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GUIDANCE: In this Section (Protection Systems), SO-SS represents SO-SS Security Systems organization unless otherwise stated.

SECTION III – PROTECTION SYSTEMS

1.0 PROTECTION SYSTEMS, PLANNING AND DESIGN

- A. SO-SS designs and develops construction drawing packages for new and modified security systems. [Requirement 9-3001]
- B. Security systems include the following:
 - 1. Physical Access Control Systems (PACS)
 - a. Administrative access control system: Apollo or Lenel
 - b. Access control system (ACS): Argus security system
 - 2. Video assessment and surveillance system (VASS)
 - 3. Vehicle access system (VAS)
 - 4. Intrusion detection system (IDS)
 - 5. Security Equipment Interface
- C. LANL Project Planning
 - 1. Engage SO-SS at the same time as Engineer of Record (EOR) for design. Submit a [SECURITY PROJECT REQUEST FORM](#), link located on the Defense Protection directorate homepage.
 - 2. SO-SS will provide a cost estimate and construction drawing package schedule.
 - 3. Include funding for same in the project budget.
- D. SO-SS Design Deliverables
 - 1. Delivers a construction drawing package that pertains to the installation of LANL security systems that are installed and maintained by SO-SS. The construction drawing package shall be integrated into project deliverables (but not be included as part of EOR drawing set).
 - 2. The construction drawing package:
 - a. Includes LANL security system equipment designs, including but not limited to AFPs, RAPs, security interface equipment, IDS, VAS and VASS.
 - b. Lists equipment indicating government furnished equipment (GFE) and construction-subcontractor furnished.

- c. Identifies work as completed by construction subcontractor or SO-SS.
 - d. Shall be included in construction subcontractor bid or work package along with the EOR design package.
- E. EOR Design Deliverables
 1. Provides all the necessary engineering discipline designs required to support the SO-SS construction drawing package and may include, but is not limited to: Fire Protection, Civil, Architectural, Structural, Mechanical, Electrical, Instrumentation and Controls, and Telecommunications.
 - a. Examples include: (i) design/identify the power circuit to security systems; (ii) structural details for sensor poles, camera poles and AFP structures; and (iii) special conduit installation details.
 - b. Security equipment may require independent electrical and fiber communications supply.
 2. Coordinate layout of security system equipment in the telecommunications rooms with both SO-SS and ISD-TS (Infrastructure Services Division - Telecommunications Services). Verify adequate space for equipment.
 3. Do not include the SO-SS construction drawing package directly in EOR design drawing set (but refer to it).
- F. Schedule and Budget for Construction
 1. In the project budget, include sufficient funding for GFE security system equipment.
 2. In the project schedule and budget, include sufficient time and funding for the installation and operational testing of physical security system devices by SO-SS and performance testing by SO-SS Physical Security.
- G. Installation
 1. LANL Master Specification section 28 0528 *Pathways for Electronic Security* provides details of installation requirements.
 2. SO-SS construction drawing package identifies construction subcontractor or LANL (SO-SS or ISD-TS) installation.
 3. SO-SS installs physical security system devices, including but not limited to: AFP components, badge readers, cameras, video support equipment, and IDS sensors.
 4. Construction subcontractor installs security system infrastructure, including but not limited to: J-boxes, security low voltage communication cables, conduit, magnetic locks, balance magnetic switches, camera poles, camera housings, and cable.
 5. Construction subcontractor shall coordinate with SO-SS for alignment and orientation of security equipment.
 6. Terminations to security equipment is completed by SO-SS.
- H. Testing
 1. Acceptance testing will begin after the installation of field devices is completed. [Requirement 9-3002]
 2. SO-SS will advise if a 30-day post-power burn-in period is required before such testing may begin. [Requirement 9-3003]

3. Before LANL security system certification is provided, SO-SS Physical Security must conduct performance testing activities. [Requirement 9-3004]

2.0 EQUIPMENT

- A. Government Furnished Equipment (GFE)
 1. Furnished by SO-SS
 - a. Badge readers
 - b. RAPs
 - c. Hand geometry units (HGUs)
 - d. Cameras
 - e. Sensors
 - f. AFP enclosures
 - g. AFP battery box components
 - h. Biometric devices
 - i. Magnetic locks
 - j. Electronic strike locks
 - k. Balance magnetic switches
 - l. Tamper indicating devices
 - m. Video switchers
 - n. Specialty security system boxes
 - o. Fiber optic hubs
 - p. Fiber and copper cables for data and control of security system equipment
- B. The following equipment may or may not be GFE (it's project-specific):
 1. X-ray machines (including conveyor belts),
 2. Enterprise Standard Booths (ESB) (including anti-pass back wall)
 3. Metal Detectors
 4. SNM monitors (pedestrian and/or vehicle)
- C. Equipment Selection
 1. Organizations must obtain approval prior to purchasing any of the equipment below. [Requirement 9-3005]
 2. To request review of security equipment prior to purchase, submit a [Security Project Request Form](#), link located on the Defense Protection directorate [homepage](#).
 - a. X-ray machines
 - b. Metal detectors
 - c. Turnstiles
 - d. [Pedestrian gates and vehicle access gates](#)

- e. Vault/VTR doors
- f. Cyber keys [Videx]
- g. Enterprise Standard Booth (ESB)
- h. SNM Equipment (pedestrian and vehicle)
- i. Vehicle crash rated barriers, bollards, and cable barriers

3.0 ADMINISTRATIVE ACCESS CONTROL SYSTEM (AACS)

- A. LANL Master Specification section 28 1321, *Administrative Access Control System Rough-In* provides details on installations requirements.
- B. Administrative Access Control Systems are used for:
 - 1. An area or room that requires automated access controls and does not require IDS, or
 - 2. Local logging where user requires automatic entrance and exit control and logging for a room or area.
- C. Administrative access control systems are Apollo or Lenel. [Requirement 9-3006]
- D. Administrative access databases can be controlled by the owning organization of a building and are an accountability system, not an accredited security system, and requires a badge swipe only. [Requirement 9-3007]
- E. Requires a 3-foot-wide wall space and 3 feet clear working space in front of it. Placement is preferred inside the local telecommunications room. [Requirement 9-3008]

4.0 ACCESS CONTROL SYSTEM (ACS)

- A. LANL Master Specification section 28 0528, *Pathways for Electrical Security* provides details on material and installation requirements.
- B. Access control system is Argus. [Requirement 9-3009]
- C. Access database is controlled by an Argus System Administrator in LANL's Badge Office and is LANL's primary security system and requires the use of a Personal Identification Number (PIN) and/or hand geometry unit in addition to a badge swipe. [Requirement 9-3010]
- D. Requires 6 feet of wall space and 3 feet clear working space in front of it. Placement is preferred inside the local telecommunications room. [Requirement 9-3011]

5.0 INTRUSION DETECTION SYSTEM (IDS)

- A. LANL Master Specification section 28 0528, *Pathways for Electrical Security* provides details on material and installation requirements.
- B. LANL's IDS is the Argus security system. [Requirement 9-3012]
- C. A standard IDS consists of the following:
 - 1. Access control system
 - a. RAP (minimum two factor authentication)
 - b. Door, gate or turnstile with electronically controlled strike/latch

2. AFP
 - a. A minimum of 12 single-mode fibers into the building is required.
 - b. Two single-mode fiber pairs go to the AFP from a fiber optic cabinet for Host communications.
 3. Battery box
 - a. AFP UPS/power supply; requires a dedicated 120 VAC 20A circuit
 4. SO-SS specifies type and location of IDS sensor(s) in construction drawing package. Examples include but are not limited to volumetric, perimeter, and/or point contact.
- D. Requires 6 feet of wall space and 3 feet clear working space in front of it. Preferred placement is inside the telecom room. [Requirement 9-3013]

6.0 IDS/ACS, AND ADMINISTRATIVE ACS RACEWAY SYSTEMS

- A. LANL Master Specification Section 26 0533, *Raceways and Boxes for Electrical Systems* provides details on material and installation requirements.
- B. The design of raceway systems for IDS and ACS cables must meet current NEC requirements.
- C. Cables must be installed in a conduit system.
- D. Coordinate design of the conduit system with SO-SS.
- E. Pathways for a standard IDS/ACS (Argus security system)
 1. Conduits to RAPs shall not exceed 300 feet in total length and shall be 1 inch.
 2. Use 2-inch homerun conduits from AFP complex to field devices unless system consists of only a few field devices.
 3. Use 1-inch conduits between device junction boxes, not to exceed more than five device junction boxes/cables.
 4. Minimum size of conduit will be 1 inch unless pathway for electrical door strike/latch cable is from nearby junction box.
 5. Cables between AFP and device junction box must be continuous with no splices.
 6. Coordinate locations of all IDS/PACS outlet boxes and enclosures with SO-SS.
 7. SO-SS will furnish as GFE the data/control copper cable connected to AFP.
 8. SO-SS will perform all terminations of data and control cables for IDS and PACS equipment and devices.
- F. Pathways for a standard administrative ACS (Apollo/Lenel)
 1. Conduit between controller and badge reader or set of badge readers at a controlled door shall be 1 inch.
 2. Minimum size of conduit will be 3/4 inch unless pathway for electrical door strike/latch cable is from nearby junction box.
 3. All cables must be continuous between controller to badge reader or device, with no splices.
 4. SO-SS will furnish as GFE the data/control cable to or from the controller.
 5. SO-SS will perform all terminations of data and control cables for equipment and devices.

7.0 TELECOMMUNICATIONS FOR IDS

- A. Follow LANL ESM Chapter 19 G50 *Site Communications* for communication work outside of buildings and LANL ESM Chapter 19 D60 *Communications* for work inside of buildings.
- B. Outside, use materials and installation methods described in LANL Master Specification 33 8126 *Communication Underground Ducts, Manholes and Handholes*.
- C. ISD-TS will furnish, install, and terminate the security system’s communications cables to Argus Host Systems.
- D. Each AFP requires 12 single-mode fiber strands for CAS and SAS Argus Host Systems communications.
- E. For security systems not protecting Category I or II SNM:
 - 1. Provide two separate security communications service entrance pathways from the point of connection (AFP) to the telecommunications network (manhole, pedestal, etc.) into the entrance of the telecommunications room. [Requirement 9-3014]
- F. For security systems protecting Category I or II SNM:
 - 1. Provide two separate and redundant security communication pathways from the point of connection (AFP) to the security host computer (CAS/SAS). Use red-colored concrete to encase conduit. [Requirement 9-3015]
 - a. With security SME approval, routing of the communication pathways inside security areas may be co-located.
 - 2. Duct spacers must provide 3-inch separation between ducts and 3-inch concrete coverage on bottom, sides, and top. [Requirement 9-3016]
 - 3. Minimum pathway is 2-inch conduit.

8.0 RECORD OF REVISIONS

Rev	Date	Description	POC	Resp. Mgr.
6	05/06/2026	Divided chapter into three main documents and attached design/construction tables to Section III. General expansion and improvement. Incorporated DOE O 473.1A. See Section I for complete chapter history.	Tina Vigil, <i>SO-SS</i>	Michael Richardson, <i>ES-DO</i>

9.0 ATTACHMENTS

The following contain design and construction requirements for most security area types described by Chapter 9, Section I.

Attachment A, Property Protection Area (PPA) Design and Construction Requirements

Attachment B, Limited Area (LA) Design and Construction Requirements

Attachment C, Vault

Attachment D, Vault-Type Room (VTR)

Attachment E, Sensitive Compartmented Information Facility (SCIF) and Special Access Program Facility (SAPF)

Attachment F, Protected Area (PA)

Attachment G, Material Access Area (MAA)