-Instrumented
2. MPRC substitutes Operations/Storage Building – Standard, 800SF
3. MPRC substitutes Large After Action Review Building, 1776SF
4. Vehicle Instrumentation Dock is not included on the MPRC
5. Battery Storage – Charging Building is only included when AWSS is used
6. The MPRC-L uses the standard small arms ROCA facilities

Design

Use the standard MPRC/DMPRC layout referenced above as the starting point for the layout of the range. The range layout, course road length, target spread, and target count for this type of range are very site dependent; adjustments during the programming phase is common. The designer and installation must ensure that the range meets all training requirements.

The threshold portion of the standard range includes six course roads (3 lanes) that extend approximately 3000 meters downrange. It has targets spread over an area 2500 meters wide and

5000 meters deep. The Objective area adds an additional 2000 meters in depth and adds 1000 meters to the course roads. The standard layout is the starting point, the limits of the specific site chosen determines actual range area and course road length.

General Range Design Requirements

In addition to the General Design Requirements, refer to the following discipline specific sections. Use these in addition to the sections for a specific item or structure and the design requirements in this document specific to the MPRC/DMPRC.

Civil Range Design

- [Siting Considerations](#)
- [Roads/Trails/Parking](#)
- [Target Emplacement Protection](#)
- [Line of Sight](#)
- [Topographic Surveying](#)

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. The ROCA for the MPRC/DMPRC is based on the Armor ROCA.

Firing Line

Vehicles fire from the course roads, crossover trails, and battle positions. Dismounted units can maneuver anywhere on the footprint. The course roads have a defensive defilade at the baseline and end of the range, along with an additional defensive position at the end of the objective lanes. There are two additional hasty or pull through positions along each course road. Position battle positions at approximately the same distance down range across the lanes to allow platoons to maneuver in line.

Down Range

The targetry shown on the standard drawing for the MPRC/DMPRC is an example of the general arrangement. Refer to the training requirements for detailed engagement information and site topography to develop specific range layout to meet training objectives. Coordinate closely with TCM Ranges, the installation, ACOM, and the RTLP MCX on the training requirements and layout.

Line of sight

Refer to the [Line of Sight](#) (LoS) section of the RDG for LoS requirements, procedures, and submittal requirements. Use the Maneuver Range design and availability criteria. Provide LoS from battle positions and maneuver boxes to targets as required to support the training tables with alternates. Include the Target Engagement Capability Matrix.

Targetry

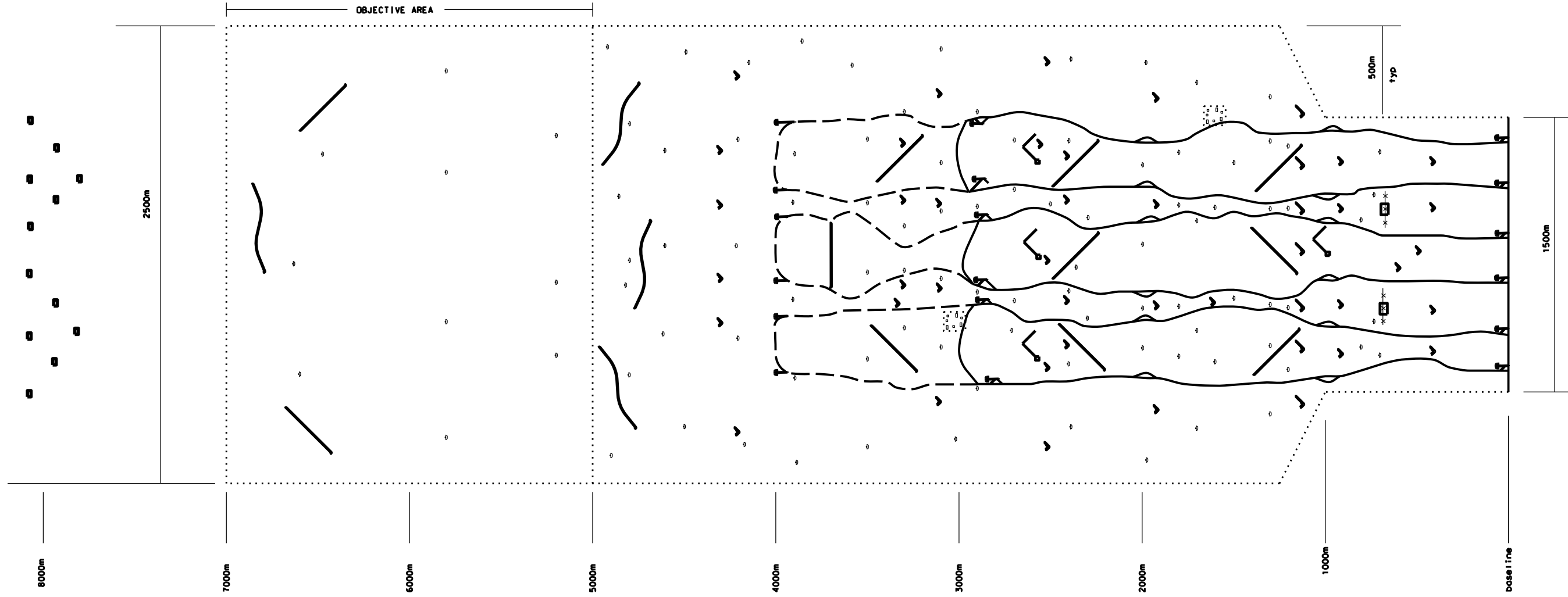
The MPRC/DMPRC uses fully automated targets with event-specific, computer-driven target scenarios and scoring. The targetry computer in the Control Tower controls the targets through the target data network. The target data network can be either hard-wired or Radio Frequency (RF), refer to the Electrical 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). The DMPRC adds the DRTS instrumentation system, which adds the ability to train the vehicles digital systems to the range.

Requirement Documents

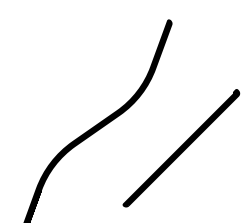







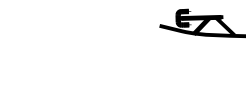



Refer to Training Circular TC 25-8, Training Ranges, for additional information and references to the FMs, ARTEPs, TCs, etc. that describe and require the training on this type of range. The latest TC 25-8 is available at Army Knowledge Online (www.us.army.mil) and the General Dennis J. Reimer Training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

Additional Information

None



LEGEND

- MOVING ARMOR TARGET (MAT) EMPLACEMENTTRAIL
- STATIONARY ARMOR TARGET (SAT) EMPLACEMENTOBJECTIVE AREA TRAILS/DEFILADES
- INFANTRY TARGET EMPLACEMENT CLUSTER (6 SIT'S and 1 - 15m MIT)STATIC TARGET
- INFANTRY TARGET EMPLACEMENT CLUSTER (6 SIT'S and 1 - 40m MIT)TRENCH WITH BUNKER
- DEFENSIVE DEFILADE POSITIONBREACHING OBSTACLE
- PULL THROUGH/HASTY BATTLE POSITIONURBAN CLUSTER
(INCLUDES BUILDINGS, FACADES, AND BREACH WALLS)

Rev. #	Description	Date	Approved

Designed by:		Date:	Rev.:
U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE, ALABAMA			
Drawn by:			
Reviewed by:			
Submitted by:			

**RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL
DIGITAL MULTIPURPOSE RANGE COMPLEX
(DMPRC) FCC 17890
(MPRC) FCC 17869)**

OCTOBER 2014