LIVE FIRE EXERCISE SHOOTHOUSE (LFSH)

Narrative Description

Purpose

TC 25-8 Training Ranges, dated 10 May 2010, is the basis for the standard design information in this document. The Live Fire Exercise Shoothouse (LFSH), FCC 17879, provides the Commander with a facility to train and evaluate a unit's ability to move tactically (enter and clear a room; enter and clear a building), engage targets, conduct breaches and practice target discrimination during a live fire exercise.

The standard shoothouse must support the following list of weapons/ammunition:

- 5.56mm M193 (M588A1)
- 5.56mm M855 (M16A2-4 and M4's)
- 5.56mm M855A1 (M16A2-4 and M4's) (EPR)
- 5.56mm M855A1 Linked (M249)
- 5.56mm Military Pack Short Range
- 5.56mm Jacketed Frangible
- 5.56mm M862 Short Range Training Ammunition

The Shoothouse shall also support blank fire, Multiple Integrated Laser Engagement System/Tactical Engagement System (MILES/TES), and Special Effects Small-Arms Marking System (SESAMS).

Refer to the standard drawings for the layout of the standard Shoothouse.

General

The standard shoothouse has a minimum net training space of approximately 158 square meters (1700sf). The actual gross area of the shoothouse depends on the thickness of the bullet absorbing material chosen but it should be less than 232 square meters (2500sf). The maximum square footage of the shoothouse canopy is 418 square meters (4500sf).
Bullet absorbing walls may be Shock Absorbing Concrete (SACON), sand filled wall section, Armor Plate steel with a ricochet defeating cover, or a commercial product designed to stop and contain rounds and ricochets. Design the bullet absorbing wall system to be replaceable and/or repairable. Using separate bullet traps behind the targets will reduce the number of rounds hitting the wall, which in turn will increase the life of the system (bullet traps are not MILCON funded). Shoothouse wall systems must contain and control ricochets down an angle of 15-degrees or less. The wall system selected should withstand at least 10 years of normal use.

The standard Shoothouse has eight rooms and two corridors. Included in the design are four full size entrances/exits and four breech holes, 1 exterior and 3 interior. All must be designed for training dynamic entry methods. The Shoothouse is not designed for live fragmentation/concussion grenades.

The Shoothouse must accommodate the types of mechanical and explosive breaching techniques used. The layout of the rooms may be changed from the standard in order to support a units particular training tasks.

A secondary containment structure must be provided to stop rounds exiting through the exterior doors and breach points in the Shoothouse. This may be done using additional bullet absorbing wall material, earth berms, or another method.

Design the electrical closet and catwalk to be self-supporting to allow Shoothouse wall panel replacement.

Refer to the Layout Details in the Appendix of this document for the standard Shoothouse layout.

Targetry

All targets are fully automated and the event specific target scenario is computer driven and scored from the After Actions Review building. The range operating system is fully capable of providing immediate performance feedback to the using participants. All targetry are life-like precision targets that have reconfigurable plug and play capability.

The targetry in the Shoothouse is placed in a tactical array that supports current training standards.

Primary Features Include:

1700	Minimum net square footage of training capability
14	Single Universal Target Outlets (UTOs)
4	Double Universal Target Outlets
10	Human Urban Targets (HUTs) ver. 2

Associated Range Operations and Control Facilities:

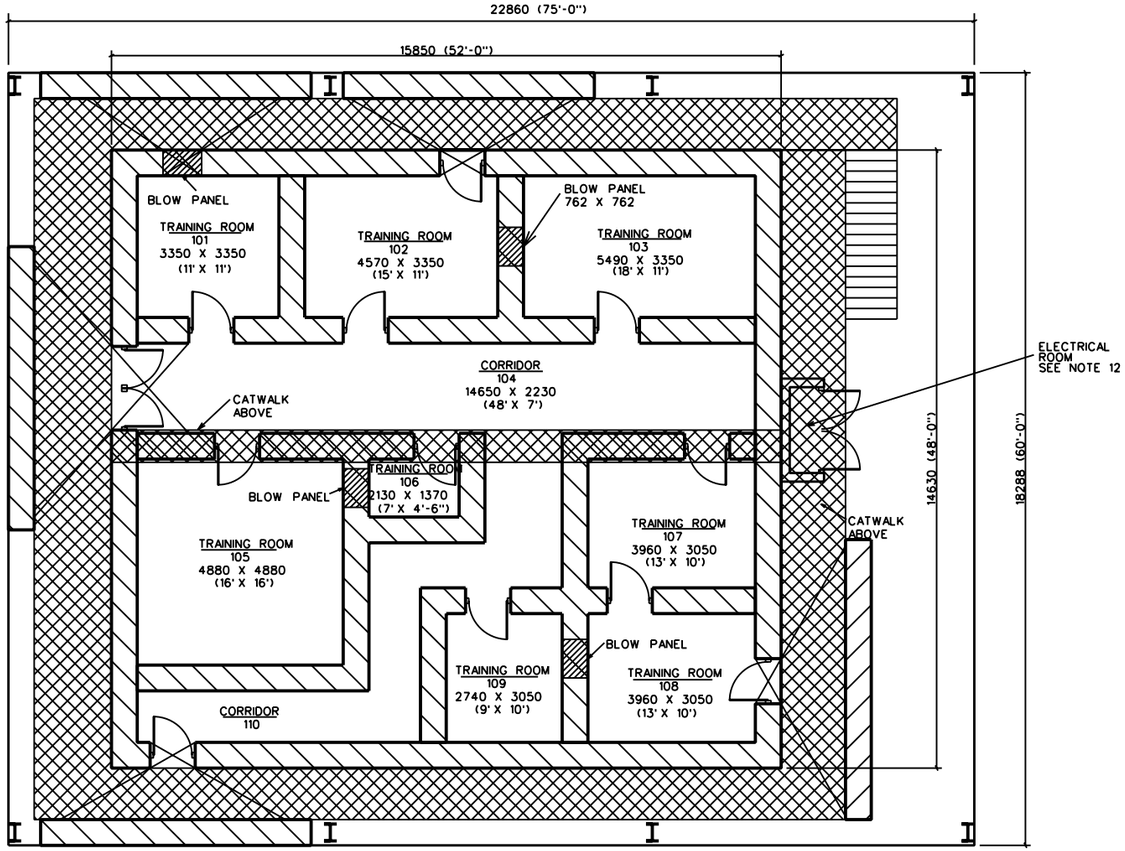
Operations/Storage Building (17122)
Latrine (73075)
After Actions Review Building-Small (17123)

Required Documents:

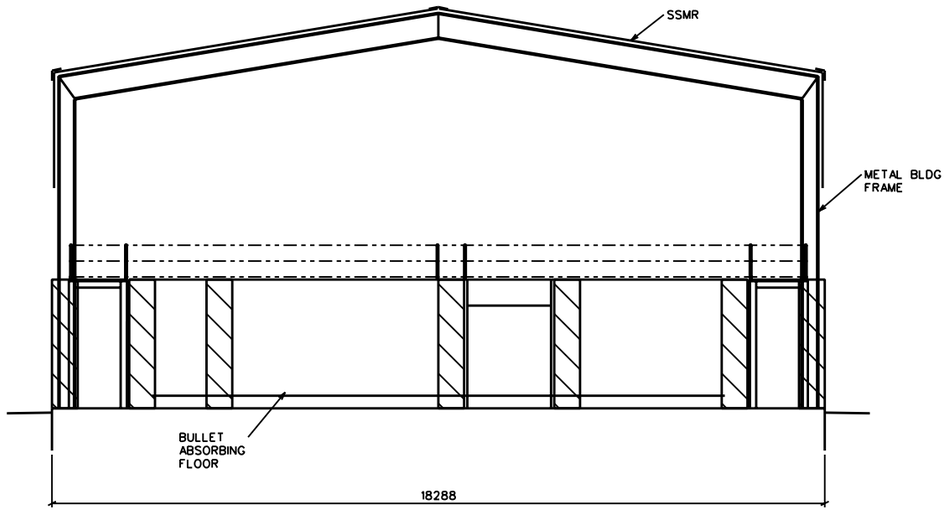
FM 3-06.11 Combined Arms Operations in Urban Operations
ARTEP 7-8-DRILL Battle Drills for the Infantry Platoon and Squad
TC 90-1 Training for Urban Operations

Additional Information:

A roof does not reduce 360 degree SDZ. It is there to reduce light, weather protection, enhance realism, and provide superstructure for an overhead crane if necessary. Ballistic roof, if added, should be UL 752 listed level 5 or higher depending on the ammunition used .



SHOOT HOUSE - FLOOR PLAN



BUILDING SECTION

NOTES
1. The standard shoothouse includes a minimum net training space of approximately 158 square meters (1700sf). The actual size of the facility depends on the thickness of the bullet absorbing material chosen. The standard depicts 610mm (24") thick walls.
The gross area of the shoothouse should be kept to a maximum of 232 square meters (2500sf).
The shoothouse cover should be kept to a maximum of 418 square meters (4500sf).
2. Bullet absorbing wall may be SACON, sand filled wall section or other commercial product designed to stop and contain rounds and ricochets.
3. Seperate bullet traps should be used behind targets to reduce the number of rounds impacting the walls.
4. Bullet absorbing wall system must be designed to be replaceable or repairable.
5. The shoot house is not designed for live fragmentation/concussion grenades.
6. The shoot house must be designed to accommodate the types of mechanical and explosive breaching techniques that will be used.
7. The SDZ of the facility is based on the locations of the firing points and targets, the weapon systems used and the ricochet characteristics of the bullet absorbing walls, a deviation is normally required.
8. The shoothouse must provide a means of stopping and containing rounds exiting through the exterior doors and blow holes in the shoothouse. This may be done using additional bullet absorbing wall material, earth berms, or other method.
9. The layout of the rooms may be changed from the standard in order to support a units particular training tasks.
10. The electrical room and catwalk should be designed so they are not supported by the shoothouse walls to allow panel replacement.
11. The catwalk may be extended over other areas of the shoothouse if needed.
12. The electrical room is 2.032m (6'-8") wide and 0.8128m (2'-8") deep with a 1.8288m (6'-0") wide doors on the front to provide required access to data enclosure and panel board.

MECHANICAL

Ventilation cooling shall be provided for the electrical room. Provide exhaust fan with interlock to motorized louver/damper. Thermostat setpoint for activation of exhaust fan shall be 100 degrees F. Exhaust fan control sequence and thermostat setpoint of 100 degrees F shall be shown on design drawings. Locate fan and louver to optimize cross ventilation in the room.

FIRE PROTECTION

Fire Protection is NOT required per fire codes for this building. Consult local Fire Marshall for compliance with local laws.

BULLET ABSORBING WALL PANEL
SEE NOTE 1

CATWALK

US Army Corps of Engineers

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Rev. *			

Designed by:
Drawn by:
Date:
Checked by:
Reviewed by:
Design file no.
Drawing code:
File name:
Plot scale:
Plot date:
Submitted by:

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE
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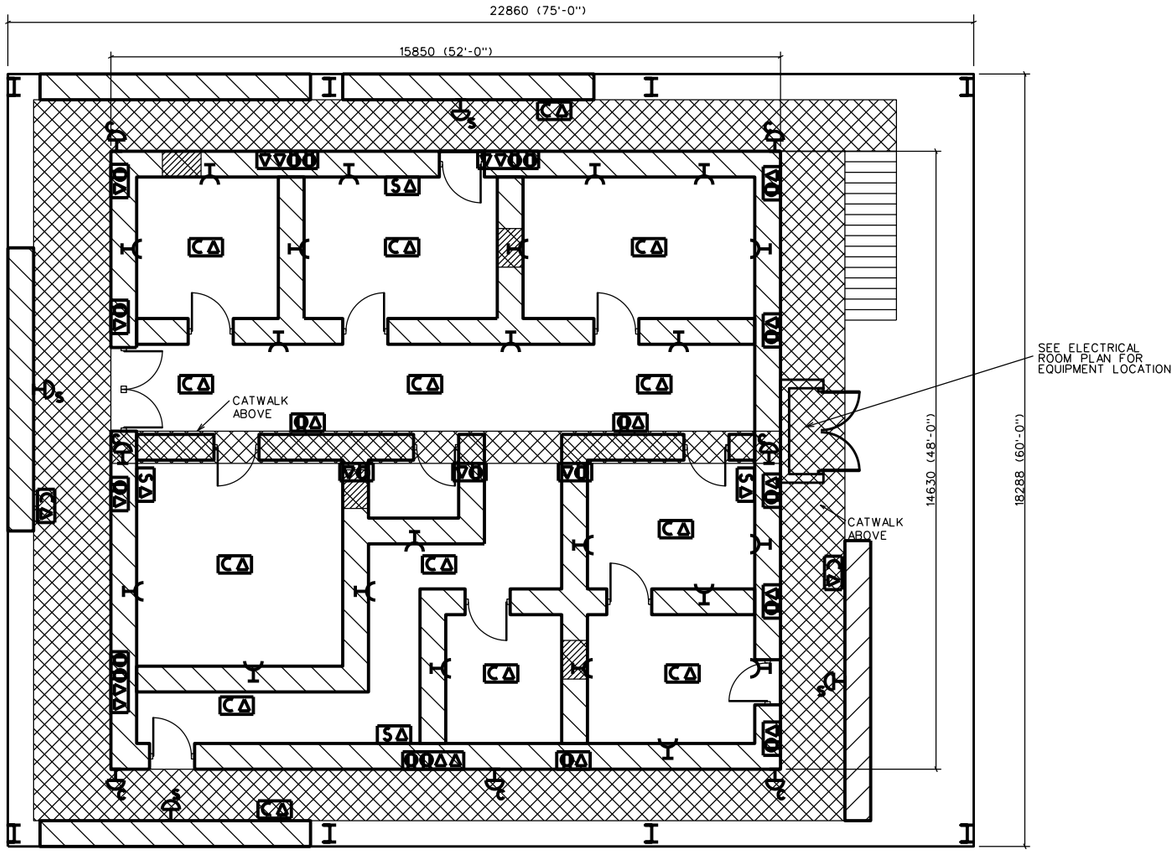
15 MAY 2007

RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL

SHOOT HOUSE
FLOOR PLAN

Sheet reference number:
SHH-A-1



SHOOT HOUSE - TARGET OUTLET PLAN

BULLET ABSORBING WALL PANEL

CATWALK

SINGLE TARGET OUTLET

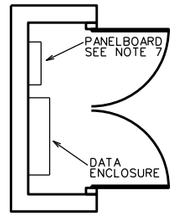
DOUBLE TARGET OUTLET

CAMERA OUTLET

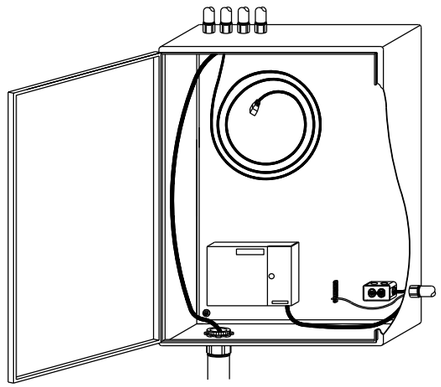
SPEAKER OUTLET

TARGET CABLE SUPPORT

PANIC BUTTON BOX:
C = BOX INSTALLED 48" ABOVE CATWALK,
S = BOX INSTALLED 48" AFF IN SHOOTHOUSE



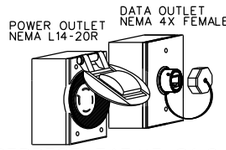
ELECTRICAL ROOM PLAN



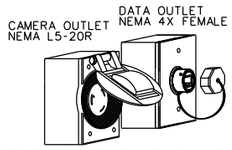
DATA ENCLOSURE

SHOOT HOUSE NOTES:

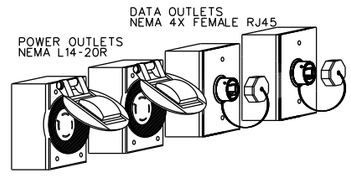
1. ROUTE WIRE FOR POWER AND DATA TO UNIVERSAL TARGET OUTLETS UNDER THE CATWALK.
2. MOUNT THE CAMERA AND SPEAKER OUTLETS TO THE ROOF STRUCTURE AND MOUNT FOUR CAMERA OUTLETS UNDER THE CATWALK.
3. INSTALLATION OF TARGETS, CAMERAS, AND SPEAKERS BY OTHERS.
4. THE ELECTRICAL ROOM SHALL BE SEALED TO PREVENT WATER FROM ENTERING THE ROOM, AND SHALL BE CONSTRUCTED TO MINIMIZE DUST FROM ENTERING THE ROOM.
5. SAND FLOORS ARE NOT ALLOWED IN ELECTRICAL ROOM.
6. FIBER OPTIC CABLE ROUTED FROM THE AFTER ACTION REVIEW FACILITY SHALL BE TERMINATED IN THE DATA ENCLOSURE LOCATED IN THE ELECTRICAL ROOM.
7. LIGHTING PLAN NOT SHOWN ON THIS LAYOUT. TYPE OF LIGHTING FIXTURES USED SHALL BE DETERMINED BASED ON LOCAL ENVIRONMENTAL CONDITIONS AT THE SITE THE SHOOTHOUSE IS CONSTRUCTED. LIGHTS SHALL BE INSTALLED SUCH THAT THEY DO NOT INTERFERE WITH THE CAMERA SYSTEM THAT WILL BE MOUNTED TO THE ROOF STRUCTURE BY OTHERS. CONSIDERATION SHOULD BE GIVEN TO THE MOUNTING OF THE FIXTURES TO ALLOW FOR WINDY CONDITIONS THAT MAY BE PRESENT AT SOME LOCATIONS.
8. INSTALL LIGHTING CONTACTOR IN AN ENCLOSURE IN THE ELECTRICAL ROOM. THE INSTALLATION SHALL BE DONE IN ACCORDANCE WITH THE NEC. PROVIDE WITH A HAND-OFF-AUTO SWITCH TO ALLOW FOR BOTH LOCAL AND REMOTE CONTROL OF CONTACTOR.
9. LIGHTNING PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 780.



REPRESENTATIVE SINGLE TARGET OUTLET (DA)
SCALE: NOT TO SCALE



REPRESENTATIVE CAMERA/ SPEAKER OUTLET (CA) (SA)
SCALE: NOT TO SCALE



Representative Double Target Outlet (DDAA)
SCALE: NOT TO SCALE

DATA ENCLOSURE NOTES:

1. DATA ENCLOSURE SHALL BE NEMA 4 RATED AND MAINTAIN NEMA RATING AFTER INSTALLATION.
2. DATA ENCLOSURE SHALL BE 4' HIGH X 3' WIDE X 10" DEEP.
3. FIBER OPTIC PATCH PANEL, MAXIMUM SIZE 9.5" HIGH X 13.5" WIDE.
4. 120V, 20A DUPLEX RECEPTACLE.
5. 2 METER SERVICE LOOP SHALL BE PROVIDED FOR ALL CABLES TERMINATING IN ENCLOSURE.
6. ROUTE SERVICE LOOP AROUND INSIDE PERIMETER OF ENCLOSURE.
7. ALL CABLES SHALL BE PERMANENTLY LABELED STATING CABLE DESTINATION.
8. METALLIC BACKPLATE SHALL BE INSTALLED THAT COMPLETELY COVER REAR OF ENCLOSURE. ALL COMPONENTS SHALL BE MOUNTED TO THIS BACKPLATE.
9. GROUND BACKPLATE WITH #6 AWG CU CONDUCTOR.
10. FIBER OPTIC TERMINATIONS SHALL BE MADE WITH SC CONNECTORS.
11. ENCLOSURE SHALL BE PROVIDED WITH A HINGED AND LOCKABLE DOOR.
12. REMAINING SPACE IN DATA ENCLOSURE SHALL BE USED FOR EQUIPMENT TO BE INSTALLED BY OTHERS.
13. 12 STRAND FIBER OPTIC CABLE INSTALLED BETWEEN DATA ENCLOSURE AND WALL MOUNTED FIBER PATCH PANEL IN AAR.
14. INSTALL CAT6 UTP CABLES FROM TARGET, SPEAKER, AND CAMERA OUTLETS INTO THE DATA ENCLOSURE. COIL 3FT AND TERMINATE WITH MALE RJ-45 CONNECTOR.

US Army Corps of Engineers

Rev. | Description | Date | Approved

Designed by: | Drawn by: | Cad by: | Reviewed by: | Submitted by:
Date: | Design file no. | Drawing code | File name: | Pw name: | Pw code:

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LIVE FIRE EXERSIZE SHOOTHOUSE

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