

APPENDIX L
ARMY TRAINING RANGES AND SELECTED INDOOR TRAINING RANGES

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APPENDIX L
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1. GENERAL.

a. General and Specific Criteria. The general criteria contained in this appendix are applicable to training ranges (Functional Category Group 179) and selected support facilities (Functional Category Group 171) for the active and reserve components (USAR and ARNG) of the Army, USMC and Army Special Operations Command. The specific definition of training ranges is contained in AR 210-21(dated May 98 reference L-1). In general, the definition includes all ranges, except for testing, and research and development ranges. Specific criteria are contained in various documents referenced below. Therefore, this appendix will be used in conjunction with the applicable referenced documents.

b. Design Policies and Responsibilities. ER 210-3-2 (reference L-2) will be used when designing Army training ranges. This regulation defines specific responsibilities and policies for Headquarters, U.S. Army Corps of Engineers (HQUSACE), Corps of Engineers Major Subordinate Commands (MSC), District Commands, Field Operating Activities (FOA), and the Mandatory Center of Expertise (MCX) for Army Range and Training Program (RTLTP). The ER identifies specific criteria to execute the responsibilities contained in AR 210-21 (reference L-1) in the areas of planning, programming, design, and construction of Army training ranges.

c. Army Range Program Management Plan. Procedures identified in the plan (reference L-3) will be used when designing training ranges. These procedures are required to meet specific contractual requirements outside of the purview of USACE. Therefore, deviations from the procedures will be in accordance with ER 210-3-2 (reference L-2).

d. USACE Design Manuals. USACE design manual CEHNC 1110-1-23 (reference L-4) replaces HNDEM 1110-1-5 thru -8, HNDEM 1110-1-15 thru -16, and CEHNC 1110-1-19 thru -22. Use this CEHNC 1110-1-23 and the remaining published manuals (ref L5 thru L8) when designing generic standard Army training facilities. These design manuals include:

(1) Mandatory Requirements. These requirements are highlighted in the manuals and will be followed verbatim to ensure that contractually obligated interface points between the hardware installer and the facility building contractor are met. The RTLTP MCX operates under HQUSACE authority for mandatory requirements to assist MSC and district commands, hereafter referred to as the "design agency."

(2) Technical Guidance. Technical guidance on the components of the design requiring further clarification and recommended component layouts are provided in the manuals. The layouts are based on HQDA and TRADOC approved generic training requirements and standards. Although this guidance is not contractually obligated, deviations often adversely impact on the use and operability of the facility. Deviations must be closely coordinated with the range user (trainer) to preclude unsafe or reduced capability results. Therefore, the use of this technical guidance is highly recommended.

(3) Recommendations. The design manuals are a method of disseminating lessons-learned. Design agency and FOA input is another source for obtaining recommendations and improvements as a result of design and construction execution.

e. Design and Construction Bulletin. Range Modernization Program (SERIES) bulletins (reference L-9) inform the engineering community and provide a means of rapidly updating the design agency, MACOM, and installation facilities engineers. The content of the bulletins is based on input from design agencies as a result of interaction and discussions during design reviews, interface inspections, and construction evaluations. The information and guidance provided by these bulletins are included in each subsequent update to the USACE design manuals.

f. Mandatory Center of Expertise (MCX). The RTLP MCX is the Huntsville Engineering and Support Center (CEHNC). The design agency responsible for design and construction in a project's geographical area maintains overall management responsibility for the project. However, the RTLP MCX can provide an overview perspective as well as identify other district agencies that have encountered similar problems and may be of additional assistance.

2. THE ARMY RANGE PROGRAM.

a. Standardization. Standardization in this functional category is executed in a unique manner in accordance with the Army Range Modernization and Standardization Program. The intent of the range modernization and standardization effort is to provide a baseline range design that is flexible enough to adapt to the specific needs of the users and still provide an economy of scale through commonality. Three major functional areas critical to the success of this effort are engineering, training, and safety. Decreases in cost, time, and manpower to provide a facility are directly proportional to how effectively coordination is accomplished between these areas at all levels of command (installations, MACOM, and Department of the Army Staff).

b. Process. This program is a dynamic process where the Army's engineering, training, safety, and material acquisition communities must coordinate their activities in order to provide safe and usable training ranges. Facility requirements often change during the course of design and normal MCA procedures cannot accommodate them. Design agencies are often presented with similar problems or situations and develop individual approaches to solve them. The RTLP MCX serves as a repository of approaches developed by design agencies and provides technical assistance on their effectiveness and lessons-learned.

3. DEFINITIONS, DESCRIPTIONS, AND CONSIDERATIONS.

a. General. A range is defined as a complex specifically intended to accomplish precision gunnery or battle tactics training with weapon systems. The term "range" includes all of the components required to safely operate and maintain the elements of the complex, such as control, firing positions, maintenance, targets, and utilities. Normally, full service (combat) or training (reduced lethality or range) ammunition will be used on a training range. However, all current modernized training range designs are configured to also accommodate simulation using eye-safe lasers, for example, Multiple Integrated Laser Engagement System (MILES) devices. The use of devices on a training range is limited to those which will replicate actual firing of the weapon system.

b. Maneuver Areas. A maneuver area (sometimes referred to as a range) is a large, contiguous parcel of land; for example, 32,375 hectares (80,000 acres) for a Heavy Division, used by one or more units to practice movement and engagement tactics without the need to conduct precision gunnery training using full service or training ammunition. Blanks and pyrotechnic simulation devices may be employed in these areas during the conduct of training.

c. Individual Proficiency Training. Close-in training areas provide a site to conduct individual proficiency training skills leading to the training areas in subparagraphs 3.a. and 3.b. above. This area is often referred to as a range primarily since all individual weapons marksmanship ranges are included in this area. This area also includes non-firing facilities, such as obstacle courses, confidence courses, pole orchards, leadership reaction courses, and driver training areas.

d. Area Requirements. The total land area necessary to safely operate and contain the weapon systems to be employed on a range is the cumulative total of the following:

(1) The footprint of a range includes the firing positions, target emplacements, course roads, target mechanisms, and the support component described in paragraph 4.

(2) The associated Surface Danger Zone (SDZ) or safety fan of all systems to be employed. SDZs may be overlapped in many cases to reduce the total land area required.

(3) Planning and additional design considerations are contained in AR 210-20 (reference L-10).

e. Siting. The siting and associated topographic surveys of a range facility are critical to a successful design and construction project. There are several factors to be considered in addition to the total land area required.

(1) The location and proximity of a range to other ranges, the irrespective individual uses, and the movement or flow of soldiers into and out of these facilities have significant resource implications. This information and analyses must be provided by the training community to the installation facilities engineer during planning and programming stages, as well as during the design stages. A constant exchange of information is needed, since planning, programming, and design information cannot be expected to be contained in any one source document. This information must be updated throughout the planning, programming, design, and construction process.

(2) When selecting sites, the existing ground condition of the proposed facility can be critical to the successful execution of a project. Since targetry and service roads will often be sited in existing or suspected impact or dudded areas, problems in obtaining accurate topographic surveys due to Unexploded Ordnance (UXO) hazards must be addressed. Dense vegetation can have an adverse impact on an accurate assessment of ground conditions when using normal aerial mapping, photogrametry, or laser profiling. When this situation exists, ground surveys will be used to verify actual ground conditions and should be a major consideration during site selection.

(3) When automated targetry is to be used, the availability of adequate power is critical to operability of the facility. The RTLP MCX should be consulted on the proper power profile and configuration for specific types of targetry. These data should then be used as a part of the site selection process.

f. Safety.

(1) Critical to any training range design are all safety considerations which must be addressed. The documents necessary for a successful design and construction project are as follows:

(a) AR 95-2 (reference L-11).

(b) AR 385-10 (reference L-12).

(c) AR 385-62 (reference L-13).

(d) AR 385-63 (reference L-14).

(e) Support Facility Annexes (Various Weapon Systems) (reference L-15).

(2) When weapon systems are employed, the SDZ for each weapon system and its associated ammunition types must be overlaid onto each firing position and target emplacement of the down range component. The total SDZ area requirement is a composite SDZ of all of the weapons used. When SDZs are overlaid, the total area to be provided is driven by the greatest weapon system or ammunition need. Siting of ranges, SDZ layouts, and their validation are the responsibility of the installation master planner, trainer, and range safety officer. Since the modernization of Army equipment is an on-going process, considerations for specific weapon systems and the associated ammunition to be used are published in Support Facility Annexes (reference L-K) available from USACE Program Manager for Force Modernization, HQUSACE, ATTN: CEMP-ET (PM FM), Washington DC 20314-1000, cml 202 761-8817, fax 202 761-4139.

(3) Containment of the SDZs total area within government controlled land includes consideration of the airspace required to conduct live-fire training. Considerations and procedures are contained in AR 95-2 (reference L-17).

g. Memorandum of Understanding (MOU). Installation facilities engineers and design agencies must ensure that commitments with third parties be in writing. It is recommended that when extensive requirements are necessary, such as cost sharing, an MOU should be prepared and executed.

4. FACILITY COMPONENTS.

a. General. Weapon system ranges are divided into two major components; down range and support components. The down range component includes the firing positions, target emplacements, course roads when required, target control mechanisms and associated safety clearances. The support component includes those facilities necessary to operate, control, maintain, and circulate within a specific range. This latter component is further divided into required and optional facilities.

b. Components. The footprint of a range complex is the area necessary to contain the following components:

(1) Down Range Component (Weapon System Ranges).

(a) Firing points (personnel and vehicle).

(b) Target emplacements (static and moving).

(c) Course roads (tracked and wheeled).

(d) Targetry maintenance roads.

(2) Support Component (Weapon System Ranges).

(a) Required Facilities.

1/ Control tower or similar control buildings.

2/ Range flagpole.

3/ Ammunition breakdown or distribution point (for live-fire ranges).

4/ Operations and storage building.

5/ Toilet facility.

(b) Optional Facilities.

1/ General instruction building.

2/ Covered food service facility.

3/ Lyster bag holder.

4/ Bleacher enclosure.

5. POINTS OF CONTACT. Design agencies are encouraged to provide lessons- learned or relay questions which may improve the process or the design of range facilities to the following points of contact:

a. Policy. Policy and programmatic issues should be provided to the USACE Program Coordinator (PC); HQUSACE, ATTN: CEMP-ET Claude Matsui, Washington, D.C. 20314-1000, DSN 285-0905, Commercial (202)

761-0905.

b. Technical. Issues directly related to planning, programming, design, and construction of training ranges should be provided to the RTLPC MCX for evaluation prior to approval by the USACE PC: Huntsville Engineering and Support Center, CEHNC, Huntsville, ATTN: CEHND-PM-CR, Vernon Petty, P.O. Box 1600, Huntsville, AL 35807-4301, DSN 927-1534, Commercial (205) 895-1534.

6. REFERENCES.

- L-1 AR 210-21, Army Range and Training Land Program, May 98
- L-2 ER 210-3-2, The Army Range Program, 1 October 1990
- L-3 Management Plan for the Army Range Program, 21 August 1987
- L-4 CEHNC 1110-1-23, USACE Design Manual Remoted Target System (RETS) Ranges, March 1998
 - a. Tank Gunnery range (stationary)
 - b. Multipurpose Training Range (MPTR)
 - c. Antiarmor Tracking and Live Fire range (AARLF)
 - d. Multipurpose Range Complex (MPRC)
 - e. Multipurpose Range Complex, light infantry (MPRC-LI)
 - f. Automated Field Fire range (AFF)
 - f. Modified Record Fire range (MFR)
 - g. Automated Record Fire range (ARF)
 - i. Fire and Movement range
 - j. Sniper Training Field Fire range
 - k. Multipurpose Machinegun Transition range (MPMG)
 - l. Combat Pistol Qualification course (CPQC)
 - m. Infantry Squad Battle course (ISBC)
 - n. Infantry Platoon Battle course (IPBC)
 - o. Military Operations on Urban Terrain (MOUT) training complex
- L-5 HNNDM 1110-1-9, Design Information for Range Control Facility, September 1984
- L-6 HNNDM 1110-1-10, Design Information for Battle Simulation Centers, October 1984
- L-7 CEHND 1110-1-18, USACE Design Manual for Indoor Ranges, (DRAFT), June 1990
- L-8 Design and Construction Bulletin, Range Modernization Program (SERIES)
- L-9 AR 210-20, Master Planning of Army Facilities, June 1987
- L-10 AR 95-2, Air Traffic Control, Airspace, Airfields, Flight Activities, and Navigational Aids, October 1988
- L-11 AR 385-10, Army Safety Program, 23 May 1988
- L-12 AR 385-62, Regulations for Firing Guided Missiles and Heavy for Training, Target Practice, and Combat, 5 January 1977
- L-13 AR 385-63, Policies and Procedures for Firing Ammunition for Training Target Practice, and Combat, 15 November 1983

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L-14 Support Facility Annexes (Various Weapon Systems)