17878

Urban Assault Course (UAC)

RANGE DESIGN GUIDE

RANGE AND TRAINING LAND PROGRAM – MANDATORY CENTER OF EXPERTISE

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

HUNTSVILLE, ALABAMA

256-895-1534

EMAIL RTLP

General

This document contains information specific to an Urban Assault Course (UAC). The document includes references to sections of the RDG for information that is general to multiple range types. The document describes the design and construction information that is specific to the range and is not contained in, or differs from, the general section. Use both the specific information in this section and the general sections referenced together for a complete, useable range.

Purpose

The UAC consists of five (or six) separate stations designed for small unit training in urban operations. This range supports training of individuals, teams, squads, and/or platoons on individual and collective tasks associated with military operations in urban terrain (MOUT).

Primary Features

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

Standard Layout

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

- UAC-C-01 - Urban Assault Course – Site Layout
- UAC-01 - Urban Assault Course – Station 1
- UAC-02 - Urban Assault Course – Station 2
- UAC-03 - Urban Assault Course – Station 3
- UAC-04 - Urban Assault Course – Station 4
- UAC-05 - Urban Assault Course – Station 5
- UAC-06 - Urban Assault Course – Station 6
- UAC-A-01 - Urban Assault Course – Facade Emplacement Details
- UAC-E-01 - Urban Assault Course – Sample Electrical Layout

Range

Number	Feature	RDG Section
	Stationary Infantry Target	SIT
	Widened Stationary Infantry Target	WSIT
	Range Signage	Range Signage

ROCA

Name	Size	UoM	RDG Section
Operations/Storage Building, Standard	800	SF	Ops/Stg Buildings
Latrine: Vault (Latrine: Water)	330	SF	Latrines

	(550)		
Ammunition Breakdown Building	185	SF	Ammunition Breakdown Building

Design

Use the standard UAC layout at the end of this section as the basis for the range.

The standard UAC consist of five Stations; Station 6 is optional at those locations that have the training requirement for mine detection.

- Station 1 – Individual &Team Task – Technique
- Station 2 – Squad & Platoon Task – Technique
- Station 3 – Grenadier Gunnery
- Station 4 – Urban Offense/Defense Building
- Station 5 – Underground Trainer
- Station 6 – Explosive Hazard Detection Lane (Optional)

Station 1 supports basic individual and team urban training skills. It is a non-live fire facility. It is a three-room structure with windows, doors, and mouseholes to replicate various room entry configurations. It has no roof and an observation platform for trainers. CMU is the standard construction material. Coordinate with the installation to ensure that there are areas around this station to train maneuvering to the structure; include various cover types as necessary.

Station 2 supports basic urban training for larger elements, up to a platoon. It is a non-live fire facility. It consists of a number of one-story buildings on two sides of a center street with a two-story structure at the end. The structures do not have roofs. CMU is the normal construction material.

Station 3 supports grenadier gunnery using the dual purpose M203. It has an open area with targets and hasty firing positions with a two-story facade at end. The station supports small arms live fire and M203 training grenades (non-dud producing). The facade is normally wood construction with a flexible rubber membrane on the face. Design the facade so that it can withstand multiple impacts from the practice grenades with minimal damage and without causing ricochets from small arms firing. The station has a control shed at the baseline with a counter for the target control computer. In order to minimize wear on the facade, layout the firing positions and targets so that small arms shots at targets do not hit the facade.

Station 4 is a multi-story, multi-roomed, CMU, non-live fire structure designed to replicate a number of different building arrangements/scenarios. The facility has several room configurations/sizes, windows, doorways, loopholes, and mouseholes designed to replicate many different urban scenarios. Ensure that interior finishes support a non-water/weather tight structure. Include non-slip, sealed concrete floors that are sloped to drain. Seal CMU walls and floors against damage from rain and snow. Use sturdy construction methods to decrease maintenance requirements. As an option, where the training requirement exists, site the building so that it lines up with Station 3 to support sniper training.

Station 5 supports the training of basic underground tactics and procedures. Site the facility so that it drains well; typically above grade then covered with soil. Use concrete pipe and manholes. Include gates at entries to keep out animals. Attaching the underground trainer to the basement of Station 4 adds additional training scenarios and is an option. Include natural ventilation as

necessary. Adding mechanical ventilation increases cost and maintenance requirements, do not use unless required.

The optional Station 6 supports explosive hazard and mine detection training. It does not support explosives or mine clearing. The station is only included at those installations that have a mine-detecting mission. Select a well-drained site that requires minimal earthwork, keep soil disturbance to a minimum. Grub the entire footprint, clearing the soil of all roots, large rocks, and foreign materials to a depth of 2 feet. Remove metal and other foreign materials using the latest detection techniques. Recompact disturbed areas with native soils to match adjacent areas; the intent is to have uniform soils and compaction over the entire lane. Adjust the layout of the lanes and footprints to fit the site; keep the lane and footprint sizes and separations. Adjust the number of lanes depending on the training load. Keep concrete for the PVC corner pipes, if used, a minimum of 1 foot below grade. Coordinate with TCM Ranges and the RTLP-MCX for additional specific information.

General Range Design Requirements

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

Civil Range Design

- Range Siting Considerations
- Roads/Trails/Parking
- Target Protection Design Curves
- Line of sight
- Topographic Surveying

Electrical Range Design

- Data Termination Rack
- Downrange Power and Data Distribution – General
- Downrange Power and Data Distribution – UAC
- Target Feeder Voltage Drop Spreadsheet/Instructions

ROCA

Refer to the ROCA-General section of the RDG for general design information. The ROCA for the UAC is based on the standard Small Arms ROCA, though with fewer buildings.

Firing Line

The UAC does not have specific firing lines at each station.

Line of sight

Refer to the Line of Sight (LoS) section of the RDG for LoS requirements, procedures, and submittal requirements.

Line of sight is required on Station 3 from each of each firing position to all of the target locations and to the facade.

Targetry

The UAC uses fully automated targets with event-specific, computer-driven target scenarios and scoring on Station 3. The targetry computer in the control shed controls the targets through the target data network. The target data network can be either hard-wired or Radio Frequency (RF), refer to the Downrange Power and Data – UAC Section of the RDG for further information. The computer captures the scoring data, which is then available to the unit for after action review (AAR).

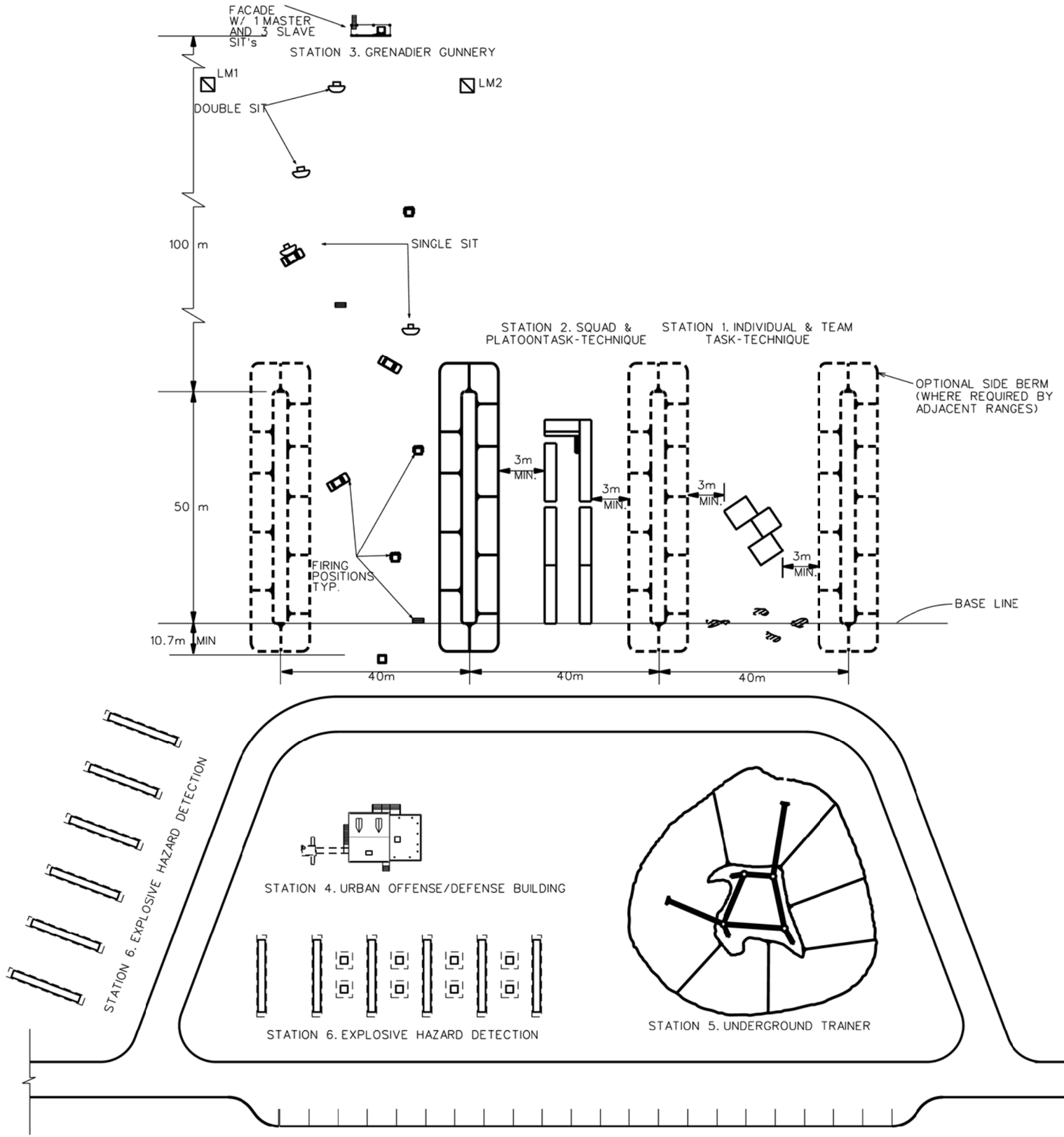
Stations 1, 2, and 4 use Human Type Targets (HTT) that do not require computer control. Stations 5 and 6 do not have automated targetry.

Requirement Documents

Refer to Training Circular TC 25-8, Training Ranges, and TC 90-1, Urban Operations, for additional information and references to the FMs, ARTEPs, TCs, etc. that describe and require the training on this type of range. The latest TC 25-8 is available at Army Knowledge Online (www.us.army.mil) and the General Dennis J. Reimer Training and Doctrine Digital Library (www.train.army.mil).

Additional Information

None



LEGEND:

- CONTROL SHED
- COVER (SEE NOTE 2)
- LM — LIMIT MARKER
- RUBBLE
- BERM
- JUNK VEHICLE
- HASTY POSITION
- SHORT WALL
- SANDBAG/SOIL TARGET BERM (SIT EMPLACEMENT)
- TARGET OUTLET (T.O.)

NOTES:

1. ADJUST LAYOUT AS NECESSARY BASED ON SITE
2. COVER IS IDENTIFIED AS TREES, BRUSH OR OTHER FORMS OF VEGETATION THAT COVER THE AREAS INDICATED.
3. PROVIDE BERMS OF ADEQUATE HEIGHT AND LENGTH TO PROTECT PERSONNEL IN ADJACENT ACTIVITIES.
4. ONLY TRAINING ROUNDS WILL BE USED ON THE GRENADIER GUNNERY STATION.

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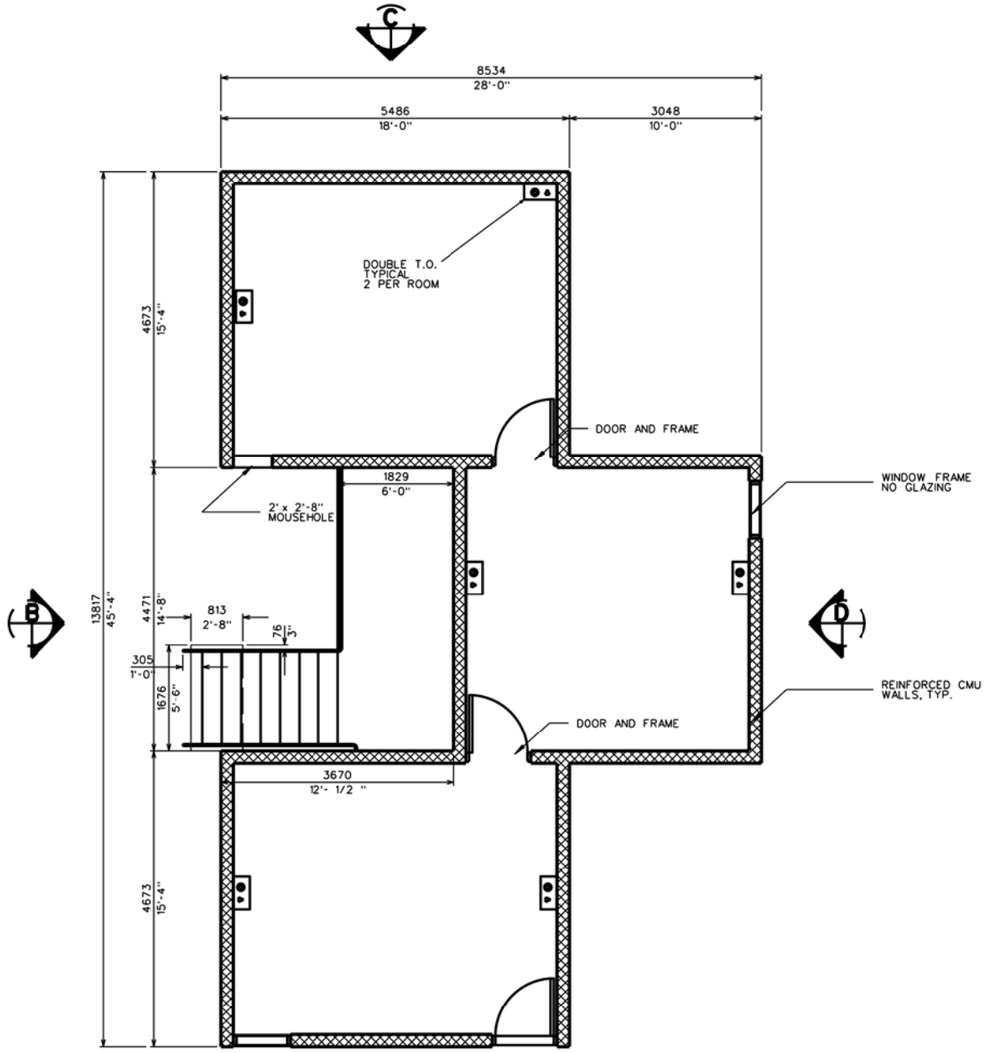
JUNE 2017

RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL
URBAN ASSAULT COURSE
SITE LAYOUT

Sheet reference number:
UAC-C-01

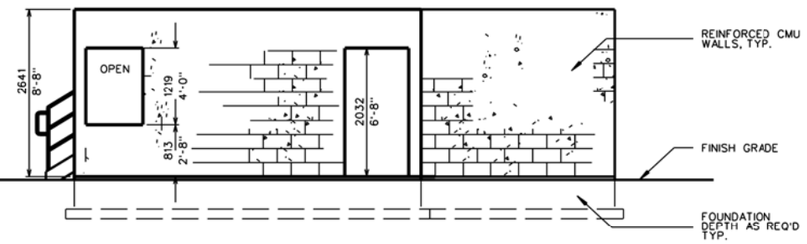


A INDIVIDUAL AND TEAM TRAINER - STATION 1
SCALE : 1/4" = 1'-0"

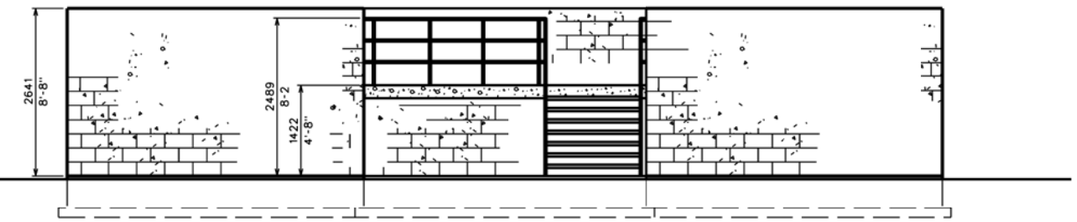
DIRECTION OF ATTACK
DOWNRANGE

NOTES:
WALLS AND FOUNDATIONS SHALL BE DESIGNED TO LOCAL CONDITIONS (STRUCTURAL AND GEOTECH)

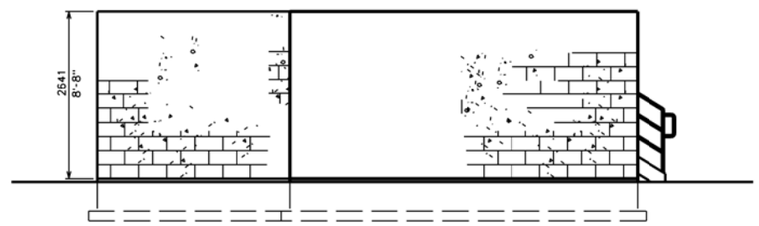
PROVIDE GRAVEL FLOORS: ENSURE PROPER DRAINAGE



A INDIVIDUAL AND TEAM TRAINER - STATION 1 - ELEVATION
SCALE : 1/4" = 1'-0"



B INDIVIDUAL AND TEAM TRAINER - STATION 1 - ELEVATION
SCALE : 1/4" = 1'-0"



C INDIVIDUAL AND TEAM TRAINER - STATION 1 - ELEVATION
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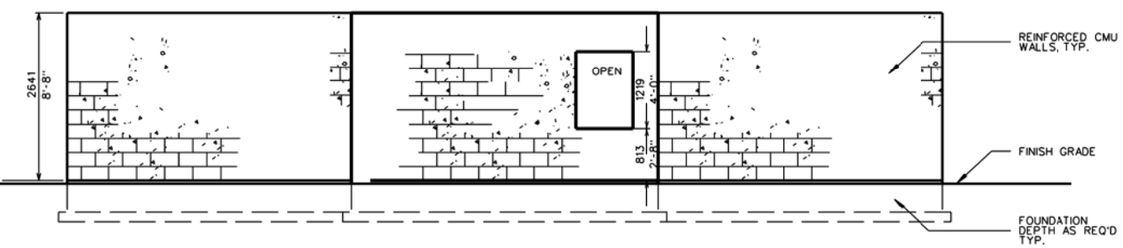

D INDIVIDUAL AND TEAM TRAINER - STATION 1 - ELEVATION
SCALE : 1/4" = 1'-0"

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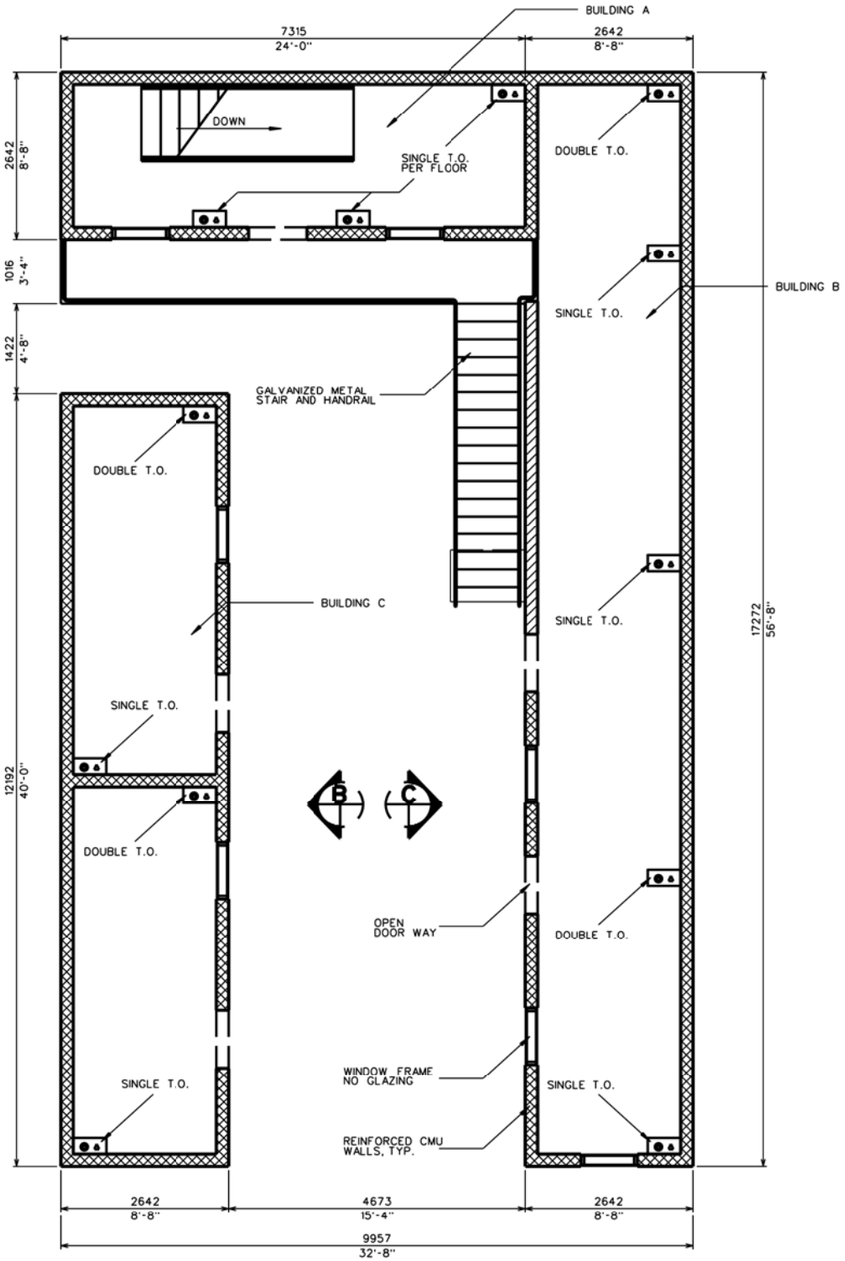
RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL
URBAN ASSAULT COURSE
STATION 1
INDIVIDUAL AND TEAM TECHNIQUES

Sheet reference number:
UAC-01



1 INDIVIDUAL AND TEAM TRAINER - STATION 2

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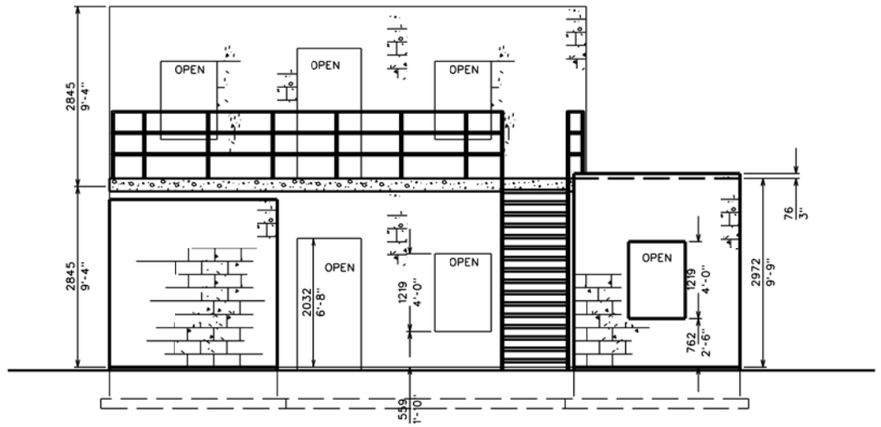
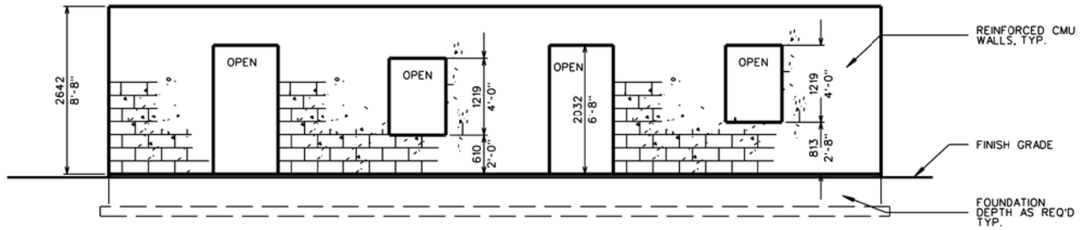


A INDIVIDUAL AND TEAM TRAINER - STATION 2 - ELEVATION

SCALE : 1/4" = 1'-0"



B INDIVIDUAL AND TEAM TRAINER - STATION 2 - ELEVATION

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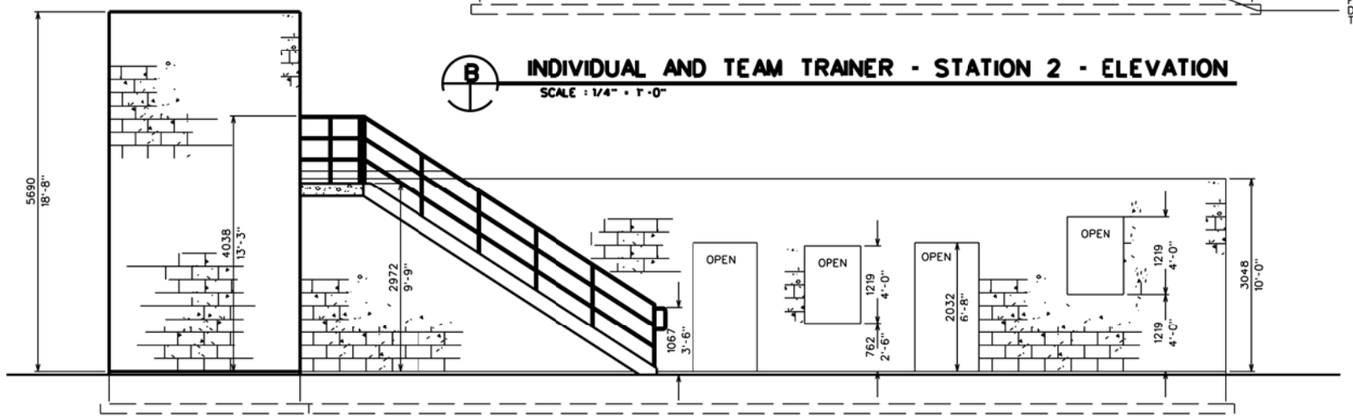

C INDIVIDUAL AND TEAM TRAINER - STATION 2 - ELEVATION

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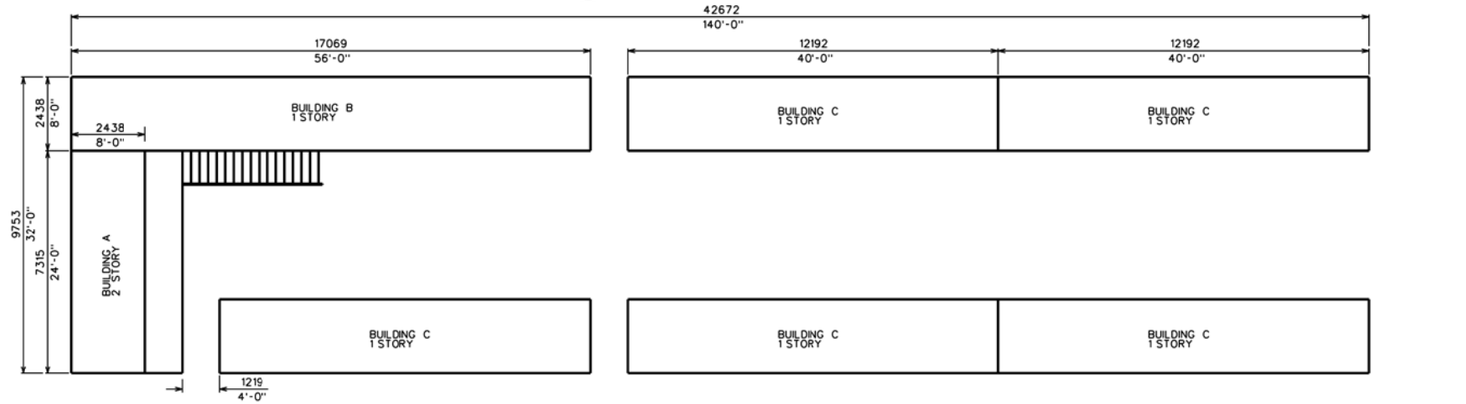

NOTES:
WALLS AND FOUNDATIONS SHALL BE DESIGNED TO LOCAL CONDITIONS (STRUCTURAL AND GEOTECH)

PROVIDE GRAVEL FLOORS: ENSURE PROPER DRAINAGE

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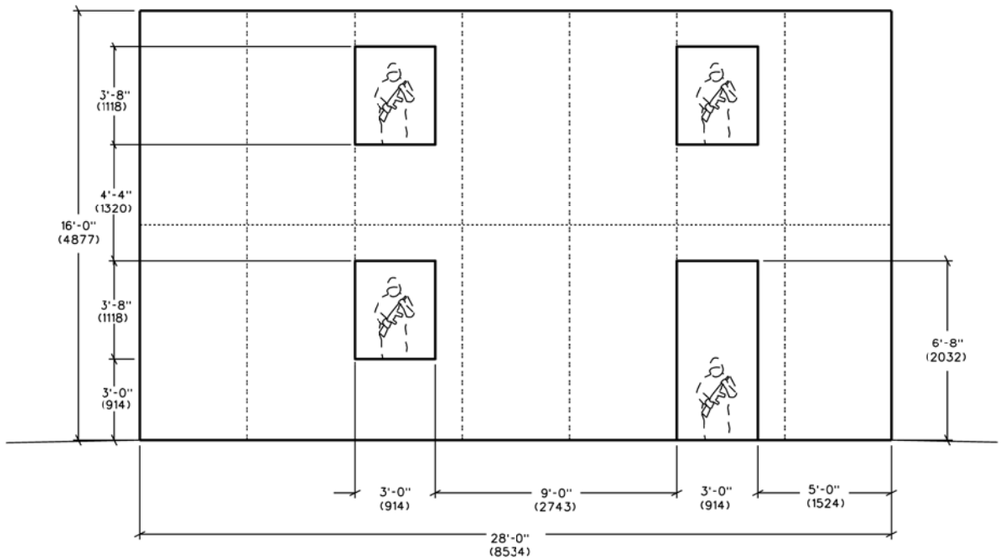
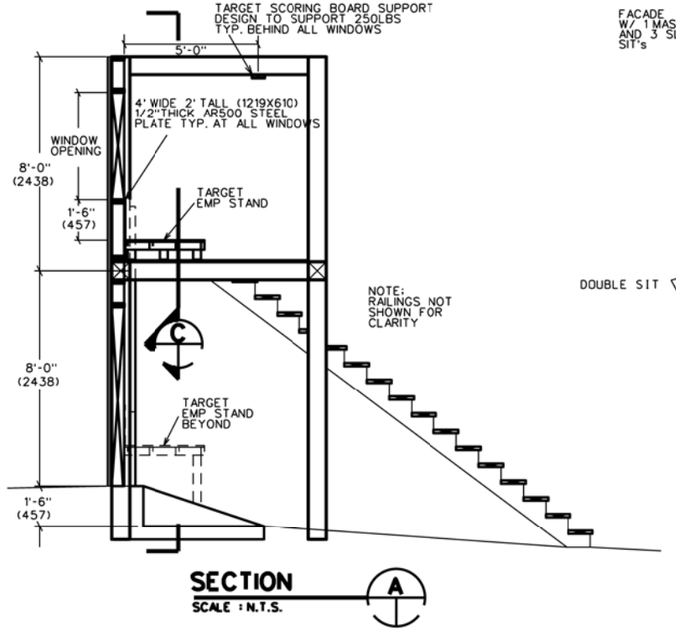
RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL

URBAN ASSAULT COURSE
STATION 2
INDIVIDUAL AND TEAM TECHNIQUES

Sheet reference number:
UAC-02



FRONT ELEVATION
SCALE : N.T.S.



SECTION
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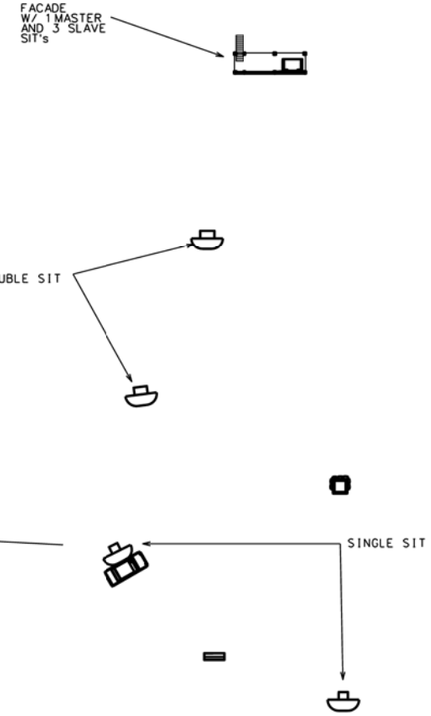
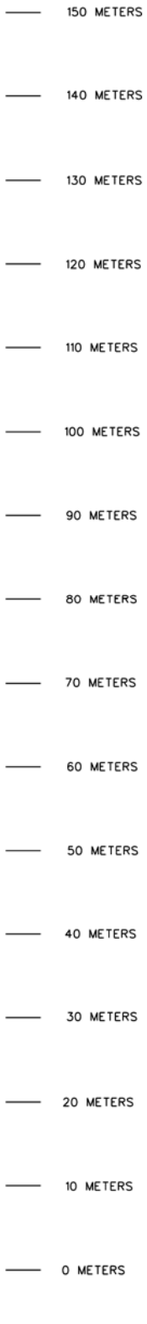
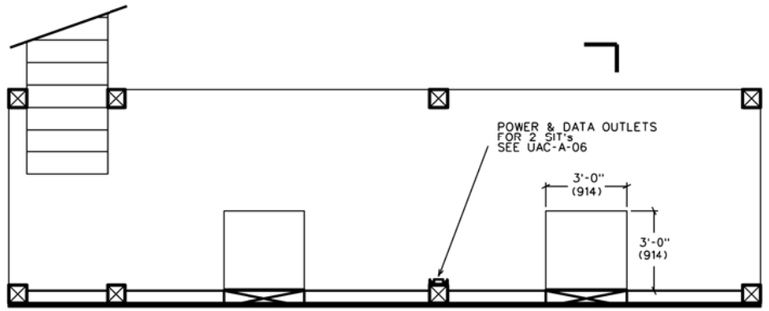
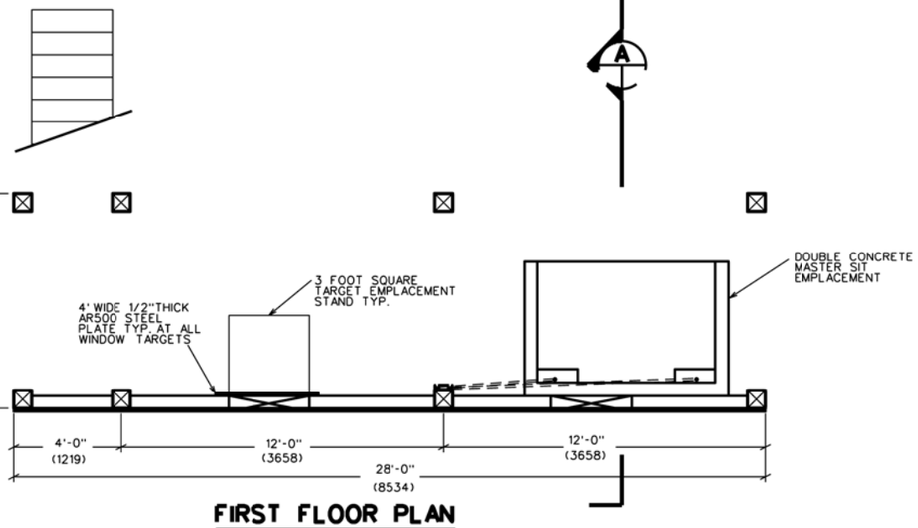


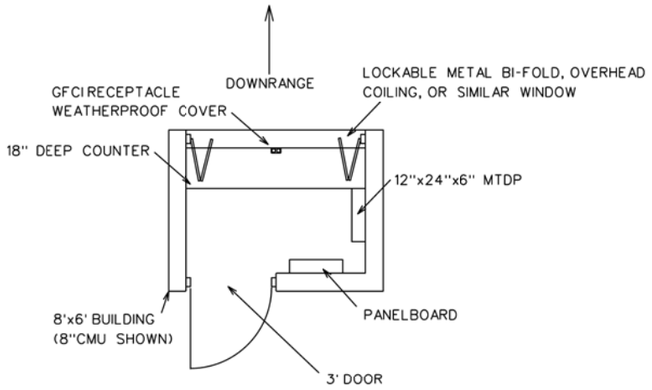




SECOND FLOOR PLAN
SCALE : N.T.S.



FIRST FLOOR PLAN
SCALE : N.T.S.

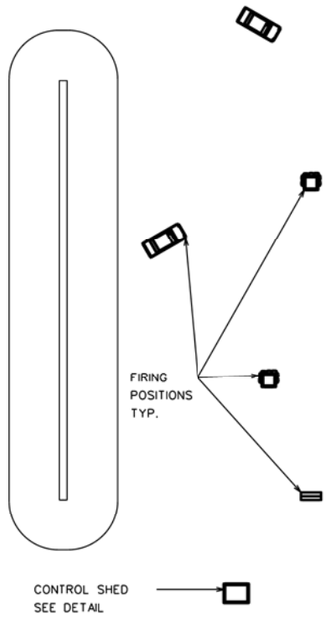


CONTROL SHED PLAN
SCALE : N.T.S.

NOTE:
PROVIDE 6mm to 12mm THICK, UV LIGHT AND OZONE RESISTANT, RUBBER MATTING ("LINATEX OZ", "RUMBER", OR SIMILAR) OR SOME OTHER SYSTEM ON THE FACE OF FRONT FACADE TO PREVENT SHATTERING OF THE WOOD FROM THE IMPACT OF THE GRENADES. THIS IS IN ADDITION TO A MINIMUM 19mm (3/4") TREATED PLYWOOD SIDING.

SEE UAC-A-01 FOR ADDITIONAL INFORMATION

FRAMING MEMBER SIZES ARE FOR REFERENCE ONLY
WALLS AND FOUNDATIONS MUST BE DESIGNED TO
LOCAL CONDITIONS (STRUCTURAL AND GEOTECH)



GRENADIER GUNNERY PLAN
SCALE : N.T.S.

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Date:	Design file no.		Proj. number:
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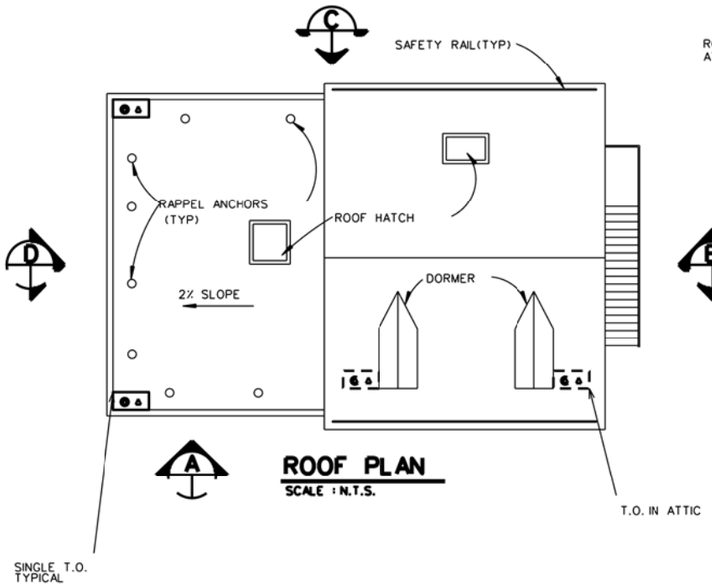
RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL

UAC STATION 3
GRENADIER GUNNERY

Sheet reference number:
UAC-03



ROOF PLAN
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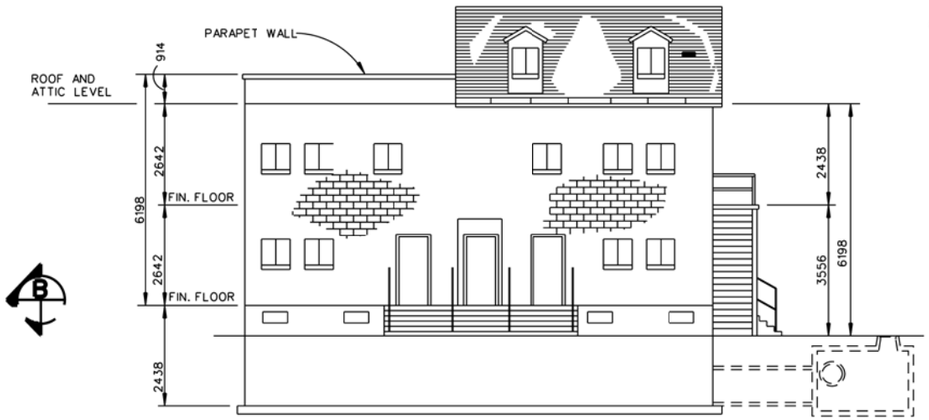
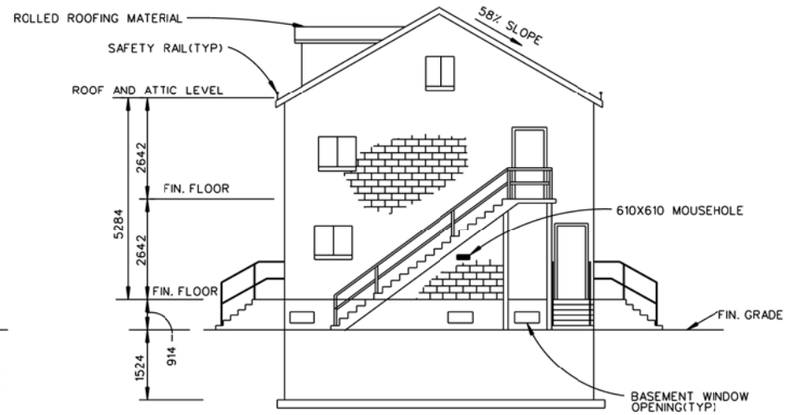
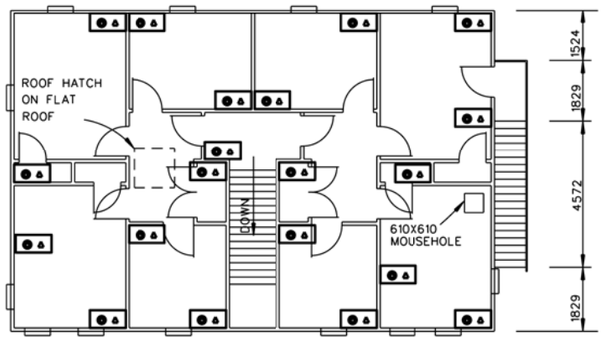


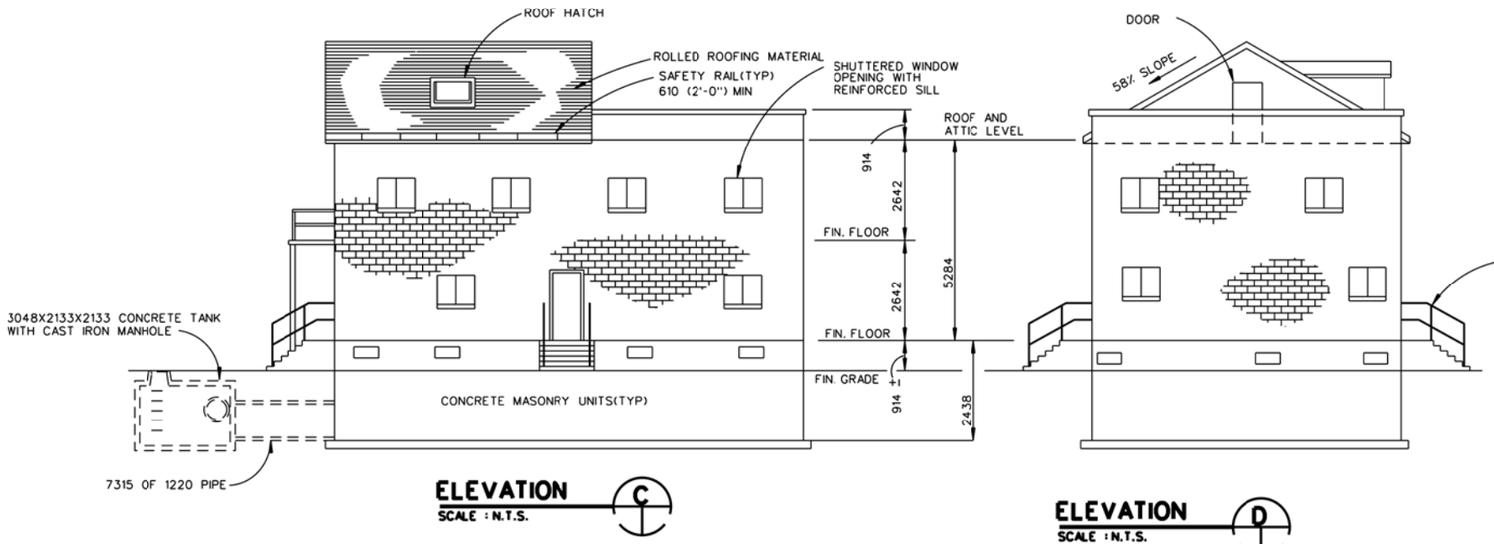
ELEVATION A
SCALE : N.T.S.



ELEVATION B
SCALE : N.T.S.

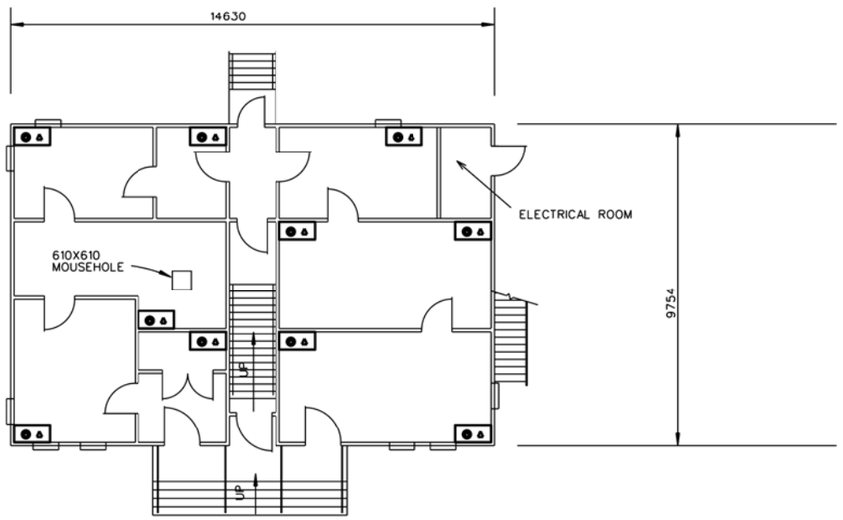


SECOND FLOOR PLAN
SCALE : N.T.S.

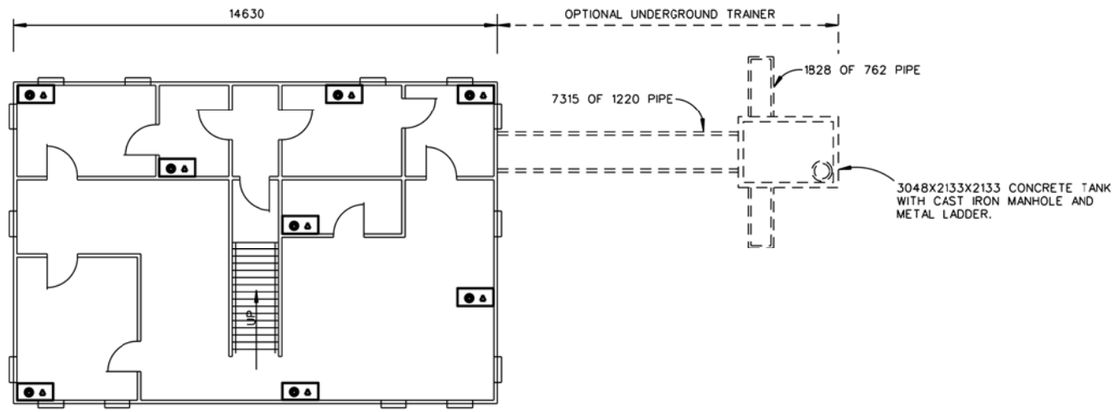


ELEVATION C
SCALE : N.T.S.

ELEVATION D
SCALE : N.T.S.



FIRST FLOOR PLAN
SCALE : N.T.S.



BASEMENT FLOOR PLAN
SCALE : N.T.S.

NOTE:
BUILDING IS NOT INTENDED FOR LIVE-FIRE TRAINING

FRAMING MEMBER SIZES ARE FOR REFERENCE ONLY WALLS AND FOUNDATIONS MUST BE DESIGNED TO LOCAL CONDITIONS (STRUCTURAL AND GEOTECH)

ALL MOUSE HOLES SHOULD BE PROVIDED WITH A COVER.

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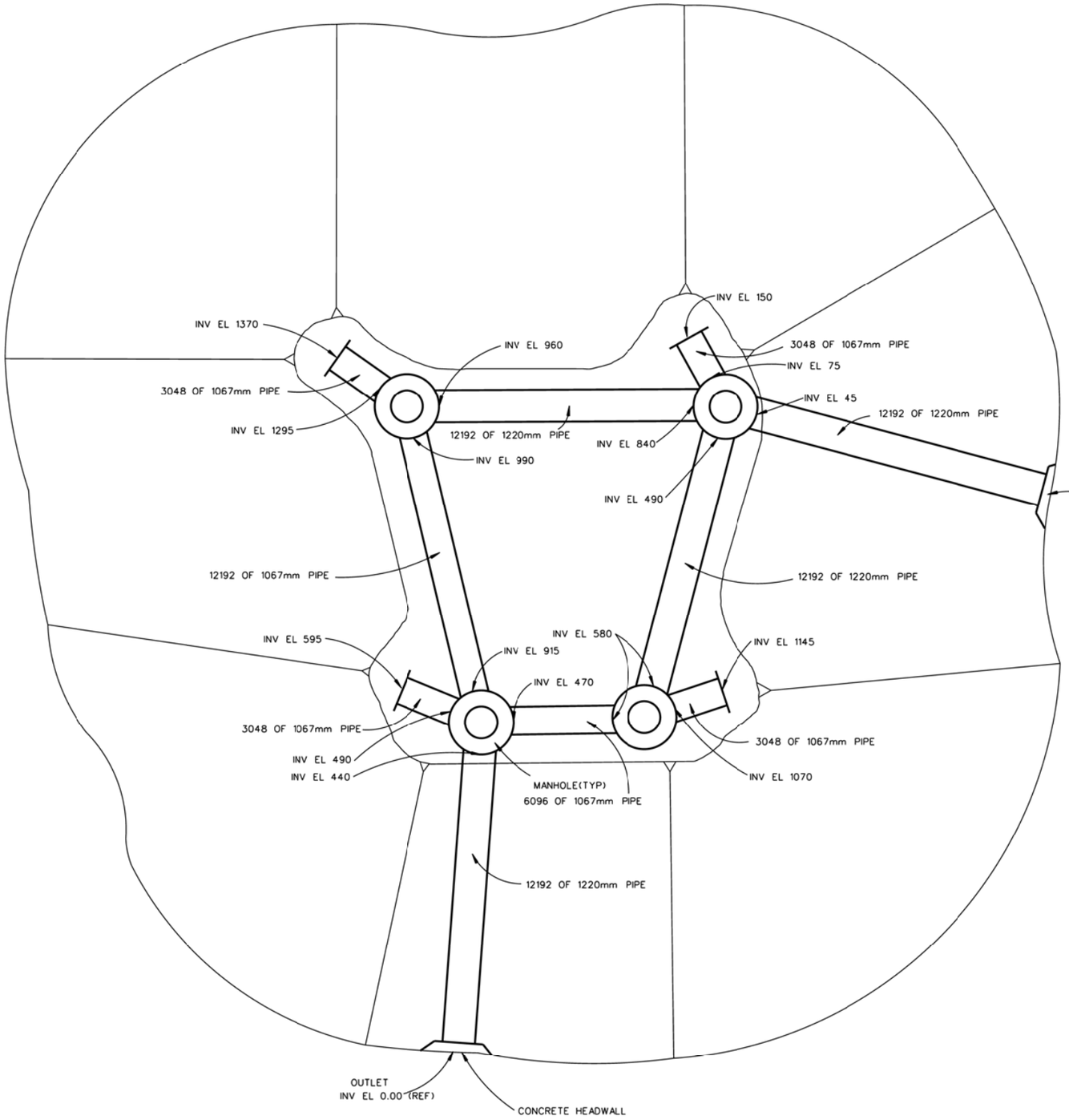
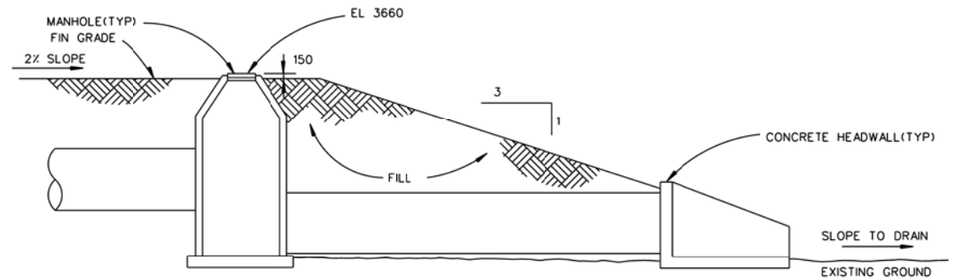
RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL
URBAN ASSAULT COURSE
STATION 4
URBAN OFFENSE/DEFFENSE BUILDING

Sheet reference number:
UAC-04



SITE PLAN
SCALE : N.T.S.



TYPICAL SECTION
SCALE : N.T.S.

NOTE: FURNISH REMOVABLE WIRE SCREEN AT ALL HEADWALL ENTRANCES.

THE UNDERGROUND TRAINER IS NOT INTENDED FOR LIVE-FIRE TRAINING

THIS STATION IS OPTIONAL. IT IS INTENDED FOR BASIC UNDERGROUND TRAINING. THE UNDERGROUND TRAINER ATTACHED TO THE URBAN OFFENSE/DEFENSE BUILDING IS INTENDED FOR MORE ADVANCED TACTICAL TRAINING

AN UNDERGROUND CHAMBER MAY BE ADDED AS AN OPTION

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Submitted by:
Date:
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File name
Plot scale
Plot code

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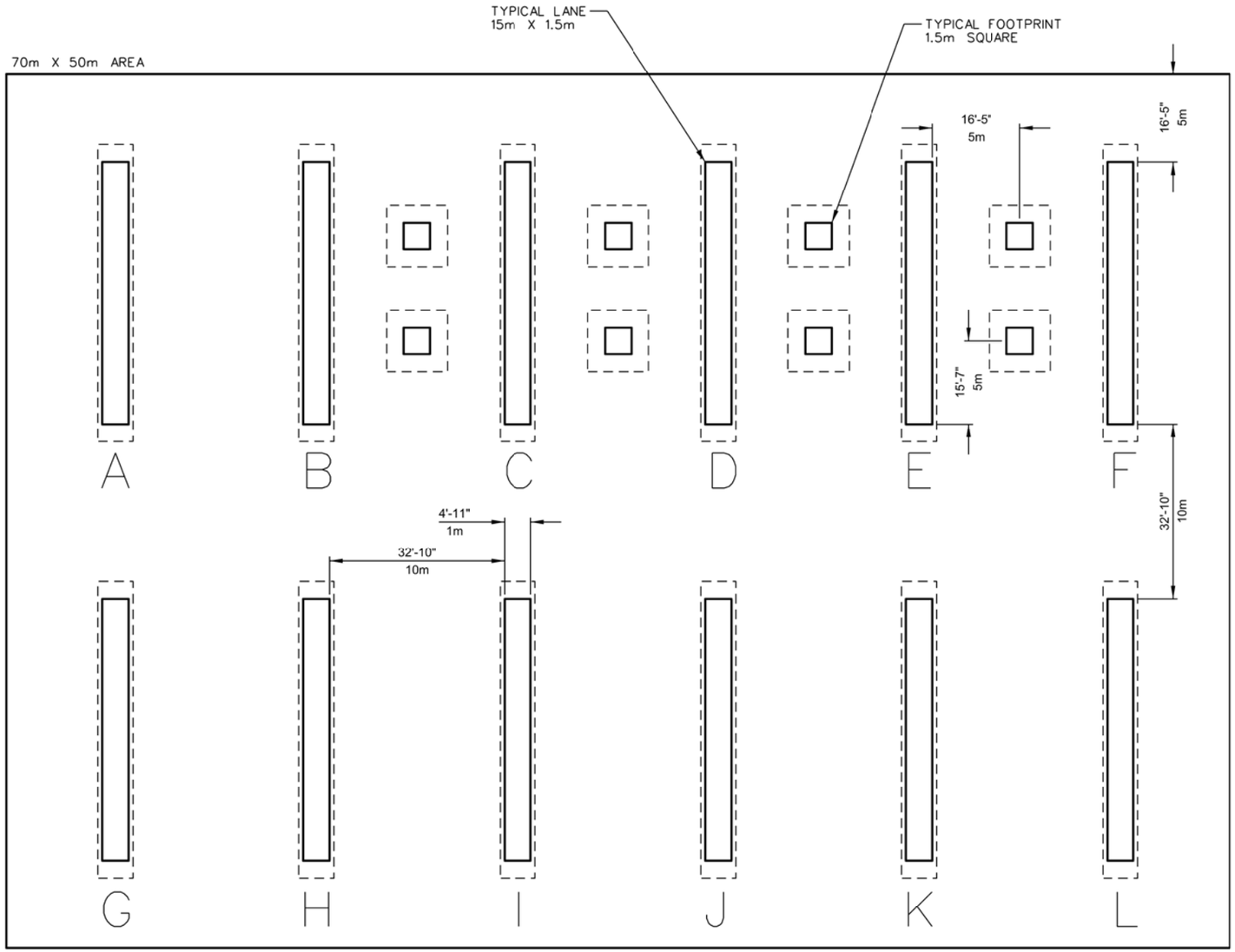
JUNE 2017

RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL

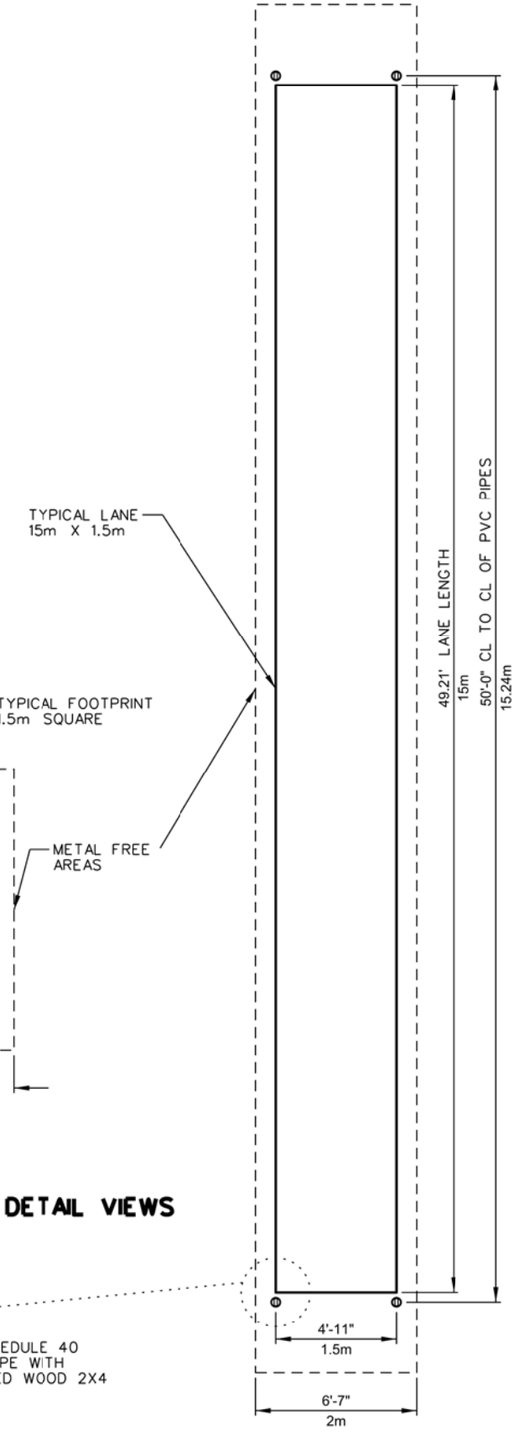
URBAN ASSAULT COURSE
STATION 5
UNDERGROUND TRAINER

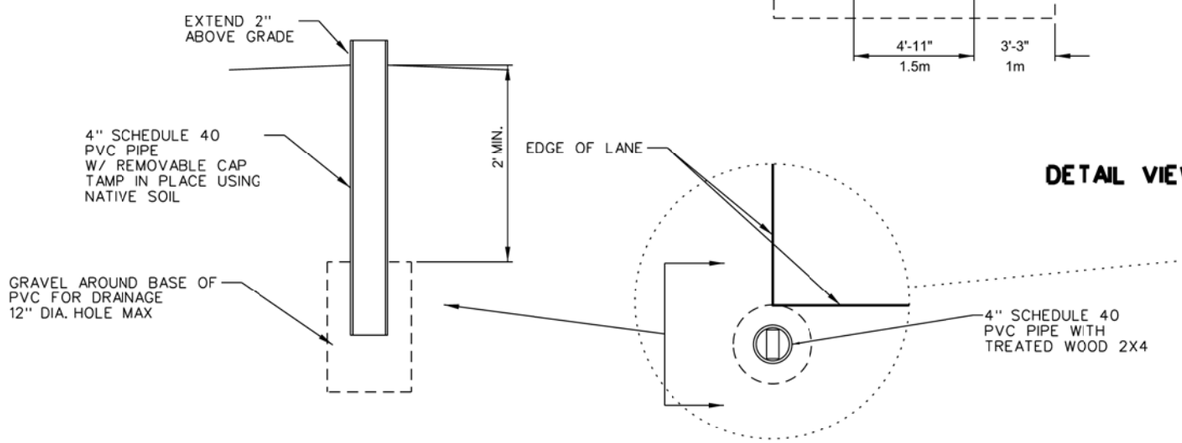
Sheet reference number:
UAC-05



PLAN VIEW

1. TYPICAL LAYOUT SHOWN.
2. ADJUST LAYOUT TO ACTUAL SITE AS REQUIRED.
3. MAINTAIN LANE/FOOTPRINT SEPARATION DISTANCES.
4. REFER TO THE WRITE-UP FOR ADDITIONAL INFORMATION ABOUT THE LANE CONSTRUCTION





DETAIL VIEWS

US Army Corps of Engineers

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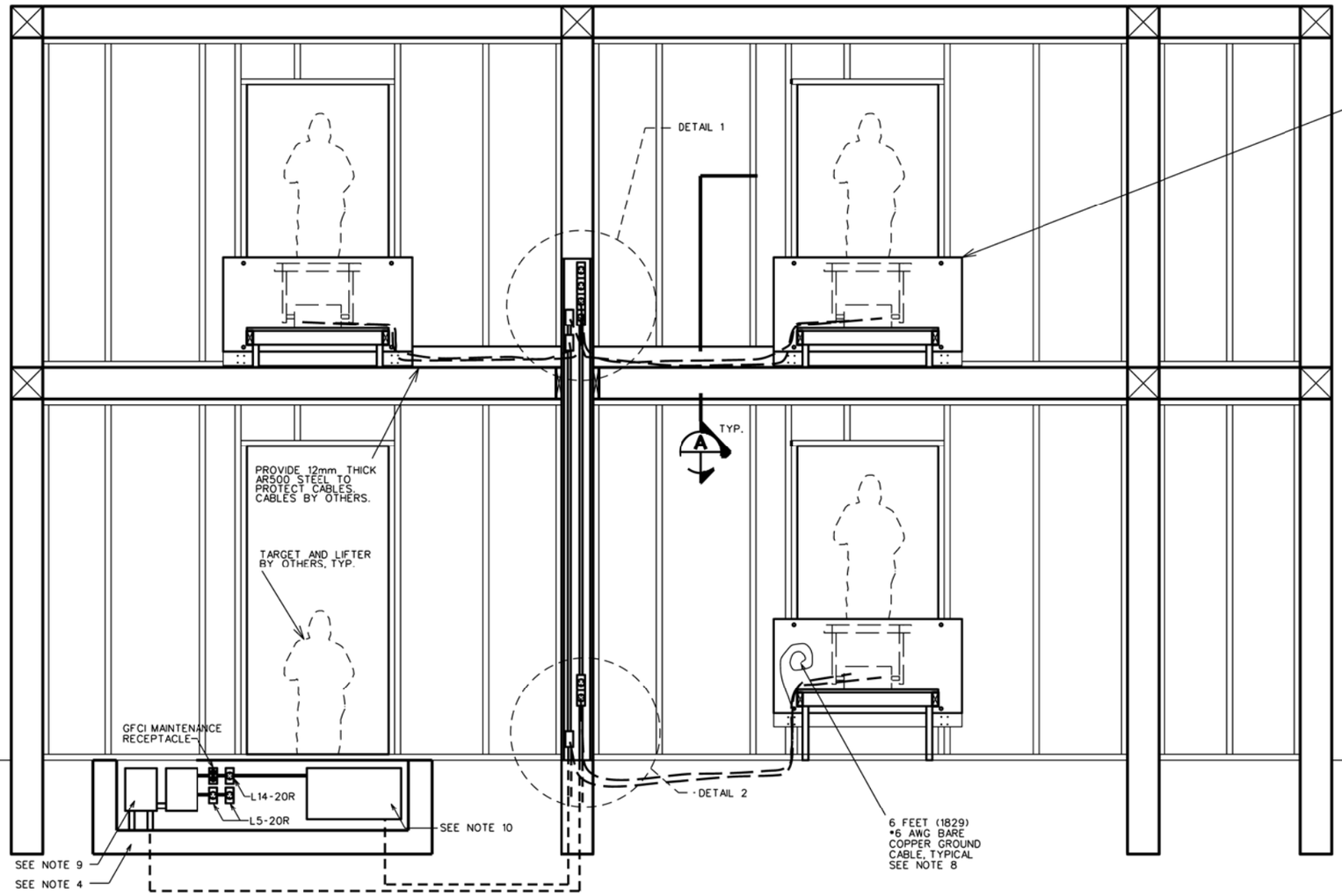
JUNE 2017

RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL

URBAN ASSAULT COURSE
STATION 6
EXPLOSIVE HAZARD DETECTION LANE

Sheet reference number:

UAC-06



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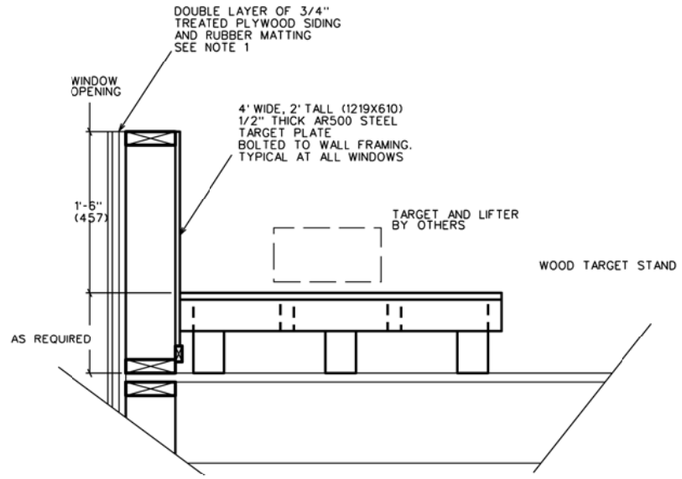

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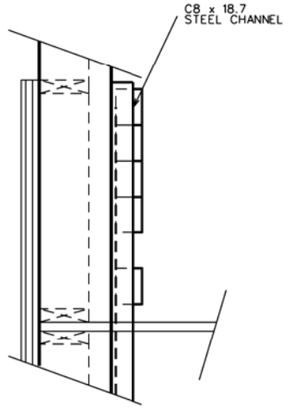

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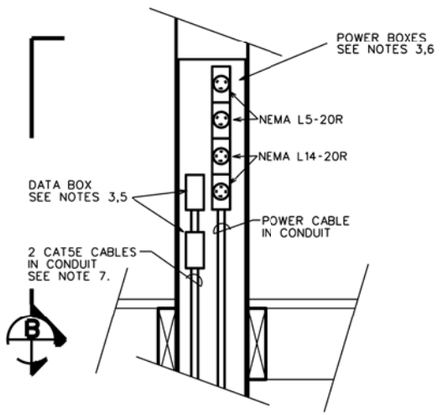

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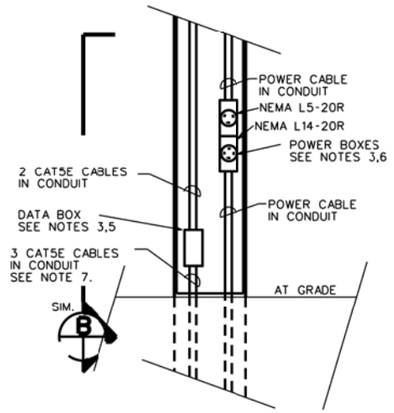

DETAIL
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2

NOTES:

1. FOR UAC GRENADIER GUNNERY FACADE PROVIDE 6mm TO 12mm THICK, UV LIGHT AND OZONE RESISTANT, RUBBER MATTING ("LINATEX OZ", "RUMBER", OR SIMILAR) ON THE FACE OF FRONT FACADE TO PREVENT SHATTERING OF THE WOOD FROM THE IMPACT OF THE GRENADES
2. SEE UAC-03 FOR INFORMATION NOT SHOWN
3. PROVIDE WEATHERPROOF EXTERIOR ENCLOSURES MOUNTED 305 AFG FOR FIRST FLOOR, 305 ABOVE PLATFORM ON SECOND FLOOR. PROVIDE CONDUIT SEAL WHEN CONDUIT ENTERS ENCLOSURES FROM THE TOP.
4. PROVIDE STANDARD WIDENED SIT EMPLACEMENT BEHIND THE DOOR IN THE FACADE. INSTALL TWO 8 CIRCUIT PANELS TO PROVIDE POWER TO TARGET RECEPTACLES.
5. PROVIDE RJ45 MALE CONNECTION IN DATA BOX ON FIRST FLOOR. PROVIDE TWO RJ45 CONNECTIONS IN DATA BOXES ON SECOND FLOOR. PROVIDE 6"-12" CABLE COILED IN ENCLOSURE WITH BLANK COVER FOR CONNECTION TO GOVERNMENT PROVIDED AND INSTALLED FEMALE DATA CONNECTOR.
6. PROVIDE NEMA L14-20R AND NEMA L5-20R RECEPTACLE IN POWER BOXES EACH WITH WEATHERPROOF IN-USE COVERS. THE NEMA L14-20R AND NEMA L5-20R RECEPTACLES SHALL BE POWERED VIA CIRCUIT FROM THE LOADCENTER IN THE SIT EMPLACEMENT.
7. EACH CAT5E CABLE IS HOMERUNNED TO THE MASTER TARGET DATA PANEL IN THE SIT EMPLACEMENT.
8. BOND A 6 FOOT #6 AWG BARE COPPER GROUND CABLE TO EACH STEEL TARGET PLATE LEAVING THE OTHER END COILED ON THE TARGET STAND FOR FUTURE CONNECTION TO TARGET MECHANISM. BOND EACH STEEL TARGET PLATE AND CABLE PROTECTION ANGLE TO THE STEEL CHANNEL USING A MINIMUM #6 AWG BARE COPPER GROUND CABLE. BOND THE STEEL CHANNEL TO THE TARGET GROUND ROD LOCATED IN THE SIT EMPLACEMENT BEHIND THE FACADE DOOR USING A MINIMUM #6 AWG BARE COPPER GROUND CABLE.
9. EACH L14-20R TARGET RECEPTACLE SHALL BE INSTALLED ON DEDICATED CIRCUITS.
10. INSTALL 12" X 24" MTDP. PROVIDE 120V DUPLEX RECEPTACLE AS SHOWN ON SIT EMPLACEMENT DETAIL.

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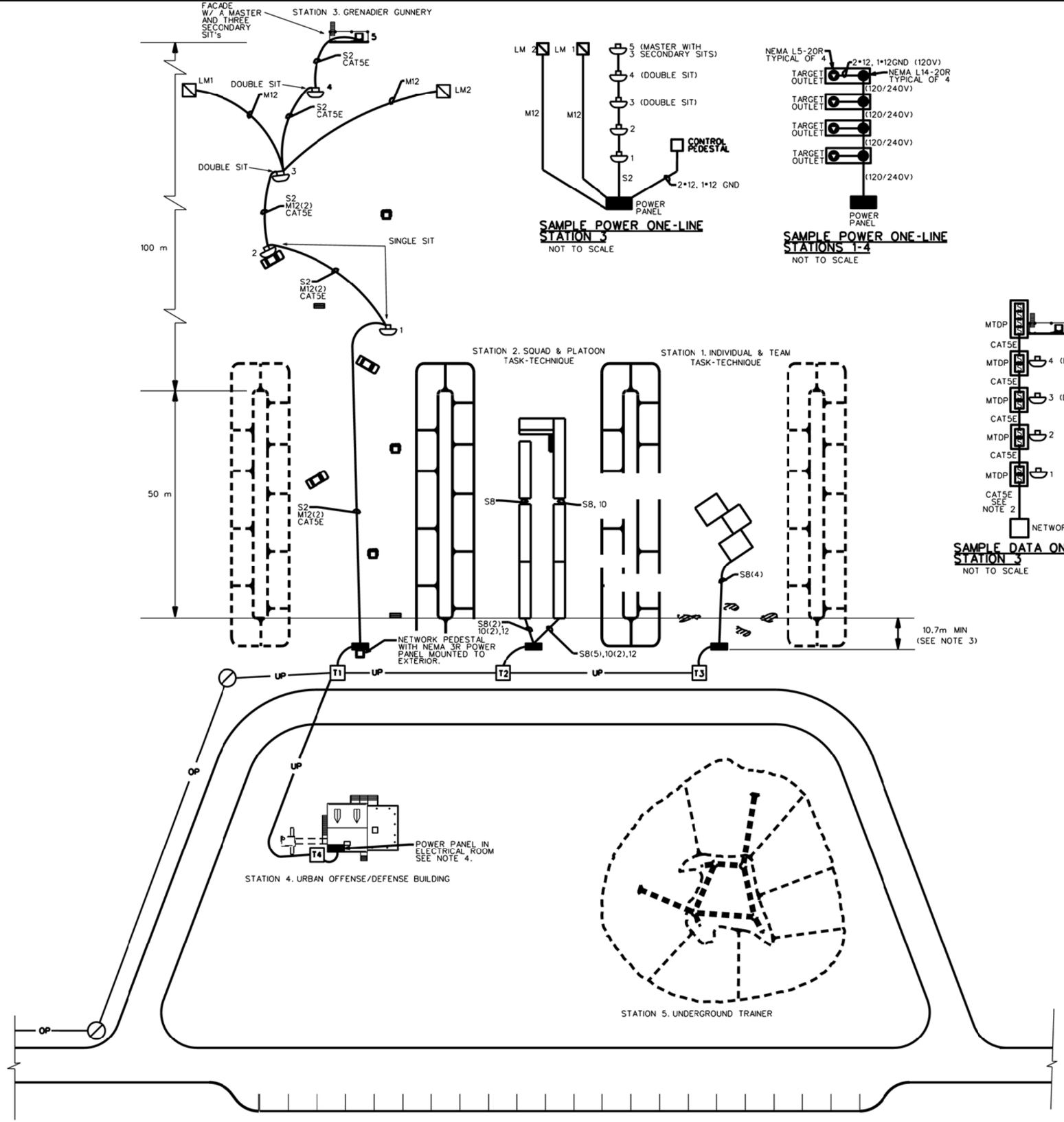
STANDARD DESIGN MANUAL

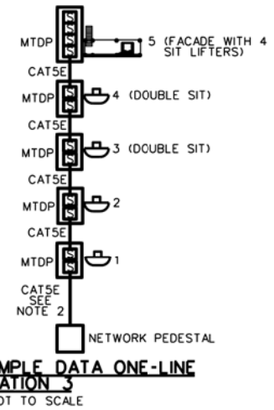
FACADE
EMPLACEMENT DETAILS

Sheet reference number:
UAC-A-01



SAMPLE POWER ONE-LINE
STATION 3
NOT TO SCALE

SAMPLE POWER ONE-LINE
STATIONS 1-4
NOT TO SCALE



SAMPLE DATA ONE-LINE
STATION 3
NOT TO SCALE

LEGEND:

- OBSERVATION PLATFORM
- COVER (SEE NOTE 2)
- RUBBLE
- BERM
- JUNK VEHICLE
- HASTY POSITION
- SHORT WALL
- X — SANDBAG/SOIL TARGET BERM (SIT EMPLACEMENT), X IS A REPRESENTATIVE NUMBER.
- TARGET OUTLET (T.O.)
- POWER POLE
- T — SINGLE PHASE TRANSFORMER WITH 120/240V SECONDARY FOR TARGETRY POWER
- NETWORK SURGE PROTECTOR
- UP — UNDERGROUND PRIMARY
- OP — OVERHEAD PRIMARY
- LMX — LATERAL LIMIT MARKER - X IS A REPRESENTATIVE NUMBER. LOCATION OF LIMIT MARKERS SHALL BE COORDINATED WITH USER.
- SX(Y) — UNDERGROUND SECONDARY 3/C CABLE. X INDICATES WIRE SIZE IN AWG. (Y) INDICATES NUMBER OF 3/C CABLE IN TRENCH. (Y) NOT SHOWN FOR SINGLE 3/C CABLE.
- CAT5E(Y) — CATEGORY 5E OR BETTER SHIELDED NETWORK CABLE SUITABLE FOR DIRECT BURIAL. (Y) INDICATES NUMBER OF NETWORK CAT5E CABLES, NOT SHOWN FOR SINGLE NETWORK CABLE. NETWORK CABLING WITHIN BUILDINGS SHALL BE CAT6 NETWORK CABLING.
- MX(Y) — DIRECT BURIED POWER CABLE FOR LIMIT MARKER - X INDICATES SIZE IN AWG AND (Y) INDICATES NUMBER OF POWER CIRCUITS.

NOTES:

1. SEE UAC-01 THRU UAC-04 FOR LOCATIONS AND NUMBER OF TARGET OUTLETS IN STATIONS 1-4.
2. IF THIS SEGMENT OF CABLE EXCEEDS 90 METERS FIBER OPTIC CABLE SHOULD BE USED.
3. OBSERVATION PLATFORMS MUST BE SITED A MINIMUM OF 10.7 METERS FROM THE BASE LINE.
4. THE ELECTRICAL ROOM SHALL HOUSE THE ELECTRICAL POWER PANEL AND THE LIGHTING CONTACTOR.

ENSURE CIRCUIT RUNS OF CAT5E OR BETTER CABLING ARE UNDER 90 METERS BETWEEN EACH TERMINATION POINT.

US Army Corps of Engineers

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HUNTSVILLE, ALABAMA

MAY 2010

RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL
SAMPLE POWER AND DATA LAYOUT
URBAN ASSAULT COURSE

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