

Standard Operating Procedure for Macro Artifact Restoration

Foreword and Purpose

The purpose of this Standard Operating Procedure (SOP) is to determine the level of restoration effort required for Army Museum Enterprise (AME) macro artifacts and how to obtain these services.

Macro artifacts are not man-portable. If you cannot lift an artifact, it is probably considered a macro artifact. The U.S. Army Center of Military History (CMH) owns more than 7,000 macro artifacts, which includes aircraft, armored cars, artillery, boats, trains, trucks, tanks, and missiles, as well as large items such as pre-WWI cannons (for example, 12-pounder Napoleons) and oversized ordnance such as a 4.2-inch chemical mortar. In most cases macro artifacts are categorized as destructive devices and therefore are considered sensitive items. Many related micro artifacts have radiological elements and contain hazardous fluids or are primed with coatings laden with hazardous materials such as CARC or lead paint.

Restoration is defined as an invasive process intended to return cultural property to a known or perceived pristine state, often through the addition of non-original material. It involves the reduction of an object's outer corrosive and original layers to reveal an unexposed, newer layer of original material. **Conservation** is a much less aggressive procedure that maintains the historical integrity of all materials while complying with any hazardous material restrictions. A third level of refurbishment is simply **re-painting** or application of prophylactic coatings designed to protect the artifact "as is" and allow it to remain in an outdoor static display. Regardless of the level of work required--restoration, conservation, re-painting, or hazardous material abatement--fluid removal, transportation, proper display, and any needed exception to policy for consumptive use are all considerations in the successful curatorial management of macro artifacts.

This SOP provides guidance for determining the type of treatment required for an artifact based on a tiered system and outlines the mechanisms appropriate for each tier of refurbishment. Other SOPs for use in conjunction with this SOP are the *Request for Conservation Services SOP* and the *Exception to Policy for Consumptive Use*. This SOP is effective as of the signature date. It will be reviewed and updated on at least an annual basis.



J CASEY DOSS
LTC, LG
Director, Army Museums

Table of Contents

Foreword and Purpose.....	1
List of Figures.....	2
1. Applicability.....	2
2. Proponent and Exception Authority.....	2
3. References.....	3
4. Responsibilities.....	3
5. Policies and Procedures.....	5

Appendices

a. Explanation of Terms.....	14
b. Digitally Embedded Documents.....	16
c. Useful Websites.....	16

List of Figures

a. Figure 1: DA 2404-D Macro Worksheet	16
b. Figure 2: Simplified Macro Condition Assessment Blank Form.....	16
c. Figure 3: PWS Transportation Abatement Stabilization and Refurbishment of AME Macro Artifacts.....	16

1. Applicability. This SOP applies to the AME and any other activity authorized to receive and maintain macro artifacts owned by the AME.

2. Proponent and Exception Authority. The proponent for this SOP is the AME. Exceptions and waivers for abatement, transportation, restoration, display, and exceptions to policy for consumptive use will be submitted to the appropriate authorities in accordance with (IAW) this SOP. Activities may request a waiver by submitting a request to the Director, Army Museums. Waiver authority for consumptive use is the Executive Director, Center of Military History (CMH).

3. References

- a. Army Regulation (AR) 870-20: Army Museums Historical Holdings and Art
- b. Army Regulation (AR) 190-11: Physical Security of Arms Ammunition and Explosives
- c. Army Regulation (AR) 190-13: Army Physical Security Program
- d. Army Regulation (AR) 190-51: Security of Unclassified Army Property

e. Army Regulation (AR) 710-1: Centralized Inventory Management of Army Supply System

f. Army Regulation (AR) 710-2: Supply Policy below National Level

g. Army Regulation (AR) 710-3: Asset and Transaction Reporting System

h. Army Regulation (AR) 735-5: Policies and Procedures for Property Accountability

i. Department of Defense (DoD) 4160.21-M: Defense Material Disposition Manual

j. Department of Defense (DoD) 4160.28: Defense Demilitarization

4. Responsibilities

a. AME activity director.

(1) While security is everyone's responsibility, the director of the AME activity is ultimately responsible for the overall security program at the respective activity. Security and safety go hand-in-hand when utilizing macro artifacts to interpret U.S. Army history in displays and educational programs.

(2) AME activity directors are the approving authority for static indoor and outdoor displays and educational programs that utilize macro artifacts.

(3) AME activity directors will budget and maintain macro artifacts used in displays and educational programs IAW Army regulations and CMH and AME policies.

b. Physical Security Manager. The Physical Security Manager of the activity will provide the guidance on the activity physical security posture that considers interior and exterior exhibits and educational programs that incorporate macro artifacts.

c. Exhibit designers. When utilizing macro artifacts in exhibits, the design and layout will consider the following:

(1) Access and pilferage

(2) Guard personnel

(3) Volunteer personnel

d. Curator. The ordnance curator or other curator of the activity will:

(1) Ensure the macro artifact is an integral component of the activity's approved storyline and supports the activity's mission.

(2) Determine the most appropriate type of macro artifact used in a display or educational program.

(3) Consider security and safety.

(4) Coordinate and manage all aspects of the macro artifact's abatement, transportation, restoration, display, and exceptions to policy for consumptive use with all pertinent departments including, but not limited to, the AME Chief Conservator, Chief of Arms and Ordnance, the local safety office, the local Provost Marshall Office (PMO), and education program managers.

(5) If appropriate, serve as a Contracting Officer Representative (COR) or technical advisor (COTR) for the abatement, transportation, and restoration of a macro artifacts when required by a contract.

(6) Provide support and coordination for the display and exceptions to policy for consumptive use through consultation with the AME Chief, Arms and Ordnance.

(7) Identify and acquire appropriate display support property to meet display requirements and, account for display support property IAW the AR 710-2.

e. AME Chief Conservator. Serve as the AME proponent for conservation through development of documents to create an outside contract for the conservation treatment of macro artifacts. The Chief Conservator will:

(1) Provide guidance on conservation for Tier I Macro Artifacts, as needed.

(2) Provide COR functions, as needed.

Tier I Macros are: unique or rare, with provenance, technically and/or historically important artifacts. These always reside indoors and require highly specialized conservation efforts. See SOP *Request for Conservation Services*.

f. AME Chief, Arms and Ordnance. Serves as the AME proponent for the Macro Artifact Restoration Program through strategic funding, contracts, and restoration management. The Chief, Arms and Ordnance will:

(1) Provide guidance or restoration for Tier II and Tier III Macro Artifacts, as needed.

(2) Provide guidance on funding, as needed.

Tier II Macro artifacts are: important but not sole examples, part of an outdoor static display, and always under cover (pole barn) and on a concrete slab or within a Training Support Facility (TSF). Restoration efforts require technically proficient work that can be provided by a local Logistical Readiness Centers (LRC) or specialized units such as the Army Test Center (ATC) at the Aberdeen Proving Grounds, or other Army facilities including the LRC in Pittsburgh, PA, or Tobyhanna, PA.

Tier III Macro artifacts are: multiple copies of a well-known macro artifact type that are part of an outdoor, static display that need not fulfill a museum exhibition requirement. This category of macro artifact requires only prophylactic coatings (appropriate primes, paints and coatings) that protect and ensure visible appeal; a fresh paint job and durable clear coating.

Tier IV Macro artifacts are: no longer AME artifacts, but have been turned over to an Army activity for outdoor display. The AME requires no specific level of restoration or repainting for these items. Interested parties may use the information provided for Tier III artifacts.

5. Policies & Procedures

a. Before any restoration or transportation can begin, the local activity group proponent (often the Ordnance Curator) must complete a thorough assessment of the macro artifact. The proponent must document what, where, and why.

(1) Tier I Macro artifacts. Download, complete and submit the *Request for Conservation Services SOP* found electronically on the CMH Sharepoint site.

(2) Tier II Macro artifacts. Refer to the macro artifact check sheet in Appendix B *Embedded digital documents*.

a. Mechanically powered macro artifacts require the removal of all hazardous materials. Most military vehicles require specialized tools and technical manuals. Not all shops have the right tools, reference manuals or skills required for a professional restoration. Work with your restoration facility to obtain the most complete set of manuals at every echelon (typically 2d, 3d, 4th, and 5th maintenance levels)

a. Photograph all hazardous components

b. Examine and assess macro-artifact exterior condition and completeness. See Macro Artifact Condition Report Form.

c. Open vehicle hatches, engine compartment, storage bins, ammo lockers and cannon/gun's breech

d. Examine and assess interior condition and completeness. Determine if interior components are needed or should be removed. Pre-1990s vehicles will have more corrosion in the interior and parts are more likely to be in compromised condition. The older the vehicle, the more corrosion should be expected.

e. Determine whether interior components are to be kept inside the vehicle. Removing these parts allows a more complete cleaning of the interior, but the parts should be reinstalled as part of the restoration. Soldier training is different than public education, especially when the research and development is part of the museum's mission. Intended audience influences what is done with interior parts.

f. Rubber components, leather, canvas and wooden items will decompose. Rust/oxidation does the same to metal.

g. Contact the garrison Department of Public Works (DPW) to satisfy the requirements for removing hazardous materials.

List of materials to remove from macro artifacts:

Fluids: Oil; transmission fluid; radiator fluid; engine and a/c coolants; fuel; hydraulic fluid

Other materials: Batteries; spark plugs

Hazardous Materials: Asbestos components; radiological components, when appropriate. This may require further research.

When removing hazardous fluids or materials in-house, do not mix fluids. Separate hazardous fluids for disposal. If you examine the engine and transmission oil, you can detect excessive metal-on-metal wear. Many drain plugs are magnetic and will collect metal fragments. Do not excessively tighten bolts. Broken threads will allow oils to escape. All hazardous fluids and materials should be turned in to the installation Hazardous Materials (Safety) office. Use a spill kit (or two) and a supply of drip pans, drip pads, or dry sweep as needed. Drain oil from engine block and remove oil filter (vehicle should be on flat level ground). Refer to the technical manuals and a "Lube Order" for the quantity of fluids contained in an engine block and fuel tanks. Open inspection belly plates under engine and open drain plug; catch oil.

h. After emptying hazardous fluids, replace used oil filter and drain plug (tighten plug & filter). Keep a residual amount of oil inside the engine to help prevent corrosion. When engine contains protective storage fluid, conduct routine inspections for eventual leaks.

i. Engine oil cooler systems, co-located near the radiator, also need to be drained.

j. Removing engine spark plugs and applying a small amount of gear oil on top of the pistons will help prevent corrosion from forming inside the cylinders.

If vehicle has an transmission oil cooler near the radiator, it will also need to be drained.

k. Drain brake system (master cylinder & brake bleeder valves). Inspect vehicle to determine presence of air brake system (do not set parking brake). Do not mix different fluids.

l. Drain axel differentials on wheeled vehicles. Replace drain plug and tighten. Many pre-1920s military vehicles did not use gaskets (metal on metal).

m. Drain final drives and reduction gear systems on tracked vehicles (open both fill plug & drain plugs). Replace drain plug and tighten

n. Drain majority of oil from wheel hubs (M-1 Abrams, MBT-70 & XM 803 using light coating of GAA). Ensure bolts are tightened.

o. Drain radiator of antifreeze. Drain antifreeze from engine block. Close drain valves or replace drain plug and tighten. The interior of the engine cooling system (water jacket) will begin to corrode due to water and metal contact. Apply a protective fluid inside the water jacket to reduce future corrosion. Older radiators are copper and or brass and these last for a very long time. They were soldered with lead Newer radiators have lots of plastic, which over time will dry, shrink and crack.

p. Disconnect and pull the vehicles batteries. Be careful with active batteries that can cause an electrical arch (wear rubber gloves). Beware of battery acid.

q. Check fuel level in fuel tank (dip-stick). Remove all fuel from tanks. Refer to TMs/LO to locate tanks and type of fuel. If fuel is present, pump-out large quantities into approved container. Fuel filters, injectors, carburetors and fuel lines can also hold fuel. Open inspection belly plates under fuel tanks & open drain valve. Soviet Tanks are known to have poor-quality rubber fuel lines. All fuel lines decompose. Do not mix diesel, gas, or jet fuel.

r. Drain hydraulics. Check TM prior to draining to determine how removal affects elevation systems; many pre M-48 tanks have an internal mechanical elevation travel lock (these will secure the main gun, preventing the main gun from dropping). Modern tanks and SPs have an external travel locks but no internal locks. On M-60 & M-1 Tanks, an adjustable turnbuckle can be installed using the metal loop on the turret roof; along with an eye-bolt screwed into the breach block will secure the gun barrel inside. Wooden blocks are a simple short term fix. Orient turret in the desired direct and engage the manual traversing travel lock (usually under the loader's seat bracket). Special Note: M-107s/M-110s/M-578 have a very large hydraulic reservoir in the hull. Drain tank main gun recoil hydraulic fluid (tanks used a fluid filler & removal tool). Check TMs/LO for fluids and quantities and how to drain.

s. Purge vehicle air conditioning system based on systems material.

t. Most tanks have some asbestos components. These are woven items and designed to be removed during normal maintenance and reinstalled as part of that level of maintenance. Older asbestos wraps on engine exhaust systems will degrade and break apart overtime (special care should be taken when working with these items; appropriate personal protective equipment (PPE) is required)

u. Develop a plan for the level of restoration and funding to support the planned use in the collection.

v. Remove any dials containing Radium (Ra226). Coordinate testing and removal through the local Base Safety Office.

(2) Non-mechanical powered macro artifacts will be surveyed by a Subject Matter Expert (SME) within the AME. If no AME SME exists, a contract or task order for the survey of macro artifacts is authorized. For example, the Duplex-Drive Sherman tank recovered from the surf at Omaha Beach requires a survey and assessment by a conservator who specializes in collections previously submerged in salt water.

b. Restoration of macro artifacts. Artifact Responsible Officers (AROs) must adhere to the following procedures for all actions involving the restoration of Army artifacts:

(1) Prior to Restoration. For Tier II-III macro artifacts, the following information should be submitted to the AME Chief, Arms and Ordnance.

(a) Central Control Number of the artifact to be treated.

(b) Artifact measurement and weight (verify recorded measurements found in Army Historical Collection Accountability System).

(c) Justification for restoration (e.g. special exhibition) Why this object and why at this time?

(2) The appraised value of the item.

(3) Photographs that accurately show the object's condition (include multiple views and details). Refer to the Macro Artifact Condition Report (embedded documents).

c. Transportation of macro artifacts. All macro artifacts must be abated of all fluids prior to shipping. Coordinate transportation with AME Transportation Officer. If hiring an outside contractor to move macro artifacts, ensure the following:

(1) The Contractor will provide the following services which are identified as Phase I: Preparation for Movement; Phase II: Loading of Macro Artifacts for Transport; Phase III: Transportation of Macro Artifacts from (originating museum) to (destination); and Phase IV: Delivery (unloading and positioning).

(2) PHASE I: PREPARATION for Movement: The Contractor will examine the macro artifact(s) and propose a method for execution of the contract for approval by the COR.

(3) The Contractor may examine the macro artifact(s) during phase I preparation to assess the packing requirements of the project.

(4) The Contractor shall provide a detailed lift plan and credentials for riggers. Failure to provide lift plan and credentials of riggers shall result in disqualification.

(5) PHASE II: LOADING of Macro Artifacts to Prepare for Transport. The Contractor will be responsible for surveying and understanding the scope and content of (originating museum) holdings as described in the Performance Works Statement (PWS). The Contractor's method for execution of the contract requirements will be guided by the requirement to load the macro artifacts in a manner designed to minimize stress on the artifacts and reduce the potential for damage.

(6) The contractor will work closely with the COR to implement detailed plans for loading the AME macro(s) artifact(s). These plans will provide optimum protection to the artifacts while allowing the fastest end result of loading macro artifacts in a timely manner.

(7) The Contractor will be responsible for creating a Bill of Lading for all macro artifacts loaded, specific to the trailer or crate in which the macro artifacts are loaded. The inventory will be submitted to the COR. Each trailer or crate loaded will carry the location code for the location of the micro artifacts at the (destination).

(8) The Contractor will assure that all loading and rigging materials are museum safe and all techniques approved by the COR.

(9) The Contractor will provide at the job site all required cranes, forklifts, straps, rigging, tarping, dunnage, and safety materials required for the safe handling and shipment "in such a way as to preclude mechanical damage of any type"(AR 870-20, Para. 3-18c). The Contractor will provide certified riggers for all lifts and will provide a work statement to include a lift plan for all macro artifacts. Prohibited items for lifting/rigging artifacts include chains and metal cable. Chains may be used with caution as to not damage the artifact when securing load to transport truck for shipment. Forks on all lifts that will come into contact directly with artifacts in the course of lifting an artifact onto a pallet, crate, or truck trailer are required to be padded with heavy padding. Macro artifacts can be loaded/unloaded using lifting eyes already present on

some artifacts but must be tested prior to use. Vehicles can be rolled on/off trucks if the artifact has been deemed safe for this type of movement by the COR. Macro artifacts with open tops will be tarped for transport unless already in an enclosed trailer. Soft-top vehicles (e.g. Jeep) will need to be transported in enclosed trailers.

(10) The Contractor will have the ability to handle fragile macro artifacts to ensure their safe transportation. The COR will identify fragile macro artifacts that require special handling. Macro artifacts classified under special handling will require special care due to their historical significance as well as other factors such as size, weight, primary material, and condition. "Special Handling" macro artifacts will require crating, cradles, fixtures and/or strapping to dunnage (for oversize, heavier macros) on trucks to insure safe transport and offload. Artifacts with "Special Handling" designations are required to be crated for shipment while other color-coded designations require an enclosed truck. All artifacts being shipped on open flatbed trailers are required to be fully tarped to insure waterproof integrity during transport unless otherwise authorized by the COR.

(11) The Contractor will ensure that the integrity of the macro artifacts shall not be compromised.

(12) 5.2.3 PHASE III: TRANSPORTATION of Macro Artifacts from (originating museum) to (destination)

(13) The Contractor will remove macro artifacts from (originating museum) and transport them to the (destination) site. Transportation of the artifacts shall be carried out in accordance with all local and Federal highway safety regulations.

(14) When applicable, the Contractor will transport the collection in climate controlled vehicles from (originating museum) to (destination). The climate controlled vehicles should be able to maintain a temperature of 68 degrees F. and 50 percent RH.

(15) The Contractor will coordinate with CMH and (originating museum) staff to ensure accountability of all artifacts transported.

(16) The Contractor will generate Bills of Lading commensurate with the CMH inventory of macro artifacts specific to each trailer or crate being transported from (originating museum) to (destination).

(17) The Contractor will submit copies of Bills of Lading to the COR concurrently with each trailer or crates being transported from (originating museum) to (destination).

(18) PHASE IV: DELIVERY and Unloading and Positioning: The Contractor will unload the macro artifacts to the (destination).

(19) The Contractor will safely unload and unpack crated macro artifacts in a manner to ensure their safe unpacking and minimize any potential for damage during unpacking working under the direction of the COR or (originating museum) staff and IAW location diagrams.

(20) The Contractor will coordinate with the COR or (originating museum) representative to review the trailer or crate specific inventory sheets to identify the correct inventory of macro artifacts being delivered.

(21) The Contractor will ship all macro artifacts to final destination, unloaded, and staged in an area defined by museum staff or Army representative upon arrival at the (destination).

d. Conservation Contract. The AME Chief Conservator is the preferred COR for conservation treatment contracts pertaining to Army historical material. Should an Army museum have the ability to manage contract with a local COR, the museum director must contact the AME Chief Conservator to review and approve the contract's Performance Work Statement (PWS).

(1) Stabilization and Refurbishment: Work Plan

(2) The Contractor will provide a work statement (CDRL TBD)

(3) All procedures will be documented in writing and photographically

(4) If DPW is unable to assist with the removal of fluids, also known as Petroleum, oil, lubricants (POL), the Contractor will be hired to cut open welded hatches and access panels as required to gain access to engine compartments and other sources of POLs

(5) If the POLs have not already been removed, the Contractor will remove all POLs from the artifacts, place the POL products in containers for used oil or PCB contaminated oil, and label, secure and store the containers. Storage and handling shall meet all federal, state, and local laws and regulations. The contractor is responsible for the disposal of all hazardous materials recovered.

(6) The Contractor will disassemble artifacts into major assemblies when necessary for paint removal and abatement.

(7) The Contractor will repair and treat all structural and non-structural corrosion damage on military artifacts not of historical significance in accordance with COR approval.

(8) The Contractor shall fabricate missing or damaged components in accordance with specifications provided in technical manuals or historical records, or

use original pieces as prototypes if technical manuals or historical records are not available. All fabricated parts shall be marked as such. All original components removed shall be labeled and retained as part of the artifact unless part or parts are deemed unusable. Any and all parts marked for disposal will be documented with detailed measurements and detailed photographs (CDRL TBD)

(9) The Contractor will perform arc, oxy-fuel and metal inert gas (MIG) welding.

(10) The Contractor may be required to fabricate or purchased special tools to be paid for under the Materials Contract line Item Number (CLIN). All tools fabricated or purchased by the contractor become government property.

(11) The Contractor will recoat artifacts with coatings provided by the government in historically correct colors and finishes.

(12) The Contractor will reassemble artifacts in accordance with technical specifications or historical records, whichever is available.

(13) After Conservation. AROs must inspect the artifact and maintain a record of the work performed, to include final conservation treatment report, and record of new parts added to the object. Original parts removed will be retained and marked with the catalog number of the source artifact.

(14) Provide the final conservation treatment report to the CMH Chief Conservator

e. Display of macro artifacts.

(1) The display of macro artifacts outdoors will consider safety and accessibility by visitors. In general, climbing on outdoor static displays is not authorized.

(2) Implement any corrective actions needed to create a museum environment conducive to artifact preservation including storing macro artifacts in an appropriate-sized warehouse or, at minimum, under roof and on a concrete slab cover for outdoor storage.

(3) Display macro artifacts outdoors on concrete slabs engineered to prevent water pooling.

(4) Ensure macro artifacts are adequately treated to prevent bird and vermin nesting on the interior and exterior. Nylon (or other non-metal) screens may be attached to prohibit entry into openings.

(5) Ensure that wheeled macro artifacts are supported with blocks on the axels .

(6) Use weather-proof interpretive displays boards and signs notifying visitors that climbing on macro artifacts is prohibited.

f. Educational programs. The appropriate type of macro artifact(s) will be used for educational programs. Tier I or II artifacts with provenance will not be used consumptively. Tier IV surplus or excess non-artifact macro artifacts are ideal and will be utilized for consumptive educational programs.

(1) The type of macro artifact(s) used is dependent on the requirement, such as a static display versus a historical interpretive demonstration.

(2) When utilizing firearms on macro artifacts, the modification of historical firearms, such as placing a bead of weld on the face of the bolt and in the chamber, is not authorized. When applicable, an Exception to Policy for Consumptive Use will be submitted via the Chief, Arms and Ordnance, MD.

(3) The display of inoperable/modified arms, such as M60C/D, M240D/H, caliber .30 and .50 machine guns, and rocket launchers on aircraft and armored vehicles, is not authorized on outdoor static displays.

(4) Obtaining specific firearms for the purpose of educational programs for use in a consumptive role or display is recommended. When directed by the commander/director, or PMO, placing a bead of weld on the face of the bolt and in the chamber is recommended. Obtain an inert certificate for firearms that are rendered inoperable (Figure 1: DoDM 4160.28-M-V3).

(5) The use of dummy weapons, appropriated through commercial channels, is authorized for use in outdoor static displays or for display outside of cases.

(6) The outdoor display of explosive ordnance, which lends itself to pilferage or theft, is not authorized.

(7) Additional security requirements, shall be at the discretion of the local commander and the PMO.

g. Exception to Policy for Consumptive Use.

(1) The Army is required to preserve artifacts of historical significance. Care shall be taken to prevent loss, damage, or destruction of historical artifacts or artwork (AR 870-20, paragraph 3-18 and laws 16 USC 431 through 333 and 470).

(2) Accessioned historical property will not be used for its original intended purpose. Vehicles will not be driven, uniforms will not be worn, and firearms will not be discharged.

(3) An exception to policy for consumptive use is a waiver to use historical property as it was originally intended. Submit requests for exception to policy for consumptive use via the Director, AME, for approval by the Executive Director, CMH.

Appendices

Appendix A: Terms

Access

Personnel movement within a restricted area that allows the chance for visual observation of, or physical proximity to, either classified or protected materiel. It is also the ability and opportunity to obtain detailed knowledge of a controlled cryptographic item through uncontrolled physical possession. External viewing or escorted proximity to controlled cryptographic item does not constitute access.

Accessibility

See Access.

Ammunition

Includes (but is not limited to) cartridges, projectiles, including missile rounds, grenades, mines, and pyrotechnics together with bullets, shot and their necessary primers, propellants, fuses, and detonators individually or having a unit of issue, container, or package weight of 100 pounds or less. For the purpose of this policy, explosive ordnance generally includes ammunition (paper and metallic cartridges), hand and rifle grenades, fuses, powder bags, explosive charges, explosive satchels, Bangalore torpedoes, mines, shells (mortar and tank), shot, rockets, shape charges, aerial bombs, and missiles. Excluded from this definition are devices charged with chemical agents defined in JP 1–02 and nuclear or biological materiel. Blank, inert training ammunition, and caliber .22 ammunition are excluded.

Arms

A weapon included in AR 190–11, appendix A, that will or is designated to expel a projectile or flame by the action of the explosive, and the frame or receiver of any such weapon.

Controlled area

See restricted area.

Demilitarization

The act of destroying the offensive or defensive characteristics inherent in certain types of equipment and materiel. The term comprehends mutilation, scrapping, burning, or alteration intended to prevent the further use of such equipment and materiel for its originally intended military or lethal purpose.

Exception

An approved permanent exclusion from specific requirements of this regulation. Exceptions will be based on a case-by case determination and involve unique circumstances which make conformance to security standards impossible or highly impractical. An exception can also be an approved permanent deviation from the provisions of this regulation.

Explosive Ordnance

See Ammunition

Facility

Any single building, project, or site.

Limited Deactivation

Any method that renders a firearm temporarily non-functional without demilitarization.

Macro artifact

Any non-man portable artifact that requires mechanical lifts for movement. Macro artifacts include but are not limited to aircraft (rotary and fixed wing), ambulances, armored cars, boats, railroad cars, engines, locomotives, and wagons. Some crew-served weapon systems, such as a 4.2-Inch mortar, also qualify as macro artifacts.

Physical security

That part of the Army security system, based on threat analysis, concerned with procedures and physical measures designed to safeguard personnel, property, and operations; to prevent unauthorized access to equipment, facilities, materiel, and information; and to protect against espionage, terrorism, sabotage, damage, misuse, and theft. Operations security and security targeted against traditional criminal activity are included.

a. PS procedures include, but are not limited to, the application of physical measures to reduce vulnerability to the threat; integration of PS into contingency, mobilization, and wartime plans; the testing of PS procedures and measures during the exercise of these plans; the interface of installation operations security, crime prevention and PS programs to protect against the traditional criminal; training of guards at sensitive or other storage sites in tactical defense against and response to attempted penetrations; and creating PS awareness.

b. PS measures are physical systems, devices, personnel, animals, and procedures employed to protect security interests from possible threats and include, but are not limited to, security guards; military working dogs; lights and physical barriers; explosives and bomb detection equipment; protective vests and similar equipment; badging systems; electronic entry control systems and access control devices; security containers; locking devices; electronic IDSs; standardized command, control, and display subsystems; radio frequency data links used for PS; security lighting; delay devices; artificial intelligence (robotics); and assessment and/or surveillance systems to include CCTV. Depending on the circumstances of the particular situation, security

specialists may have an interest in other items of equipment such as armored sedans.

Physical security program

The interrelationship of various components that complement each other to produce a comprehensive approach to security matters. These components include, at a minimum, the PS plan; PS inspections and surveys; participation in combatting terrorism committees and fusion cells; and a continuing assessment of the installation's PS posture.

Sensitive items

Material requiring a high degree of protection to prevent unauthorized acquisition. This includes arms, ammunition, explosives, drugs, precious metals, or other substances determined by the Administrator, Drug Enforcement Administration to be designated Schedule Symbol II, III, IV, or V under the Controlled Substance Act of 1970 (10 USC 812).

Appendix B: Digital Embedded Documents

Document Name	Description	Digital Form
DA 2404-D Macro Worksheet	Macro Worksheet	 DA 2404-D Macro Worksheet.pdf
Simplified Macro Condition Assessment Blank Form	Macro Condition Assessment Form	 Simplified Macro Condition Assesseme
PWS Transportation Abatement Stabilization and Refurbishment of AME Macro Artifacts	Performance Work Statement Transportation Abatement Stabilization and Refurbishment of AME Macro Artifacts	 PWS Transportation Abatement Stabiliza

Appendix C: Useful Websites

Website	URL	Description
GSA Advantage	https://www.gsaadvantage.gov/advantage/main/start_page.do	Online Catalogue of Government Vendors to purchase supplies
GSA Elibrary	https://www.gsaelibrary.gsa.gov/ElibMain/home.do	Database of GSA Contracts
Federal Procurement Data System	https://www.fpds.gov/fpdsng_cms/index.php/en/	Federal Contract Search Engine

Small Business Search	http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm	Search for Certified Small Businesses
Army Regulations	https://armypubs.army.mil/ProductMaps/PubForm/AR.aspx	All Army regulations
Army Pamphlets	https://armypubs.army.mil/ProductMaps/PubForm/PAM.aspx	All Army Pamphlets