

AFTER ACTION REVIEW BUILDING (AAR) – Small

General: The AAR-Small provides space for personnel to review training exercises. Space is also provided for the installation of required electronics and communications equipment to prepare the review presentation and control rooms to monitor the presentation. All AAR information is collected via fiber optic cabling from the Range Operations Center (ROC) which is described elsewhere in this manual. A 40 seat theater room is provided with a folding partition to allow for two smaller 20 seat theaters. Monitors, computers, printers, and associated equipment to aid in AAR editing and development are located in the development room. An outside covered area for boot and gear cleaning with gear hooks is included.

Facility Development: The information included in this section provides the overall concept for the After Action Review (AAR) operation for Non-Instrumented Ranges and Live Fire Shoothouse Training Facilities. The entire suite of standard buildings is currently under revision. Contact the MCX for most current building layouts on specific projects. The building layout and sketches shown in this section may not explicitly match the new layouts, but the function of the equipment and the components described in this section should be incorporated to all new AAR facilities.

Design Drawings: Contact the MCX for building layouts for use on specific projects.

Typical Configuration:

Size:	99 square meters (1064 square feet)
Occupancy:	48
Foundation:	Concrete slab on grade with turned down edges
Shell:	Reinforced split-faced CMU
Roof:	Insulated Standing Seam Metal Roof (SSMR) system
Doors:	Insulated hollow metal
Windows:	Aluminum frame with polycarbonate glazing
Interior Finishes:	Painted CMU, acoustical tile ceiling, sheetrock/metal studs partition walls
HVAC:	Central heat and air - Site adapted
Standard Lighting:	Fluorescent
Special Lighting:	Red lens or red lamps. Dimming capable lighting in the theater
Lightning Protection:	Air terminals
Power:	120/240Vac, Single Phase, 3-wire Secondary
Telephone:	Standard Voice Cable (optional)
Data Communication:	Fiber Optic Cable from ROC

Electrical/Communications: This paragraph discusses electrical/communication considerations unique to this specific structure type. Downrange power, communication, load, transformers, trenching requirements, etc. are discussed elsewhere in this manual.

General: Electrical service to the AAR-Small will be 120/240Volt, single phase, 3-wire secondary; 277/480Volt, three phase, 4-wire; and 120/208 Volt, three phase, 4-wire secondary. The voltage supplied must be maintained within 5 percent at a frequency of 60 Hz, +/-0.5. Surge suppression devices will be provided at the service entrance for protection of the AAR-Small distribution system. Rigid steel conduit shall extend a minimum of 1524mm (5 feet) beyond the outside of the building foundation for power circuits entering or leaving the building. The AAR-Small power distribution panel will have separate circuits for lighting, convenience outlets, communications, and Heating, Ventilation, and Air Conditioning (HVAC) equipment.

Additionally, each workstation should be fed by a 120V, 20-amp duplex receptacle on a dedicated 20-amp circuit. In the classroom, 120V, 20-amp duplex receptacles should be provided for each overhead projector and video camera.

For power to the DTRs in Live Fire Shoothouse AARs an L5-30 outlet fed by a dedicated 30-amp circuit should be provided in the ceiling above each Data Termination Rack (DTR) location. There should be power for two DTRs, and both the DTRs will be provided by the instrumentation contractor. For all other types of small AARs, a quad outlet fed by two dedicated 20-amp circuits should be provided in the base of each Data Termination Rack (DTR) and the DTRs will be furnished and installed during construction.

Communication: A direct buried fiber optic cable will connect the AAR-Small and the ROC via the Data Termination Rack (DTR). The cable will enter the buildings via RGS conduit filled with innerduct to facilitate future expansion [Military Construction (MILCON) funded]. The DTR is an enclosed equipment rack where all fiber optic cables are terminated in a cross-connect panel with industry standard type SC connectors (also MCD). A minimum 24-strand fiber optic connection is required between the AAR-S and the ROC for transporting video and data information.

For Live Fire Shoothouse AARs, the AAR will also serve as the ROC. There is no data connectivity between the Live Fire Shoothouse AAR and any other facility except for the Live Fire Shoothouse training building. In the Shoothouse AAR a direct buried, 12 strand, single mode fiber optic cable will connect the AAR and the Shoothouse Training building. This fiber optic cable is terminated on a fire rated communications backboard inside the AAR. The fiber optic cables are terminated in a cross-connect patch panel with industry standard type SC connectors. This patch panel is mounted to the fire rated communications backboard. The DTRs will be provided by the instrumentation contractor only for the Live Fire Shoothouse AAR. Coordination should be done with the instrumentation contractor to ensure the backboard is installed immediately adjacent to the location of the DTRs, and for coordination for the location of the wireway system and DTR power outlets. Note, for all other types of AAR facilities it is the responsibility of the construction contractor to purchase and install the DTRs.

A ladder type wireway system is required to extend from the DTR to above the ceiling (MILCON supplied). Vertical cable tray elbows shall be installed above DTR locations and work stations to allow smooth transition of cables from vertical to horizontal cable tray. A 24 inch ladder type cable tray shall interconnect the workstations and the fiber racks in the AAR Development Room. The AAR workstations shall be connected to the wireway system via 12" x 4" cable tray. Vertical cable tray serving AAR workstations shall be recessed in wall and terminate 18" AFF with a removable section for cable access. All data communication conduits shall connect to the horizontal wireway to allow for interconnecting of instrumentation components. Camera and video projectors in the AAR Classroom shall be connected to the wireway system via 1" conduits. A 4" x 4" junction box is required in front wall of classroom at 18" AFF. Recessed junction box shall have a 1" conduit that extends back to cable tray. Provide pull wires in all conduits where cables are to be installed by others.

Other Appropriations-Army (OPA) funded communications equipment will share DTR rack space to convert the fiber optic cables to industry standard. Ethernet copper network cable for connection with the network, video editing computers, as well as other instrumentation components. Coordination with OPA contractors should be conducted for location of communication conduits and boxes for networking and video presentation.

Lighting: Lighting will be fluorescent and red lamps or lenses for night operation will be provided with protected switching to prevent accidental illumination of white lights during night operations. Due to night firing requirements, all lighting within the AAR if located along the baseline will need to be in both white and red lighting to ensure proper range operations. Red light is required during training so as not to ruin the night vision of the soldiers. Where necessary, low-level in-ground lights (similar to airfield markers), may be used for vehicle parking areas and walkways. There is not an Army standard for the lighting system, the designer will need to ensure that the customer's lighting requirements are met.

Night Operations Lighting: To prevent interference with specialized equipment used during night operations, red lenses or red lamps must be provided in addition to standard lighting if the following conditions exist.

- Night training will be performed
- ROCA buildings are near the firing positions
- ROCA building has windows that cannot be covered.

Separate switching for the standard and red lighting shall also be provided, located near points of egress.

Grounding: Grounding is required for safety and for lightning protection. The AAR-Small ground system will consist of a buried, No. 4/0 AWG, stranded, copper conductor and ground rods all interconnected to yield an earth resistance of 25 ohms or less. Cable connections and connections to the ground rods and structural steel will be exothermically welded. The DTR and cable tray system should all be bonded

and connected to a Telecommunications Main Ground Bar (TMGB) with at least a No.6 AWG, insulated, stranded, copper cable. The TMGB will be connected to the ground system with at least a NO. 4/0 AWG, bare, copper cable.

Telephone Communication: Telephone communications are not a requirement but if desired must be coordinated with the local installation Directorate of Information Management (DOIM).