APPENDIX B

RANGE INFORMATION/DESCRIPTIONS/CELLS

APPENDIX B

RANGE INFORMATION / DESCRIPTIONS / CELLS

Range cells included in this appendix were created, which included *historical* regulations, manuals, photos, drawings, and documents. They represent typical (general) layouts, which include firing lines, target areas, target berms, and danger areas (aka SDZ). Each cell is a two-dimensional model, which does not take into account (during time of use) terrain, boundaries, or local requirements and/or restrictions.

As stated in an obsolete Army Regulation, AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace,* dated May 22, 1939, "It is obviously impossible for any general range regulation to cover each local situation completely. Such additional regulations as may be necessary to meet local condition will therefore, be prepared and enforced by the post, camp, or station commander."

When the ranges were established, regulations such as AR 750-10 (now obsolete), along with others, such as TM 9-855, *Targets, Target Material, and Training Course Lay-Outs,* dated August 17, 1944 (now obsolete) would have been referenced. These guidelines would have been applied to the local environment at the time of construction.

Where applicable, right and left firing limits and down-range limits were required and set based on the local conditions. Taking in-to account the scores of ranges and the lack of first-hand knowledge, many ranges were estimated using the best available resources. Topographic maps were analyzed to determine if terrain features could be used to limit the extent of the range.

For most sites it's likely to locate numerous historical maps displaying firing ranges drawn in a various configurations, but not necessarily with a true representation. For instance, they may show the range as nothing more than a dot, a box, circles, or a V-shaped fan. However, in rare cases, a range map displays what appears to be a true fan with a calculated danger area. In these cases, the range fans may be a true representation of the actual range boundaries, and therefore be considered for use instead of the general *Range Cells.* An example where this applies is shown below:

A historical range map found for Fort Custer, Michigan identified numerous ranges, all having range fans drawn. The fans displayed on this map appear to be proportioned, and closely represent correct angles and distances according to regulations. It is believed this map was done with a high degree of accuracy; therefore the range fans were used instead of the general *Range Cells.* Also recovered, was a document referring to the artillery range. It explained the necessity to discontinue firing of artillery on this facility because of the inconvenience of reducing the propelling charges

on 155mm Artillery Shells. The rational behind this reduced charge was to minimize the down-range distance the projectile would travel. At charge 7 (max), a 155mm projectile had a maximum range of approximately 17,400 yards. In addition to this distance, regulations required a mandatory 1,000-yard buffer zone beyond the max range. If the max charge had been used to calculate the danger area, the downrange distance for this artillery range would have extended more than 6-miles beyond the installation boundary. Maximum distance on artillery munitions can be calculated using appropriate Ammunition Firing Tables.

Unfortunately, this detailed information is seldom available. Other options to consider are included in the following example where the use of topographic maps and site inspections were used to determine the boundaries of Spencer Mountain Rifle Range in North Carolina.

The only available map displayed the range as a small rectangular box. Documents recovered stated that the range was positioned at the base of the mountain in order to reduce the danger area. The *range cell* for a rifle range was designed to include 50 firing positions, which calculates to a width of 400 yards. However, during the site inspection, the actual width of the range was determined to be no more than 150 feet. By reducing the width of the *range cell,* and using contour lines on a topographic map the delineated boundaries was realistically reduced from the standard 1259 acres down to 72 acres.

As indicated, there are many variables to account for when developing range boundaries, and it is unlikely that all of the data used when the range was originally laid out will be available. Therefore, the historical data found during research (maps, aerial photos, documentation, etc.) was utilized to represent the range as accurately as possible. In most cases, the only option was to use the general *Range Cell*.

Each range description contains a list of Ammunition Data sheets. The intention of this list is to provide a general idea of the ordnance that could have been used on the range. It is not intended to be all-inclusive and by no-means is an indication that these munitions are actually present.

A significant number of manuals, drawings, letters, instructions, reports, and miscellaneous documents were referenced in order to calculate the *Range Cells*. The following non-inclusive list are published Range Manuals that were referenced to create the range cells.

- TR 140-5, *Range Regulations for Firing Ammunition in Time of Peace,* dated November 1931
- AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace,* dated May 1939

- AAF Manual 85-0.1, *Army Air Forces Gunnery and Bombardment Ranges,* dated June 1945
- AD-A954 905, *Training in the Ground Army 1942-1945, Study No. 11,* dated May 1948
- *Second Air Force Ground Gunnery Range*, dated July 24, 1943
- TM 9-855, *Targets, Target Material, and Training Course Lay-Outs,* dated August 1944
- TM 9-855, *Targets, Target Material, and Training Course Lay-Outs,* dated November 1951
- AFM No. 66, *Poorman Flexible Gunnery Trainer,* dated March 1945
- TC 25-1, *Training Land*, dated August 1978
- TC 25-8, *Training Ranges,* dated February 1992
- AFI 13-212, Vols 1,2,3, *Space, Missile, Command, and Control, Weapons Ranges,* dated July 1994
- AR 210-21¸ *Army Ranges and Training Land Programs,* dated May 1997
- AR 385-62¸ *Regulation for Firing Guided Missiles and Heavy Rockets for Training, Target Practice, and Combat,* dated June 1983
- AR 385-63, *Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat,* dated November 1983

HISTORIC USE: OB/OD

BURN AREA

Range Type: OB/OD

Cell Name(s): BURNAR

The range is typically used to destroy unserviceable small arms ammunition, pyrotechnics, propellants, and explosives.

A danger area is established by application of the criteria given below.

If the net explosive weight (NEW) of burn material is more than 100 pounds the minimum safe distance shall be at least 1,250 feet. If the NEW of burn material is 100 pounds or less, the danger area shall be at least 670 feet.

If the facility is a military range and the material being destroyed is unknown consider the NEW to be 100 pounds or less and select a danger area of 670 feet.

If the facility is an ammunition plant or explosive manufacturing plant assume the danger area to be a minimum of 1,250 feet unless evidence indicates a lesser distance is applicable.

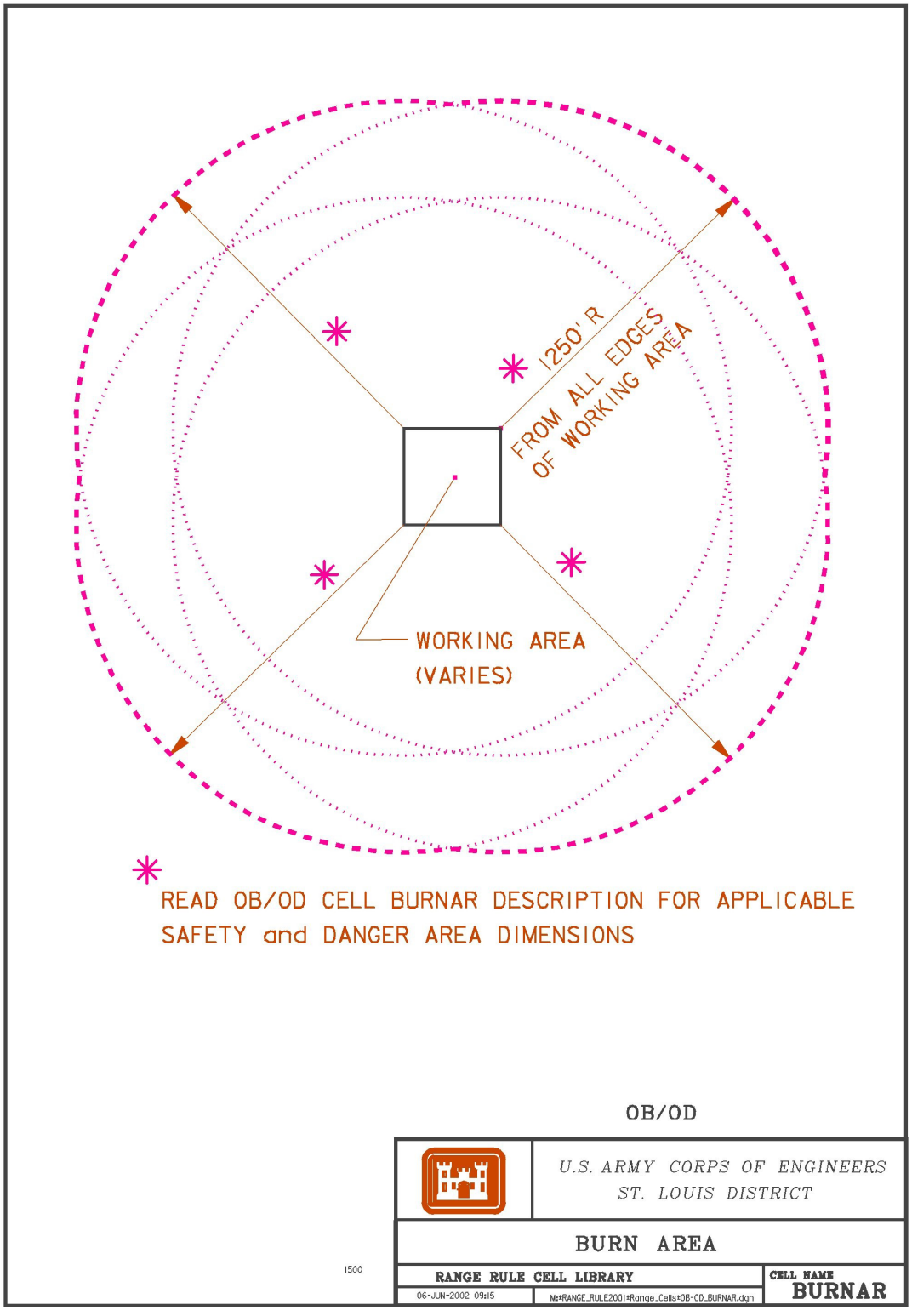
Unless the location of the actual burn pit is known, the danger area should be established from all edges of the working area the range.

Ammunition (probable)
Small Arms ammunition, or applicable munitions

Data sheet(s):
When selecting datasheets, it is important to consider the time frame the range was used. Possibilities include:

CTT01 Small arms, General

Reference(s): DOD 6055.9-STD, *DOD Ammunition and Explosives Safety Standards*, July 1999


1250' R
FROM ALL EDGES
OF WORKING AREA
WORKING AREA
(VARIES)
READ OB/OD CELL BURNAR DESCRIPTION FOR APPLICABLE
SAFETY and DANGER AREA DIMENSIONS
OB/OD
U.S. ARMY CORPS OF ENGINEERS
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BURN AREA
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BURNAR
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1500

RANGE USED FOR DESTRUCTION OF AMMUNITION, DEMONSTRATIONS, AND EXPLOSIVE ORDNANCE DISPOSAL (EOD)

Range Type: OB/OD

Cell Name(s): EODRNG

The danger area for explosive demolitions, demonstrations, and EOD explosives operations is determined by application of the criteria given below.

The danger area should not be less than 1250 feet, for non-fragmenting explosive materials. This would generally pertain to explosive demonstrations, training, etc.

The danger area should not be less than 2500 feet, for fragmenting explosive materials. For bombs and projectiles with caliber 5-inches or greater use a minimum distance of 4000 feet.

If the type of ammunition destroyed on the range is unknown then the maximum distance should be applied.

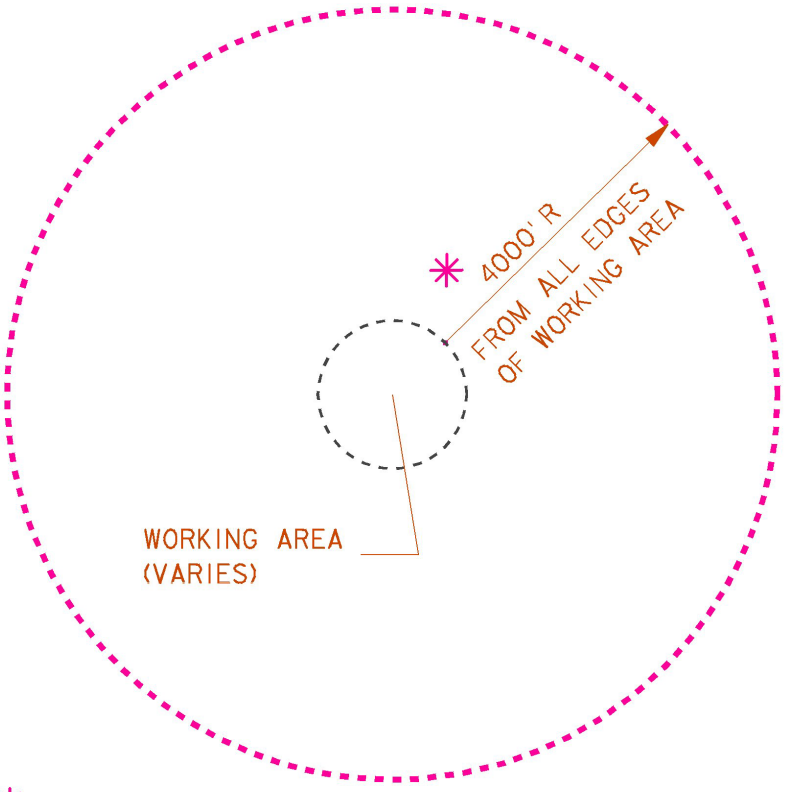
Because the actual disposal pits may be positioned anywhere within the range area, the danger area should be established from all edges of the working area of the range.

Ammunition (probable)
All ammunition, applicable to the installation. To include demolition materials.

Data sheet(s):

Must be determined for each site

Reference(s): DOD 6055.9-STD, *DOD Ammunition and Explosives Safety Standards*, July 1999



* READ OB/OD CELL EODRNG DESCRIPTION FOR APPLICABLE SAFETY and DANGER AREA DIMENSIONS

OB/OD

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DEMOLITION RANGE

1500

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CELL NAME
EODRNG

HISTORIC USE: RIFLE GRENADE, ANTI-TANK ROCKET

GROUND TOWED TARGET

Range Type: Multiple/Combined Use

Cell Name(s): GRTTG

Firing at a distance of up to 900 yards at targets on sleds or cars towed by motor vehicles is permitted on this range. Pulleys may be set at desired locations to accomplish changes in the direction of the target. More than one car or sled may be used at one time. Right and left limits of fire would have been established based on existing conditions. As shown in the cell, the suggested depth of the range is 1,000 yards and the firing line is 200 yards wide. A danger area would have been established based on the right and left firing limits and the width of the firing line. A 600-yard buffer is added to each side of the range and a 1,000-yard buffer is added downrange beyond the maximum range of the weapon used. An arbitrary safety fan angle of 30°, which is based on assumed right and left firing limits, the angle of fire, and ricochet zones, is used for this range cell. This range is designed to accommodate 37mm tank guns, 37mm sub-caliber weapons, rifle grenades and antitank rockets.

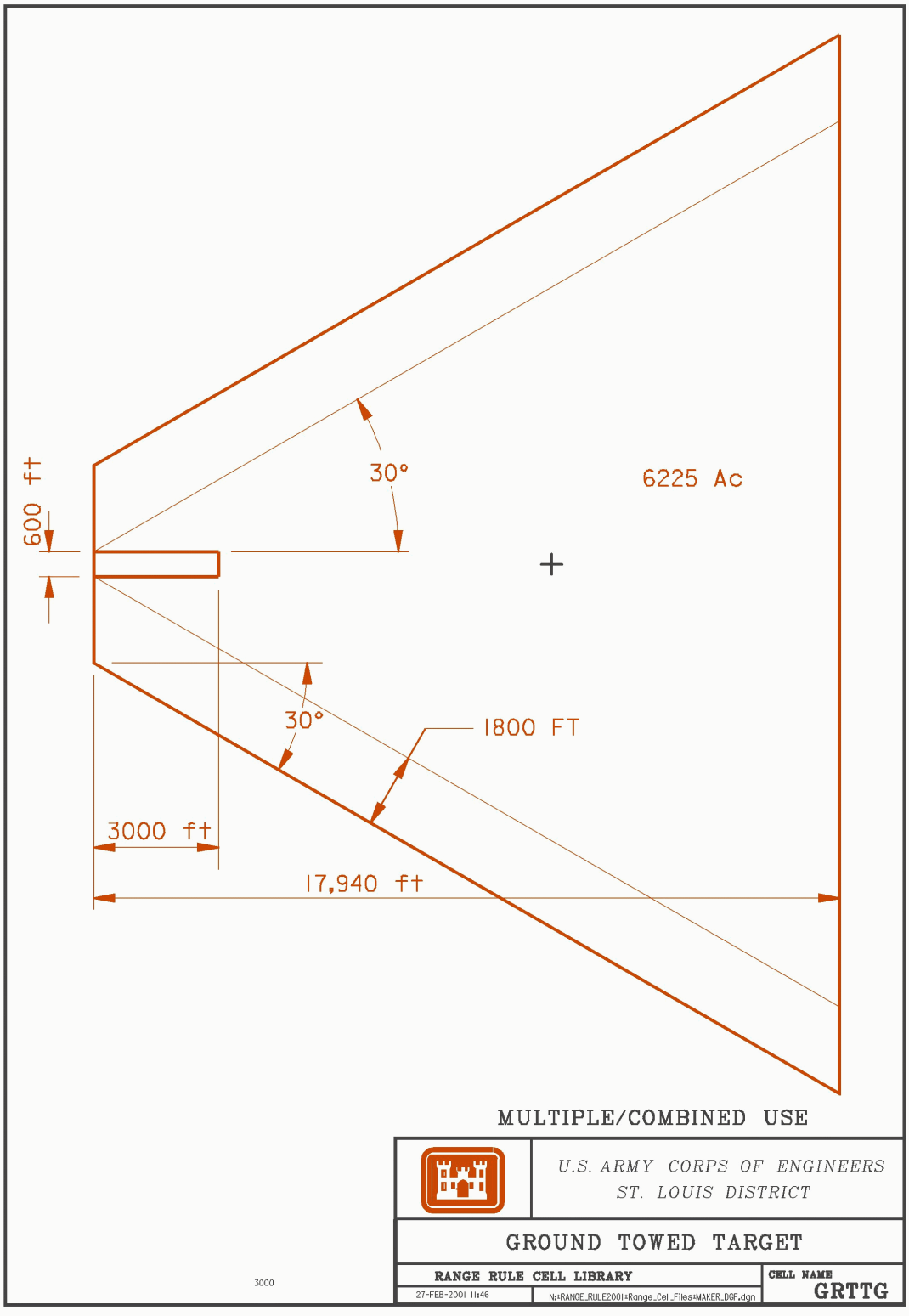
Note: Rockets and Rifle Grenades have a limited effective range so targets would be engaged from 100 to 300 yards, and from 25 yards to 125 yards; respectively.

Ammunition (probable)	Max Range (yards)
37mm AP	4,950
2.36" Rocket (Practice)	700
Rifle Grenade (Practice)	< 400

Data sheet(s):

CTT01	Small arms, General
CTT10	M7A1, Practice Rocket, 2.36"
	M7A3, Practice Rocket, 2.36"
	M11A2, Practice Rifle Grenade
CTT13	37mm, APC, M59

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951; *FM 23-30, Hand and Rifle Grenades, Rocket, AT, HE, 2.36-inch,* February 1944



MULTIPLE/COMBINED USE

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GROUND TOWED TARGET

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CELL NAME
GRTTG

3000

40mm GRENADE LAUNCHERS M79 AND M203 (HE)

Range Type: Rifle Grenade/Anti-Tank Rocket

Cell Name(s): L40mmG

The surface danger zone represents three firing lanes. Additional firing positions may be added if a minimum separation of 6 meters is maintained between positions.

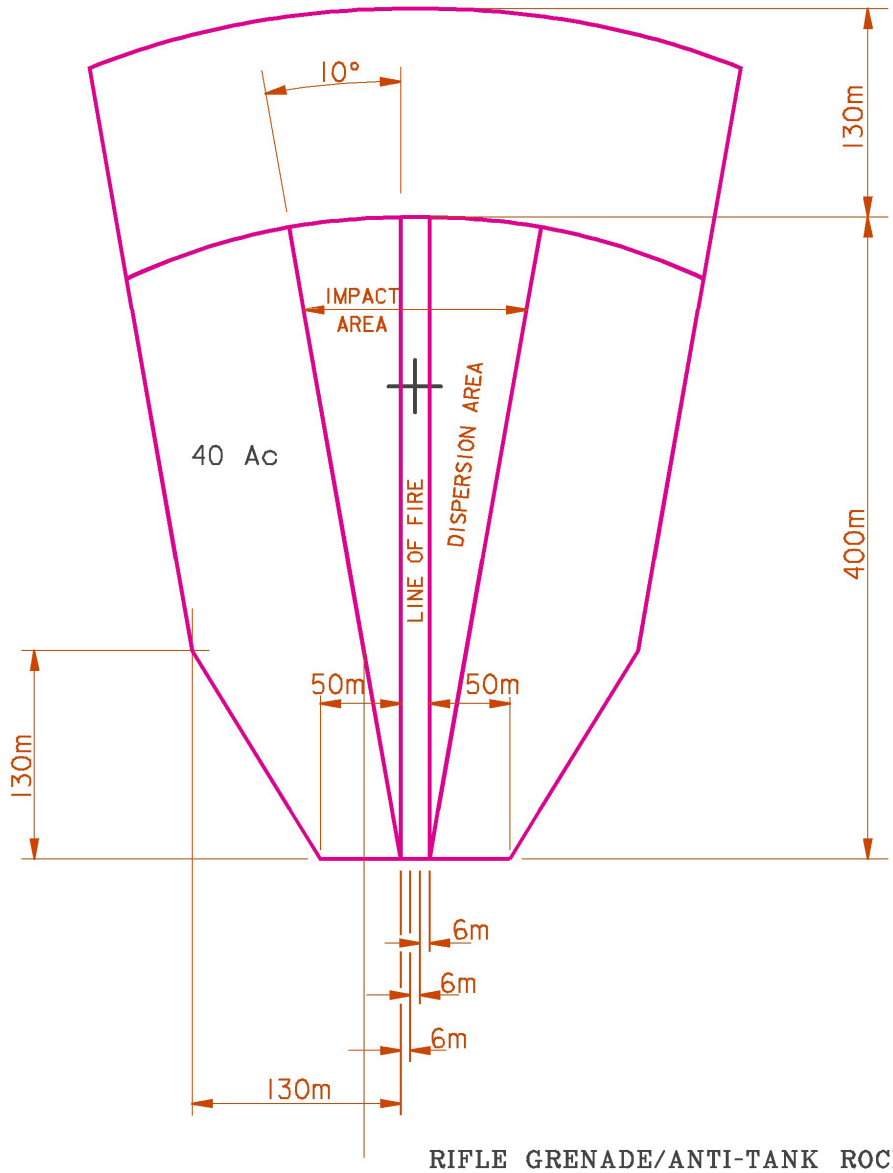
For the Mk19, 40mm machine gun (MG), the distance to the back of the impact area is 2,000m and will not be reduced.

Ammunition (probable)
40mm HE
40mm Practice
40mm Illumination

Data sheet(s):

CTT13	40mm, HE, M381
	40mm, HE, M386
	40mm, HE, M406
	40mm, HEDP, M433
CTT14	40mm, Parachute, Star, M583, M661, M662
CTT15	40mm, Practice, M382
	40mm, Practice, M407
	40mm, Practice, M781

Reference(s): AR 385-63*, Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat,* November 1983.



RIFLE GRENADE/ANTI-TANK ROCKET

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LIVE 40mm GRENADE LAUNCH RANGE

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L40mmG

300

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40mm GRENADE LAUNCHERS M79 AND M203 (PRACTICE)

Range Type: Rifle Grenade/Anti-Tank Rocket

Cell Name(s): P40mmG

The surface danger zone represents three firing lanes. Additional firing positions may be added if a minimum separation of 6 meters is maintained between positions.

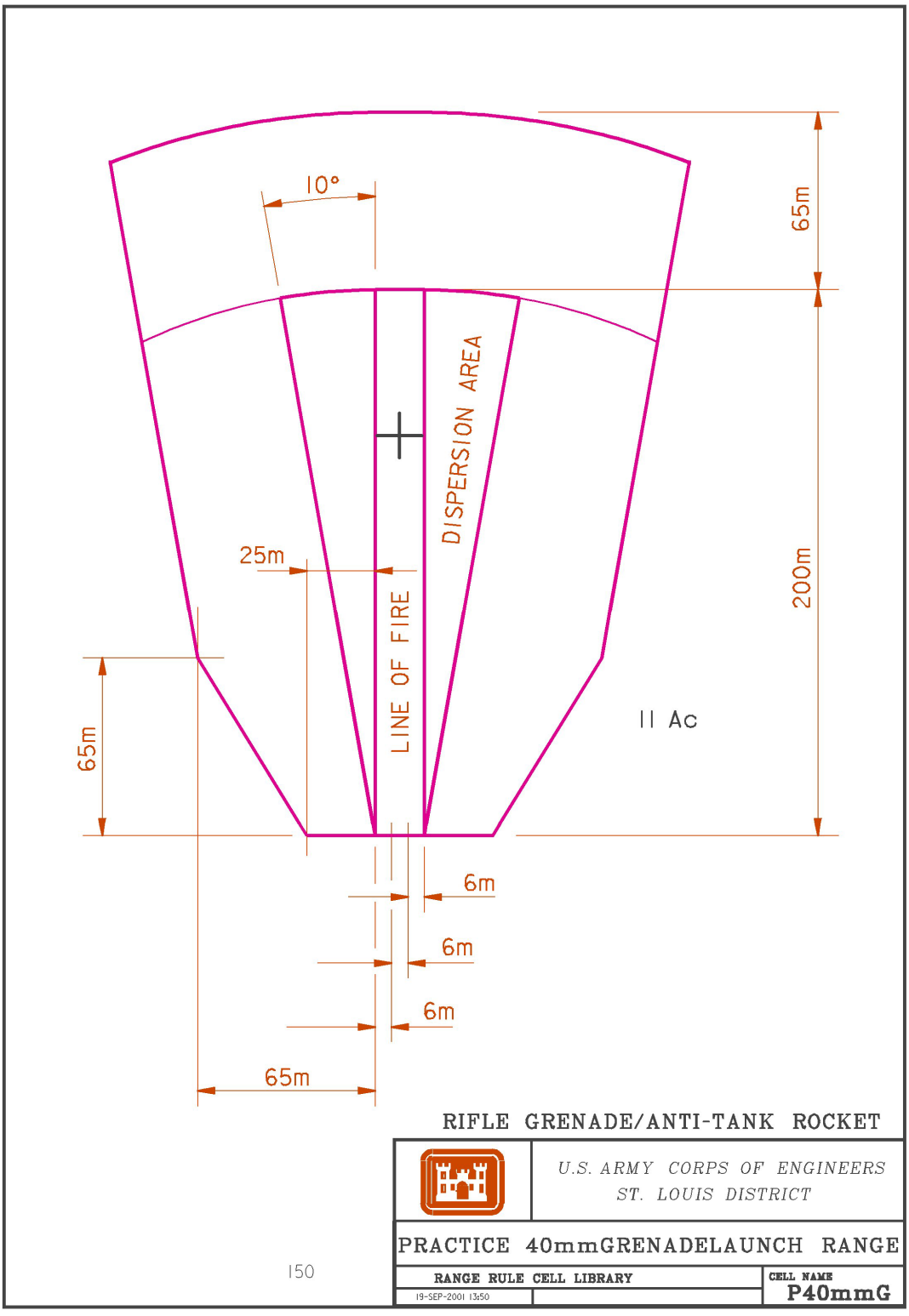
For the Mk19, 40mm machine gun (MG), the distance to the back of the impact area is 2,000m and will not be reduced.

Ammunition (probable)
40mm Practice
40mm Illumination

Data sheet(s):

CTT14	40mm, Parachute, Star, M583, M661, M662
CTT15	40mm, Practice, M382
	40mm, Practice, M407
	40mm, Practice, M781

Reference(s): AR 385-63*, Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat,* November 1983.



RIFLE GRENADE/ANTI-TANK ROCKET

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PRACTICE 40mmGRENADELAUNCH RANGE

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RIFLE GRENADE (PRACTICE)

Range Type: Rifle Grenade/Anti-Tank Rocket

Cell Name(s): RGREN

As stated in the regulations, "The number of targets and firing points depends upon local conditions." The safety zone extended 500 feet beyond all targets.

Three types of rifle grenade ranges are described below. One or all of these types could have been located on the rifle grenade range depicted in the range cell.

- Antipersonnel Marksmanship
  - High trajectory fire – the range would encompass an area 200 yards long and approximately 40 yards wide with targets located at the far end. Firing points would be established at ranges of 50, 100, 150, and 200 yards. Foxholes are dug at the 200-yard firing position.
  - Flat trajectory fire – this court is 75 yards long and has 6 targets at the far end. Sandbags are placed at the 25-yard mark, shell craters are dug at the 50-yard mark, and stakes indicate other firing points at the 75-yard mark.

- Antitank Marksmanship
  - A court for known-distance firing at stationary targets would consist of a single firing line using shell craters and/or 1-man foxholes for firing positions. Targets would be located at 25 yards, 37½ yards, and 75 yards.
  - A court for firing at moving targets could and most likely be constructed on the same stationary target court. Moving targets would either be towed parallel or perpendicular to the firing line. All firing positions are allowed to use one target when towed parallel to the firing line. However, only two firing positions are allowed to use one target when towed perpendicular to the firing line.

- Antitank Field Firing – This ground towed target range may be utilized for field firing exercises with practice antitank grenades. Several standing-type 1-man foxholes or shell craters at a location near the center of the range would be constructed.

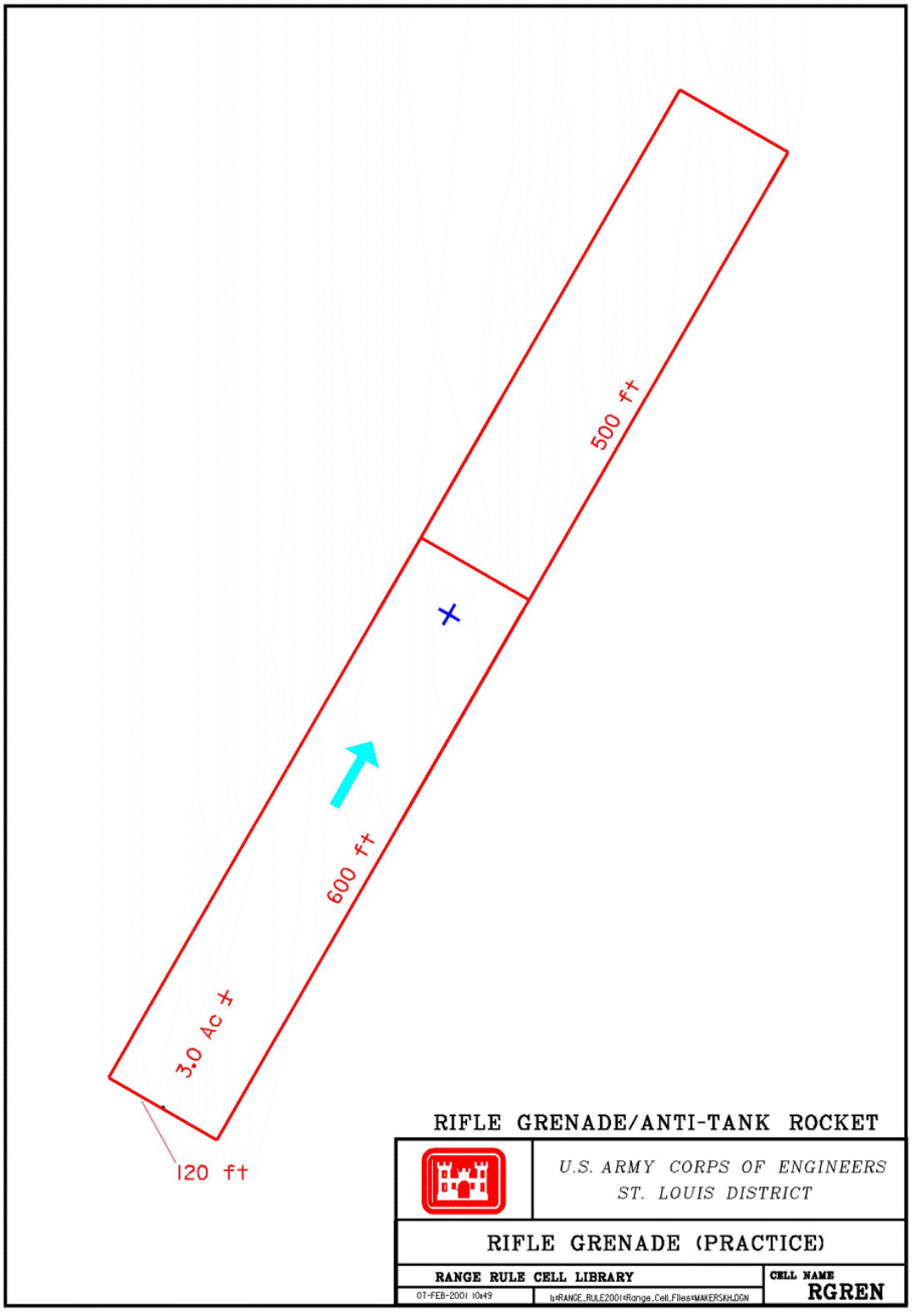
Since practice antitank rifle grenades do not contain an explosive charge, training in their use may be given in any area where troops are not within a distance of 200 yards to the rear of the target. In order to minimize damage to fin assemblies, an area free from trees, stumps, rocks, and other hard objects would have been selected.

Ammunition (probable)	Max Range (yards)
Practice Rifle Grenades	<400

Data sheet(s):

CTT10 M11A2, Practice, Rifle Grenade

Reference(s): *FM 23-30, Hand and Rifle Grenades, Rockets, AT, HE, 2.36-inch,* February 1944; *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944.



RIFLE GRENADE/ANTI-TANK ROCKET

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RIFLE GRENADE (PRACTICE)

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ROCKET, 2.36-inch (STATIONARY TARGETS)

Range Type: Rifle Grenade/Anti-Tank Rocket

Cell Name(s): ROCKET

Target areas would have been established with consideration given to terrain and local restrictions; however, a width of 356 mils (20°) is assumed for this range cell. Targets would have been located at 100, 200, and 300 yards, with some down range as far as 650 yards. Typically, targets would have been at least 10 feet square and constructed from paper, cloth, wood, or metal. However, targets would have been constructed of wood or metal when high explosive rockets were used. The impact area would begin at the short limit of the target area (100 yards for this range cell) and extend to the maximum range of the rocket (approximately 700 yards). A 20◦ angle of fire is established by adding 10° to each side of the target area (assumed to be 20◦ wide). The safety fan includes a 300-yard danger zone beyond the impact area, plus a 200-yard danger zone parallel to the angle of fire that extends the length of the range.

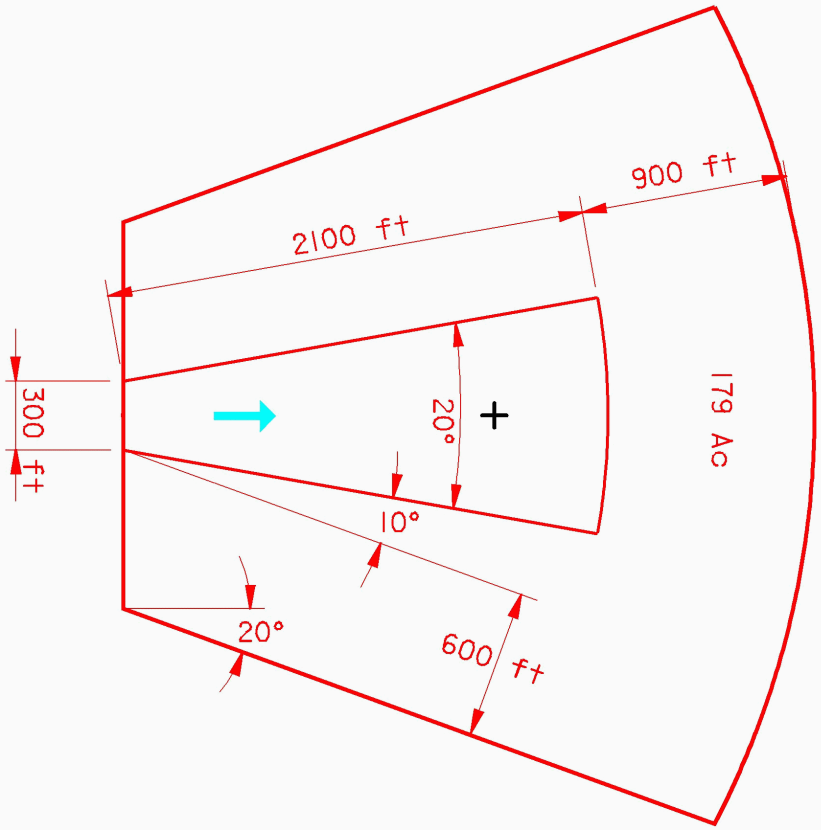
Note: Rifle grenades were commonly used on these ranges.

Ammunition (probable)	Max Range (yards)
Rocket, 2.36" Anti-tank	700
Rocket, 2.36" Practice	700
Rifle Grenade, Anti-tank	<400
Rifle Grenade, Practice	<400

Data sheet(s):

CTT08	M6A1, Rocket, HEAT, 2.36"
	M6A3, Rocket, HEAT, 2.36"
	M9A1, Rifle Grenade, Anti Tank
CTT10	M7A1, Rocket, Practice, 2.36"
	M7A3, Rocket, Practice, 2.36"
	M11A2, Practice, Rifle Grenade

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951; *TM 9-294, 2.36-inch A.T. Rocket Launcher M1A1,* September 1943; *FM 23-30, Hand and Rifle Grenades, Rocket, AT, HE, 2.36-inch,* February 1944



RIFLE GRENADE/ANTI-TANK ROCKET

U.S. ARMY CORPS OF ENGINEERS
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ROCKET, 2.36inch (STATIONARY TARGETS)

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CELL NAME
ROCKET

ROCKET, 3.5-inch (MOVING TARGETS)

Range Type: Rifle Grenade/Anti-Tank Rocket

Cell Name(s): ROCKMT

The target area would have been established with consideration given to terrain and local restrictions; however, a width of 356 mils (20°) is assumed for this range cell. The target locations are not described in the references used to derive this range cell. The impact area begins at the short limit of the target area and extends to the maximum range of the rocket (1,300 yards for practice rockets). A 30° angle of fire is established by adding 20° to each side of the target area. The safety fan includes a 300-yard danger zone beyond the impact area, plus a 300-yard danger zone parallel to the angle of fire that extends the length of the range.

Note: This range was not available during WWII, but rather sometime around the end of the Korean War.

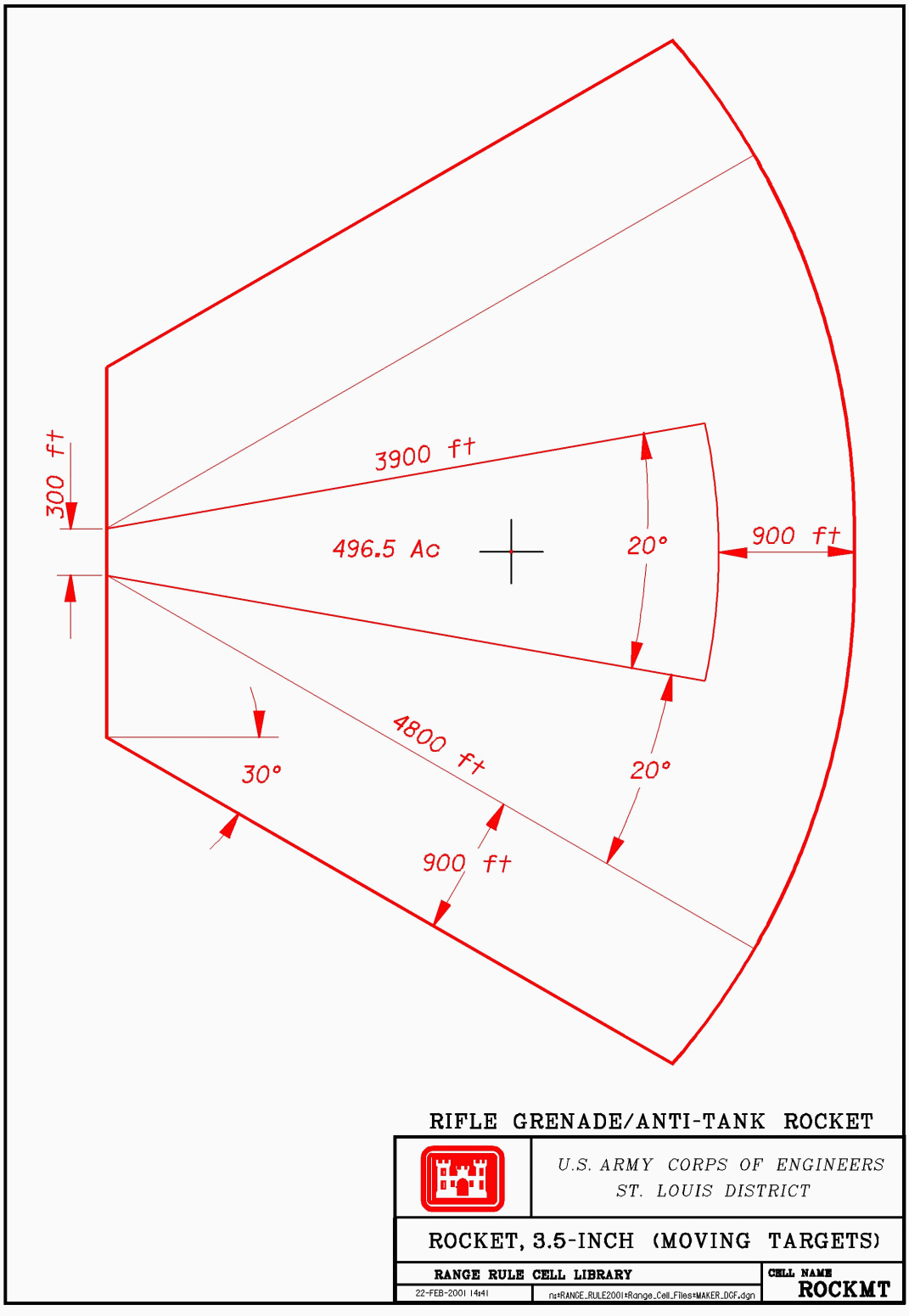
Ammunition	Max Range (yards)
Rocket, 3.5" Practice	1,300

Ammunition (possible)	Max Range (yards)
Rocket, 3.5" Anti-tank	945
Rocket, 3.5" WP	945

Data sheet(s):

CTT09	M30, Rocket, WP, 3.5"
CTT10	M28, Rocket, HEAT, 3.5"
	M29, Practice Rocket, 3.5"

Reference(s): *Targets, Target Material, and Training Course Lay-outs*, November 1951



RIFLE GRENADE/ANTI-TANK ROCKET

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

ROCKET, 3.5-INCH (MOVING TARGETS)

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CELL NAME
ROCKMT

ROCKET, 3.5-inch (STATIONARY TARGETS)

Range Type: Rifle Grenade/Anti-Tank Rocket

Cell Name(s): ROCKST

Target areas would have been established with consideration given to terrain and local restrictions; however, a width of 356 mils (20°) is assumed for this range cell. Targets would have likely been located at 100, 200, and 300 yards, with some down range as far as 650 yards. Typically, targets would have been at least 10 feet square and constructed from paper, cloth, wood, or metal. However, targets would have been constructed of wood or metal when high explosive rockets were used. The impact area would begin at the short limit of the target area (100 yards for this range cell) and extend to the maximum range of the rocket (approximately 1,300 yards for practice rockets). A 20° angle of fire is established by adding 10° to each side of the target area (assumed to be 20° wide). The safety fan includes a 300-yard danger zone beyond the impact area, plus a 300-yard danger zone parallel to the angle of fire that extends the length of the range.

Note: Rifle grenades may be found on these ranges. This range was not available during WWII, but rather sometime around the end of the Korean War.

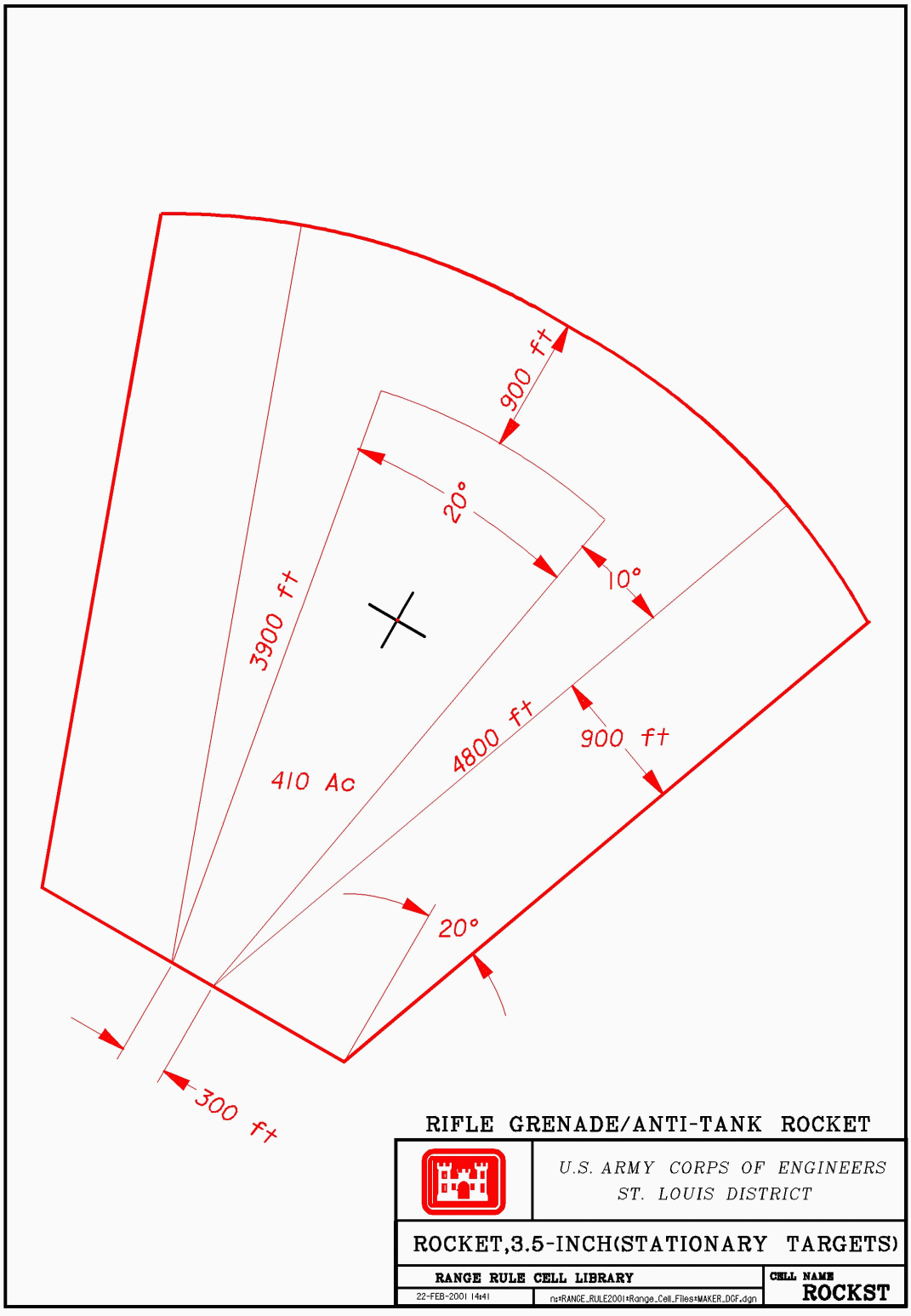
Ammunition	Max Range (yards)
Rocket, 3.5" Practice	1,300
Rifle Grenade, Practice	400

Ammunition (possible)	Max Range (yards)
Rocket, 3.5" Anti-tank	945
Rocket, 3.5" WP	945
Rifle Grenade, HEAT	400

Data sheet(s):

CTT08	M28, Rocket, HEAT, 3.5"
	M9A1, Rifle Grenade, Anti Tank
CTT09	M30, Rocket, WP, 3.5"
CTT10	M29, Practice Rocket, 3.5"
	M11A2, Practice, Rifle Grenade
	M29, Practice Rifle Grenade

Reference(s): *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, November 1951



RIFLE GRENADE/ANTI-TANK ROCKET

U.S. ARMY CORPS OF ENGINEERS
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ROCKET,3.5-INCH(STATIONARY TARGETS)

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CELL NAME
ROCKST

ROCKET, 2.36-inch (MOVING TARGETS)

Range Type: Rifle Grenade/Anti-Tank Rocket

Cell Name(s): RRMT

A moving target range may incorporate one or two firing lines. Typically no more than four launchers were used simultaneously. Targets, measuring 15-18 feet long by 6-8 feet high, were pulled through the target area with the use of ropes and pulleys. Targets were fired upon from a distance of 100, 200, and 300 yards. The impact area would begin at the short limit of the targets (100 yards from the targets in this case) and extend to the maximum range of the rocket (approximately 700 yards).

Target areas would have been established with consideration given to terrain and local restrictions; however, a width of 356 mils (20°) is assumed for this range cell. An angle of fire (30°) is established by adding 20° to each side of the target area.

The safety fan includes a 300-yard danger zone beyond the impact area, plus a 200-yard danger zone parallel to the angle of fire that extends the length of the range.

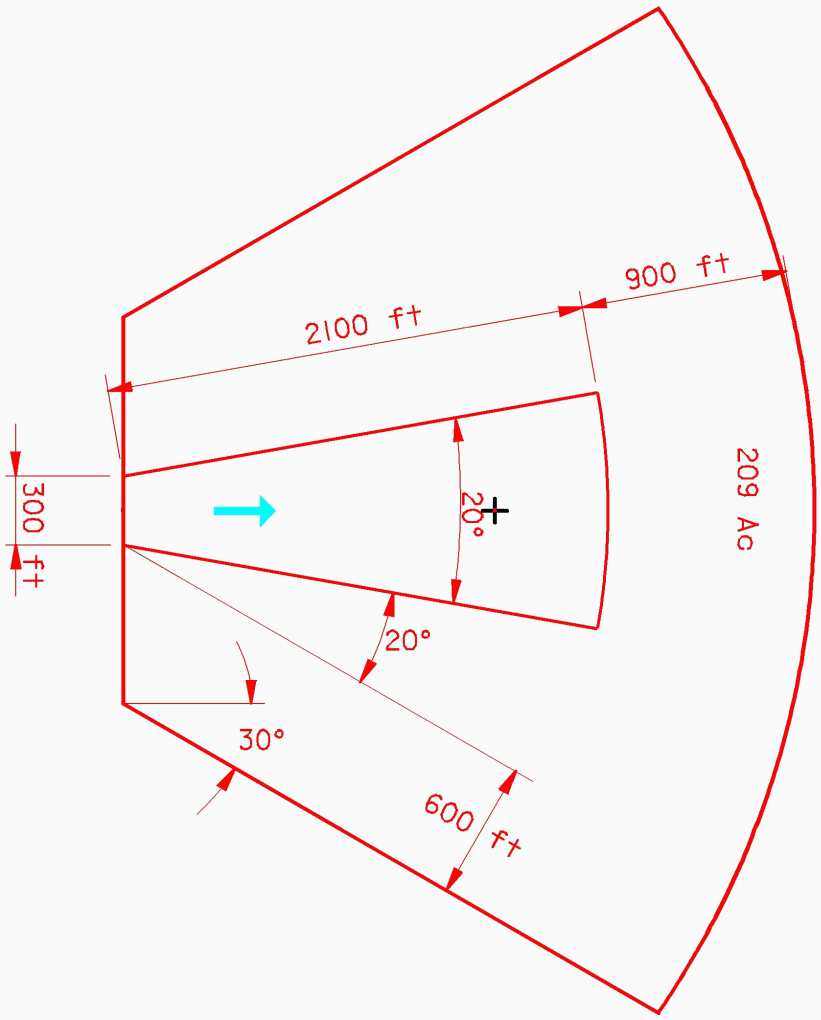
Note: Rifle Grenades were commonly used on these ranges.

Ammunition (probable)	Max Range (yards)
Rocket, 2.36" Anti-tank	700
Rocket, 2.36" Practice	700
Rifle Grenade, Anti-tank	<400
Rifle Grenade, Practice	<400

Data sheet(s):

CTT08	M6A1, Rocket, HEAT, 2.36"
	M6A3, Rocket, HEAT, 2.36"
	M9A1, Rifle Grenade, Anti Tank
CTT10	M7A1, Rocket, Practice, 2.36"
	M7A3, Rocket, Practice, 2.36"
	M11A2, Practice, Rifle Grenade

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & Nov 1951; *TM 9-294, 2.36-inch A.T. Rocket Launcher M1A1,* September 1943; *FM 23-30, Hand and Rifle Grenades, Rocket, AT, HE, 2.36-inch,* February 1944



RIFLE GRENADE/ANTI-TANK ROCKET

U.S. ARMY CORPS OF ENGINEERS
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ROCKET, 2.36inch (MOVING TARGETS)

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CELL NAME
RRMT

HISTORIC USE: SMALL ARMS

ANTI-AIRCRAFT, MINIATURE .22 CALIBER (aka: Miniature AA Range)

Range Type: Small Arms

Cell Name(s): AAMINI

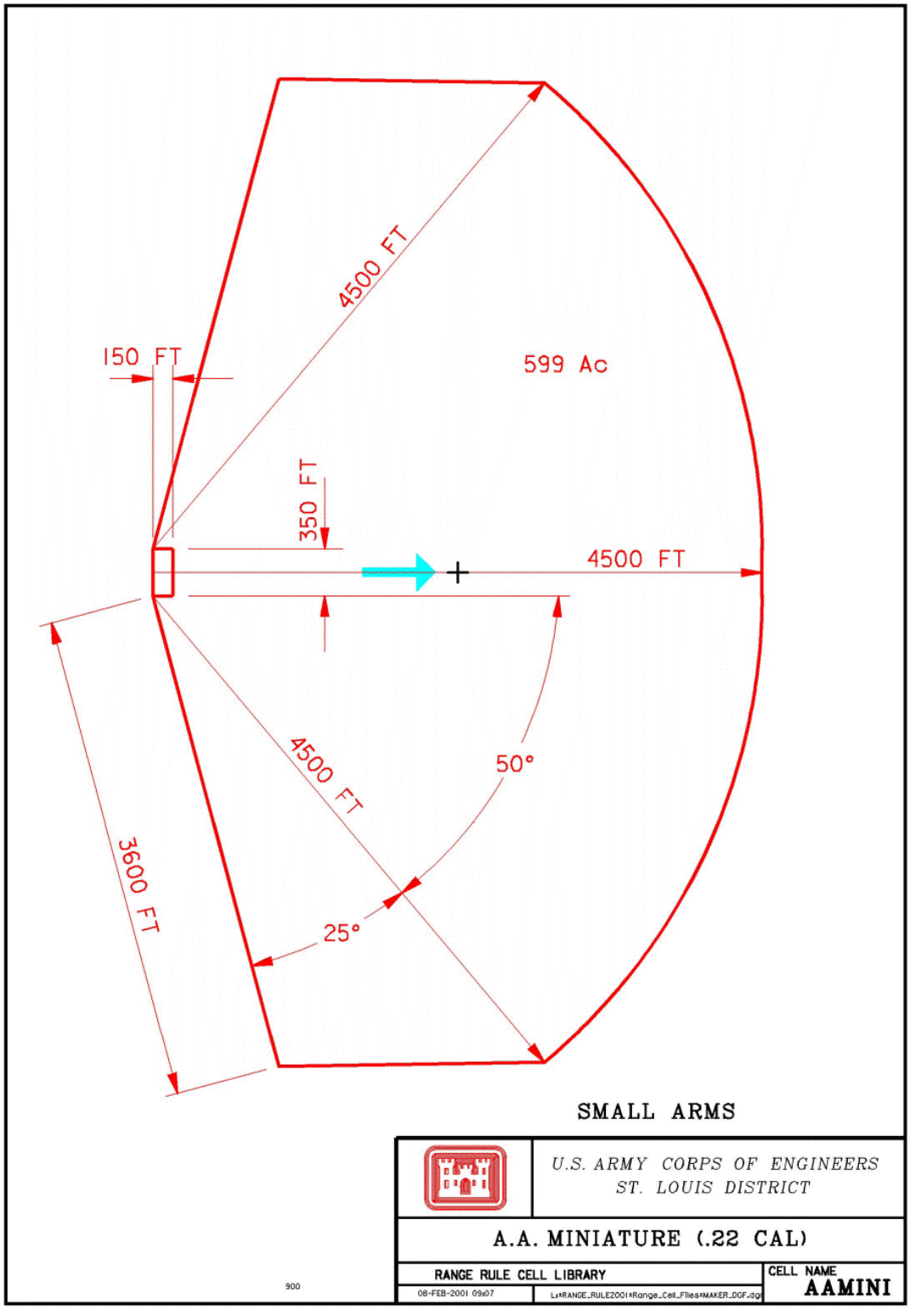
This range requires an area approximately 350 feet wide by 150 feet long. It accommodates three types of targets: Parachute, Climbing-Diving, and Horizontal. A single firing line runs the full length of the range. The Parachute target is located 92 feet down range, and the Climbing-Diving and Horizontal targets are positioned 500 inches down range. The danger area consists of the 50° angle of fire plus a required safety angle of 25°. The 50° angle of fire extends from the beginning of the range down range a distance of 1,500 yards; and the additional 25° safety angle extends from the same point down range a distance of 1,200 yards.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

A.A. MINIATURE (.22 CAL)

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CELL NAME
AAMINI

900

ANTI-AIRCRAFT, TOWED TARGET and/or OQ (.30-CALIBER, .50-CALIBER) (aka: AA Range, AAA Range)

Range Type: Small Arms

Cell Name(s): AATT50, AATT30

Details of these ranges were established locally. Construction would have consisted only of the necessary clearing to provide a firing point and the required visibility within the limits of fire and adjacent danger area.

The range was used for firing at either towed or radio controlled airplane targets. The designation "OQ" refers to the type of target used on the range. The "O" means pilotless and the "Q" stands for radio-controlled. The firing point should accommodate at least 50 men, spaced at 1½ yards, in a line. A level strip of ground, 100 yards long by 2 yards wide, preferably on a hill, was suitable. A firing point similar to that of a Known Distance rifle range may have been constructed. The angle of fire included a 5° angle added to the left limit, and a 10° angle to the right. Without specific information as to the location of the left and right limits of fire, a 30° safety fan is assumed (but could be as much as 40°) to extend down-range a distance of 4,300 yards for .30 caliber ammunition and less.

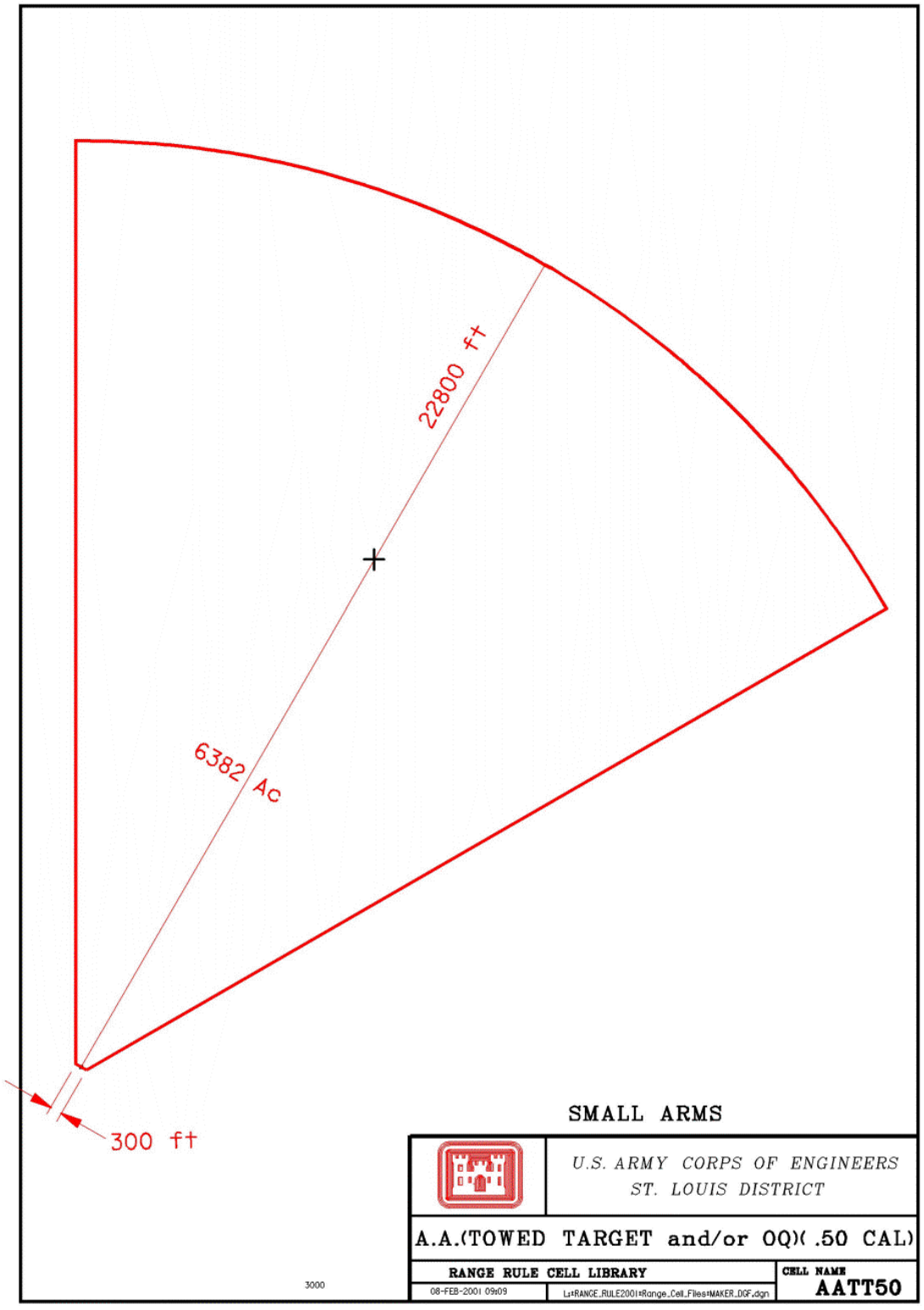
For ranges utilizing .50-caliber ammunition, this safety fan would be increased to 7,600 yards. Cells for both .30-caliber and smaller and .50-caliber are shown.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951; Range-Safety Factors & Range Facilities for Infantry Regiments (circa 1944)



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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A.A.(TOWED TARGET and/or OQ)(.50 CAL)

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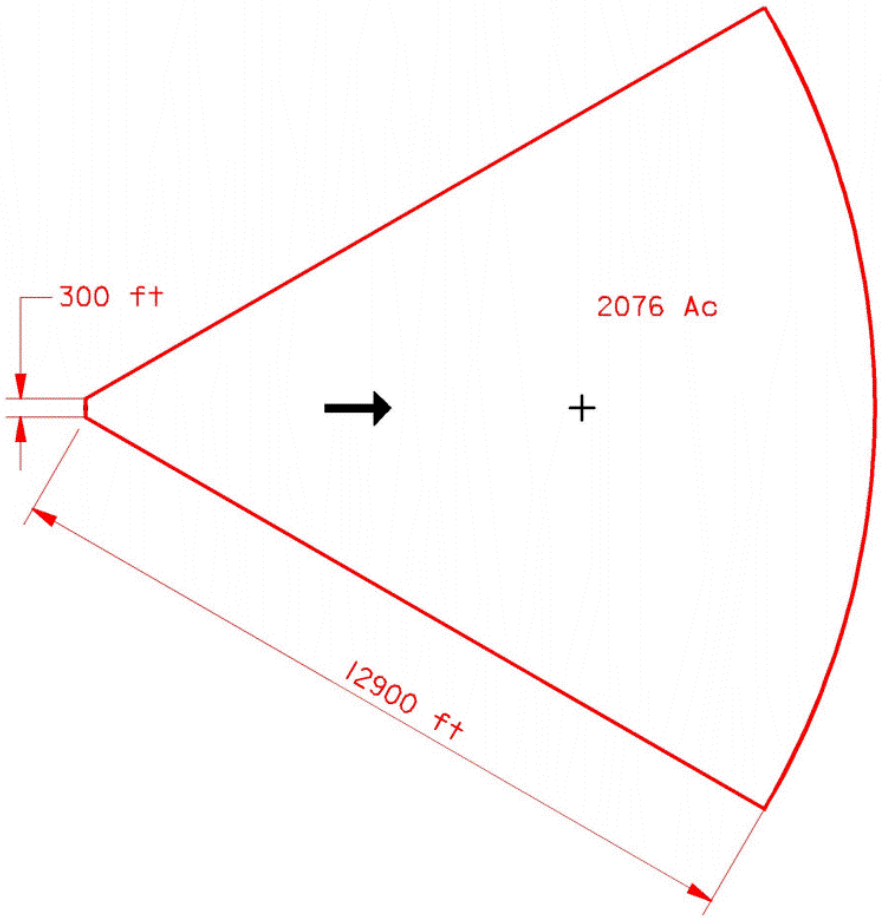

SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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A.A.(TOWED TARGET and/or OQ)(.30 CAL)

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CELL NAME
AATT30

2400

ANTI-TANK, 1,000-inch

Range Type: Small Arms

Cell Name(s): ANTANK

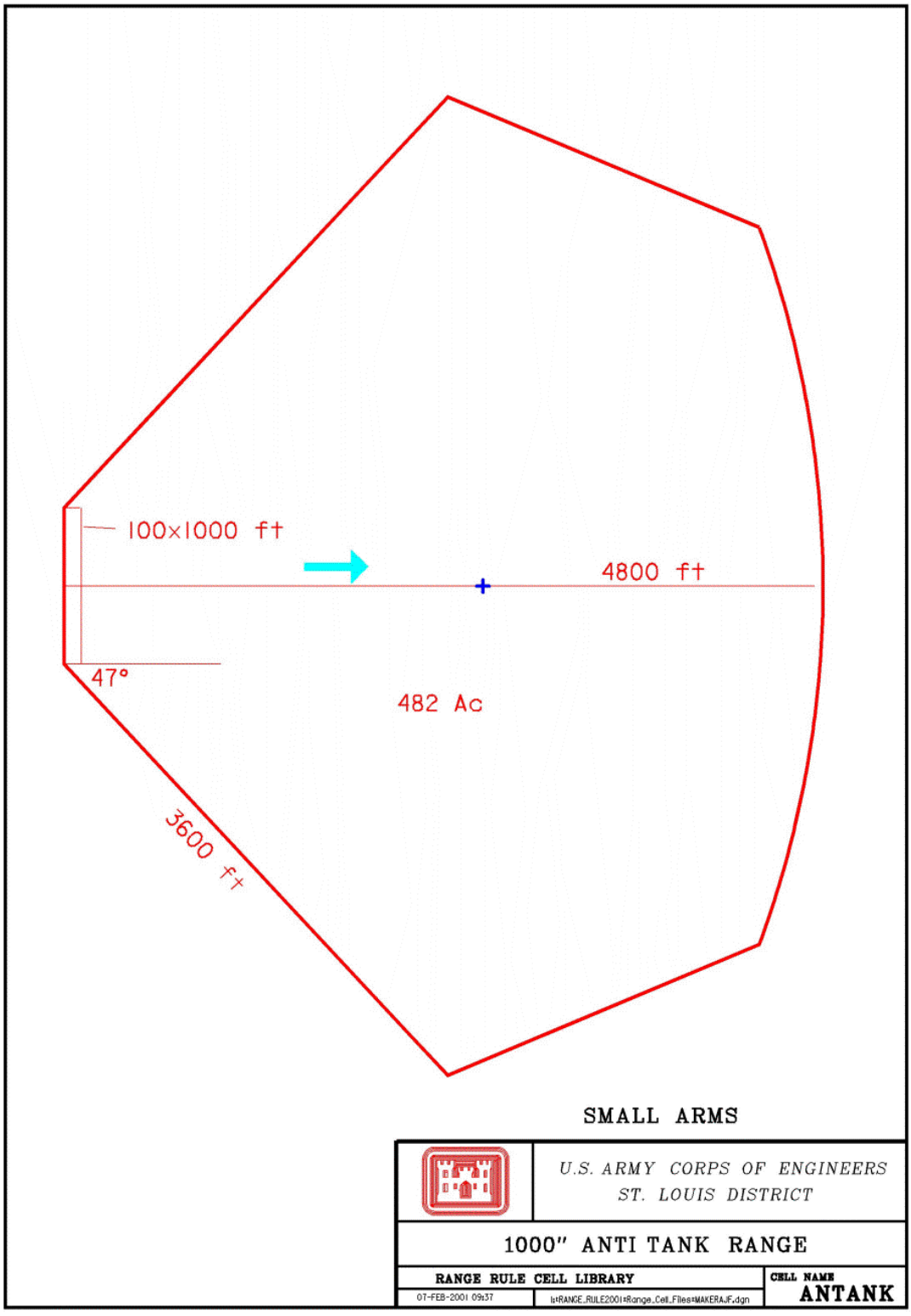
An Infantry Division would require that this range have twelve 48-foot wide target units. Allowing for separation between units, the range would be approximately 1,000 feet wide by 100 feet long. A single firing line would stretch across the width of the range and target tracks would be positioned 1,000-inches down-range. The danger area would include a 22° angle of fire that extends 1,600 yards down range, and a 25° safety fan, added to both sides, which extends 1,200 yards down range.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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1000" ANTI TANK RANGE

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CELL NAME
ANTANK

COMBAT/FIELD TARGET (MACHINE GUN)

Range Type: Small Arms

Cell Name(s): CFTMG

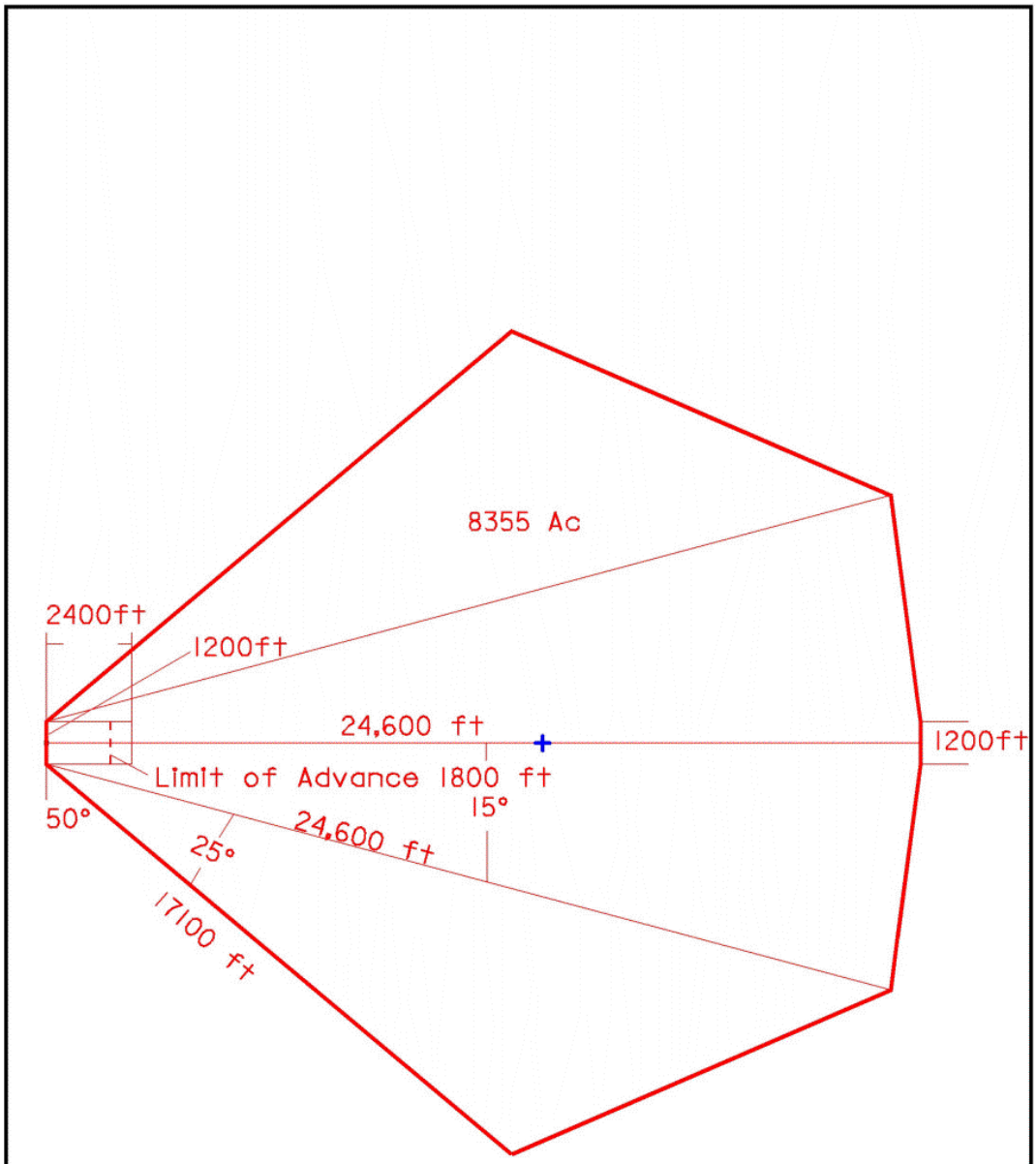
The "typical" Combat Range is comprised of various components. Once the training officer determined the locations of these components, the danger areas could be established. When practical, target units would have been placed on reverse slopes approximately 1 foot below the crown of a rise. Typical dimensions of a range were 400 yards wide by 800 yards long. A limit of advance would have generally been established 600 yards downrange. The safety/danger area included a 15° angle of fire that extended from each side of the range down range a distance of 8,200 yards, and an additional 25° safety fan, which originated from the same points as the angle of fire, that extended down range a distance of 5,700 yards.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700
.50 caliber	7,500	2,545

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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COMBAT/FIELD TARGET (MACHINE GUN)

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CELL NAME
CFTMG

CLOSE COMBAT COURSE

Range Type: Small Arms

Cell Name(s): CLOSE-D

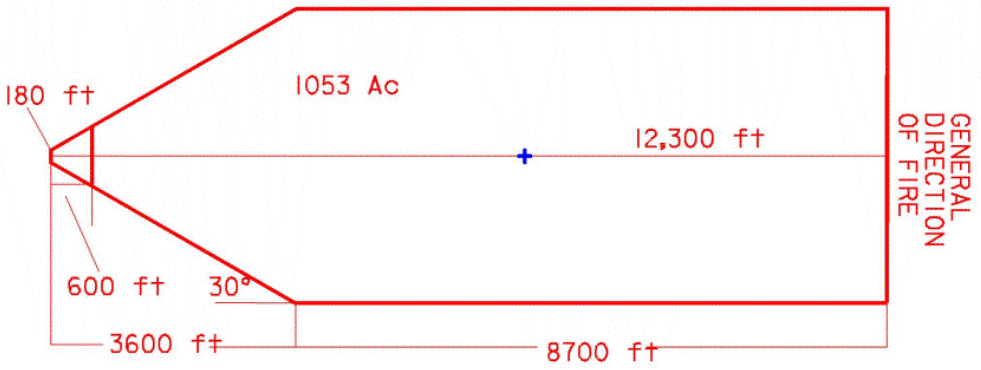
A Close Combat Course/Range is basically an assault course approximately 200 yards long. The range may consist of one or two individual courses commonly referred to as a single leg or double leg course. Each leg was approximately 30 yards wide; however, the width, in addition to the overall range boundaries, was established with consideration given to terrain and local restrictions. Where multiple courses joined each other, pronounced changes in direction of fire were not considered practical. Targets were arranged so that they could appear and disappear quickly and were positioned at various points ranging from 5 to 50 yards. Men were required to engage targets while negotiating wire entanglements, shell craters, trenches, or other obstacles. The quantity of targets varied, but 16 positions were identified in the reference. At least one situation (target) should have been present for the use of a practice grenade (likely at the end of the course). The danger area consisted of a 5° angle of fire and a 25° safety fan. The danger area is represented as a 30° fan originating from the beginning of the range and extending 1,000 yards past the forward limit of advance. At this point the fan extends an additional 2,900 yards parallel to the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.45 caliber	1,600	802
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100
Practice Hand Grenades		

Data sheet(s):

CTT01	Small arms, General
CTT04	M21, Practice Hand Grenade
	Mk 1A1 Practice Hand Grenade

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

CLOSE COMBAT COURSE

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COMBAT/FIELD (RIFLE & LIGHT MACHINE GUN)

Range Type: Small Arms

Cell Name(s): COMBAT

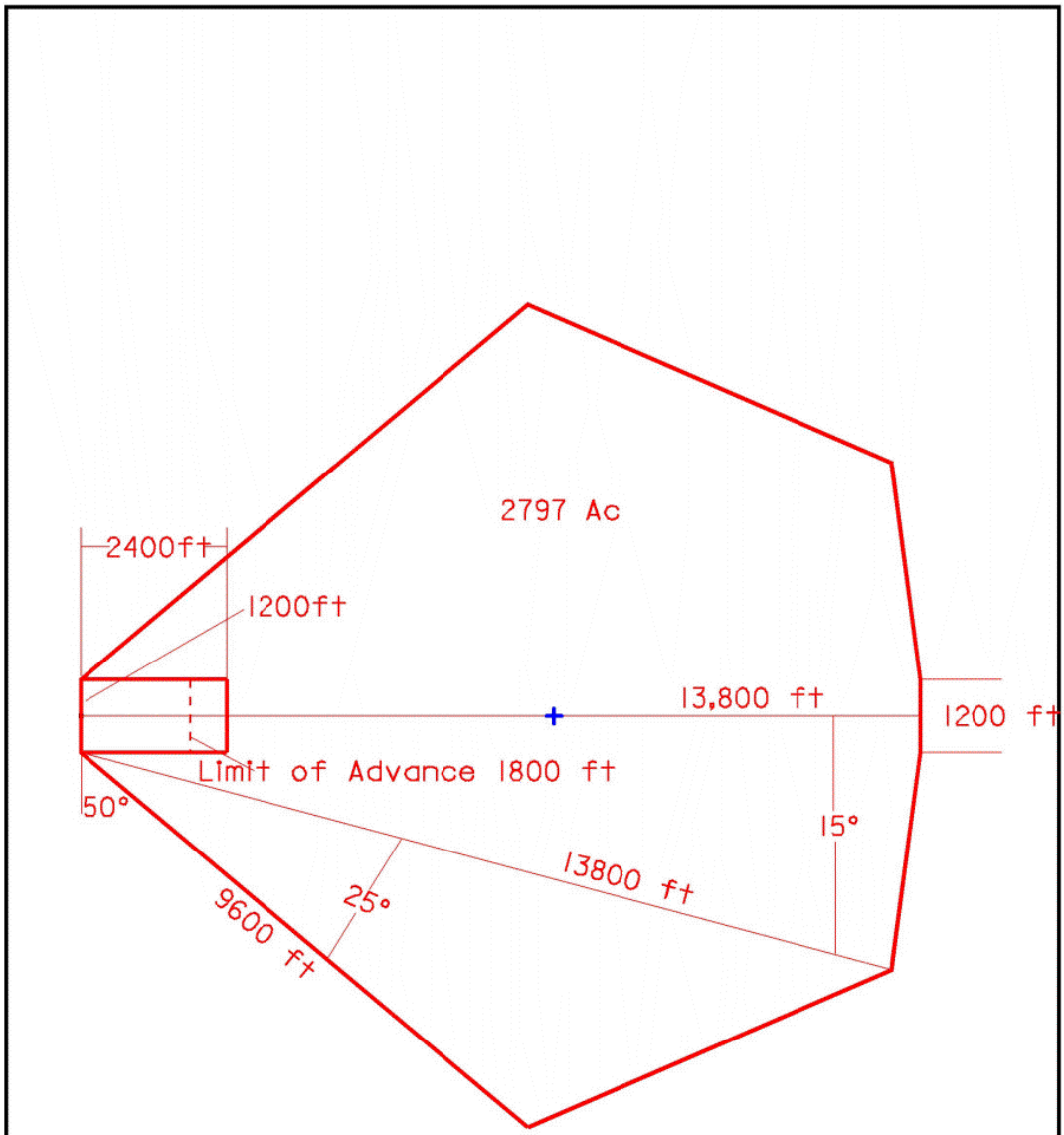
The "typical" Combat Range is comprised of various components. Once the training officer determined the locations of these components, the danger areas could be established. When practical, target units would have been placed on reverse slopes approximately 1 foot below the crown of a rise. Typical dimensions of a range were 400 yards wide by 800 yards long. A limit of advance would have generally been established 600 yards downrange. The safety/danger area included a 15° angle of fire that extended from each side of the range down range a distance of 4,600 yards, and an additional 25° safety fan, which originated from the same points as the angle of fire, that extended down range a distance of 3,200 yards.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.22 caliber	1,500	1,100
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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COMBAT/FIELD TARGET (RIFLE & LIGHT MACHINE GUN)

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FIRING-IN-BUTT (aka: Harmonizing Range)

Range Type: Small Arms

Cell Name(s): FIRINB

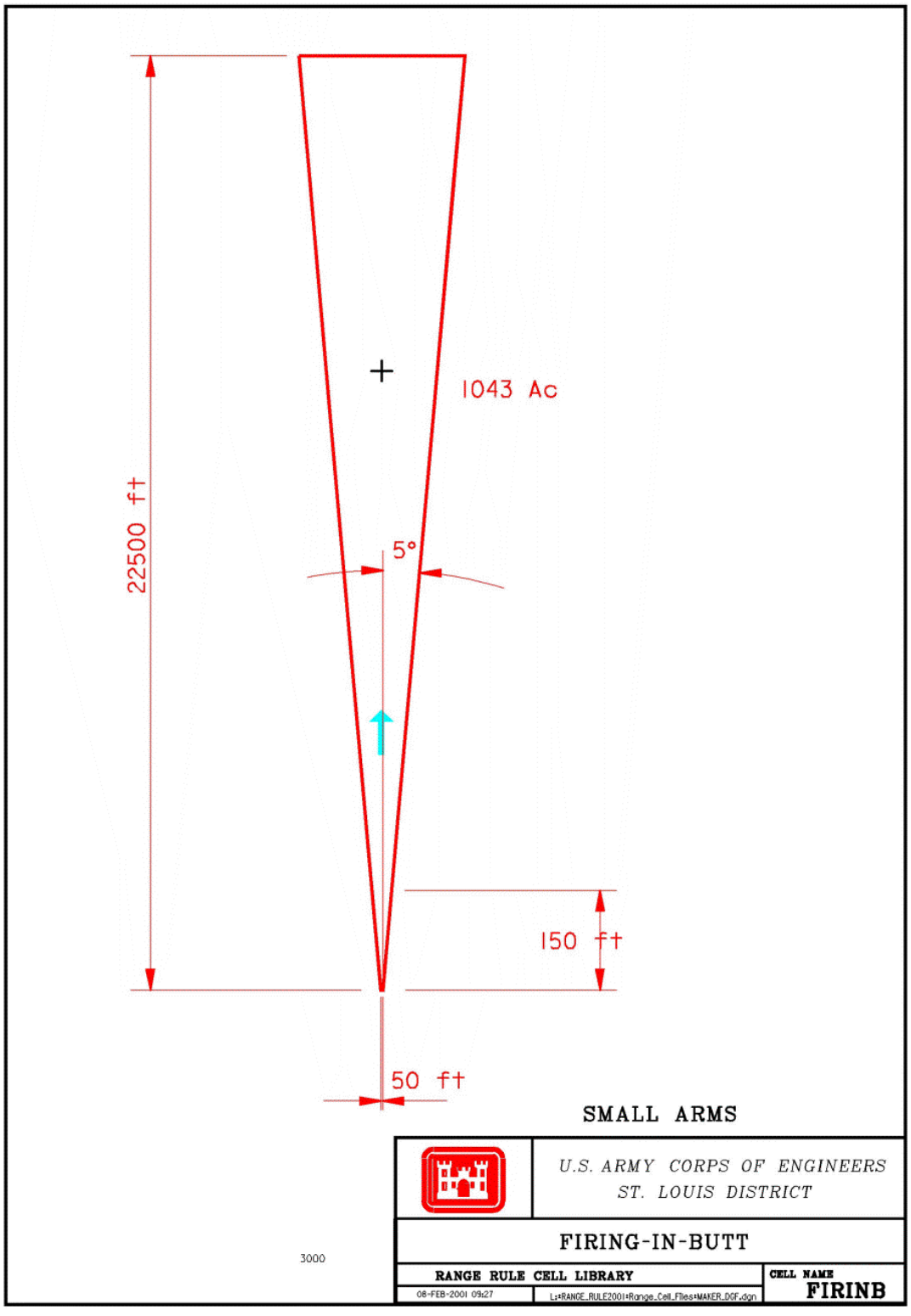
Firing-in-butts were common to airfields. This range provided a designated area for crews to zero, service, and maintain aircraft weapon systems (fixed guns). Typical construction consisted of a hardstand for aircraft positioning. An earthen berm would have been necessary and constructed to the front of the aircraft. The distance from the hardstand is unknown, and may differ at various airfields. Based on experience (archive searches, site inspections, etc.), 150 feet is an accurate estimate. The safety zone for this range was derived using 5° angles that extended downrange a distance of 7,600 yards (consistent with .50 caliber ammunition). There is a possibility that when the berm was constructed, personnel considered it to be satisfactory in limiting the downrange distance for fixed guns. Therefore, firing-in-butts may be found in areas not favorable for a general range safety fan.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
20mm		

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944



SMALL ARMS

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FIRING-IN-BUTT

3000

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CELL NAME
FIRINB

TANK, 1,000-inch

Range Type: Small Arms

Cell Name(s): IKTANK

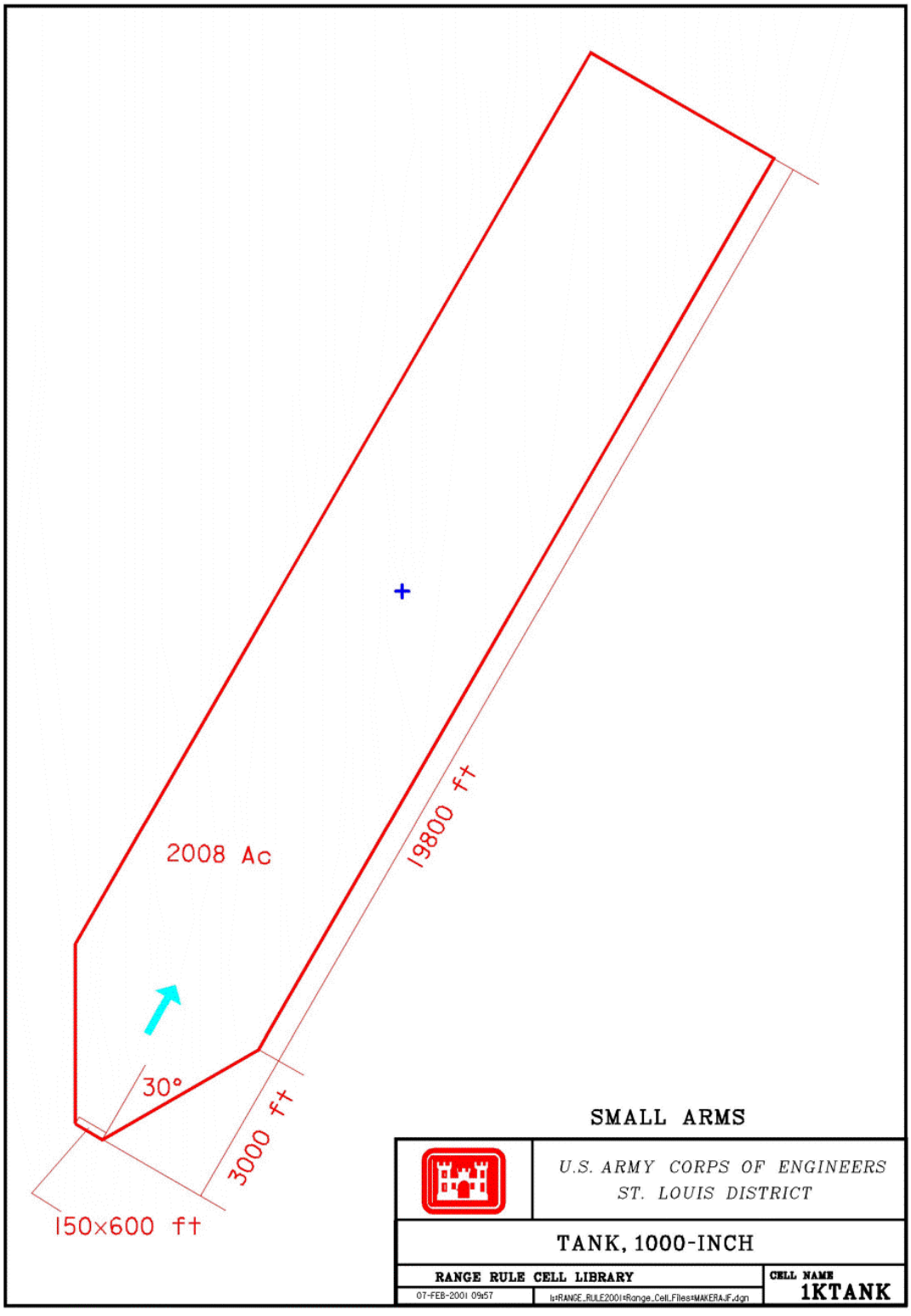
A 1,000" Tank Range is designed for practice with the cal. 30 and cal. 50 machine guns mounted on tanks (stationary). Targets would have been placed 1,000 inches (83 feet, 4 inches) in front of a firing line. The firing line would need to be large enough to accommodate several light tanks. The estimated size of the range area is approximately 200 yards wide by 150 feet long. A 30° safety fan originating from both ends of the firing line would extend down range 1,000 yards, at which point it would continue an additional 6600 yards parallel to the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

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TANK, 1000-INCH

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CELL NAME
1KTANK

INFILTRATION COURSE

Range Type: Small Arms

Cell Name(s): INFILTX

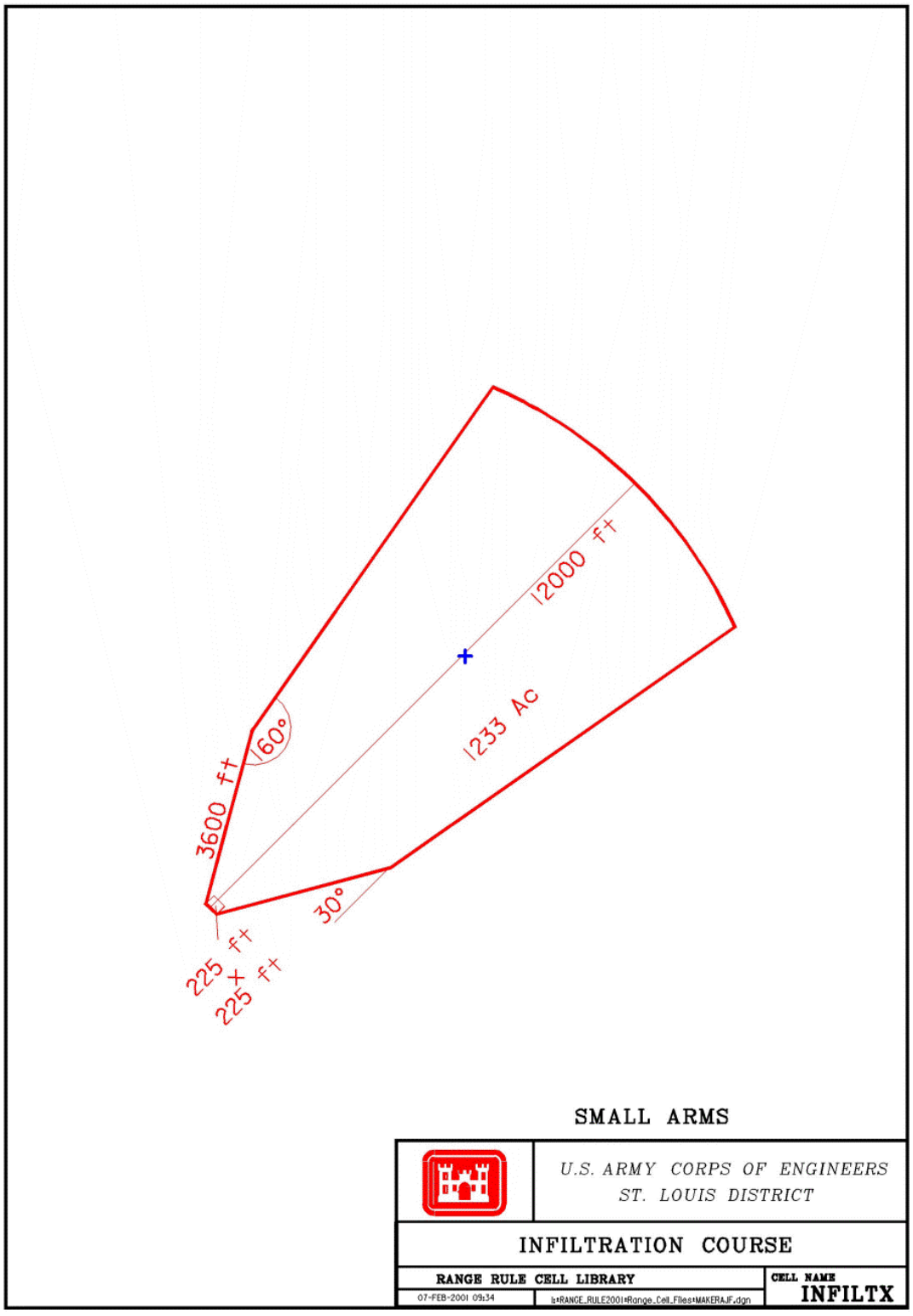
The typical range would occupy an area 75 yards wide by 50 to 100 yards deep. The range cell represents and area 75 yards wide by 75 yards deep. The ground for the infiltration course would generally be level, with logs and small mounds of dirt 10 to 12 inches in height for men to roll over. The ground would have contained shell holes, trenches, slit trenches, wire entanglements, stumps, sparse brush, and other obstacles. Two to three machine guns would have been bolted to stable platforms at the front of the range. Reduced charges of explosives were placed in craters throughout the course. The dimensions of the embankment into which the machine guns fired would have been 15 feet high by a distance long enough to provide safety to the flanks of the infiltration course. The 30° safety fan extends 1,200 yards, at which point it continues at a 10° angle an additional 3,000 yards. Because of the fixed machine guns, a safety fan would not be required beyond a suitable earthen berm constructed to the rear of the range.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700
TNT		
Dynamite		
Blasting Caps		

Data sheet(s):

CTT01	Small arms, General
CTT27	Explosives, Dynamite, Commercial
	Explosives, TNT
	Blasting Caps

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

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INFILTRATION COURSE

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MACHINE GUN, ROLLING TARGET, 1,000-inch

Range Type: Small Arms

Cell Name(s): K.50C

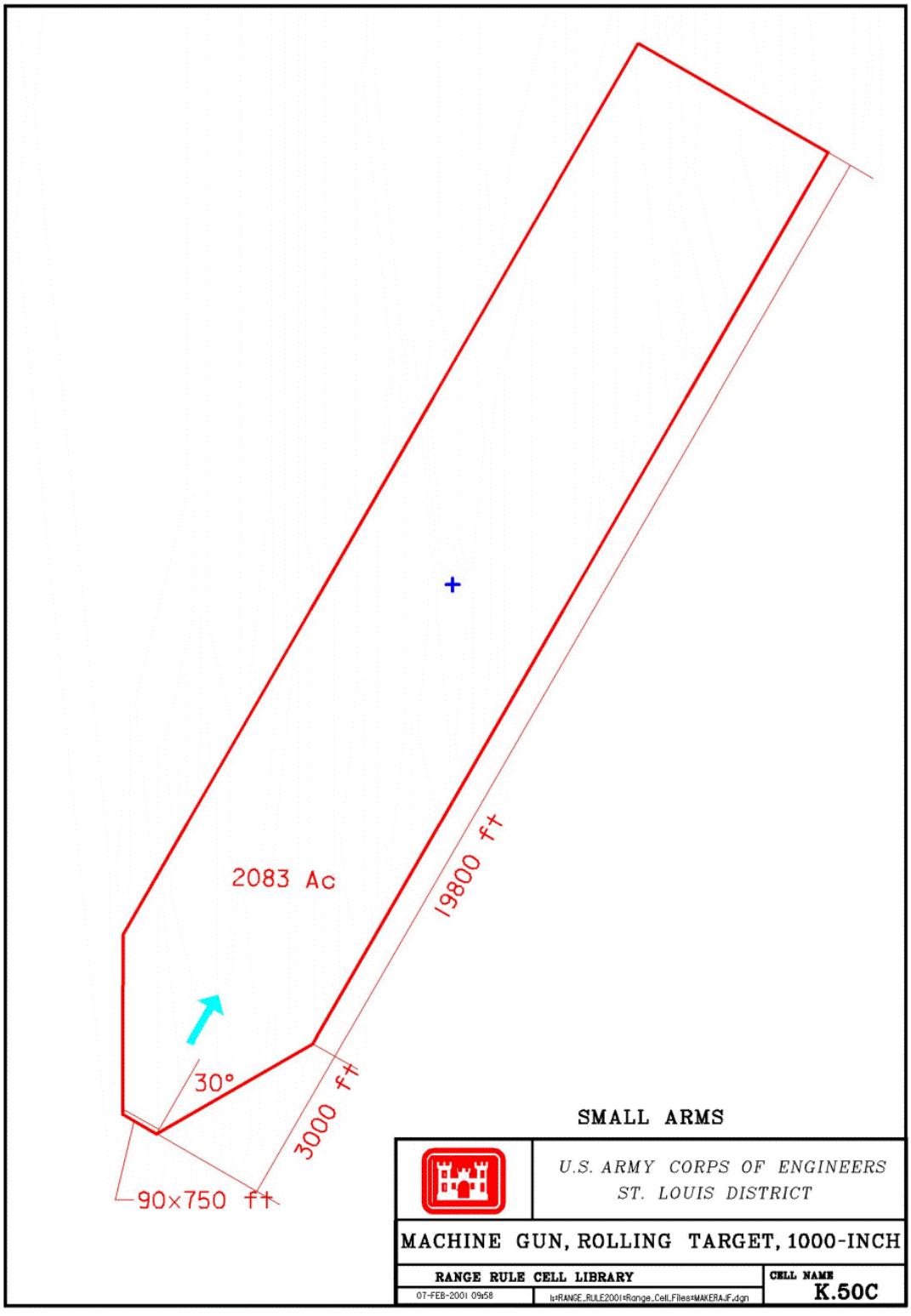
Typically, light and/or heavy machine guns may be used on this range. In order to meet requirements for an Infantry Division, the range should be approximately 250 yards wide. A salvage wall (earthen berm) would have been constructed approximately 5 feet beyond the target area; and the firing line would have been positioned 1,000 inches in front of the targets. A range this size could accommodate 45 tracks, with two targets per track. The danger area includes a 5° angle of fire plus a required safety angle. The estimated 30° safety fan originates from both ends of the firing line, extends down range a distance of 1,000 yards, at which point it extends an additional 6,600 yards (based on .50 caliber ammunition) parallel to the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545
.30 caliber, M1	5,500	2,700
.30 caliber, M2	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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MACHINE GUN, ROLLING TARGET, 1000-INCH

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LANDSCAPE, 1,000-inch (aka: Landscape 1,000-inch; Landscape and MG; Landscape; Machine Gun; Portrait Range)

Range Type: Small Arms

Cell Name(s): LAND

Landscape targets are used for rifle practice on this 1,000-inch range. The complete target set consists of five black and white paper landscape targets mounted on individual target frames and held in place on six vertical posts. The complete set of five landscape paper targets makes a panoramic picture of a landscape. The size of this panoramic picture is such that all (or nearly all) of the salient features are recognizable at a distance of 1,000-inches.

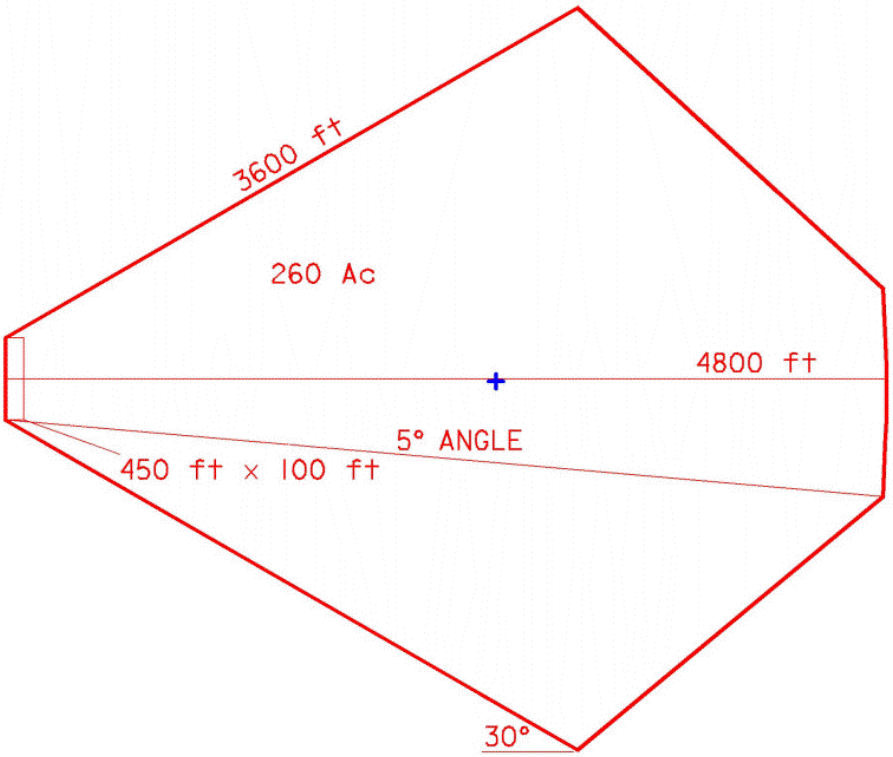
Based on the size requirements for each target unit (a complete set of landscape paper targets), it is assumed that no more than 6 units were constructed on a single range. In order to provide a safety space between adjacent targets and to allow independent operations, a distance of 50 feet separated each 25-foot wide target unit. Approximate dimensions for this range are 450-feet wide by 100-feet long. A single firing line stretched across the width of the range. Personnel fired .22-caliber weapons (preferably) at a panoramic picture of a landscape, which was positioned 1,000-inches down-range. An additional area behind the firing lines included the ready line, ammunition issue point, and administrative area. A 5° angle of fire extended from each end of the firing line down range a distance of 1,600 yards; and an additional 25° safety fan, which originated from the same points as the angle of fire, extended down range a distance of 1,200 yards.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

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LANDSCAPE, 1000-INCH

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CELL NAME
LAND

MALFUNCTION, .50 CALIBER (aka: Small Arms Malfunction Range)

Range Type: Small Arms

Cell Name(s): MAL50C

The range area, which includes the danger area, is approximately 850 feet by 500 feet. To conform to this limit, a 16-foot earth embankment was required to be constructed to the rear of the range (approximately 500 feet to the front of the firing line) and extend to the outer limits of the safety fan. A firing line approximately 250-foot long would accommodate up to 25 machine guns.

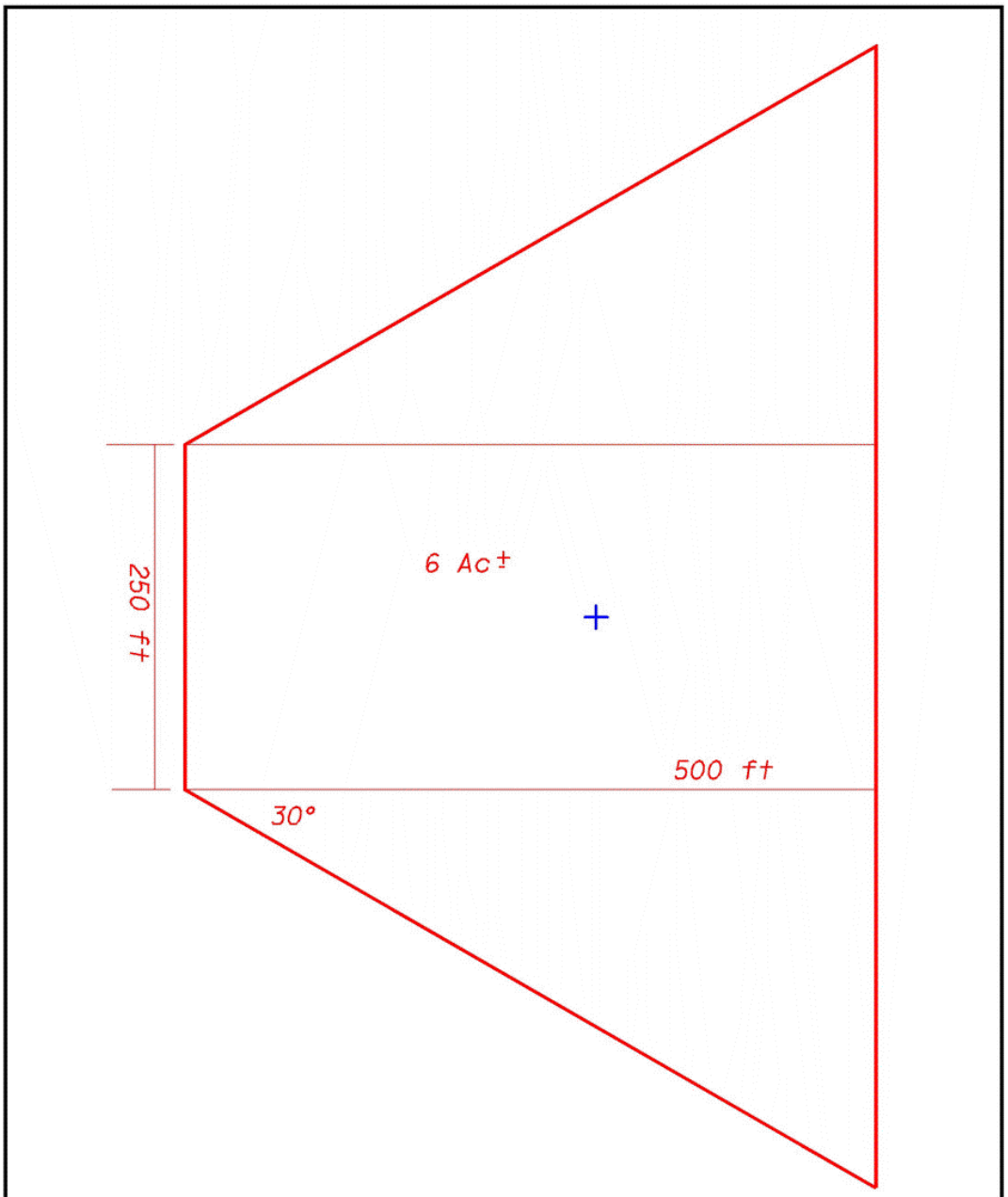
All guns would have been post mounted (fixed), thereby restricting movement in azimuth and elevation. The earth embankment plus the fixed guns allowed for the reduction in the downrange danger area typically seen on small arms ranges. The danger area includes an angle of fire plus the required safety fan, totaling 30°, which originates from each end of the firing line and extends to the earthen berm.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545

Data sheet(s):

CTT01 Small arms, General

Reference(s): 2nd Air Force Ground Gunnery Range Requirements, July 1943; *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944.



SMALL ARMS

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MALFUNCTION, .50 CALIBER

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CELL NAME
MAL50C

MOVING FIELD TARGET (.30 CALIBER)

Range Type: Small Arms

Cell Name(s): MFT30C

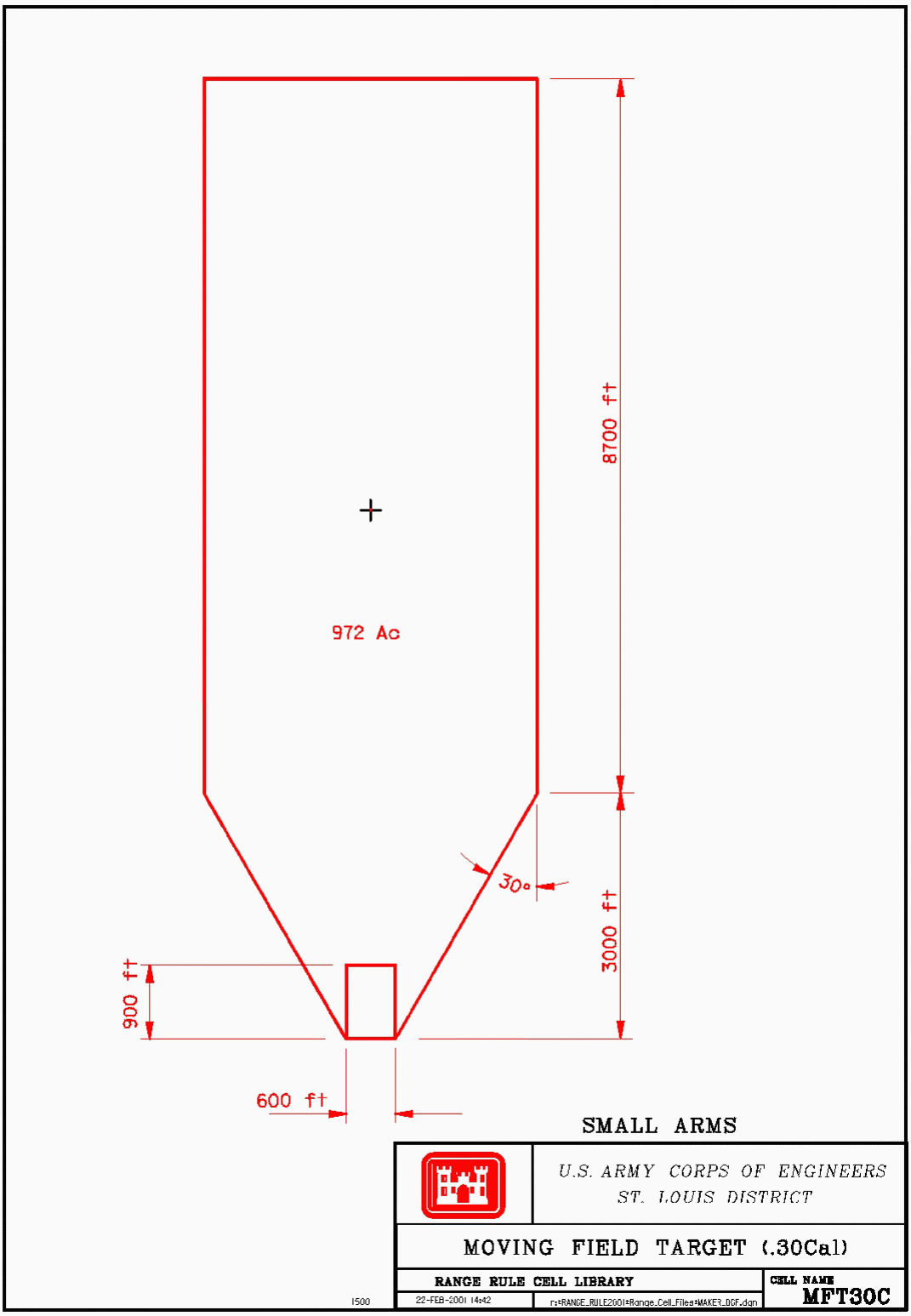
The only description available in the references is an illustration showing a target car mounted on a narrow gage track at the rear of a range. The target may have been towed using a stationary motor drum or by a vehicle. The width of the range is not described and it is unknown as to the number of firing points allowed. Therefore, the range size is estimated to be 200 yards by 300 yards. A salvage wall (earthen berm) would have been constructed directly behind the targets. An additional area behind the firing lines would have included the ready line, ammunition issue point, and administrative area. The danger area would have included a 5° angle of fire plus a 25° safety fan. The danger area is represented as a 30° fan originating from the ends of the firing line, extending down range a distance of 1,000 yards, at which point it continues an additional 2,900 yards (8700 feet) parallel to the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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MOVING FIELD TARGET (.30Cal)

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CELL NAME
MFT30C

1500

MACHINE GUN, AUTOMATIC RIFLE (BAR), 1000-inch (aka: Machine Gun, Automatic Rifle, 1,000-inch; BAR, 1,000-inch; Browning Automatic Rifle, 1,000-inch)

Range Type: Small Arms

Cell Name(s): MGARB

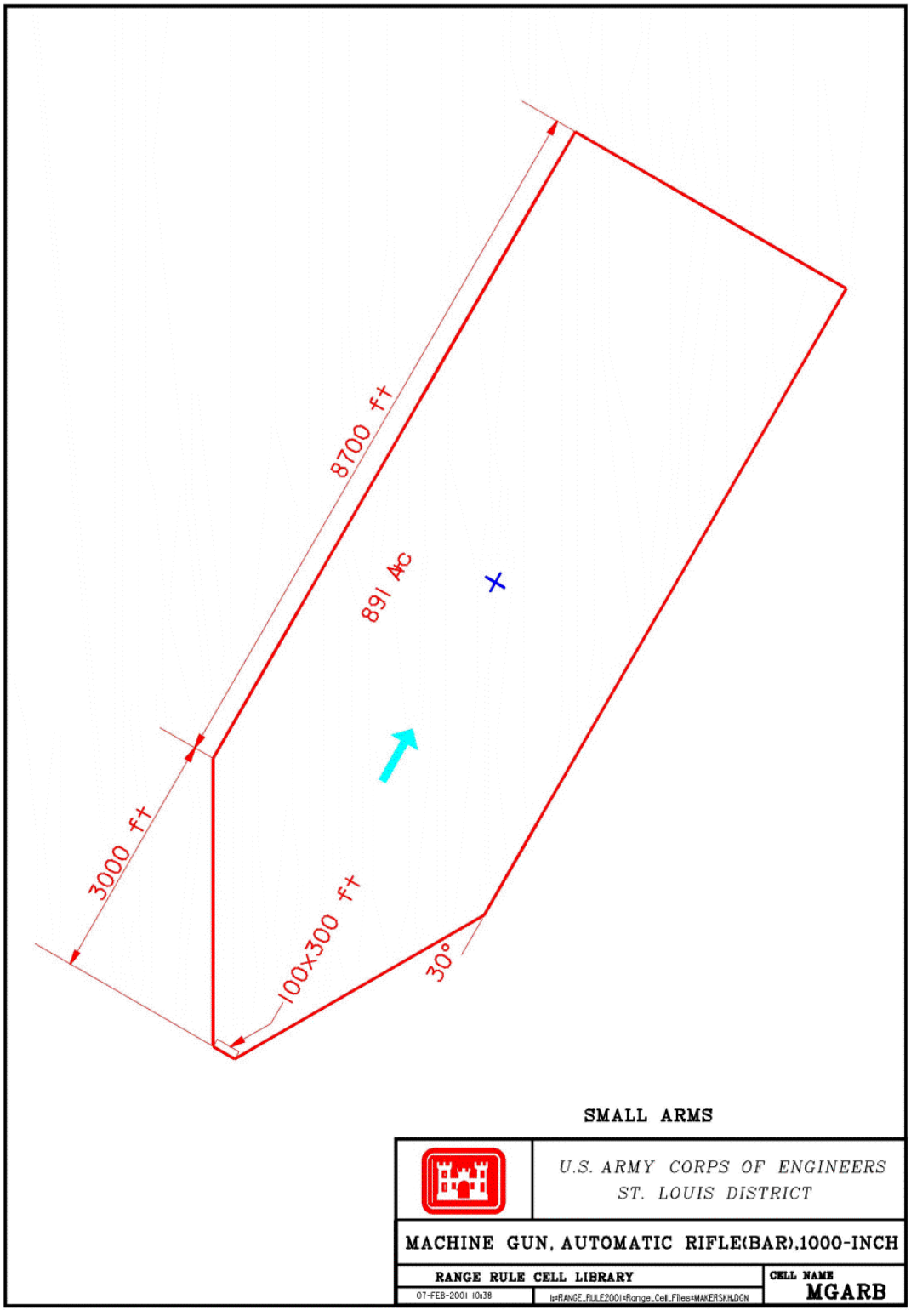
The estimated size of the range is 300 feet wide by 100 feet long. An additional area behind the firing lines would have included the ready line, ammunition issue point, and administrative area. The danger area consisted of a 5° angle of fire and an additional 25° safety fan. The 30° fan would have originated from each end of the firing line, extended 1,000 yards down range, at which point it would have continued an additional 2,900 yards parallel to the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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MACHINE GUN, AUTOMATIC RIFLE(BAR),1000-INCH

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MOVING VEHICLE (.30 CALIBER MACHINE GUN)

Range Type: Small Arms

Cell Name(s): MOV.30

A .30 caliber machine gun moving vehicle range may be located adjacent to or within the limits of a submachine gun moving vehicle range where the size of the danger area could be reduced. Log type obstacles were desirable at locations other than where continual use by tank traffic occurred.

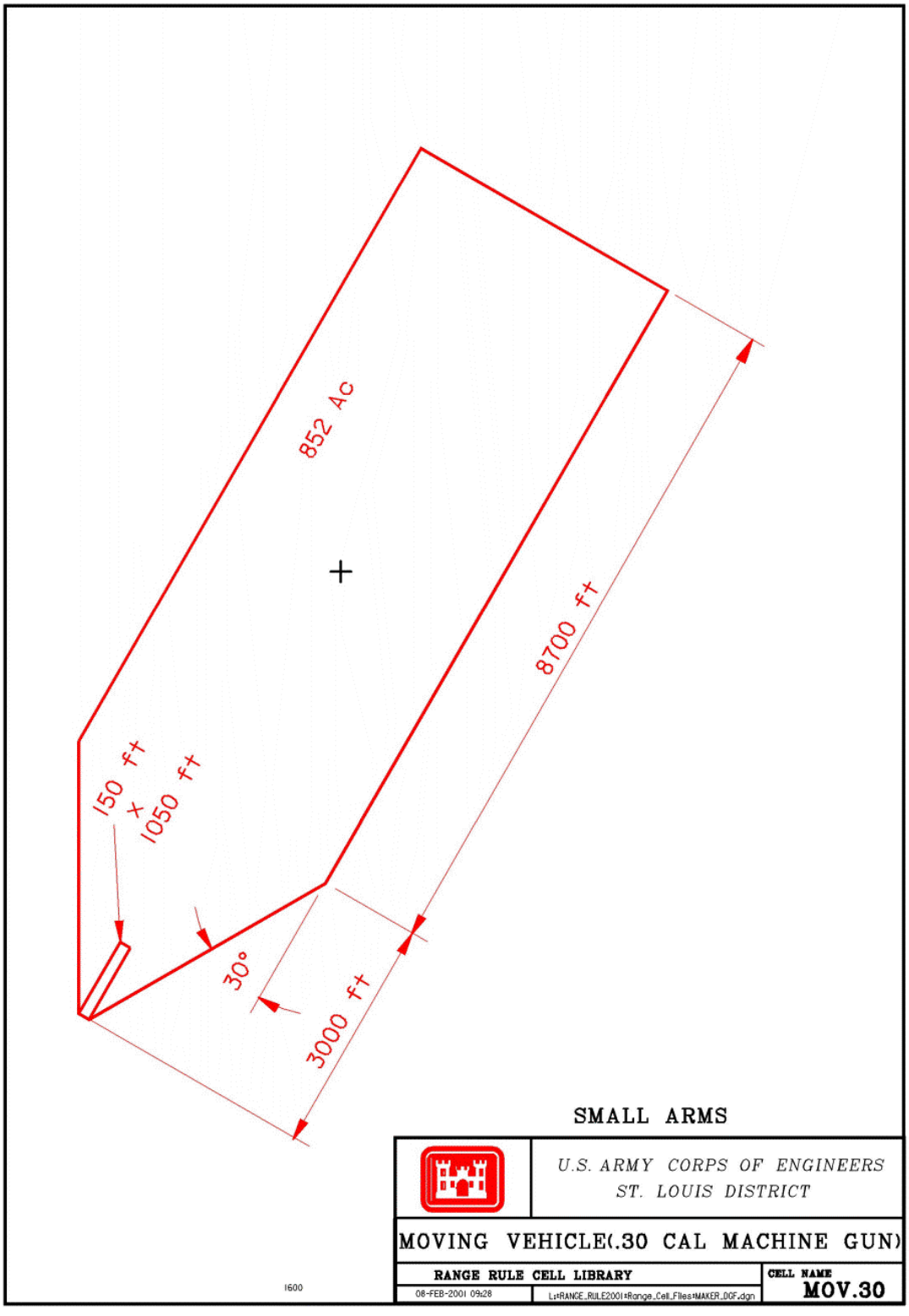
A typical firing lane consisted of a straight road, 350 yards long with targets positioned at the rear of the range. The target area would have been approximately 50 yards wide. Vehicles were required to traverse the road and obstacles while gunners engaged targets. Firing commenced at the 50-yard line and continued to the 275-yard line. The danger area would have included the angle of fire and the prescribed safety fan, which would have extended downrange 4,300 yards beyond the cease-fire line.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

MOVING VEHICLE(.30 CAL MACHINE GUN)

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1600

MOVING TARGET 1,000-inch (STRAIGHT TRACK)

Range Type: Small Arms

Cell Name(s): MT1000

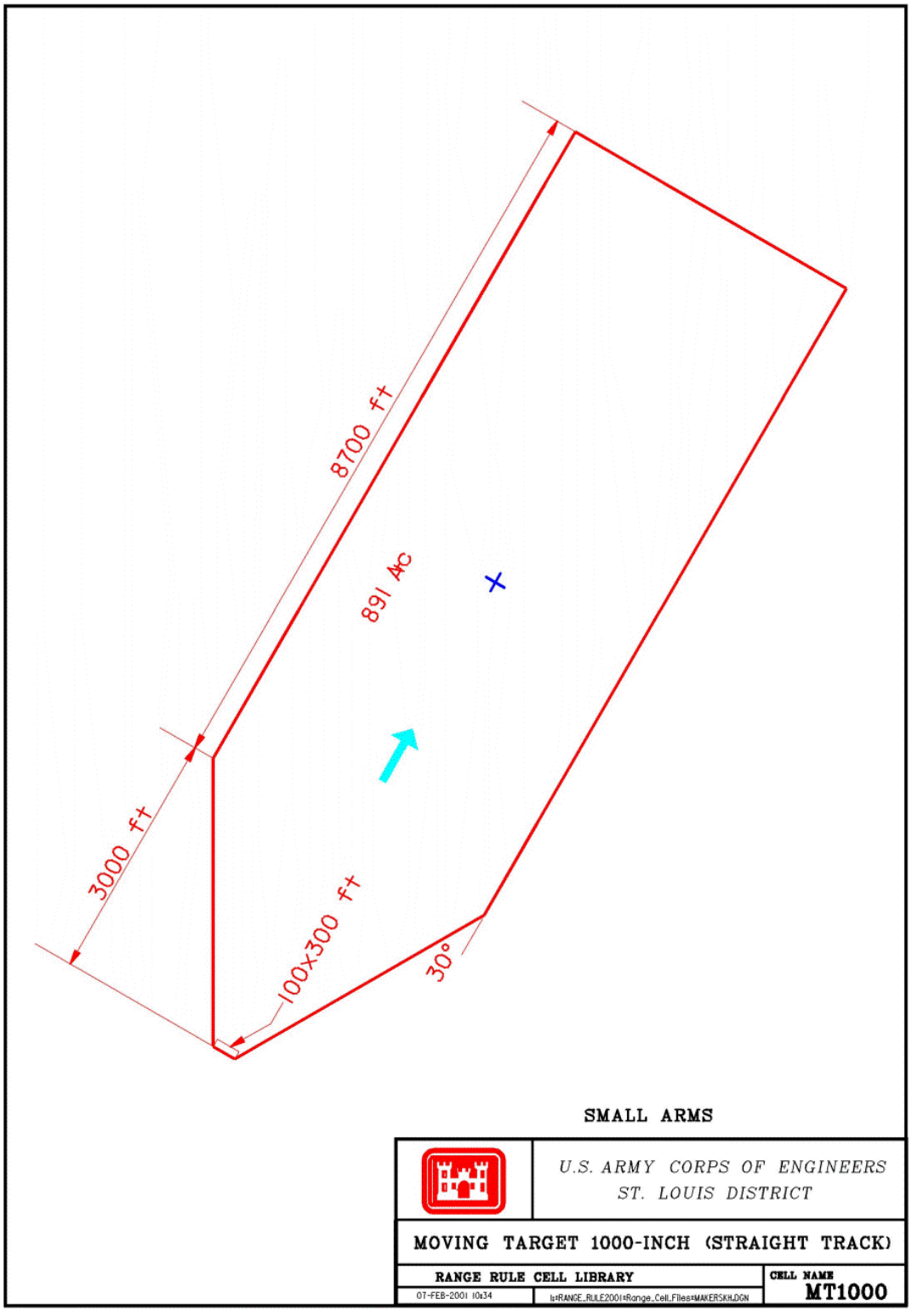
The only description available in the references is an illustration showing a target car mounted on a track at the rear of a 1,000-inch range. As illustrated, as the target car is pulled along the track, it is visible to the gunner for no more than 35 feet. The width of the range is not described and it is unknown as to the number of firing points allowed. It may be possible that a range consists of multiple tracks with multiple firing lines. Therefore, the range size is estimated to be 300-feet by 100-feet. A salvage wall (earthen berm) would have been constructed directly behind the targets. An additional area behind the firing lines would have included the ready line, ammunition issue point, and administrative area. The danger area would have included a 5° angle of fire and a 25° safety fan. The area is represented as a 30° fan that originates from the ends of the firing line, extends down range a distance of 1,000 yards, at which point it continues an additional 2,900 yards (8700 feet) parallel to the direction of fire. If .50-caliber ammunition is suspected, the safety fan should be extended to 6,600 yards in-lieu of 2,900 yards (on the range cell).

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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MOVING TARGET 1000-INCH (STRAIGHT TRACK)

RANGE RULE CELL LIBRARY	CELL NAME
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MOVING TARGET (CURVED TRACK)

Range Type: Small Arms

Cell Name(s): MTCUTR

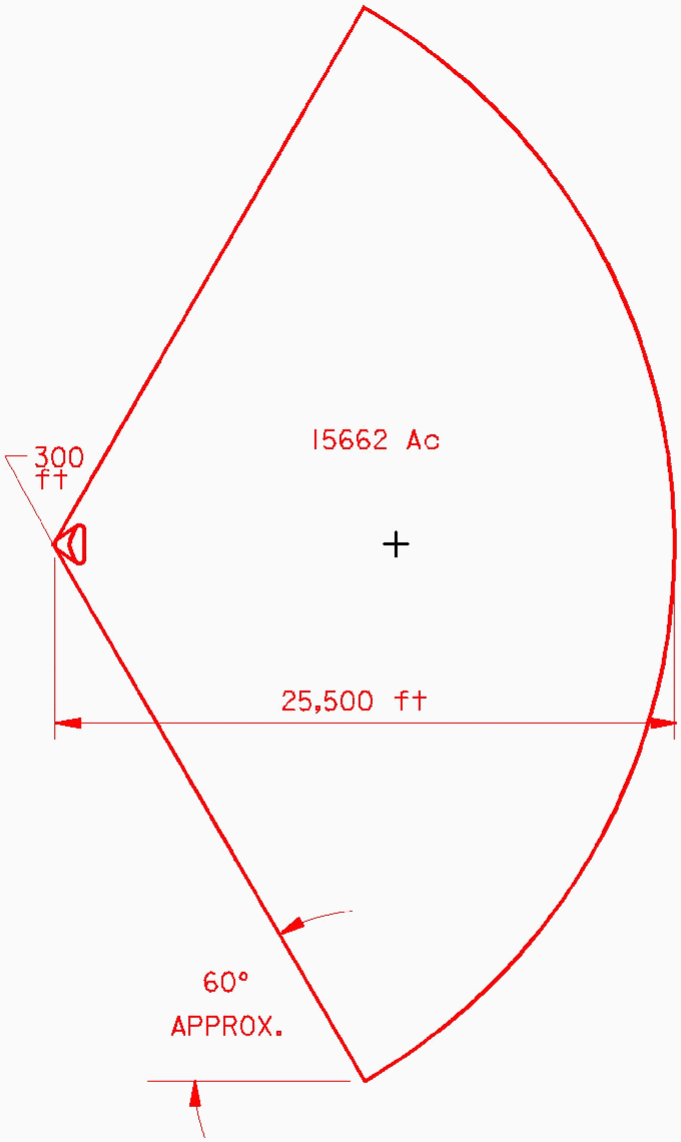
Typically, a Moving Target (curved type) is designed to provide practice for calibers .30 and.50 machineguns. However, this range also accommodated guns up to 75 mm (it is possible that 37mm subcaliber munitions were used for these guns). The target area consists of a continuous narrow gage rail (tracks) approximately 600 feet by 1,500 feet. The track layout may vary. Targets are mounted on target cars, which operate on the track. The cars and tracks are protected by earthen berms. The firing line is typically located 600 feet from the target area, and is wide enough to accommodate 24 firing positions (spaced at 12 feet apart plus room at both ends calculates to approximately 300 feet). Left and Right limits of fire are established based on the width of the target area. A danger area would include 300 mils (17°) added to the left and right limits of fire and extend down range a distance of 1,000 yards beyond the maximum range of the largest munitions used. The cell represents the size of range necessary to accommodate .50 caliber ammunition. High explosive munitions would not have been authorized for use on this type of target range.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
37mm AP	(at elev. 15°) 4,980	data not available
75mm AP	(at elev. 15°) 7,140	2,030

Data sheet(s):

CTT01	Small arms, General
CTT13	37mm, APC, M59
	75mm, AP M72

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



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MOVING TARGET (CURVED TRACK)

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CELL NAME
MTCUTR

6000

MOVING TARGET, JEEP TYPE

Range Type: Small Arms

Cell Name(s): MVJEEP

This type of range consists of a jeep-mounted target that is driven on a track laid out in a triangular shape. Gun turrets mounted on stationary platforms were positioned along the firing line approximately 600 yards to the front of the target. Local requirements would have dictated the number of turrets. An earthen berm constructed around the target area was required to conceal and protect the vehicles and personnel.

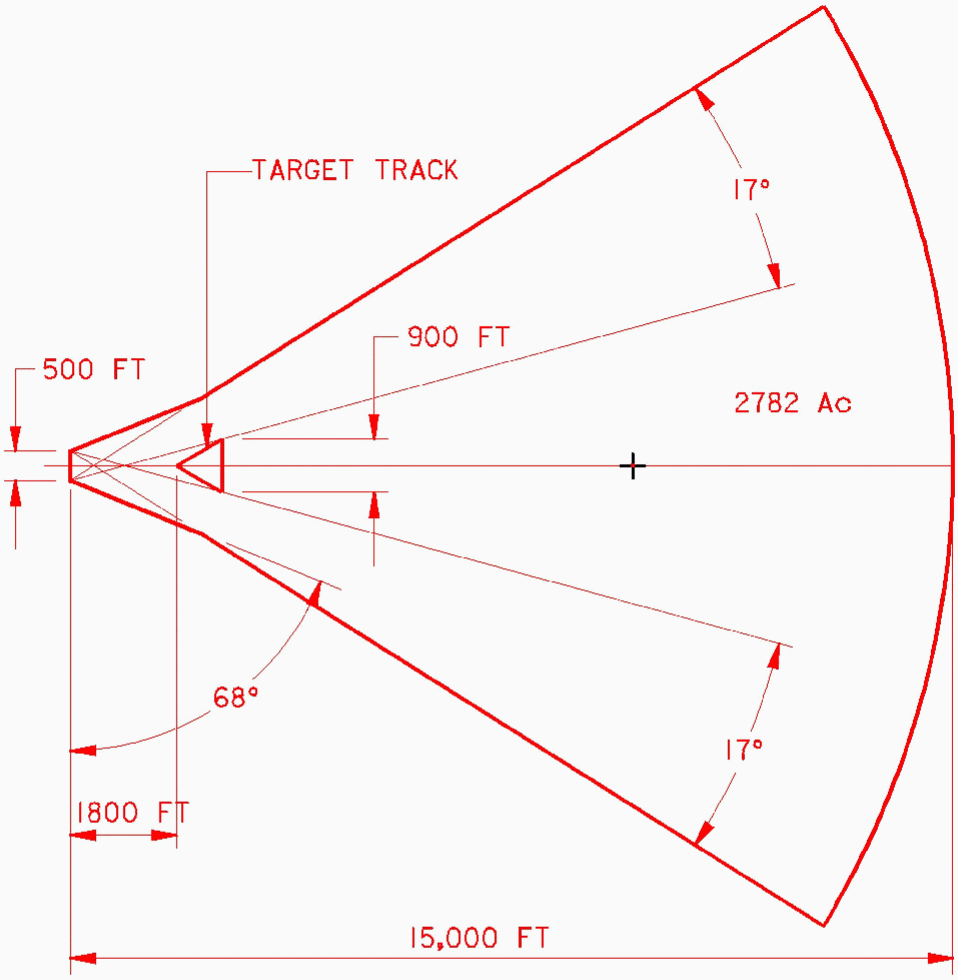
The range cell was derived using the following assumptions: a 500-foot firing line positioned 1,800 feet from the forward edge of the target; a 900-foot wide target; the down range distance (as stated in reference – from the firing line to the end of the safety fan) is 15,000 feet (5000 yards). Safety fans were calculated by adding an additional 17° safety fan to the right and left limits of the far right and far left gun positions. Right and left limits are locally established, but typically set at the ends of the target area. A set safety fan of 22° would extend from each end of the firing line and extend to intersect the right and left limit safety fan.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545

Data sheet(s):

CTT01 Small arms, General

Reference(s): *Second Air Force Ground Gunnery Range Requirements,* July 1943; *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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MOVING JEEP TYPE TARGET

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CELL NAME
MVJEEP

MOVING VEHICLE (SUBMACHINE GUN)

Range Type: Small Arms

Cell Name(s): MVRANG

A Moving Vehicle Range for submachine guns consisted of a u-shaped vehicle track with three separate target groupings. It was typically located along a ridge or on topography that permitted a wide angle of vision. Road construction would have consisted primarily of clearing enough of an area to provide for satisfactory passage of vehicles. Its arrangement would have been subject to modifications in order to accommodate the local terrain and danger area restrictions. Gunners were tasked to engage three target groups while mounted in a moving vehicle

The area required for this range is approximately 150 yards by 225 yards, which provides enough room to construct the road, have adequate separation between the three target groups, and provide approximately 50 yards of length, which allows the vehicle to reach the required speed. The terrain for this range would have been generally flat with a good field of fire for the gunner; and the vegetation would have typically consisted of grass, weeds, and underbrush. The three separate target groups (consisting of E-type targets) would have been positioned appropriately to meet local terrain and restrictions.

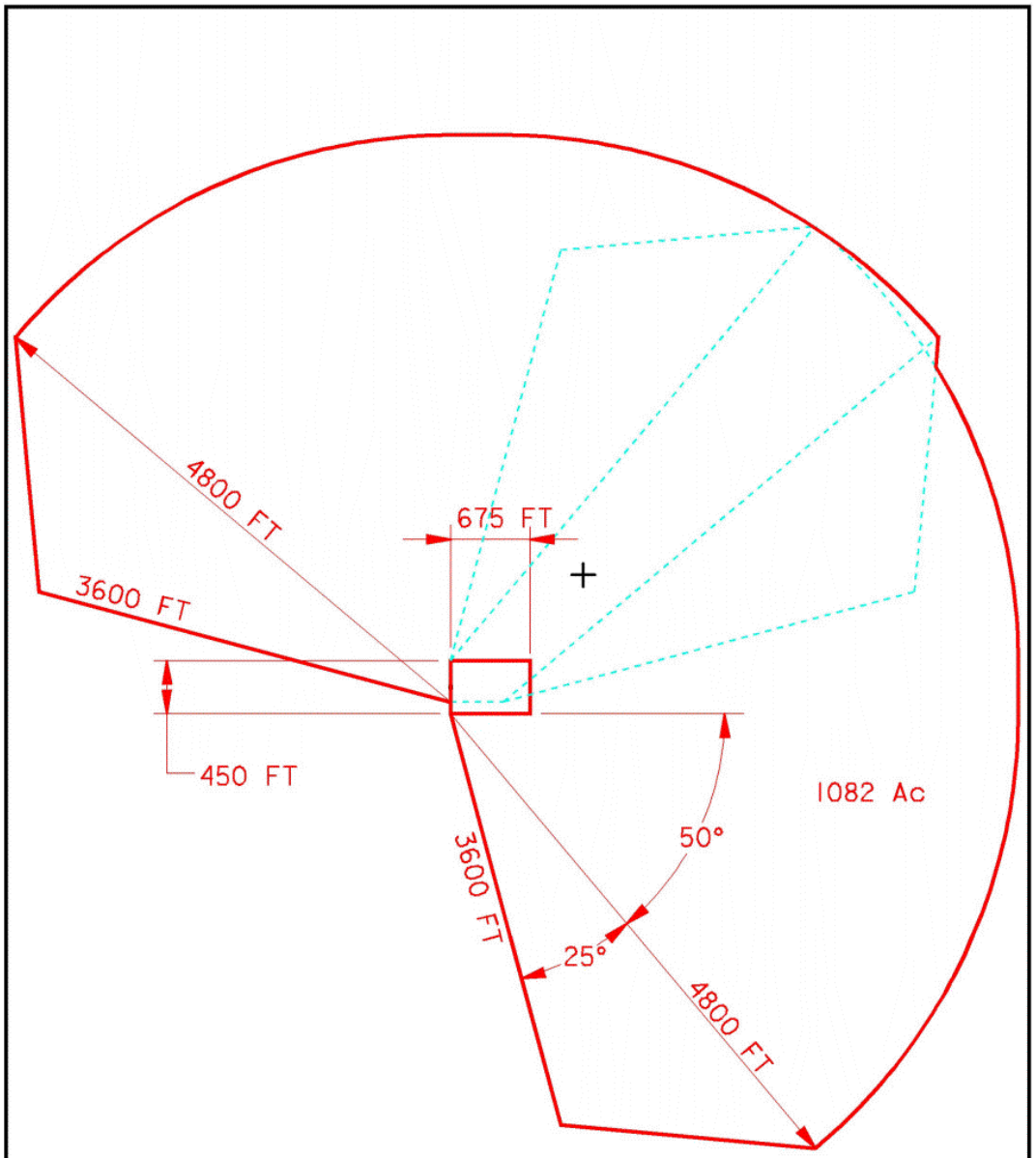
The range cell was derived using the following assumptions: 150 yard by 425 yard range area; vehicle route constructed within these limits; danger area developed using two machinegun danger areas to account for the two directions of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.45 caliber	1,600	802

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



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MOVING VEHICLE (SUBMACHINE GUN)

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1200

MOVING BASE (SHOTGUN)

Range Type: Small Arms

Cell Name(s): MVSHOT

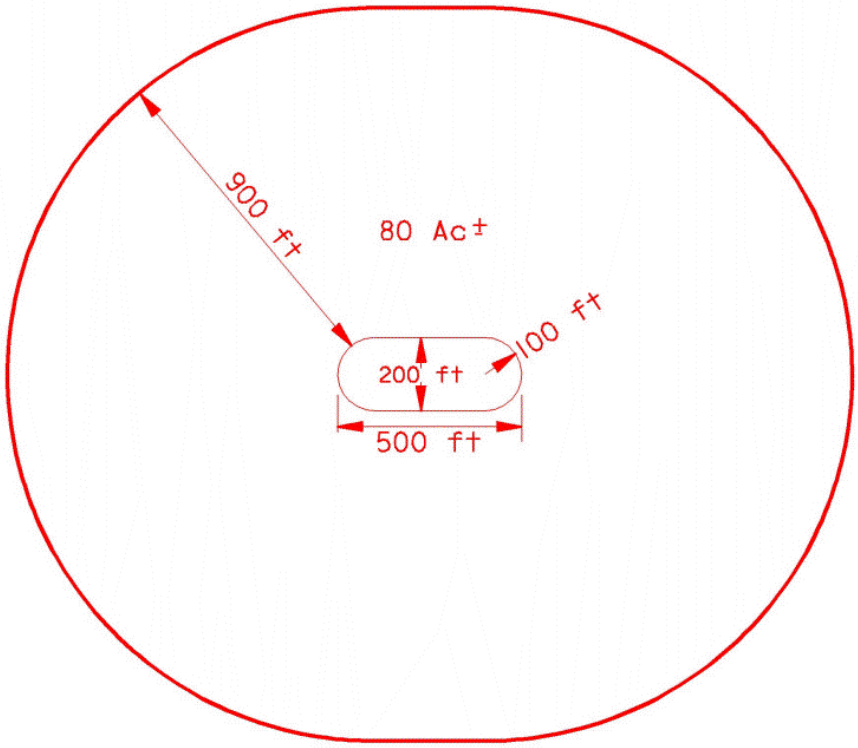
Similar to skeet and trap, this range uses clay targets (clay pigeons) thrown from trap houses. Shotguns would have been the authorized weapons. Shooters would have engaged targets from a moving vehicle traversing a set course, which was generally an oval track. No standards are known for this range. However, it is estimated that the oval track was approximately 500 feet by 200 feet and that a 900-foot safety fan extended from the oval.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
12 gage shotgun	NA	NA

Data sheet(s):

CTT01 Small arms, General

Reference(s): No references available



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MOVING BASE (SHOTGUN)

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PISTOL

Range Type: Small Arms

Cell Name(s): PIRAN

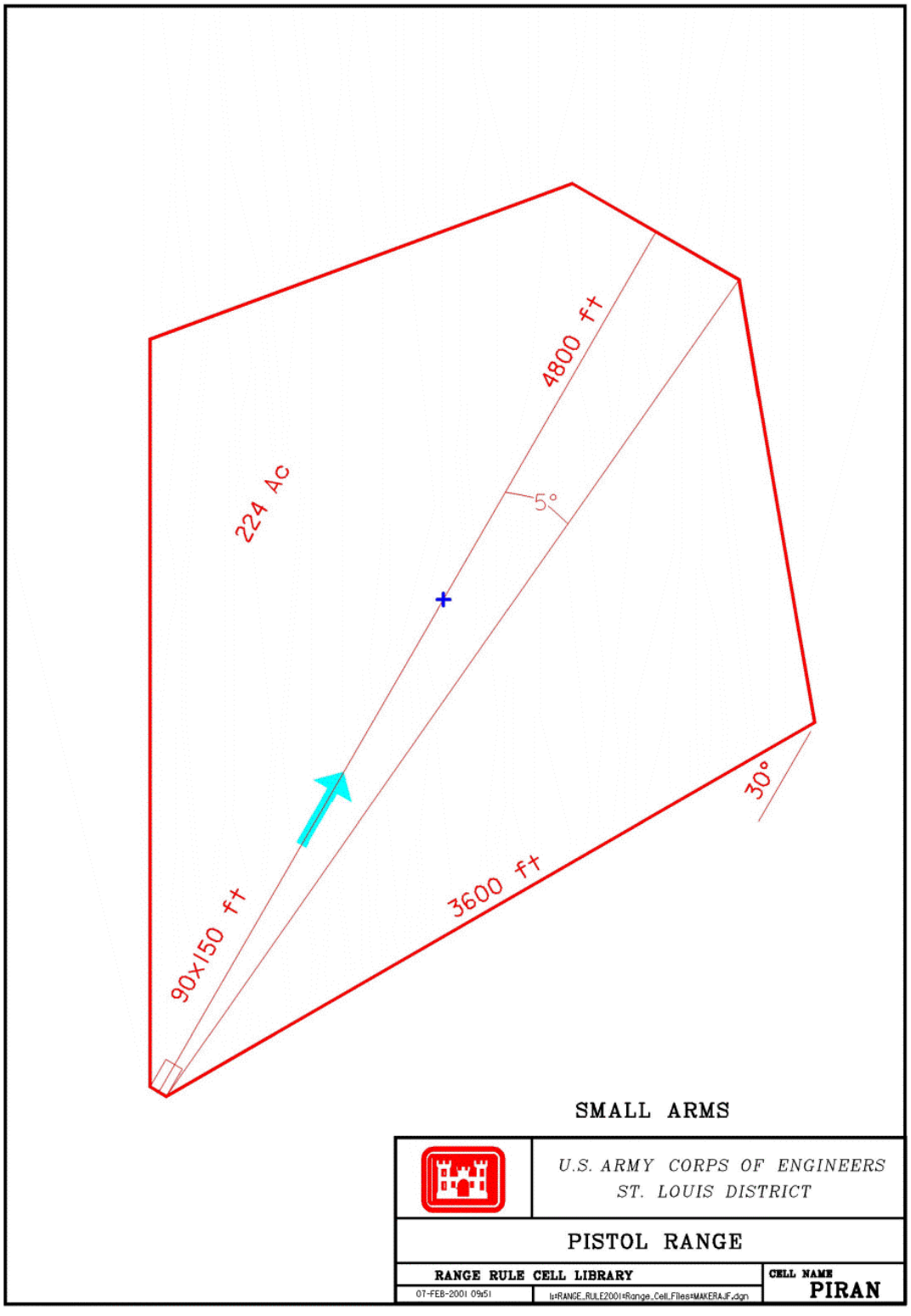
Typically, a Pistol Range accommodated 25 firing positions, and was approximately 30 yards wide by 50 yards deep. A pistol range is comprised of a salvage wall (earthen berm), the targets, the firing line(s), safety fan, and an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The salvage wall (earthen berm) would have been constructed along the backside of the range approximately 5 feet to the rear of the target line. In situations where bluffs or steep hills were present, a salvage wall may not have been required. A five-foot opening typically separated each target. Firing lines would have been positioned at 5, 10, 15, and 25 yards in front of the targets. A 5° angle of fire extended from each end of the firing line down range a distance of 1,600 yards; and an additional 25° safety fan, which originated from the same points as the angle of fire, extended down range a distance of 1,200 yards.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.45 caliber	1,600	802
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



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PISTOL RANGE

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CELL NAME
PIRAN

POORMAN RANGE

Range Type: Small Arms

Cell Name(s): POORMN

A machine gun range utilized to provide a ground trainer designed to simulate problems encountered in the air while firing at a fighter attacking on a pursuit curve. Along the firing line are positioned one or more Poorman Flexible Gunnery Trainers or Poorman Hand-Held Trainers. A cloth target is mounted on a target car running on a track from the firing line to a point 1000 inches (83' 4") in front and directly on the center-line of the firing turret.

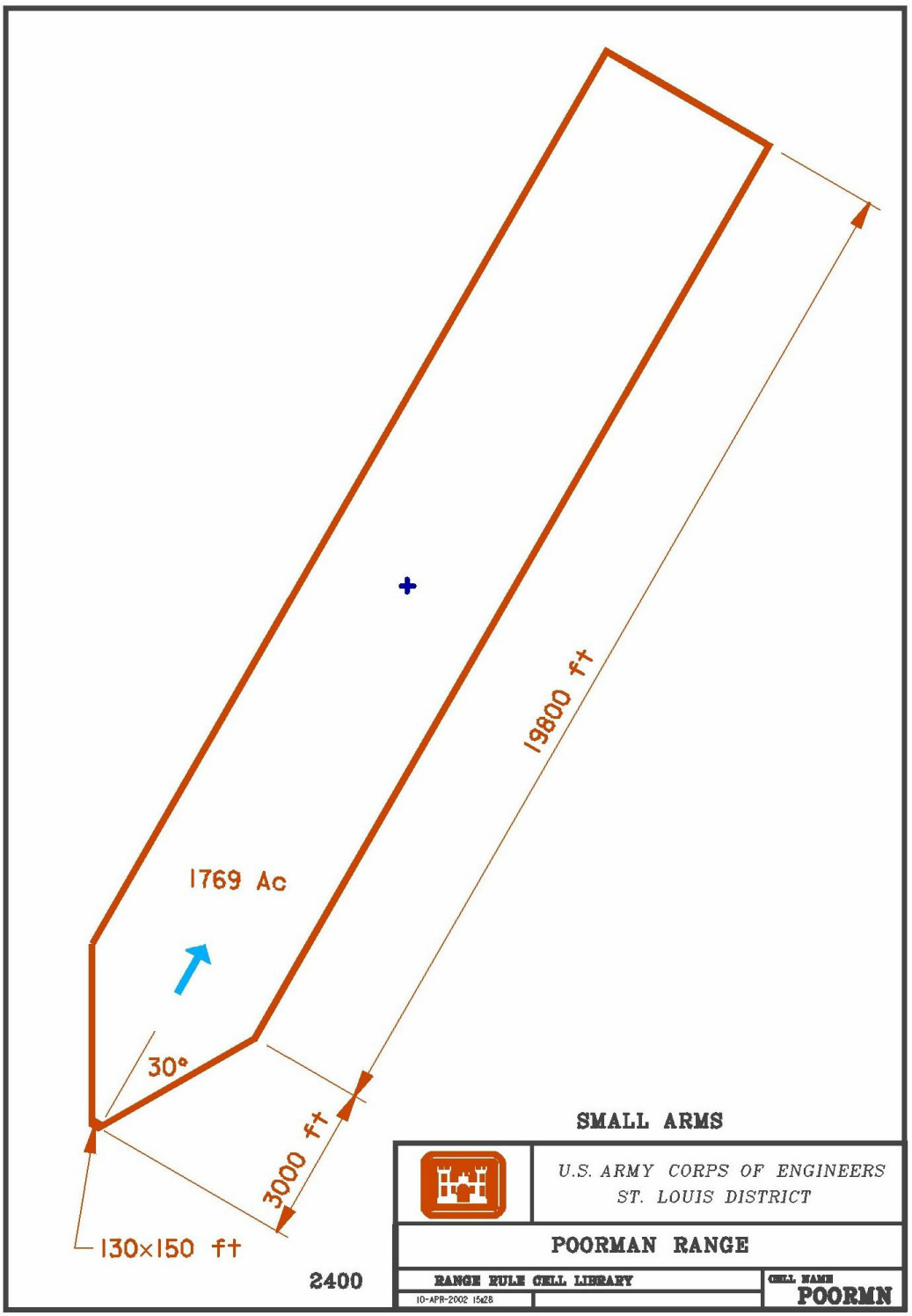
Currently, no references are currently available to provide a range layout. The trainer manual on hand gives no dimensions other than the target distance. Modification to width depends on quantity of trainers. The estimated size of the range, based on six trainers, is approximately 130 feet wide by 150 feet long. A 30° safety fan originating from both ends of the firing line would extend down range 1,000 yards, at which point it continued an additional 6600 yards parallel with the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): AF Manual No. 66, *Manual for the Instructor on the Poorman Flexible Gunnery Trainer;* AR *750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951


19800 ft
1769 Ac
30°
3000 ft
130x150 ft
2400
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ST. LOUIS DISTRICT
POORMAN RANGE
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RIFLE, KNOWN DISTANCE (aka: KD Range, Known Distance Range, Qualification Range, Rifle Range, Musketry Range)

Range Type: Small Arms

Cell Name(s): KD500, KD300, RIFLE

A known distance (KD) rifle range was utilized for weapons familiarization and qualifications. KD ranges may be designated 200-yard, 300-yard, or 500-yard. Based on the designation, firing lines were positioned at 100 yd and 200 yd, 100 yd, 200 yd, and 300 yd, and 100 yd, 200 yd, 300 yd, and 500 yd, respectively. An additional 1,000-yard firing line may have been present; although, these firing lines typically consisted of a small number of firing points.

The width of the range would have been determined based on terrain and installation requirements. A range constructed to accommodate 50 men was approximately 400 yards wide. A range is comprised of a salvage wall (earthen berm) constructed directly behind the targets, the targets, the firing line(s), an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The 30° safety fan originates from the ends of each firing line, extends down range 1,000 yards, at which point it continues an additional 2,900 yards parallel to the direction of fire.

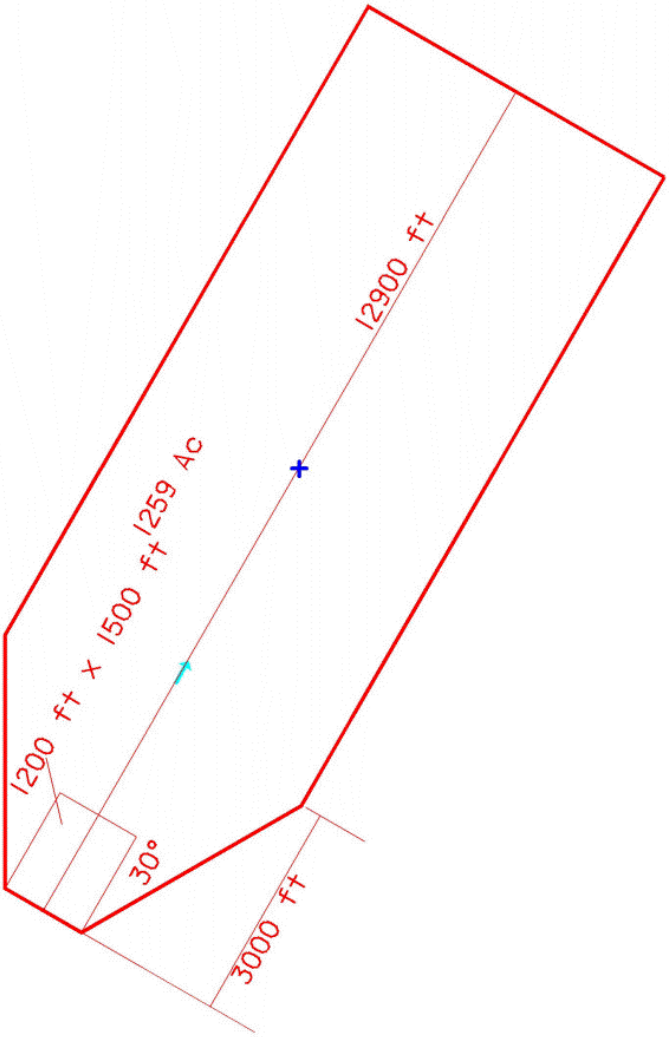
Note: Since the downrange distance is calculated from each firing line, the difference in the down range distance between a 200-yard range (12,000-foot down range distance) and a 500-yard range (12,900-foot down range distance) is 300 yards (900 feet).

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100
.45 caliber	1,600	800

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



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RIFLE, KNOWN DISTANCE (KD) 500-YARD

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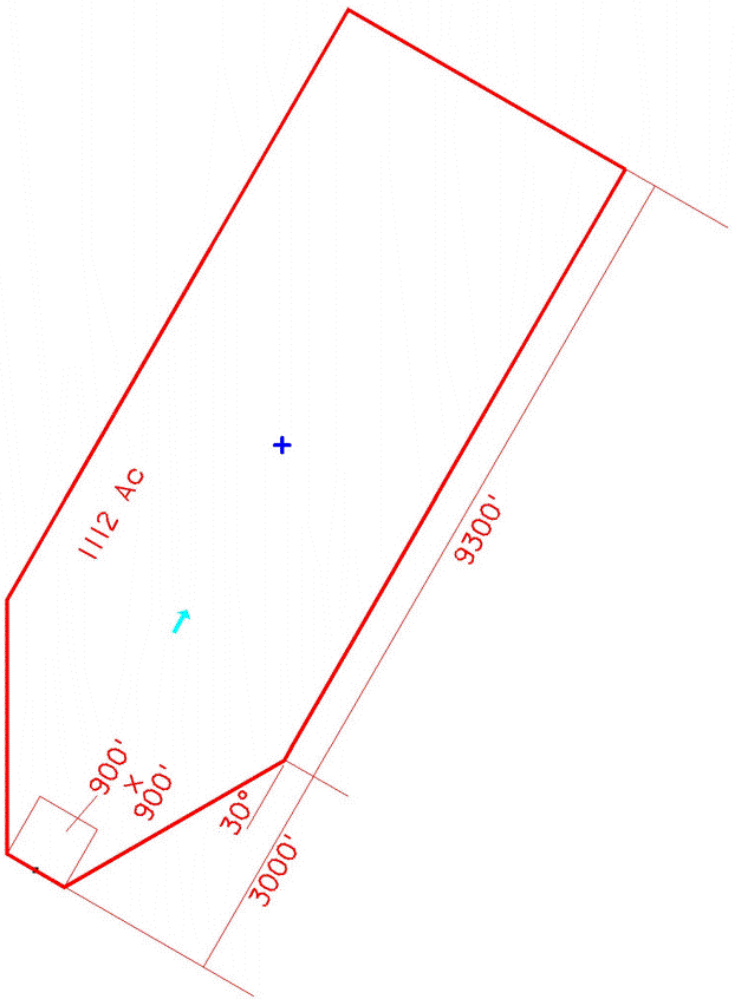

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U.S. ARMY CORPS OF ENGINEERS
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RIFLE, KNOWN DISTANCE (KD) 300-YARD

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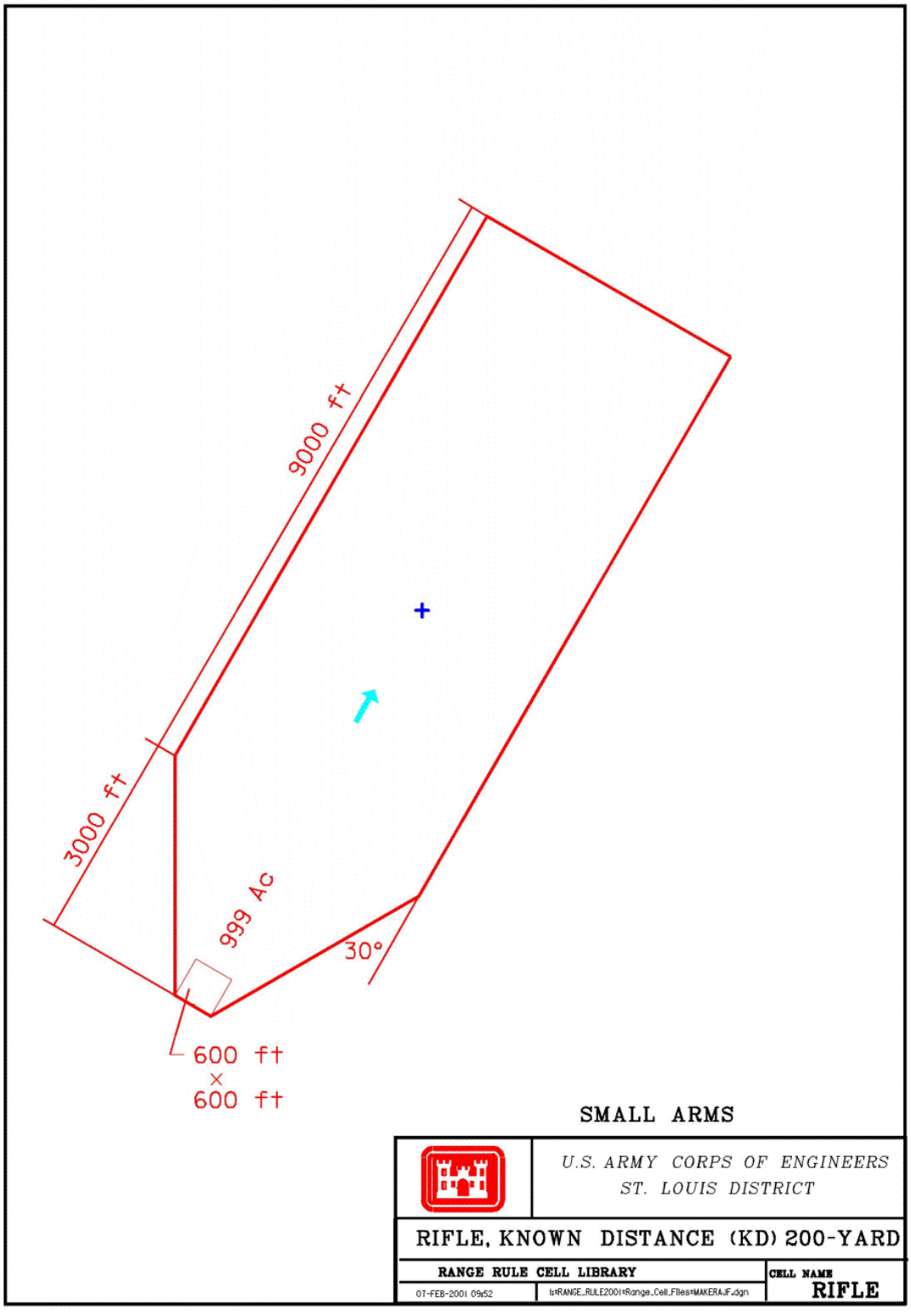

SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
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RIFLE, KNOWN DISTANCE (KD) 200-YARD

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SKEET & TRAP (aka: Skeet Range, Shotgun Range)

Range Type: Small Arms

Cell Name(s): SKEET, DSKEET, TSKEET

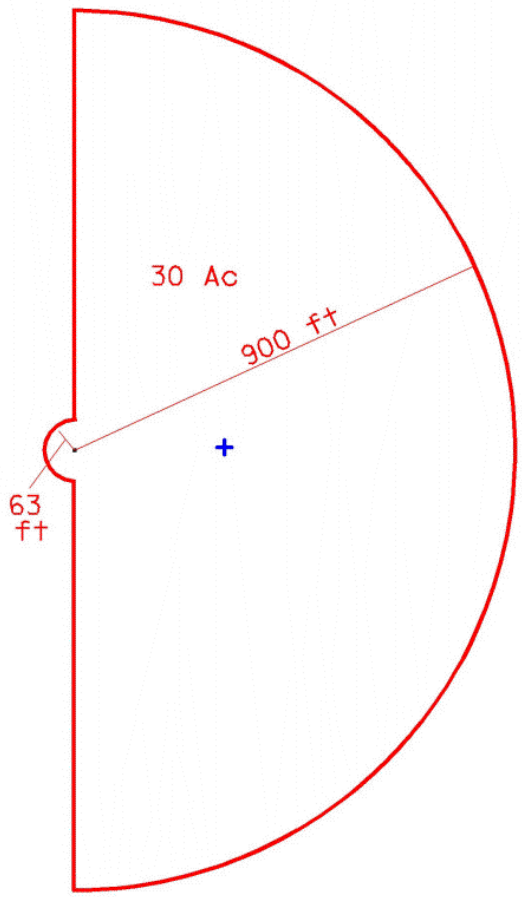
Typically, skeet ranges should be located in open country. A range facility may consist of one or several shooting fields, which are normally positioned side by side. A shooting field is laid out in a semi-circle with a 63-foot radius. Many ranges utilized concrete walkways. The safety fan consists of a semi-circle with a 900-foot radius that utilizes the same apex as the shooting field. Trap houses may have been constructed of wood, concrete, or brick.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
12 gage shotgun	NA	NA

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

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SINGLE SKEET & TRAP RANGE

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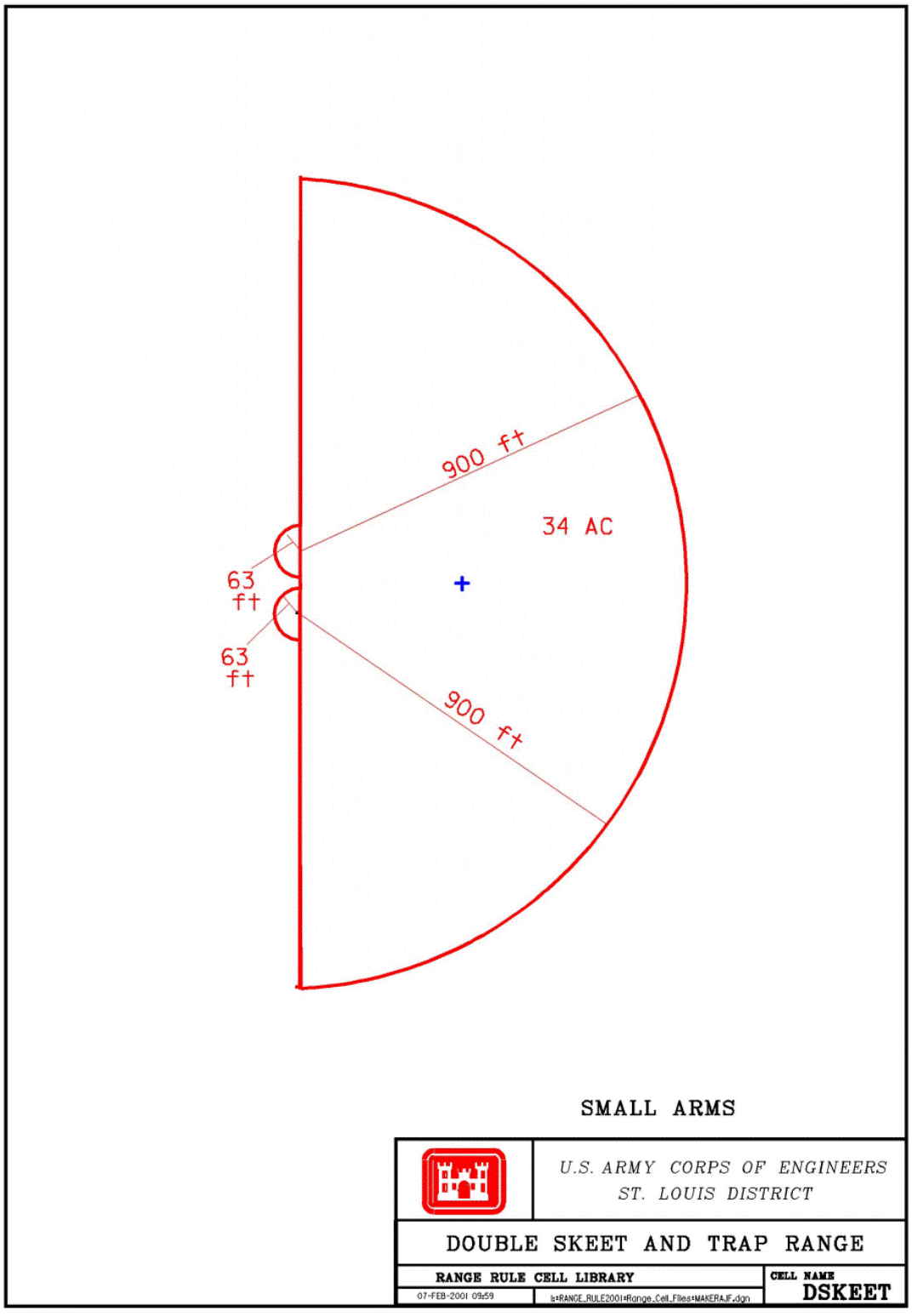
CELL NAME
SKEET



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DOUBLE SKEET AND TRAP RANGE

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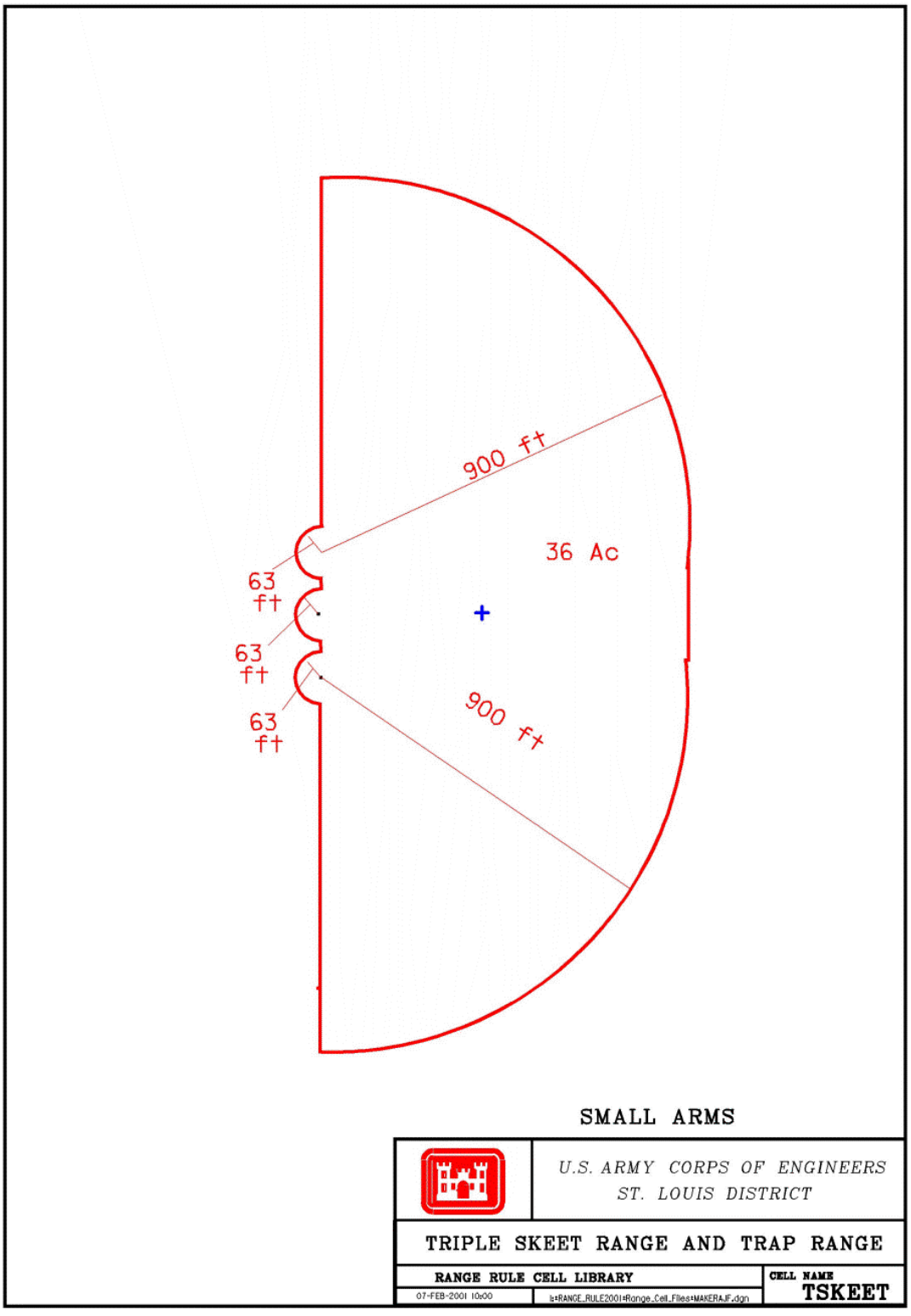
CELL NAME
DSKEET



SMALL ARMS

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TRIPLE SKEET RANGE AND TRAP RANGE

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SUBMACHINE GUN MOVING TARGET (aka: Tommy Gun Moving Target)

Range Type: Small Arms

Cell Name(s): SUBGMV

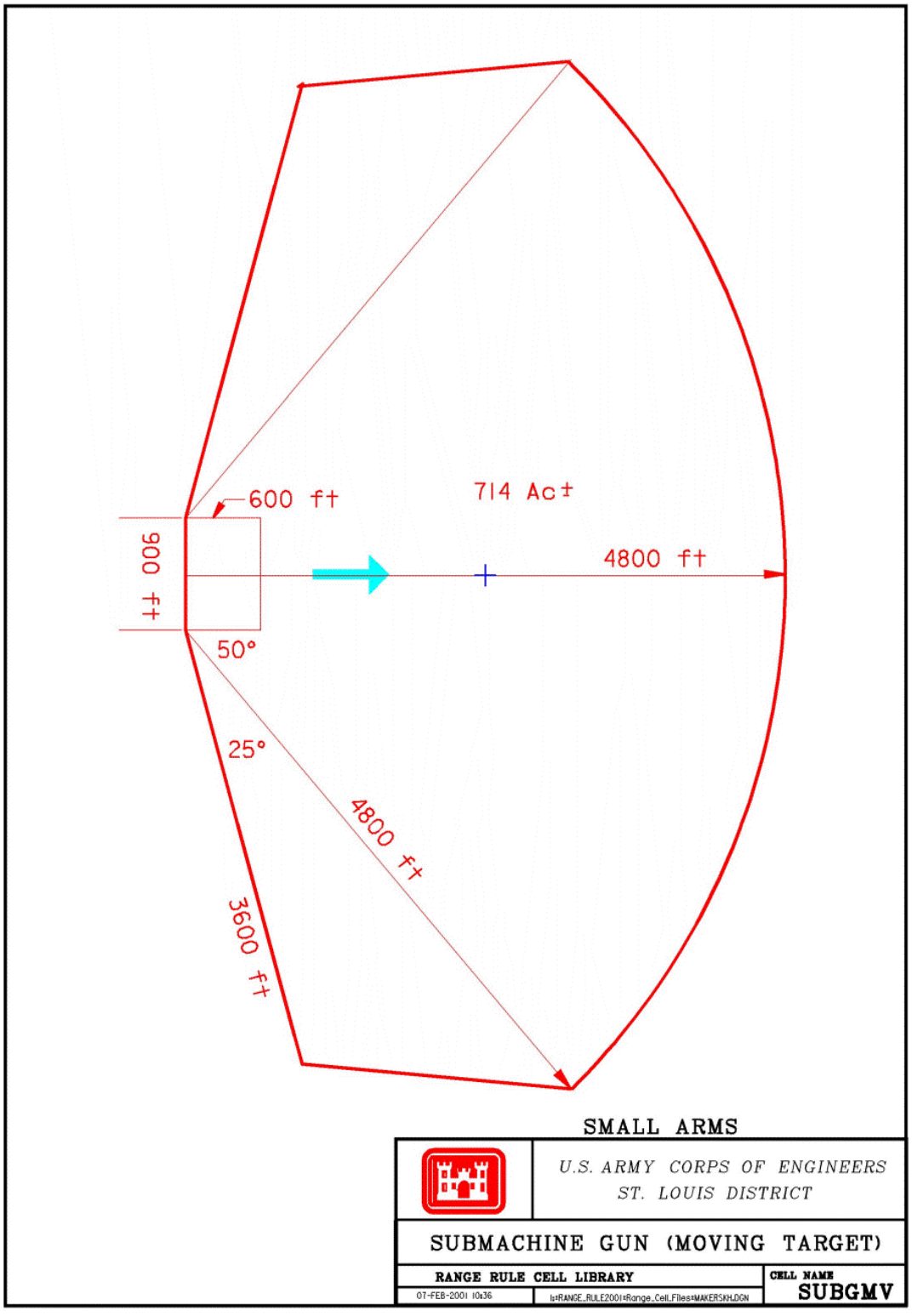
The area required for this range is approximately 300 yards wide by 200 yards deep. A straight length of narrow gage track would have been set up at the rear of the range. A target car carrying a 5-ft by 8-ft target would have run along this track. A towed target sled may have been used in situations where materials were unavailable. Gunners engaged targets from moving vehicles. The vehicles required a smooth level road surface. A danger area included a 50° fan extending 1,600 yards down range from each end of the range, and an additional 25° fan, originating from the same point, extending down range a distance of 1,200 yards.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.45 caliber	1,600	802

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

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SUBMACHINE GUN (MOVING TARGET)

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SUBMACHINE GUN (aka: Tommy Gun Range)

Range Type: Small Arms

Cell Name(s): SUBMGT

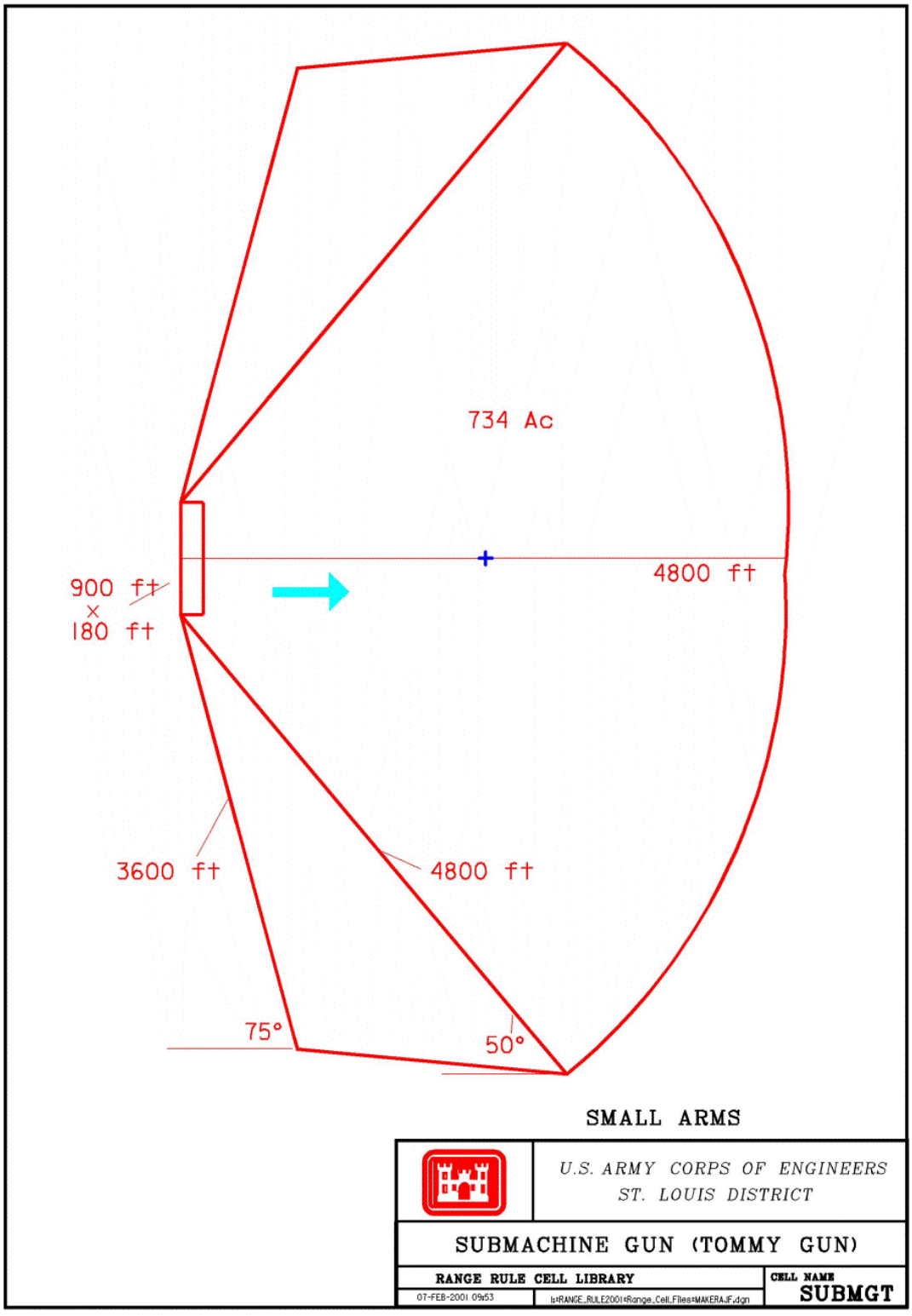
A Sub-machine Gun Range (.45 caliber), which was approximately 300 yards wide by 60 yards long, was laid out with 10 targets per firing position. Six firing points (allocation for one Infantry Div) may be laid out to allow for independent or non-independent operation. The difference between independent and non-independent is the minimum separation between firing positions. Non-independent firing requires a 160-foot separation, whereas independent firing requires a 350-foot separation. Therefore, 6 firing positions would require 800 feet and 1,750 feet of separation, respectively. Because of the lateral distance involved, it is assumed unlikely that a single range accommodated 6 firing positions with independent operations. Therefore, the range is estimated to be no more than 300 yards (900 feet) wide. The danger area consists of a 50° fan, which extends 1,600 yards downrange from each end of the range, and a 25° fan, originating from the same point, which extends 1,200 yards downrange.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.45 caliber	1,600	802

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951.



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

SUBMACHINE GUN (TOMMY GUN)

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CELL NAME
SUBMGT

TRANSITION (AUTOMATIC RIFLE)

Range Type: Small Arms

Cell Name(s): TRANAR

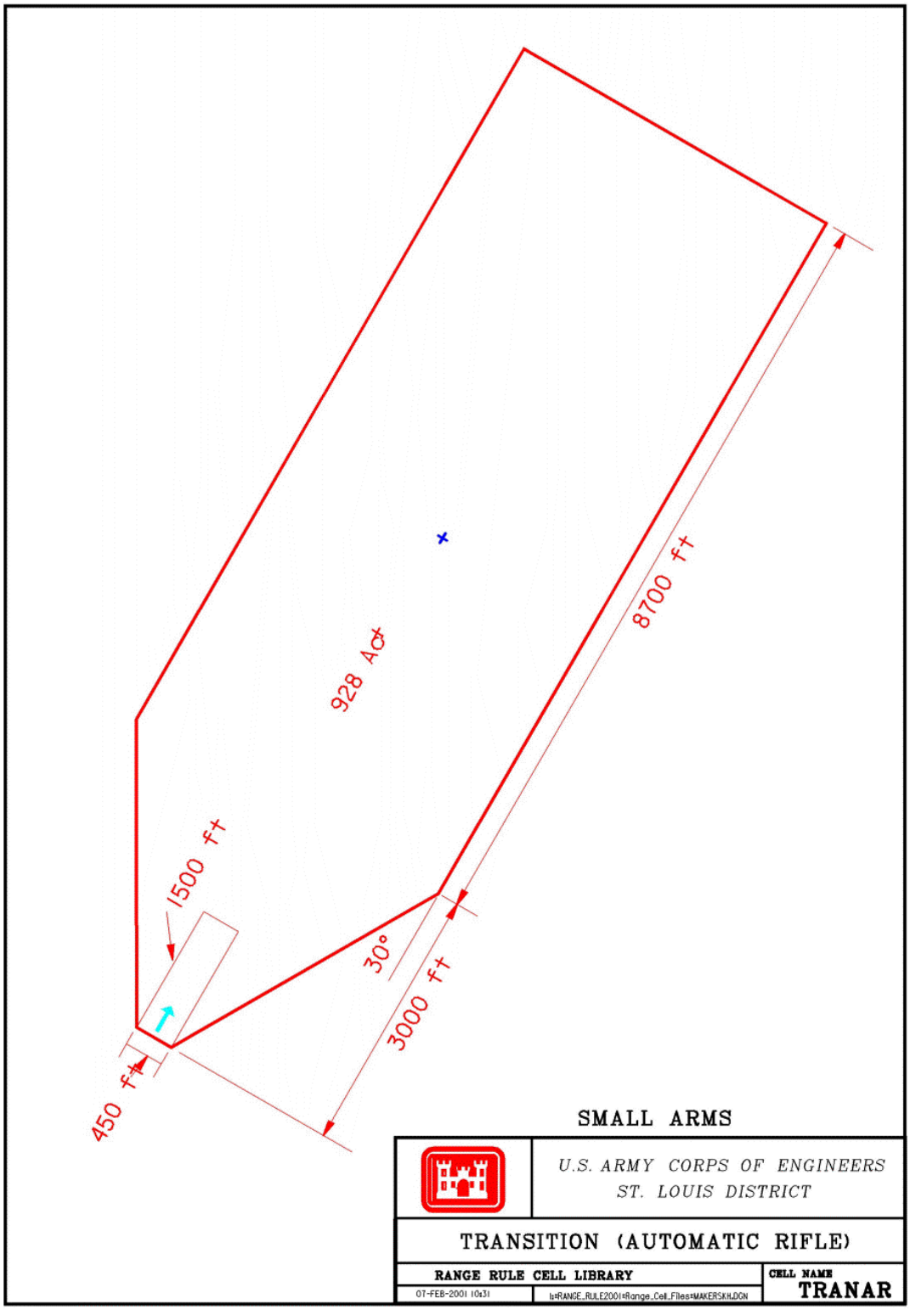
The Automatic Rifle Transition Range is similar to the rifle transition range. This type of range consists of individual firing lanes approximately 150 yards wide by 500 yards long. Each lane uses unique firing positions (fox hole, window, and prone). Each soldier transitions along the firing line engaging targets from each position. Targets were positioned at various distances ranging from 150 to 500 yards. The danger area includes an angle of fire and a prescribed safety fan. A 30° fan originates from each end of the firing line, extends 1,000 yards downrange, at which point it continues an additional 2,900 yards parallel to the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951.



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

TRANSITION (AUTOMATIC RIFLE)

RANGE RULE CELL LIBRARY

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CELL NAME
TRANAR

TRANSITION, RIFLE; TRANSITION, RIFLE (WITH LIMIT OF ADVANCE); TRANSITION, RIFLE (TYPES I AND II)

Range Type: Small Arms

Cell Name(s): TRARIF, TRANSR, TRARLA

Note: Although there is a difference of 6-years between the two referenced regulations, each of the four transition rifle ranges described were used during the WWII era.

TRANSITION, RIFLE (TYPES I AND II) – A 1944 range regulation describes transitions ranges as Type I and Type II.

- Type I has an undetermined number of firing lanes, which have a single firing point and pop-up targets set at 200, 300, and 500 yards. Each firing lane is approximately 60 yards wide. The regulation states that a number of these firing lanes together constitute a Transition Firing Course Range, Type I.
- Type II has an undetermined number of firing lanes, which have a single firing point and 6 stationary targets placed at random distances ranging from 200 to 500 yards. Each firing lane is approximately 50 yards wide. The regulation states that a number of these firing points together constitute a Transition Firing Course Range, Type II.

An additional area to the front of the firing line included the ready line, ammunition issue point, and administrative area. The estimated width of both ranges is 400 yards. Each would utilize a typical danger area for small arms ammunition. A 30° safety fan originated from the ends of each firing line, extended 1,000 yards down range, at which point the fan continued an additional 2,900 yards parallel to the direction of fire.

TRANSITION, RIFLE (with and without a limit of advance) – A 1951 range regulation describes rifle-type transition ranges with and without a limit of advance.

- Transition, Rifle (w/o a limit of advance) – This type consisted of up to ten firing lanes where each offered a unique firing position (i.e., fox hole, rooftop, logs, window, etc.). Personnel transitioned along the firing line shooting from various positions. Targets were placed at random distances out to 500 yards. Assuming that each lane requires a width of 20 yards, the width of the range may be up to 200 yards. The danger area included an angle of fire and a prescribed safety fan. A 30° fan originated from each end of the firing line, extended 1,000 yards downrange, at which point it continued an additional 2,900 yards parallel with the direction of fire.
- Transition, Rifle (with a limit of advance) – This type of transition range utilized firing lanes in which personnel transitioned down-range while engaging pop-up targets. Each lane was approximately 25 yards wide and 130 yards long. An earthen berm may have been constructed between firing lanes. Targets were

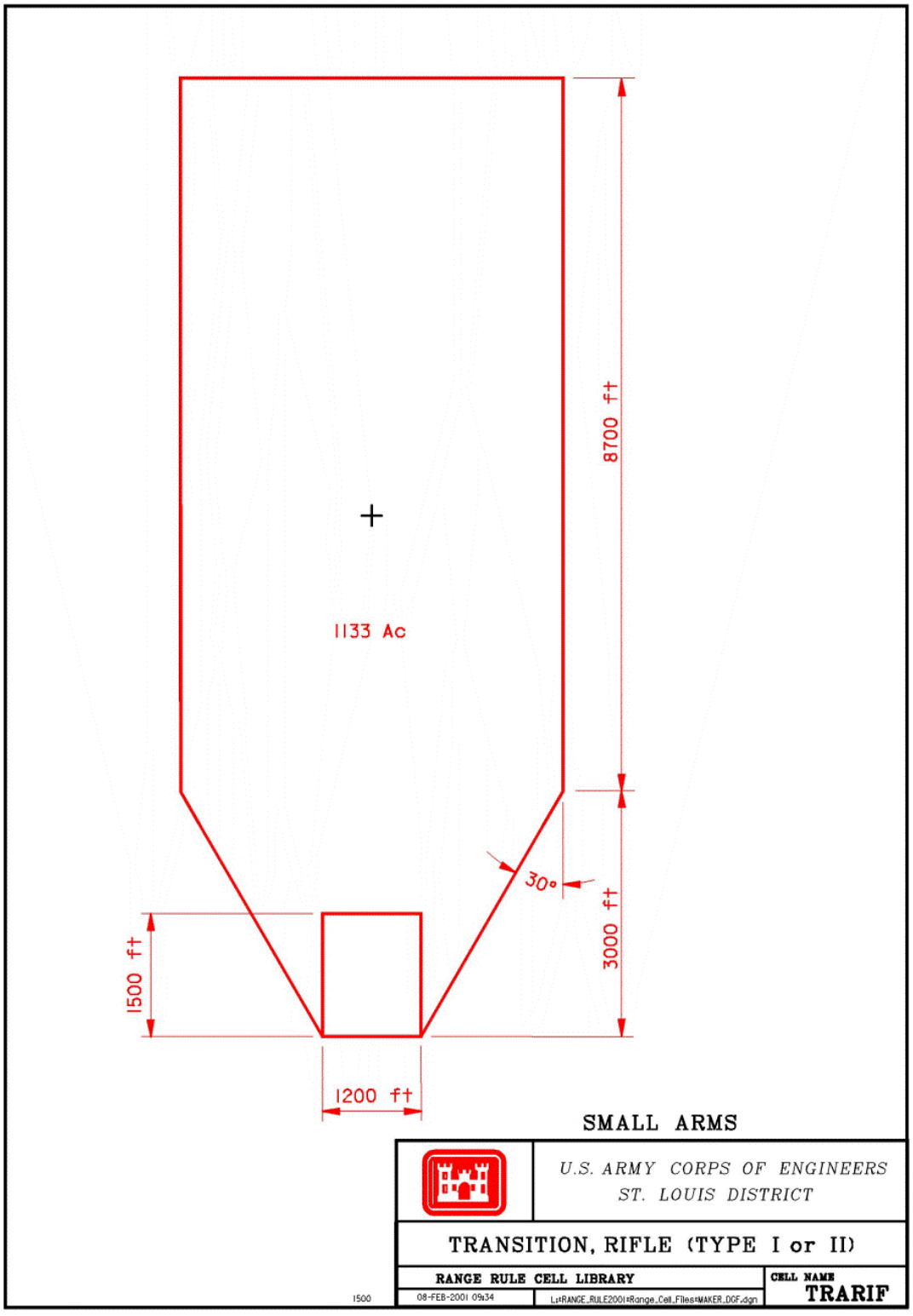
positioned at various locations between 40 and 130 yards down range. A limit of advance would have been established no farther than 90 yards down range. The number of firing lanes was determined by local terrain and safety conditions. A range with 6 firing lanes is estimated to have been 200 yards wide and 130 yards long. The danger area includes an angle of fire and a prescribed safety fan. A 30° fan originated from each end of the firing line, extended 1,000 yards downrange, at which point it continued and additional 2,900 yards parallel to the direction of fire.

Ammunition (probable)	Max Range (yards)	Muzzle Velocity (fps)
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,* May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951.



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

TRANSITION, RIFLE (TYPE I or II)

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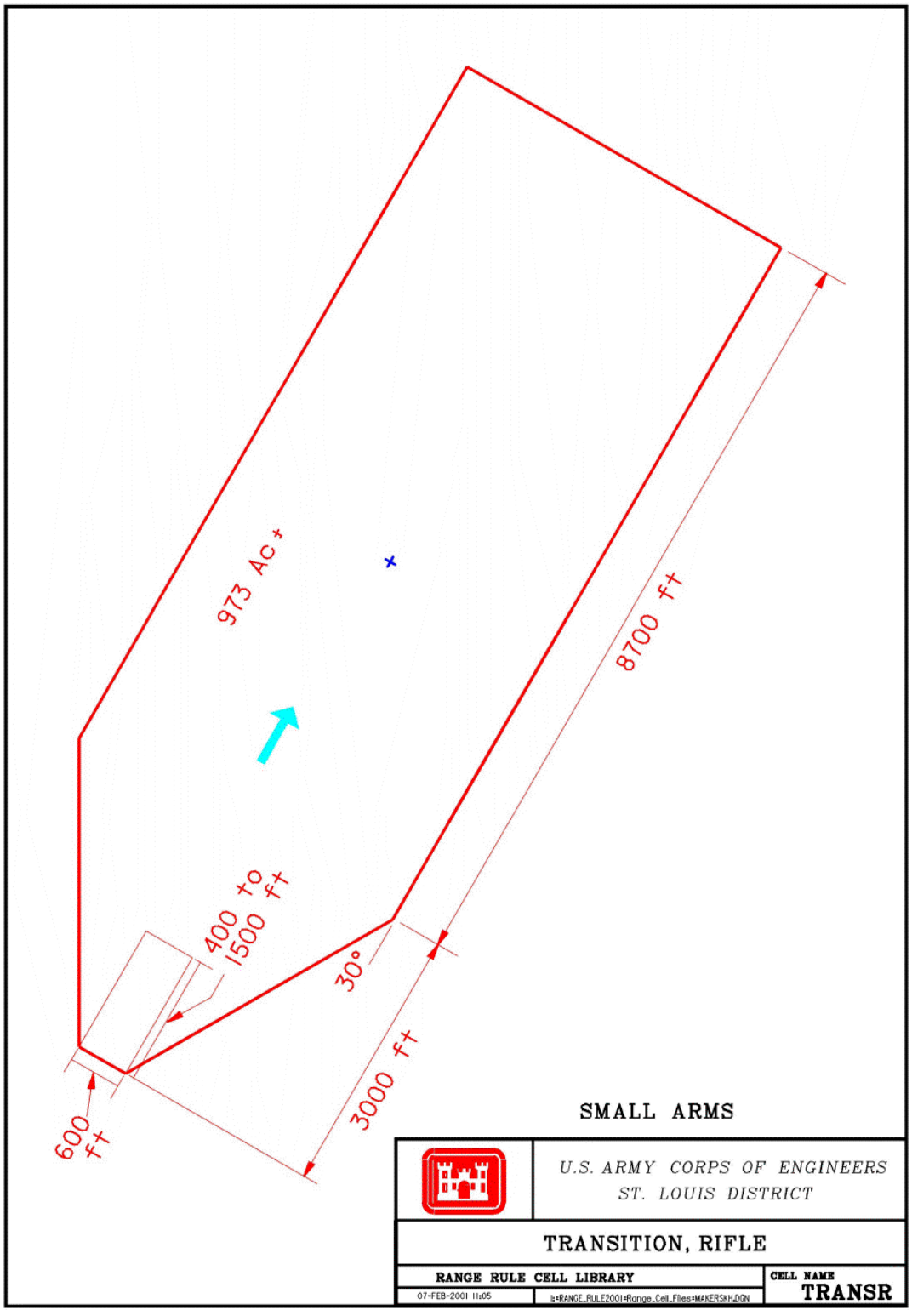
CELL NAME
TRARIF

1500



SMALL ARMS

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

TRANSITION, RIFLE

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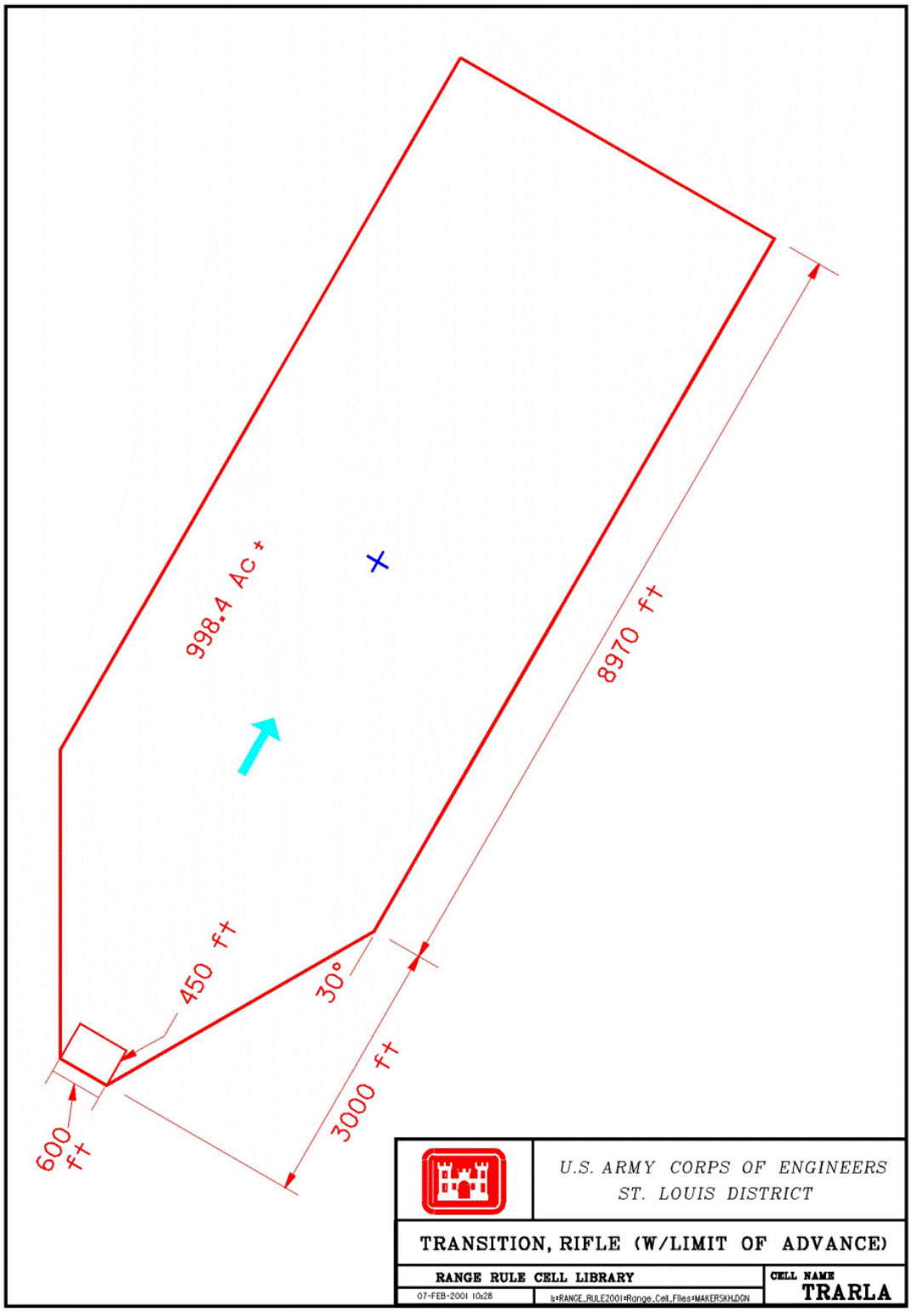
998.4 Ac ±
8970 ft
450 ft
30°
3000 ft
600 ft
U.S. ARMY CORPS OF ENGINEERS
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TRANSITION, RIFLE (W/LIMIT OF ADVANCE)
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CELL NAME
TRARLA