

DEPARTMENT OF THE ARMY
FACILITIES STANDARDIZATION
PROGRAM

**INFORMATION SYSTEMS
FACILITIES (ISF), CATCODE
13115**

*Applies also to catcodes 13120, 13125, and 13140
as applicable*

STANDARD DESIGN CRITERIA

June 2014

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**INFORMATION SYSTEMS FACILITIES (ISF)
STANDARD DESIGN CRITERIA**

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STATEMENT OF WORK

[Directions for use and editing: review, complete and delete prior to delivery of completed Request For Proposal (RFP) to Design/Build Offeror.]

[This portion of the document contains scope and other specific design information about the Information Systems Facility. It is organized in a manner that enables the planner/RFP preparer to edit items or delete selected items that do not apply to the specific project. The document should be used as follows:

Paragraph 3.1: Modify the portions of the narrative in the brackets ([____]).

Paragraph 3.2: Modify the portions of the narrative in the brackets ([____]).

Paragraph 3.3: Modify the portions of the narrative in the brackets ([____]). The schematic layouts in the attachments are provided to illustrate required functional requirements and adjacencies. If revisions are required beyond the options indicated, the RFP Preparer shall contact the Center of Standardization.

Paragraph 3.4 – 3.18: Modify the portions of the narrative in the brackets ([____]).

Paragraph 3.19 : Modify the portions of the narrative in the brackets ([____]). The A/V equipment listed is representative of equipment that may be included in each of the spaces listed. The final list of equipment for each of the space shall be coordinated and updated by the RFP preparer in conjunction with the user and with USAISEC.

Paragraph 3.20: Keep this section in entirety.

IN ADDITION TO PARAGRAPHS 1 - 6, USE OF THIS STANDARD DESIGN MAY INCLUDE INFORMATION FROM ATTACHMENTS

1.0 PROJECT OBJECTIVES

The project objective is to design and construct facilities for the military that are consistent with the design and construction practices used for civilian sector projects that perform functions similar to the military projects, with additional requirements as stated herein. For example, a Local Session Controller Node (LSCN) has a function similar to a telephone switch in the civilian sector; therefore, the design and construction practices for an LSCN should be consistent with the design and construction of a telephone switch, and as required for military application by these standards.

Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
Information Systems Facility	Data Center

Critical power and stand-by power shall be provided for the spaces or rooms as listed in table 3.10.D-1 and Table 3.11.K-1. Critical power means provision of an uninterruptible and generator power sources. Stand-by power means provision of generator back up.

It is the Army's objective that these buildings will have a 25-year useful design life before a possible re-use/re-purpose or renovation requirement, to include normal sustainment, restoration, modernization activities, and a 50-year building replacement life. Mission space shall include a 25% growth factor. Therefore, the design and construction should provide an appropriate level of quality and flexibility to ensure the continued use of the facility over that time period with the application of reasonable preventive maintenance and repairs that would be industry-acceptable to a major civilian sector project owner. The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles.

The project site should be developed for efficiency and to convey a sense of unity or connectivity with the adjacent buildings and with the Installation as a whole. Requirements stated in this contract are minimums. Innovative, creative, and life cycle cost-effective solutions which meet or exceed these requirements are encouraged. Further, the offeror is encouraged to seek solutions that will expedite construction (panelization, pre-engineered elements, etc.) and shorten the schedule. The intent of the Government is to emphasize the placement of funds into functional/operational requirements, protecting the facility with a permanent and secure structure while providing the facility with a professional aesthetic consistent with Installation standards.

1.1 SECTION ORGANIZATION

This Section is organized under six (6) major "paragraphs".

- A. Paragraph 1 is intended to define the project objectives and to provide a comparison between the military facility(ies) and comparable "civilian" type buildings.
- B. Paragraph 2 describes the scope of the project.
- C. Paragraph 3 provides the functional, operational and facility specific design criteria for the specific facility type(s) included in this contract or task order.
- D. Paragraph 4 provides the design and construction criteria applicable to all standard buildings.

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- E. Paragraph 5 provides the general technical requirements applicable to all standard buildings.
- F. Paragraph 6 provides the requirements for the project, which are specific to the location and specific project.

2.0 SCOPE

2.1 INFORMATION SYSTEMS FACILITY (ISF)

The ISF shall be designed according to the principles and directions found herein and according to the requirements of these standards. For this project, specific program requirements are as follows.

Construct [insert _____ GSF (_____ GSM)] Network Enterprise Center for [insert user/installation]. The facility is a consolidated customer-service-oriented information systems and telecommunications support facility – the end point of defense telecommunications lines distributed throughout its mission area and serves as the main information systems and telecommunication center for [insert user]. The building will provide 24-hour [insert as required: tactical network security operations, telecommunications support, information assurance, systems administrations, network management, telephone controls, land mobile radio, computer services, computer security management, etc.]. The facility includes space for [insert as required: a command center for operations support, system and network administrators, operations floor, tech lab, Multi-service Technical Control Facility (MTCF), Defense Switched Network (DSN), Operations Center, administrative offices, customer service center, technical assistance for IT, land mobile radio, etc.]. The facility also serves Installation as a Docking station (IAADS) in its baseline services.

The [single, multi]-level building(s) will be constructed of [insert primary structural materials] and with all components (e.g., exterior walls, windows, roofing, mechanical, and electrical systems) designed appropriately for [insert location's] unique geological [earthquake] and climatic standards [to withstand winds of [insert location's maximum standard design wind load in mph or kph]], and will be sited and designed to include appropriate antiterrorism/force protection (AT/FP) distance setbacks and other defensive requirements.

The facility may include raised floors if deemed required for [insert as preferred: IPN, Local Session Controller Node, command center operation, administrators, supporting equipment rooms, etc.]. **However, this standard does NOT require raised access flooring.** The receiving area [insert as required: and the mechanical room, operations floor, MTCF, DSN, desktop support, etc.] will be provided with a sheltered loading area, which shall be accessed by a service road. As part of the facility, stand-by power, uninterruptible power supply, battery, transformer and generator units will be constructed to the [insert as appropriate: N+2] level of redundancy. The facility will be provided with redundant power, air conditioning and fire protection systems. The building will be protected by automatic fire sprinkler systems and an addressable fire alarm system incorporating mass notification features. Monitoring systems – whether for fire, power, climate control, security, etc – shall not simply be “a red light” alarm, but rather shall provide useful information, as for example; digital annunciators for UPS on line, UPAS on battery, HVAC on Generator, UPS on Bypass, etc.. All monitoring systems, unless otherwise noted, must in all cases be transmitted to NOC or other constantly monitored location such as the EMCS/BMS, or Network Management System.

Heating, ventilating and air-conditioning systems will be provided for this facility consistent with applicable criteria for both mission and facility functions. [The existing [list functions to be moved, if any] will be relocated to the new ISF building.] Provision will be made for uninterruptible service relocation of the existing [insert functions] to the new building. Stand-by generator(s) and UPS unit(s) will be provided to support the critical operations of the facility. Project will also include: [off-site utility improvements,] utilities connections, fire protection, plumbing, telecommunications, parking lot and walkway lighting, paving, sidewalks, curbs, gutters, drainage, information systems, landscaping, signage, and other functions as required herein. Provide [Insert number] parking stalls for privately owned vehicles (POVs) (staff and customers), tactical vehicles, organizational vehicles, and IAADS tenants. Accessibility for the

handicapped shall be provided. Other supporting facilities include: [transformer building, utility enclosures, trash enclosure, etc.].

Sustainable features will be incorporated as required to meet the Army's current sustainable design and development policy and applicable criteria. The design will achieve energy consumption levels according to current applicable criteria.

During the design phase, a Building Information Model (BIM) will be required to ensure proper coordination between the various building elements, including telecommunication equipment in raised floor systems.

The project will include [insert core technical rooms/spaces], administrative, business and plans, support, customer parking, loading and service areas.

[Insert as applicable: This facility will also require these other operational facilities: warehousing, outside plant, maintenance vehicle sheltered parking, storage yard. Requirements for these facilities are included in a separate solicitation and NOT in the scope of this project.] [Other support facilities included in the scope of this project consist of the following: [insert as applicable: warehousing, outside plant, maintenance vehicle sheltered parking, storage yard. Requirements for these facilities are provided in Section 01 10 00, Paragraph 6.]

Refer to other portions of this RFP for site and climactic specific requirements; for example, some locations may be more prone than others to extremely corrosive marine environments. In that case, practices may include requirement to coat or otherwise protect metallic materials (or avoid them altogether). Other areas may be prone to flooding, and might require sump pumps. Other areas may be susceptible to fine air-borne particulates that pose a hazard to equipment and needs to be addressed.

2.2. SITE:

Site work shall consist of the complete design and construction of roadway, curbs, pedestrian walks, utilities, service and emergency access, security (fencing and access control, cameras, etc), site drainage, and landscaping. The facility shall be complete with utility connections and other amenities as described in the design documents.

Overall site design shall conform to the guidance provided herein. [Insert as appropriate: Site planning, development and construction shall at all times accommodate existing facilities adjacent to or within the project site which will continue to operate.] Site design shall consider local climate including [insert as appropriate: snow drifting, and snow and ice falling from roofs, proper drainage in flood prone areas for roads, sidewalks, parking lots, stairways, roofs, etc.].

Maintain the construction site and haul route. Repair / replace damage to existing sidewalks, pavements, curb and gutter, utilities, and / or landscaping within the construction limit, adjacent to the construction site, and along the Contractor's haul route resulting from the Contractor's construction activities, at no additional cost to the Government. Prior to construction activities, the Contractor and Contracting Officer Representative shall perform an existing condition survey. At the completion of the work, the Contractor and Contracting Officer Representative shall perform a final condition survey to determine repair/replacement requirements.

Approximate area available for this facility (these facilities) is shown on the drawings.

The project location for the ISF is shown in the design drawings. Site design shall include vehicular and pedestrian circulation, and service vehicle accessibility.

Provide concrete sidewalks for access to and from the parking area, and to and from other appropriate areas. Walks shall extend from all entrances and interconnect. [Sidewalk and parking design shall take into consideration climatic conditions such as falling snow and snow storage.]

To the greatest extent possible, underground utility lines, including appurtenant structures such as manholes, vaults, etc., shall not be located under road pavement, road shoulders, paved parking areas or drainage ditches.

Protect existing utility lines when new pavements are required to be constructed over them. Existing cover over utilities shall be maintained. If existing cover is not maintained, the utility system shall be redesigned for the specific conditions.

[Insert as appropriate: Snow Removal and Storage: Snow removal and convenient storage shall be a major consideration in the design and layout of roads, driveways, parking lots, and sidewalks. Storage shall accommodate sliding snow from roofs, as well as drifting snow. Storage shall not compromise AT/FP requirements.]

2.3. GOVERNMENT-FURNISHED GOVERNMENT-INSTALLED EQUIPMENT (GFGI)

Responsibility for the acquisition and installation of equipment and furnishings shall be allocated between the Government and the Contractor according to the equipment responsibility tables contained herein. Equipment may be Government furnished/Government installed (GF/GI), Government furnished/Contractor installed (GF/CI), or Contractor furnished/Contractor installed (CF/CI).

The terms "facility data", "facility telephone" and similar references in this document shall denote equipment normal to the building use. The terms "mission data", "mission telephone" and similar references in this document shall denote equipment specifically intended to carry out the ISF's missions. For example, the workstation and the telephone in the reception area are facility equipment since reception is a normal facility function while the servers in the Information Processing Node (IPN) and the switches in the TR are mission equipment since these are specific to the mission. Coordinate with Government on GFGI item requirements and provide suitable structural support, brackets for projectors/video playback equipment/TVs, all utility connections and space with required clearances for all GFGI items. Fire extinguisher brackets and cabinets are Contractor furnished and installed CFCI while fire extinguishers are GFGI, per below. Include tables/cabinets/ etc. for GFGI equipment that is not freestanding in furniture design.

The following items are GFGI:

- Computers and associated peripheral computer hardware
- Printers
- Faxes
- Copiers
- Video projectors
- VIDEO PLAYBACK EQUIPMENT
- TV
- Microwave oven
- Fire extinguisher
- Interactive whiteboard, projectors, and manual projector screens.
- Switches and servers for [insert as appropriate: telecommunications room(s), data center(s), Local Session Controller Node, and cable vault and related operations spaces].
- 5-drawer GSA approved safes.
- Security cameras

Card swipe devices
Security alarms
Modular workstations, conference room tables and chairs, credenzas, free standing shelving, podiums and cabinets.
Break room furniture and vending machines.
[Additional GFGI items will be provided in the project task orders.]
Facility data equipment (e.g., routers, switches, modems), facility telephone switch equipment, radio transmitting equipment, specialized racks/cabinets and associated antenna and wiring (equipment racks/cabinets, and any required facility UPS systems and raceway to be provided by the Contractor); front end equipment and equipment racks associated with CATV/CCTV/Satellite TV, and separate front end audio equipment not associated with a Combined Mass Notification and Paging System.

2.4. FURNITURE REQUIREMENTS

Provide furniture design for all spaces listed in Paragraph 3 and including any existing furniture and equipment to be re-used. Coordinate with the user to define requirements for furniture systems, movable furniture, storage systems, equipment, any existing items to be reused, etc. Coordination of furniture design and placement with the building design is essential for a complete and usable facility. Contractor shall coordinate furniture layout with appropriate government agencies to assure that all utilities and other design items associated with the furniture are properly coordinated during design and construction.

The procurement and installation of furniture is NOT included in this contract. Furniture will be provided and installed under a separate furniture vendor/installer contract. The general contractor shall accommodate that effort with allowance for entry of the furniture vendor/installer onto this project site at the appropriate time to permit completion of the furniture installation for a complete and usable facility to coincide with the Beneficial Occupancy Date (BOD) of this project. The furniture vendor/installer contract will include all electrical pre-wiring and the whips for final connection to the building electrical systems however; the general contractor shall make the final connections to the building electrical systems under this contract. Furthermore, the general contractor shall provide all facility Information/Technology (IT) wiring (i.e. LAN, phone, etc.) up to and including the face plate of all freestanding and/or systems furniture desk tops as applicable, the services to install the cable and face plates in the furniture, the coordination with the furniture vendor/installer to accomplish the installation at the appropriate time, and all the final IT connections to the building systems under this contract.

The Government reserves the right to change the method for procurement of and installation of furniture to Contractor Furnished/Contractor Installed (CFCI). CFCI furniture will require competitive open market procurement by the Contractor using the Furniture, Fixtures and Equipment (FF&E) package.

Fixed computer racks and related furnishings for core mission technical rooms and spaces are CFCI unless designated otherwise herein.

3.0 INFORMATION SYSTEMS FACILITY – CATCD 13115

3.1 GENERAL REQUIREMENTS

Provide an information systems facility (hereafter ISF) [insert as appropriate: which is a renovation of existing facilities]. This project shall provide facilities to accommodate the functions and operations selected herein. The ISF is intended to be similar to a data center in the civilian sector community adapted to military requirements. This may be a new facility or renovation of an existing facility. In the case of conflicts in requirements in this RFP and among referenced criteria (ie between referenced UFCs, MIL handbooks, etc.), the more stringent requirement shall apply.

3.1.1 Facility Description: An ISF consists of a building or buildings that consolidate the components of Information Management/Information Technology (IM/IT) and serve as a single information center for information management/information technology services, all telecommunications systems that feed into it, and associated administrative support. ISFs are used for telecommunications, network and switch, voice and data systems, enterprise management, servers, data storage, information assurance, transmission network installation and maintenance, land mobile radio, desktop support, system support, tactical support, customer support and related purposes. An ISF may contain a network operations center (NOC), tech lab, video conferencing (VTC), classroom(s), training room(s), conference room(s) and offices, and support facilities for all and similar functions. The preferred arrangement is a stand-alone facility organized around a central core consisting of lobby, reception, security station, with main conference rooms, classrooms, toilets, break rooms in close proximity. Administrative office space for ISF divisions is grouped together as a suite, with general office space delineated by organizational elements and security zones..

3.1.2 Relationship to Other Facilities: The location and siting will be in accordance with the local Department of Public Works (DPW) Master Plan. [Insert as appropriate: Other operational facilities associated with the ISF are warehousing, storage yard and technical vehicle parking and maintenance.] Building hardening shall be provided where required by the referenced AT/FP documents. Required minimum stand-off distances shall be maintained. [Insert as appropriate: Refer to the site plan included with the RFP for a graphic representation of the relationship between disparate facilities.] The idealized overall site shall provide, [insert as appropriate: an antenna farm] a loading and service area, and controlled access parking for organizational vehicles, customers, staff/employees, as well as tactical parking for IAADS support .

3.2 FUNCTIONAL AND OPERATIONAL REQUIREMENTS

3.2.1 General Building Design Principles:

The ISF shall be designed according to the following principles: modularity, scalability, flexibility, reliability, security and sustainability. Design shall accommodate command impacts (such as consolidations), technological advances, and mission changes. Technical resolutions to physical plant issues such as expansion/contraction of space needs, fencing, security layering, high level of energy and back-up requirements, may

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be found within existing experience and design effort. ***Although a raised access floor greatly facilitates the desired flexibility, it is not a required feature of a ISF.***

- 1) MODULARITY: Design the facility by assembling standard functional components (definitions, requirements and guidance follow below). ISF missions differ from each other but are similar in the components used to achieve them. The standard four-division staffing structure includes Business and Plans, Network and Switch, Desktop and System Support, and Information Security, Information Assurance. The first and last divisions (largely administrative) are relative constants while the middle two (technical) vary greatly from installation to installation. These criteria define components by division to be assembled as mission requires.
- 2) SCALABILITY: Design the facility to allow for expansion and contraction of services. ISF missions are being consolidated at some locations; units deploy and deployed units return; and new missions are developed. Design shall enable shrinkage and growth as changing missions require.
- 3) FLEXIBILITY: Design the facility to accommodate changing technologies. Information systems change rapidly. Design shall enable efficient change in equipment and systems.
- 4) AVAILABILITY: Design the facility to meet high reliability standards as defined by Tier designation and requirements.. ISF's frequently perform 24/7 mission-essential functions. Equipment and personnel operate under specific controlled conditions and risk failure when these conditions are not met. Design will require mission-appropriate environments and redundancy in power and utilities.
- 5) SECURITY: Design the facility to achieve a high level of security from internal and external threats in compliance with AT/FP and Information Security, Information Assurance requirements. Design the facility to protect communications including physical and electronic emanations.
- 6) SUSTAINABILITY: Design the facility to comply with current Army sustainable design and development (SDD) policy.

3.2.1.1 **Physical Security Zones:** The building is organized around [insert as appropriate: three, four] security zones as described below. Security zones are intended to aggregate spaces based on the relative sensitivity of operational activities for space planning purposes. It does not alter, waive, or otherwise justify deviation from applicable life safety, Antiterrorism / Force Protection (AT/FP), information security, physical security, telecommunications security, or other security requirements and fire protection requirements outlined in this standard design criteria document and the references provided elsewhere in this RFP. These zones delineated by physical security access considerations coupled with consideration for information handling / classification limitations. All security systems and controlling software will be on critical power. All primary spaces and common are within one or more of the physical security zones. The Space Program will designate applicable security zones. The following paragraphs provide an overview of the security zones.

- 1) Security Zone 1 (SZ 1): Limited access for physical and personal security purposes allowing access for support staff and limited public access. This zone includes, but is not limited to:
 - a. Entry, Vestibule, Lobby – Unclassified but admission by authorized personnel
 - b. Security Station – Unclassified but admission by authorized personnel
 - c. Administrative Areas – Unclassified but accompanied by authorized personnel

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- d. Multi-Purpose Conference/Classroom – Routinely unclassified but admission by authorized personnel but may temporarily have a Security Classification Level of up to SECRET – when physically secured and accompanied by authorized personnel
 - e. Business and Plans Division – Unclassified but accompanied by authorized personnel
 - f. Customer Service Center – Unclassified but accompanied by authorized personnel
 - g. Support Areas – Men’s and Women’s Toilets, Reproduction Room, Vending and Recycling – Unclassified but admission by authorized personnel
- 2) Security Zone 2 (SZ 2): Controlled access for mission operational and information security purposes [insert: with electronic access control]. The security classification level of this zone is up to and including SECRET. This zone includes, but is not limited to:
- a. Local Session Controller Node – Security Classification Level of up to and including SECRET.
 - b. Installation Processing Node (IPN) (Server Room) – NIPRNET (Non-Classified Internet Protocol Router Network) – Security Classification Level of up to and including SECRET.
 - c. Secure Internet Protocol Router Network (SIPRNET) Café (Kiosk) – Security Classification of up to and including SECRET.
 - d. Plans and Blueprint Room – Security Classification Level of up to and including SECRET
 - e. COMSEC Vault – Security Classification Level of up to and including SECRET.
 - f. Land Mobile Radio (LMR) and Executive Conference Room– Security Classification Level of up to and including SECRET.
 - g. Training and Testing Center (Lab Room) - Security Classification Level of up to and including SECRET.
 - h. Video Teleconference – Security Classification Level of up to and including SECRET [When SIPRNET, SZ 3]
 - i. Information Assurance Office (IA) – Security Classification Level of up to and including SECRET.
 - j. Network and Switch Division (NSD) – Security Classification Level of up to and including SECRET
 - k. Commercial Point of Presence (CPOP) – Security Classification of up to and including SECRET if SIPRNET runs in this space. Provide controlled access.
 - l. Pulverizer – Security Classification Level of up to and including SECRET.
 - m. Controlled Storage – Security Classification Level of up to SECRET
 - n. Cable Vault - Security Classification Level of up to and including SECRET
 - o. Note that Zone 2 security facilities may require IDS, high security locks and security containers IAW AR 380-5.
- 3) Security Zone 3 (SZ 3): Authorized operational staff only - Restricted access area for classified mission operational & information security and certified for up to and including OPEN STORAGE to TOP SECRET. The number of access points to each of the spaces in SZ 3 shall be limited to the fewest possible to accommodate operational requirements with electronic access control. The extent of the Security Zone 3 perimeter shall be as depicted on the drawings included with this SOW. All areas identified below shall be designed and constructed as a “secure room” in accordance with SCIF construction standards. The required Security Level for each area shall be as follows [insert as appropriate]:

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- a. COMSEC Vault – Security Classification Level of up to and including SECRET.
- b. Network Operations Center (NOC) – Security Classification Level of up to TOP SECRET.
- c. [Multi-Service Technical Control Facility (MTCF) - Security Classification Level of up to and including TOP SECRET]
- d. [Sensitive Compartmented Information Facility (SCIF) - Security Classification Level of up to TOP SECRET] in compliance with ICD/ICS 705, Technical Specifications for construction and Management of Sensitive Compartmented Information Facilities, most recent.
- e. Note that Zone 3 security facilities may require IDS, high security locks and security containers IAW AR 380-5.

Note to Planner: Tactical SCI Vehicle Area for all facilities supporting Deployable Units, only.

[~ [Not Used][Tactical SCI Vehicle Area (TSVA) – Security Classification Level of TOP SECRET-SENSITIVE COMPARTMENTED INFORMATION]]

[Note to RFP preparer: Coordinate need and location of Security Zone 4 with user for OCONUS or where employing foreign national staff.]

- 4) Security Zone 4 (SZ 4): If Authorized by Proponent (normally for OCONUS), Authorized Operational Staff and/or Foreign National (Non-US) Operational Staff Area – Area for augmentation staff not cleared for access into other security zones, i.e. space for non-US staff habitually supporting the mission with security classification level equivalency determined by theater requirements. SZ 4 shall be located on the first floor to the maximum extent feasible, connected with the organization, but physically and operationally isolated from all other activities in the other security zones. Provide access safeguards to prevent unauthorized or inadvertent entry of SZ 4 personnel into other areas of the facility, specifically SZ 1 through SZ 3, as determined by the commander and/or local security officer. SZ 1 through SZ 3 personnel with work-related requirements are typically afforded access to SZ 4.]

3.2.2 ISF Structure and Space Allocation:

Organization and Circulation - The ISF is typically composed of Directorate offices and four divisions, each division with its subordinate branches. The ISF is designed for an efficient, flexible and fire-escape safe traffic flow while maintaining necessary security levels, from the main reception area to and from the branch work areas. The main reception area will be readily accessible from administrative spaces, classroom, customer support and functional areas shared with the public. A programming worksheet is included as attachment A that provides the allocation of square footage required for this facility for both program areas as well as building support. Note that mechanical and electrical building support spaces in the worksheet are based upon a typical percentage-based algorithm and are intended as “guideposts” and may be modified in accordance with the specific engineering solution of the facility. However, program spaces may not be reduced by more than 5%. The bubble diagrams show adjacency relationships between divisions. These are neither scale drawings nor real floor plans but rather illustrations of functions’ relative sizes and security levels, and what functions generally need to be near each other and what separations are

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generally recommended. Material Flow – Supplies, materials and equipment delivered to and taken from the ISF shall be serviced by a separate loading dock entrance and shall be managed to maintain the security levels of the facility.

The major program areas are described below. Following the brief descriptions, detailed room data sheets are provided:

3.2.2.1. Directorate administrative space:

The Directorate is the Command component of the ISF at the Installation. The Directorate level functions involve overall visioning and management of the NEC. Directorate administrative areas, arranged as a suite, are accessible to the main entry without traversing areas of higher security level. The Directorate spaces include Director and (if existent) deputy director offices. The Director will occasionally host customers and Installation tenants, hold regular meetings with Division and Branch supervisors, and counsel staff. The Director and Deputy Director (if existent) require private offices. Other Directorate level supporting spaces include:

- Administrative Assistant: Open work area adjacent to the director's office and overseeing the reception area.
- Reception Area: Small open reception area adjacent to the administrative assistant's work area and proximate to all offices within the administrative area. Also adjacent to the main lobby.
- Executive Conference Room: VTC enabled Conference room or area within the administrative suite for a maximum of 8 persons, appropriate for the hosting of guests as well as executive meetings. May be combined with the director's office. Must be rated for SECRET. Conference Room may be sized to serve the facility.
- Multi-Purpose Conference/Classroom: VTC-enabled Main conference room to conduct meetings for staff/facility employees and all associated personnel and division and branch meetings of the facility. Training classroom to conduct training for staff/facility employees/all associated personnel and information technology related sessions. Where movable partition wall(s) are provided in order to divide the room into two (or more) spaces for smaller training sessions, separate entry and exit doors are required for each space. Design should consider multi-use rooms that combine conference and classroom functions.

3.2.2.2 Business and Plans Division:

The Business and Plans Division provides strategic and technical planning and management of business and logistical processes for information technology resources. They provide planning for the implementation and enhancement of information technology infrastructure through management of diverse projects. They support all of the installation community ISF information technology business processes, maintain and sustain adequate financial and personnel resource requirements, including management of electromagnetic spectrum operations (EMSO), and security programs. They provide all Command, Control, Computer, Communications, Information Management (C4IM) for the Installation. Business and

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Plans Division tasks are largely administrative, with little if any “shop” activities. Spaces for Business and Plans Division includes:

- Division Chief's Office: Office is normally in close proximity to or within the divisional functional area. However, Division chief offices may be co-located if preferred.
- Branch Chiefs' Offices:. Each branch chief may have a private office within the functional area of the branch if the branch has more than 10 employees as identified in the approved OTOE/TDA.
- Specialists' Work Spaces: Required in all ISFs. Individual work areas for general specialists, such as contracts specialist, general supply specialist, and the like. Each area may contain special equipment, such as special cabinets.
- Management Analyst: Open work area.
- Office Supplies: Required in all ISFs. Provides space adequate for office supplies used in this division. May be shared with other divisions.
- Plans and Blueprint room: Space for drafting, printing work and equipment, and for the storage of utility and technical documents.

3.2.2.3 Networking and Switch Division:

Network and Switch Division is the backbone of the NEC; the division's mission is to provide reliable, modern, and integrated communications services with advanced data delivery to enable war-fighting, training, and support. They provide enhanced, uninterrupted communications in all NIPR/SIPR environments and continuous and dependable technical support for the radio systems. They monitor the data network and provide installation services, maintenance, and 24 hour incident resolution for all voice and data infrastructure. Spaces associated with this division include:

- Division Chief's Office: Office is normally in close proximity to or within the divisional functional area. However, Division chief offices may be co-located if preferred.
- Branch Chiefs' Offices:. Each branch chief may have a private office within the functional area of the branch if the branch has more than 10 employees as identified in the approved OTOE/TDA.
- Local Session Controller Node (LSCN), Switch Space: Serves as the central location for internal and external telecommunications. Cable from local transmitter and receiver facilities, commercial telephone entrance points, and other telecommunications systems feed through this location. In addition, DSN (Defense Switched Network) and DDN (Defense Data Network) switching equipment, local commercial telephone feeds, and control of all point-to-point telecommunications are associated with this location.
- Commercial Point of Presence (CPOP): Commercial telephone entrance point and equipment.

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- Cable Vault: Required by these standards. Serves as the main access and distribution point for cabling. Comply with referenced standards. Minimum ceiling height shall be 8ft (2440mm). Minimum width shall be as programmatically determined. The room will be directly below DSN room, but not below the battery room and shall have contiguity with the exterior. Provide internal vertical access such as a ship's ladder.
- Installation Processing Node (IPN) (Server Room): Primary technical space used to store, manage and/or disseminate data, information and command, control, communications, computers and information management (C4IM) services. Houses racks with banks of computers within a secure perimeter. Requires significant electrical load, cooling capacity and critical power.
- Battery Room: Required by these standards when voice telecommunications services are provided. Houses battery banks for stand-by power in case of utility failure.
 - 48V batteries are for the DCO Switch
 - UPS batteries are for the IPN and other critical loads
- Uninterruptible Power Supply (UPS): Required by these standards when data services are provided. Houses equipment that provides uninterruptible power immediately in case of utility failure.
- Rectifier Room: Space to house rectifier and associated equipment associated with the batteries.
- Generator Room: Required when voice and/or data services are being provided. Space to house generator and associated equipment.
- Switchgear Room: Required when voice and/or data services are being provided. Space to house switchgear and associated equipment.
- Transformer Room: Space to house transformer and associated equipment.
- [Multi-Service Technical Control Facility (MTCF): Houses MTCF equipment, which is the network for the entire installation. Direct access from outside and secure separation from the inside is required where contractor or foreign nationals serve the facility. Special requirements may include raised floor systems.]
- Network Operation Center (NOC): Open operations floor that supports the network command and control operations. This room shall accommodate the programmed number of full-time personnel and will have the ability to accommodate up to a maximum programmed number of personnel during special operations. Special requirements may include raised floor. The programmed number of network workstations is to be provided.
- NOC Storage: Required by these standards when NOC is provided. Storage room for various NOC furniture, equipment and supplies.
- Training and Testing Center (Lab Room): Required by these standards when Customer Service Center (CSC) is provided. Lab used for testing network servers and network gear. Also used as training for personnel who work in the operations area. Special requirements may include raised floor. It is sized to

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accommodate up to the programmed number of personnel. Includes training stations with computer terminals, audiovisual capabilities with phone and internet connections for each training station.

- Land Mobile Radio (LMR): Provides technical assistance for handheld radios, configuration installation and network management. Also provides support for first responders for such agencies as police, fire department and force protection. See Division Storage (below) for LMR storage). An Antenna may be required.
- Division Computer and Equipment Storage: Required by these standards. A separate environmentally controlled storage space for the storage of computer and related equipment and material specific to the functions of this division. Particular items may include data server equipment, land mobile radio equipment and supplies, and other environmentally sensitive materials.
- Transmission Branch Shop: Required by these standards. Exterior yard for storage of materials that do not require environmental control, such as empty cable reels, service vehicles, and utility equipment. Provides partially sheltered space for some materials and vehicles. May be listed under another CATCD.
- Inside Plant: Required by these standards. Includes small inside plant repairs. Materials, tools, and vehicles may be stored.

3.2.2.4. Desktop Support and Systems Support Division(s):

The Desktop Support and Systems Support division is responsible for computer/server related service requests and the operations and maintenance of servers and desktops/laptops/printers needed by the user community. Conducts system administration planning, coordination, modification, implementation and troubleshooting to support customer needs. Tracks the number of permanently assigned users; systems; baseline applications; deployments; servers (NIPR/SIPR); mission servers; backups; restores; device imaging; operating system upgrades; patches; scans; managing lists of users, and client computers running the current operating system environment. Manages the e-mail system, PAD and other services, planned authorized service interruption outages and mitigation of unplanned outages; and maintains the secure operational effectiveness of the systems. Primary Spaces associated with this division include:

- Division Chief's Office: Required in all ISFs. Office is normally in close proximity to or within the divisional functional area. However, Division chief offices may be co-located if preferred.
- Branch Chiefs' Offices:. Each branch chief may have a private office within the functional area of the branch if the branch has more than 10 employees as identified in the approved OTOE/TDA.
- Customer Service Center (CSC) Help Desk: Large room to house help desk for customer service center for IT services for installation personnel. Provide the programmed number of customer service stations. CSC is adjacent to main lobby of the facility for easy access for patrons who are seeking support.

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- Customer Service Center, Life Cycle (CSCLC): Lab testing center and tech support for the CSC and life cycle upgrades for IT equipment. Located adjacent to the CSC that it supports.
- Customer Service Center Storage: Required by these standards when CSCLC is provided. Storage for CSCLC equipment and supplies.
- Technical Specialists' Work Spaces: Required by these standards. Individual work areas for technical specialists, such as information technology specialist. Each area may contain special equipment, such as cabinets or work benches.
- SIPRNET Cafe: Secure room that provides SIPRNET access to authorized visiting personnel.

3.2.2.5. Information Assurance Division (IA):

Information Assurance division ensures all regulatory requirements and operations are compliant with AR 25-2 and manages the Defense Information Assurance Certification and Accreditation Program (DIACAP) process. They provide guidance and oversight of DIACAP accreditation to installation and tenant activities, conducts vulnerability risk assessments, manages the information assurance program, and validates corrections for compliance and establish/published IA policies. Division also Institutes anti-virus maintenance, virus detection/prevention, conducts network scans, and ensures updates are implemented; Executes scanning, remediation, host and network intrusion, (detection/prevention), content filtering, and remote dial-in protection; Provides network accounts/passwords for installation and tenant users.

- Division Chief's Office: Required in all ISFs . Office is normally in close proximity to or within the divisional functional area. However, Division chief offices may be co-located if preferred.
- Branch Chiefs' Offices: Each branch chief may have a private office within the functional area of the branch if the branch has more than 10 employees as identified in the approved OTOE/TDA.
- Communications Security (COMSEC): Required by these standards. Includes an office area and a vault for classified operations and is accessible from the main entry area. The vault is specially constructed according to standards referenced herein.
- Division equipment Storage: Required by these standards. Provides secure storage for technical materials, equipment and supplies specific to the functions of this division.

3.2.2.6. Common Areas:

- Team Rooms: Required by these standards. 8 Person informal teaming rooms should be distributed for maximum utilization among the building staff. These

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may be fully, partially, or unenclosed (or a combination thereof) for maximum utilization.

- Break Room: Required by these standards. Area for facility staff for use as a multi-purpose room for lunch and break area. This room shall accommodate preparation and consumption of light meals and beverages, and storage of food items. This room shall have a kitchenette with base cabinet(s) with counter and sink, wall cabinet(s), and space for refrigerator and microwave oven. It may include LAN, telephone, and CATV. Support functions such as vending, toilets, and drinking fountains are located convenient to the break room. This space shall be reasonably accessible to the administrative areas but not directly adjacent thereto.
- Vending and recycling: Required by these standards. This area houses vending machines and is available to the whole facility. Should be co-located at the break room(s) and supports overall sustainability requirements. This area shall be convenient to the recycling and trash pick-up area.
- Men's & Women's Toilets/Lockers: Required by these standards. Provide staff toilets and locker areas for use by assigned personnel at the facility. Generally has no direct access to the public without an escort, except that IAADS tenants may receive access. These spaces are to include showers and lockers for staff personnel use and with the required plumbing fixtures and toilet accessories according to the referenced standards, and shall be ABA/ADA accessible. Women-to-men fixture and locker ratio shall be based upon programmed personnel requirements.
- Loading Dock with associated shipping/receiving: Required by these standards. This space is a weather-enclosed designated area with ramp (verify requirement) and staging space for receiving equipment, materials and supplies, and for the shipment of material from the facility, as well as packing and unpacking materials. A separate area, convenient to all areas of the facility, serves for the pickup of recycling and trash. Receiving shall be separated from secure areas of the facility and be convenient for distribution.
- General Building Storage: Required by these standards. This space provides general centralized storage of supplies and material to support the building operation and is separate from individual divisional primary space technical equipment storage areas. This area should be close to the loading dock.
- Office Supply Storage: Required by these standards. This space provides general centralized storage of 30 day consumable office supplies and material to support the entire facility and is separate from individual divisional primary space technical equipment storage areas. This area may be co-located and consolidated with the supply storage.
- Generator Room: Required when voice and/or data services are being provided. Space to house generator and associated equipment
- Pulverizer Facility: Required by these standards. May be housed in a separate structure. This room houses equipment and supplies for the shredding of material and the degaussing or destruction of hard drives, and contains sufficient space to ensure that turned-in material receives proper accountability. Equipment operation generates dust, noise and vibration; this room therefore is provided with negative air pressure relative to other spaces

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and is separately exhausted and sound-attenuated from other areas. Locate convenient to but not within secure areas and convenient to recycling and trash pickup areas. Room has space for bagging and handling of trash but does not store classified material or equipment.

- Building Service Areas: Building service areas include those non-program utility spaces for which allowance is made in the net to gross factor. These spaces are those spaces that are required by the Code or for the operation of the building generally, and include the following:
 - Janitor's Closet: Closet for the handling and storage of janitorial equipment and supplies with sink and racks for mops and brooms.
 - Enclosed Vestibules: 7 feet deep transition space(s) at exits between the exterior and the lobby or building interior.
 - Main Lobby: Required by these standards. Reception area and main lobby should be co-located and close to the Director suite. This main lobby serves as the publicly accessible portion of the facility. This area may also serve as a waiting area for LMR, COMSEC and CSC Help Desk and as the point of entry for customers to be escorted to other areas of the ISF. Main Lobby square footage should be installation-specific and is accounted for within the net to gross square footage allowance, but should not exceed 500 net square feet.
 - Security Station: For smaller facilities, this function may be combined with the Main Lobby/Reception Area. If provided separate, locate within or adjacent to the lobby. Should be a net area of 70sf minimum, an accessible customer reception counter and is secure.
 - Men's & Women's Toilets: Required by these standards. Provide public toilets for use by assigned personnel at the facility and building patrons. These spaces shall be equipped with the required plumbing fixtures and toilet accessories according to the referenced standards. Provide ABA/ADA accessibility. Women-to-men fixture and locker ratio shall be based upon programmed personnel requirements.
 - Mechanical and electrical rooms: Mechanical, electrical and telecommunications rooms shall be keyed separately for access by Installation maintenance personnel. Filter changes and preventative maintenance shall be performed without requiring access to the facility's functional areas. First floor exterior access is required for centralized mechanical and electrical rooms.
 - Telecommunications Room: Required by these standards. This shall comply with the requirements of I3A Criteria and ANSI/TIA-568-C.1-1 Commercial Building Telecommunications Cabling Standard (Addendum 1-Pathways and Spaces) TR shall be sized to approximately 1.1% of the facility square footage.
 - Generator Room: Required when voice and/or data services are being provided. Space to house generator and associated equipment.
 - Switchgear Room: Required when voice and/or data services are being provided. Space to house switchgear and associated equipment.

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- Transformer Room: Space to house transformer and associated equipment.

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3.2.3 Room Data Sheets. The Following are tabularized room data sheets for major spaces of the ISF:

Directorate Level:

- 1) **Directorate Office(s):** Required for the ISF director, deputy director (if existent). Private offices may also be provided for division and branch chiefs who supervise 10 or more.

ROOM NAME	DIRECTORATE OFFICE(S)
Function	General office(s) for the [insert as appropriate: ISF director, [insert name of division(s)] division chief(s), [insert name of branch(es) branch chief(s)]
Min Ceiling Hgt	
Min Width/Length	
Occupants	1
Security Zone	Varies with location
Adjacencies	Division chiefs' offices, administrative assistant's space
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for workstations, computer equipment and peripherals
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone and NIPRNET (and CATV at Director's Office) in accordance with the Technical Criteria for the Installation Infrastructure Architecture (I3A) document (current edition). • SIPRNET data outlet for Director, deputy director, division chiefs, and branch chiefs (whether or not private office is provided)
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	
Furnishings	Office furniture
Doors	3' x 7' locking solid wood or hollow metal door
Mission Equipment	
Acoustical	STC 52 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

- 2) **Main Lobby and waiting area :** Required. An entry lobby shall be provided in a location that allows it to serve as an access control area for the building and to support access to and egress from the

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meeting room(s). The space shall be designed to accommodate card readers, metal detectors and visitor pass issue. The space shall be large enough that a population equal to the capacity of the main conference room and the classroom can be accommodated without interfering with access control operations for the remainder of the building. This space is typically manned by the administrative assistant.

ROOM NAME	MAIN LOBBY AND WAITING AREA
Function	Central area adjacent to the Main Entry Vestibule leading to the various functions of the facility.
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to [insert number]
Security Zone	1
Adjacencies	Security, vestibule, administrative area, public entry, classroom, conference room, public toilets, vending
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted duplex receptacles
Lighting	<ul style="list-style-type: none"> General lighting, accent lighting, dimmer controlled per IESNA Lighting
Telecommunications	<ul style="list-style-type: none"> Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition)
Plumbing	No plumbing or plumbing piping except fire suppression shall be run through or over these rooms.
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	<ul style="list-style-type: none"> Glass front display cabinet for unit memorabilia, trophies, history and/or awards. [(1) Recessed] building directory
Security	<ul style="list-style-type: none"> Access controls with closed circuit camera (CCTV) in conjunction with Security Station Passive Infrared Sensors in conjunction with Security Station
Equipment	<ul style="list-style-type: none">
Furnishings	
Doors	
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

- 3) **Reception and Security Station:** Required. Located within or adjacent to the lobby. Has a net area or [insert area: 70sf] minimum, an accessible customer reception counter and is secure.

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ROOM NAME	RECEPTION/SECURITY STATION
Function	Area to serve as clearance point and to provide electronic security entry control into the facility
Min Ceiling Hgt	
Min Width/Length	
Occupants	[Insert number]
Security Zone	1
Adjacencies	Vestibule, lobby, administrative area, public entry; may be collocated with the Reception Area.
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for workstations, computer equipment and peripherals
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone, NIPRNET in accordance with the Technical Criteria for the Installation Infrastructure Architecture (I3A) document (current edition). • Add on wall mounted phone /intercom within the vestibule for off-duty hour communication/access.
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	<ul style="list-style-type: none"> • Access controls with closed circuit cameras (CCTV) viewing exterior, Vestibule and Lobby in conjunction with Lobby and Vestibule • [Security / service window with pass-through between Security and Vestibule]
Equipment	<ul style="list-style-type: none"> • PA and (1) audio speaker
Furnishings	<ul style="list-style-type: none"> •
Doors	
Mission Equipment	
Acoustical	<ul style="list-style-type: none"> • STC 52 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

- 4) **Executive Conference Room:** Required. Within the administrative area appropriate for the entertainment of distinguished guests as well as executive and leadership meetings. Also shall house telecommunications equipment to support C4I services OCONUS.

ROOM NAME	EXECUTIVE CONFERENCE ROOM
Function	Executive conference room or area
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to 8
Security Zone	2

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Adjacencies	Administrative area
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for computers, VTC and AV equipment • Secure VTC drop • Power floor mounted [insert number] quadplexes centered on conference room table
Lighting	<ul style="list-style-type: none"> • General lighting, accent lighting, dimmer controlled per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone, NIPRNET and CATV in accordance with the Technical Criteria for the Installation Infrastructure Architecture (I3A) document (current edition). • SIPRNET drop
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	<ul style="list-style-type: none"> • VTC equipment • A/V rack and connections • AV package • (1 ea.) Ceiling mount bracket for AV monitor and TV • (1) White board and (1) bulletin board or combo • (1) Recessed roll down video display
Furnishings	<ul style="list-style-type: none"> • (1) Conference table and (max. 8) chairs • (Max. 2) side chairs • (1) AV monitor • (1) Television
Doors	3' x 7' locking solid wood or hollow metal door with keypad
Mission Equipment	
Acoustical	STC 52 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	Dual fabric shade for semi-shading and total blackout

- 5) **Multi-Purpose Conference/Classroom:** Required. The facility's main meeting room . May be constructed for video conferencing when required by the program. Reconfigurable to serve multiple purposes as required by the program, such as team room, classroom, computer and software training. Space to conduct training for staff and associated personnel and information technology related session for the Army. [Provide movable partition wall(s) (provide fold type operable wall partition in where indicated in the drawings) in order to divide the room into two (or more) spaces for smaller training sessions. Separate entry and exit required for each resulting room.]

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ROOM NAME	MULTI-PURPOSE CONFERENCE/CLASSROOM
Function	Large general conference and classroom for staff, patrons and possible installation use. Reconfigurable for multiple purposes, various size meetings, and training.
Min Ceiling Hgt	9'-6" @ center of room, 8'-0" perimeter soffits
Min Width/Length	Subdivided length no greater than 1.5 x width
Occupants	Accommodates up to [insert number]
Security Zone	2; SZ 3 when SIPRNET in use
Adjacencies	Administrative area, main lobby, public toilets
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for computers, VTC and AV equipment • Secure VTC drop • Power floor mounted [insert number] quadplexes audio/video, centered under conference room table
Lighting	<ul style="list-style-type: none"> • General lighting, accent lighting, dimmer controlled per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone, NIPRNET and CATV in accordance with the Technical Criteria for the Installation Infrastructure Architecture (I3A) document (current edition). • SIPRNET drop. • VTC drops (Both secure and unsecure).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	(1) Garment rack or closet Closet for equipment and furnishings storage
Casework	Computer and software training
Security	Locking door with key pad
Equipment	<ul style="list-style-type: none"> • VTC equipment • A/V rack and connections • A/V package • ([#]) Ceiling mount bracket for AV monitor and TV • (1) White board and (1) bulletin board or combo • (1) Recessed roll down video display
Furnishings	<ul style="list-style-type: none"> • (1) Large conference table and ([insert number]) chairs • ([insert number]) side chairs • (1) AV monitor • (#) Television • (#) 4' x 30" tables, ([insert number]) student chairs, (1) presenter table, (1) podium
Doors	3' x 7' locking solid wood or hollow metal door gasketed with 100 sq.in. vision panel. If VTC is provided, provide set of shades/blinds over the vision panel.
Mission Equipment	
Acoustical	STC 52 to adjacent spaces
Construction and Finishes	

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Floor	
Wall	
Ceiling	Acoustic
Window Treatment	Dual fabric shade for semi shading and total blackout

- 6) **Video Teleconference Equipment Room:** Required when video teleconferencing is included in the space program. This room is shared between the multi-purpose conference/classroom and the executive conference room. Consider a low profile raised floor system if technically practicable.

ROOM NAME	VIDEO TELECONFERENCE EQUIPMENT ROOM
Function	VTC equipment room to support adjacent conference room
Min Ceiling Hgt	
Min Width/Length	
Occupants	[Insert number]
Security Zone	3
Adjacencies	Conference room; door to conference room
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for servers, monitors and A/V equipment
Lighting	<ul style="list-style-type: none"> • General lighting, dimmer controlled per IESNA Lighting Handbook
Telecommunications	Telephone, NIPRNET and CATV in accordance with the Technical Criteria for the Installation Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	<ul style="list-style-type: none"> • VTC equipment • A/V rack and connections
Furnishings	Work station
Doors	3' x 7' locking solid wood or hollow metal door
Mission Equipment	
Acoustical	STC 45 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

Business and Plans Division

- 7) **Business and Plans Division Office:** Private office space for division director.

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ROOM NAME	Business and Plans Division Office
Function	Private office for division chief
Min Ceiling Hgt	
Min Width/Length	
Occupants	1
Security Zone	2
Adjacencies	
Critical Power	
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for workstation, computer equipment, and peripherals
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	•
Furnishings	Office furniture
Doors	
Mission Equipment	
Acoustical	STC 52 to adjacent spaces
Construction and Finishes	
Floor	•
Wall	
Ceiling	
Window Treatment	<ul style="list-style-type: none"> • Window into Division space • Provide fabric shade for semi, privacy shading

- 8) **Plans and Blueprint Room:** Required for the Business and Plans Division. Space for drafting, printing work and equipment, and for the storage of utility and technical documents.

ROOM NAME	PLANS AND BLUEPRINTS ROOM
Function	Workroom for drafting, printing and storage of technical documents
Min Ceiling Hgt	
Min Width/Length	
Occupants	[insert number]
Security Zone	2
Adjacencies	Business and plans division
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles

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	<ul style="list-style-type: none"> Power for computers, printing equipment
Lighting	<ul style="list-style-type: none"> General and task lighting per IESNA Lighting Handbook
Telecommunications	Telephone, NIPRNET and in accordance with the Technical Criteria for the Installation Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	Blueprint file cabinets
Casework	
Security	
Equipment	
Furnishings	<ul style="list-style-type: none"> (1) White board and (1) bulletin board or combo Drafting tables
Doors	3' x 7' locking solid wood or hollow metal door
Mission Equipment	
Acoustical	STC 45 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

Network and Switch Division

9) **Network and Switch Division Office:** Private office space for division director.

ROOM NAME	NETWORK AND SWITCH DIVISION OFFICE
Function	Private office for branch chief
Min Ceiling Hgt	
Min Width/Length	
Occupants	1
Security Zone	2
Adjacencies	NSD
Critical Power	
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted duplex receptacles Power for workstation, computer equipment, and peripherals
Lighting	<ul style="list-style-type: none"> General lighting per IESNA Lighting Handbook
Telecommunications	Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	

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Storage	
Casework	
Security	
Equipment	•
Furnishings	Office furniture
Doors	
Mission Equipment	
Acoustical	STC 52 to adjacent spaces
Construction and Finishes	
Floor	•
Wall	
Ceiling	
Window Treatment	<ul style="list-style-type: none"> • Window into Division space • Provide fabric shade for semi, privacy shading

10) **Network and Switch Division (NSD) technicians:** Central office for data and switch mission functions.

ROOM NAME	NETWORK AND SWITCH DIVISION (NSD)
Function	Large, open, secured area will be the hub of all command operations at the facility.
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to [insert number]
Security Zone	2
Adjacencies	
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Power for workstations, computer equipment and peripherals • Wall mounted duplex receptacles
Lighting	<ul style="list-style-type: none"> • General lighting, dimmer controlled per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone, NIPRNET, and SIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria, Version 6 (current edition)
Plumbing	Except for fire suppression, do not install plumbing or plumbing piping above server rooms.
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	•
Equipment	•
Furnishings	• ([insert number]) work station(s)
Doors	
Mission Equipment	
Acoustical	

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Construction and Finishes	
Floor	•
Wall	
Ceiling	
Window Treatment	

11) **Local Session Controller Node (LSCN):** Serves as the central location for internal and external telecommunications. Cable from local transmitter and receiver facilities, commercial telephone entrance points, and other telecommunication systems feed through this location.

ROOM NAME	LOCAL SESSION CONTROLLER NODE (LSCN)
Function	Switch room
Min Ceiling Hgt	
Min Width/Length	
Occupants	[Insert number]
Security Zone	2
Adjacencies	<ul style="list-style-type: none"> • Cable Vault • IPN • Battery Room • UPS • Rectifier Room
Critical Power	<p>A Parallel-Redundant Uninterruptable Power Supply (UPS) Information Security, Information Assurance with the UCR 2008 Change 3 for all equipment within the space. The UCR 2008 defines the UPS as consisting of batteries, generator and alarms. (1) provide power to IT equipment in the event of an outage from the utility power source, and (2) to protect IT equipment daily from spikes, surges, and dips from the utility power source. Facility needs protection from an outage from the utility power source (Brown Out, Black Out or Surge). After the UPS detects a good power source, it will automatically switch over. UPS should be a redundant 3-phase and engineered to handle the LSCN equipment power load. The UPS shall have a minimum of 30 minutes of capacity at full load to allow for the generator override or orderly shutdown of critical loads if the generator power fails to go on line. Studies show that UPS systems need to run close to capacity (approximately 80%) to get the most efficiency. Provide a UPS system in a N+1 configuration. The UPS should be scalable. Battery type selection for the UPS system will be based upon local NEC direction. The generator is connected to an automatic transfer switch. When a fault in the utility power is detected, the LSCN is switched to the UPS. The UPS provides uninterruptable power to the IT equipment until the backup generator starts and provides a new clean power source. Then the LSCN is switched to the backup generator. Provide backup generators sized to meet the actual load requirements plus one generator in a (N+1) configuration. When multiple generators are used, switchgear shall be provided in lieu of multiple transfer switches. Provide generator fuel tank with a minimum of 72 hour run time capacity. [Insert as appropriate: Natural gas fuel supply can be used in lieu of diesel, dependent upon installation approval]</p>
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Electrical infrastructure and IT (Information Technology) cabling overhead will keep the plenum free, which will aid airflow management. Power Distribution Units (PDU) takes higher voltage and amperage, and

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	<p>transforms it to common levels of electricity. PDUs will be installed throughout the LSCN floor to provide power to the IT hardware. The IT hardware connections should be configured to provide redundancy and maximum capacity at the PDU. Most IT hardware (server, network, or free standing) have two power supplies; all cabinets should be equipped with redundant power supplies. Free standing hardware and the cabinets should then be connected to separate PDUs. Balancing the PDUs will be difficult because of the limitations that physical location will create. The baseline ISF design shall provide PDU's with 80% capacity in a Tier II configuration. The optional ISF design shall provide PDU's with 50% capacity in a Tier III configuration. See paragraph 3.10(D)(2) for tier rating information. Provide 3 Phase power with capacity to support future expansion. Redundancy requirements will determine the power layout. Facility should be designed with two separate power feeds from two different substations or from two different power grids. When calculating LSCN capacity, power consumption figures show 5-15 kW per cabinet depending on equipment. Blades will be higher power density.</p> <ul style="list-style-type: none"> • The grounding system shall comply with the requirements of NFPA 70, I3A, UFC 3-520-01 and TIA Standard Criteria. Impedance from the ground ring to earth potential of five ohms or less, with impedance measurements made using a direct reading ground resistance meter. An Earth electrode system shall be used consisting of exothermically bonded bare wire (minimum size of 4/0 AWG) to ground rods driven into the earth around the perimeter of the building or in a triangular pattern in an open area just outside the LSCN
Lighting	<ul style="list-style-type: none"> • General lighting – Lighting must be able to differentiate like colors to facilitate working with multi-strand fiber and copper cabling
Telecommunications	<ul style="list-style-type: none"> • Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) • A backbone network cable infrastructure. This infrastructure will include cable, switches, and core routers, and should complement the floor plan. It will provide connectivity to the LANs within the facility and the Internet. The backbone should be fiber optic single mode. Copper will be run to the intermediate points. Choose the highest category cable allowed by the I3A Design Criteria to install. In a raised or solid floor setting, the cable infrastructure should be run overhead. Install cable trays that will allow you to separate the fiber and copper. 606-B a labeling standard, and ensure all cables are labeled. The floor plan for the racks should be designed for maximum energy efficiency, using a hot aisle/cold aisle floor plan and providing appropriate access ways. The type of air conditioning and air flow needs to be kept in consideration when creating the floor plans for the functional areas. The most efficient cooling architecture can be compromised with a poor floor plan. Overhead cable trays providing easy access to keep up with changes in a LSCN while being an effective way to manage data and power cabling. Network & Voice ports in strategic locations throughout space to include standard 120 Volt Outlets.
Plumbing	<p>Except for fire suppression, do not install plumbing or plumbing piping above server rooms.</p>
HVAC	<p>Provide HVAC consistent with paragraph 3.11.1 Mechanical Design</p>

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Special Requirements	
Storage	
Casework	
Security	Locking door with key pad
Equipment	Passive Infrared Sensors
Furnishings	<ul style="list-style-type: none"> • Work bench, storage lockers, racks
Doors	<ul style="list-style-type: none"> • Access control and IDS • 3'-6" x 8' (double door) interior solid core wood, heavy gauge metal, locking
Mission Equipment	<ul style="list-style-type: none"> • Equipment Racks, cable ladder, critical and non-critical a/c panel, and cable management system
Acoustical	
Construction and Finishes	
Floor	<ul style="list-style-type: none"> • Anti-static flooring
Wall	Durable materials to withstand heavy equipment moving.
Ceiling	Acoustic
Window Treatment	<ul style="list-style-type: none"> • No windows shall be installed at exterior walls

12) **LSCN Storage:** Storage area in support of the LSCN.

ROOM NAME	LSCN STORAGE
Function	Storage area to support the LSCN.
Min Ceiling Hgt	
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	LSCN
Critical Power	No
Building Systems	
Electrical	Wall mounted duplex receptacles
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	Adjustable heavy duty [insert: wall mounted, floor mounted] shelving [insert size(s)]
Security	<ul style="list-style-type: none"> •
Equipment	
Furnishings	
Doors	3'-6" x 8' interior solid core wood, heavy gauge metal, locking with keypad
Mission Equipment	
Acoustical	
Construction and	

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Finishes	
Floor	Durable, damage resistant
Wall	Durable, damage resistant
Ceiling	
Window Treatment	

13) **Battery Room:** Required when voice telecommunications are provided, to provide 30 minutes of battery power. This space supports the telecommunications batteries (NOT the UPS batteries)

ROOM NAME	BATTERY ROOM
Function	Room to house battery racks for Rectifiers, DCO and CPOP.
Min Ceiling Hgt	•
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	Rectifier Room,
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • See 3.10(c)(1)(g) for requirements • Wall mounted duplex receptacles • Battery areas and battery racks shall comply with UFC 3-520-05 • (If applicable) Installation of electrical equipment within hazardous locations shall comply with the code requirements of NFPA 70 Article 500
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	No plumbing or plumbing piping (except fire suppression) is permitted to run through or over this room
HVAC	<ul style="list-style-type: none"> • Dedicated air conditioning system. • Provide ventilation to limit hydrogen per battery manufacturer's directions/warranty and UFC 3-520-05. • Provide ventilation failure alarm to building spaces manned 24 hrs a day such as the NOC, EMCS/BMS, or network management system. • Rooms shall be maintained at a negative pressure. Also see 3.11.1.i.
Special Requirements	<ul style="list-style-type: none"> • Battery units shall have a 30 minute capacity at full load
Storage	
Casework	
Security	<ul style="list-style-type: none"> • The battery alarm will alert personnel (technical staff) in the NOC in the case of a malfunction.
Equipment	<ul style="list-style-type: none"> • Provide spill containment for batteries (if lead acid type is specified).
Furnishings	
Doors	<ul style="list-style-type: none"> • Exterior double door (open outwards)
Mission Equipment	<ul style="list-style-type: none"> • OSHA compliant combination emergency eyewash and shower station
Acoustical	
Construction and Finishes	
Floor	<ul style="list-style-type: none"> • Non-slip acid resistant, with perimeter spill barrier required if lead acid

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	batteries are used.
Wall	No windows are permitted
Ceiling	
Window Treatment	•

14) **Uninterruptible Power Supply (UPS):** Required. The UPS serves as the back-up power for critical electrical load for the facility. Provide remote status to NOC.

ROOM NAME	UNINTERRUPTIBLE POWER SUPPLY (UPS)
Function	Room to accommodate UPS/battery system
Min Ceiling Hgt	•
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	Rectifier Room, Battery Room, LSCN, NIPR/SIPR CPOP, IPN, NOC, COMSEC Vault. Not accessible from public side.
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • See 3.10(c)(1)(g) for requirements • Wall mounted duplex receptacles • Provide status light to the NOC
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	No plumbing or plumbing piping (except fire suppression) is permitted to run through or over this room
HVAC	<ul style="list-style-type: none"> • Provide HVAC consistent with paragraph 3.11.1 Mechanical Design • The space will be maintained at 77 deg F. The amount of ventilation for the space will be determined by the volumetric flow rate equation found in of the referenced UFC for Stationary Battery Rooms. This will be the minimum amount of air that needs to be continuously exhausted from the space for the current battery quantity to maintain the hydrogen level below 1 percent concentration. Any time the battery quantity or type changes this calculation will need to be revised and the ventilation for the space will need to be adjusted accordingly. Provide ventilation failure alarm that alarms at the NOC. Room shall be maintained at a negative pressure. The exhaust fan for this space will be located on the roof as stated in the referenced UFC for Dial Central Facility Design.
Special Requirements	
Storage	
Casework	
Security	<ul style="list-style-type: none"> • DoD 8500.2 IA Controls includes a section of “Physical and Environmental” Information Security, Information Assurance Controls those systems must address. Limitation on entry points, elimination of windows, and one foot thick concrete exterior walls are all design components that can increase a facility’s security level.
Equipment	<ul style="list-style-type: none"> • Provide spill containment for batteries (if lead acid type is specified).
Furnishings	<ul style="list-style-type: none"> • Racks, cabinets
Doors	<ul style="list-style-type: none"> • Exterior double door (open outwards)
Mission Equipment	<ul style="list-style-type: none"> • OSHA compliant combination emergency eyewash and shower station

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Acoustical	
Construction and Finishes	
Floor	<ul style="list-style-type: none"> Non-slip acid resistant floor finish. Do not use materials that generate or hold static charges.
Wall	
Ceiling	
Window Treatment	<ul style="list-style-type: none">

15) **Rectifier Room:** Required where battery backup is provided; houses rectifier equipment.

ROOM NAME	RECTIFIER ROOM
Function	Room to house rectifier equipment.
Min Ceiling Hgt	<ul style="list-style-type: none">
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	Battery Room (can be combined)
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted duplex receptacles See 3.10(c)(1)(g) for requirements
Lighting	<ul style="list-style-type: none"> General lighting – per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> Telephone in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	No plumbing or plumbing piping (except fire suppression) is permitted to run through or over this room.
HVAC	<ul style="list-style-type: none"> 24 hour air conditioning. Design to be consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	<ul style="list-style-type: none"> Rectifiers shall be powered from non-UPS power busses
Storage	
Casework	
Security	<ul style="list-style-type: none">
Equipment	<ul style="list-style-type: none">
Furnishings	<ul style="list-style-type: none">
Doors	<ul style="list-style-type: none"> Lockable Double doors
Mission Equipment	<ul style="list-style-type: none">
Acoustical	
Construction and Finishes	
Floor	<ul style="list-style-type: none">
Wall	No windows
Ceiling	
Window Treatment	NA

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16) **Commercial Point of Presence (CPOP):** Area which houses the commercial communications equipment of the installation.

ROOM NAME	COMMERCIAL POINT OF PRESENCE (CPOP)
Function	Area which houses the commercial telecommunications equipment.
Min Ceiling Hgt	
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	Near an exterior wall, adjacent to Rectifier room and cable vault
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted duplex receptacles
Lighting	<ul style="list-style-type: none"> General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	<ul style="list-style-type: none"> Provide HVAC consistent with paragraph 3.11.1 Mechanical Design. HVAC alarm to DPW and NOC for too high or too low room temperature and relative humidity.
Special Requirements	
Storage	
Casework	
Security	Access control and IDS
Equipment	
Furnishings	
Doors	<ul style="list-style-type: none"> Locking double doors with key pad; doors at exterior. No vision lite.
Mission Equipment	<ul style="list-style-type: none"> Equipment racks, cable ladder, critical and auxiliary ac panel, and cable management system
Acoustical	
Construction and Finishes	
Floor	Vinyl Composition Tile (Static Dissipative Tile (SDT))
Wall	
Ceiling	
Window Treatment	<ul style="list-style-type: none"> No windows shall be installed at exterior walls

17) **Cable Vault:** Required when voice telecommunications services are provided. This is the main entrance and distribution point for telecommunication cabling at the facility. Enables physical cable plant splicing & racking.

ROOM NAME	CABLE VAULT
Function	Cable Vault to support the LSCN and IPN.
Min Ceiling Hgt	<ul style="list-style-type: none"> Minimum 2.5m (8 feet) head height
Min Width/Length	Total net area of [insert size] m ² [[insert size] s.f.].
Occupants	0
Security Zone	2

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Adjacencies	Underneath LSCN, and provided with direct exterior access
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted GFCI duplex receptacles • Site-specific floor plan 20A spec grade double duplex ISO ground receptacle, mounted 17" AFF
Lighting	<ul style="list-style-type: none"> • Lighting levels shall be capable of detailed color differentiation for work on color coded multi-strand fiber and copper cabling, but shall be no less than 50 fc. • Surface mounted high power factor magnetic emergency (XFI), UL listed for wet location.
Telecommunications	<ul style="list-style-type: none"> • Cable pulling-in irons shall be installed on the wall opposite each main conduit entrance location, 3½ to 9 inches (90-230 mm) from the floor of the maintenance hole and in line with the conduit entrance. The pulling-in irons shall be placed and embedded during the construction of the Vault wall.
Plumbing	
HVAC	<ul style="list-style-type: none"> • Provide HVAC consistent with paragraph 3.11.1 Mechanical Design • Provide exhaust
Special Requirements	
	Cable access at opposite ends of vault, minimum 50 feet in a straight line to the vault at each end from the outside opening
Storage	
Casework	
Security	<ul style="list-style-type: none"> • Provide internal vertical access such as stairs and/or ship's ladder. • Not accessible by customers but only approved service technicians.
Equipment	<ul style="list-style-type: none"> • Sump and sump pump: Sump shall be cast into the floor of the vault. The floor shall slope toward the sump to provide drainage into the sump from all areas. The sump shall be approximately 13 in x 13 in (330 mm x 330 mm), or a 13-in (330-mm) diameter circle, and shall be 4 inches (100 mm) deep, covered with a removable perforated or punched plate to permit drainage. The cover shall be fastened to the housing by a chain, rope, or hinge. Pumped water shall be plumbed minimum of 10 feet beyond exterior of the building
Furnishings	<ul style="list-style-type: none"> •
Doors	<ul style="list-style-type: none"> • Access control • No external access
Mission Equipment	<ul style="list-style-type: none"> • Underground Cable Vault shall comply with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) • A center rack shall be provided for splicing the tip cables to the OSP cables. However, wall racking, if cited in the design package, is permissible for small to medium LSCN's. The CEV shall be designed to allow ample space for splicing of the cables. For planning, a typical CEV splice is 1 foot x 3 feet (300 m x 900 m).
Acoustical	
Construction and Finishes	
	<ul style="list-style-type: none"> • Reasonable efforts shall be made to prevent water from entering a cable vault. The manufacturer's instructions for installing a cable vault shall be followed. As a minimum, the following guidance shall apply as long as it does not violate a manufacturer's recommendations or warranty. Additional requirements may be identified in the design package. Water-resistant gaskets or seals shall be placed between the lid frames, collars,

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	and cable vault tops. The area around ducts penetrating the cable vault walls shall be sealed with a permanent, water-resistant material. Ducts between the cable vault entrance and the first vault shall be based upon the size of the switch, the number of outside cable pairs served from the switch location, and future growth. A main duct run includes the vault and ducts from a LSCN and provides the pathways for large feeder cables and/or cores. New main duct runs shall consist of a minimum of 6-way, 4-inch duct banks. One of the ducts shall be equipped with four integrated 30-mm (1.19-inch) (minimum) sub-ducts or four 51-mm (2-inch) conduits connected into an assembly. A cable vault shall include a point of egress for maintenance personnel. For exterior access,, provide lockable manhole cover not less than 30 inches (765 mm) in diameter and shall not violate the H-20 load rating of the vault. Additional lids or oversized lids may be provided for a LSCN. The lid shall fit in a steel ring or frame and be equipped with a concrete collar to be at grade level, as required. The frame and collar shall be attached to the vault IAW the manufacturer's instructions, but as a minimum, the lid shall form a watertight seal and shall resist lateral movement if accidentally bumped. Use Durable materials to withstand heavy equipment moving. For interior access (optional), provide hinged door access.
Floor	<ul style="list-style-type: none"> Concrete monolithic structural / sub-floor shall be air and water-tight and shall have water drainage capability
Wall	Concrete reinforced structural slab without contraction joints. Load calculations must be analyzed before final build to ensure expected equipment loading is identified. All penetrations from LSCN / Duct Bank into vault must be cast in place or submitted to structural engineer for review.
Ceiling	
Window Treatment	<ul style="list-style-type: none"> No windows shall be installed at exterior walls

- 18) **Installation Processing Node (aka Server Room) (IPN):** MEVA. Required primary mission technical space used to store, manage and/or disseminated data, information and command, control, telecommunications, computers and information technology (C4IT) services. Houses racks with banks of computers within a secure perimeter. Requires significant electrical load, cooling capacity and stand-by power. Accommodates frequent technical work by NEC personnel necessitating acoustical measures. Note that if the IPN is classified up to SECRET, it can also house the SIPRNET Café in lieu of providing a separate room. This allows additional flexibility in layout.

ROOM NAME	INSTALLATION PROCESSING NODE
Function	Area to house servers that support the NSD. These servers serve as the hub of the entire facility. Includes servers for NIPR and other miscellaneous servers and network switches.
Min Ceiling Hgt	
Min Width/Length	
Occupants	[0]
Security Zone	2
Adjacencies	<ul style="list-style-type: none"> LSCN NSD
Critical Power	<ul style="list-style-type: none"> Critical Power: Provide a parallel-redundant Uninterruptable Power Supply (UPS) for all equipment within space and provide instantaneous power for a duration a minimum of 30 minutes until backup generators start. (1) Provide power to IT equipment in the event of a service outage

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	<p>from the utility power source, and (2) to protect IT equipment daily from spikes, surges, and dips from the utility power source. Facility needs protection from an outage from the utility power source (brown out, black out or surge). After the UPS detects a good power source, it will automatically switch over. UPS should be redundant 3-phase and engineered to handle the data center equipment power load. Studies show that UPS systems need to run close to capacity (approximately 80%) to get the most efficiency. Provide a UPS system in a N+1 configuration. The UPS should be scalable. The generator is connected to an automatic transfer switch. When a fault in the utility power is detected, the data center is switched to the UPS. The UPS provides uninterruptable power to the IT equipment until the backup generator starts and provides a new clean power source. Then the data center is switched to the backup generator. Provide backup generators sized to meet the actual load requirements plus one generator in a (N+1) configuration. When multiple generators are used, switchgear shall be provided in lieu of multiple transfer switches. Provide generator fuel tank with a minimum of 72 hour run time capacity. [Insert as appropriate: Natural gas fuel supply can be used in lieu of diesel, dependent upon installation approval]</p> <ul style="list-style-type: none"> • Provide a digital readout indicating that the IPN is being fed by the generator. This provides timely detection by the operators to begin an orderly shutdown. • See paragraph 3.10(c)(1)(f) and 3.10(c)(1)(g) for requirements
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • If a raised floor is included in the project, keeping all the data cabling overhead will keep the raised floor plenum free, which will aid air flow management. Power distribution unit (PDU) take higher voltage and amperage, and transforms it to common levels of electricity. PDUs will be installed throughout the data center floor to provide power to the data hardware. The data hardware connections should be configured to provide redundancy and maximum capacity at the PDU. Most data hardware (server, network, or free standing) has two power supplies; all cabinets should be equipped with redundant power supplies. Freestanding hardware and the cabinets should then be connected to separate PDUs. Studies show PDUs operate at a higher efficiency when at maximum capacity. Balancing the PDUs will be difficult because of the limitations that physical location will create. The baseline ISF design shall provide PDU's with 80% capacity in a Tier II configuration. The optional ISF design shall provide PDU's with 50% capacity in a Tier III configuration. See paragraph 3.10(D)(2) for Tier rating information. While intelligent PDUs are more expensive, they provide load data and network-connected monitoring, making them worth considering. Provide 3-phase power with capacity to support future expansion. Redundancy requirements will determine the power layout. Facility should be designed with two separate power feeds from two different substations or from two different power grids. When calculating data center capacity, power consumption figures show 5-15 kW per cabinet depending on equipment. Blades will require higher power density. • The grounding system shall comply with all the requirements of NFPA 70, I3A Criteria, MIL-STD-188-124-B, UFC 3-520-01, and TIA Standard Criteria. Impedance from the ground ring to earth potential of five ohms

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	<p>or less, with impedance measurements made using a direct reading ground resistance meter. An earth electrode system shall be used consisting of exothermically bonded bare wire (minimum size of 4/0 AWG) to ground rods driven into the earth around the perimeter of the building or in a triangular pattern in an open area just outside the server room.</p>
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook • Server room lighting shall be multi-switched/multibanked so that unneeded lighting may be turned off. • Lighting circuits shall be coordinated with overhead power and cabling. • Emergency lighting during non-duty hours, auto shut off lighting during duty hours for high visible clarity while performing work orders or maintenance.
Telecommunication	<ul style="list-style-type: none"> • Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition). • The data center requires a backbone network cable infrastructure. This infrastructure includes cable, switches, and core routers, and should complement the floor plan. It will provide connectivity to the LANs within the facility and the Internet. The backbone should be fiber optic single mode. Copper will be run to the intermediate points. Choose the highest category cable allowed by the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) Document (current edition) to install. In a raised or solid floor setting, the cable infrastructure should be run overhead. Install cable trays that will allow separation between the fiber and copper. Lay out the cable trays so that the trays for power cables will be installed in the hot aisle and trays for the data cabling in the cold aisle. Create a labeling standard, and ensure all cables are labeled. The floor plan for the racks should be designed for maximum energy efficiency, using a hot aisle/cold aisle floor plan and providing appropriate access ways. The type of air conditioning and airflow needs to be kept in consideration when creating the floor plans for the functional areas. Overhead cable trays provide easy access updating the data center while an effective way to manage data and power cabling. Provide network and voice ports in strategic locations throughout the space; include standard 120V outlets.
Plumbing	<p>Except for fire suppression and HVAC related plumbing, do not install plumbing or plumbing lines above server rooms. If raised floors are used, provide a water monitor located beneath the raised floors.</p>
HVAC	<ul style="list-style-type: none"> • Provide HVAC system consistent with design criteria for design of data centers in section 3.11.1 Mechanical Design • HVAC alarm for room temperature and relative humidity. • On-floor CRAC unit (down flow type) to meet the Latest ASHRAE Thermal Guidelines for room conditions. • Provide alarm status to NOC or other space manned 24 hours such as the EMCS/BMS or Network Management System spaces.
Fire Protection	<ul style="list-style-type: none"> • Automatic Fire suppression systems in all areas.
Special Requirements	<p>Locate on exterior wall</p>
Storage	
Casework	
Security	<ul style="list-style-type: none"> • Access control and IDS
Equipment	<ul style="list-style-type: none"> • White board • Bulletin board

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	<ul style="list-style-type: none"> • Passive Infrared Sensors • [insert number and size] racks
Furnishings	<ul style="list-style-type: none"> • File cabinets • Printer/scanner/copier • Work bench • Storage lockers
Doors	<ul style="list-style-type: none"> • Double-wide 3'-6"x8'-0" Locking doors with key pad
Mission Equipment	<ul style="list-style-type: none"> • Equipment Racks, cable ladder, critical and auxiliary a/c panel, and cable management system
Acoustical	Minimum STC 50
Construction and Finishes	<ul style="list-style-type: none"> • Durable materials to withstand heavy equipment moves.
Structural	<ul style="list-style-type: none"> • Needs to support a fully functional server system of racks, servers and accompanying equipment. [Insert numbers]
Floor	Anti-static flooring
Wall	Fire-rated walls with site-specific seismic ratings
Ceiling	<ul style="list-style-type: none"> • minimum 12' ceiling height above finished floor. Suspended acoustical tile ("dropped") ceilings are prohibited.
Window Treatment	<ul style="list-style-type: none"> • No windows shall be installed at exterior walls

19) **Multi-Service Technical Control Facility (MTCF):** Special mission space similar to IPN. Accommodates frequent technical work by NEC personnel.

ROOM NAME	MULTI-SERVICE TECHNICAL CONTROL FACILITY (MTCF)
Function	Area to house server cabinets for monitoring special systems
Min Ceiling Hgt	
Min Width/Length	
Occupants	[0]
Security Zone	2
Adjacencies	
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Refer to Server Room power requirements above
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	Except for fire suppression, do not install plumbing above server rooms.
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Fire Protection	<ul style="list-style-type: none"> • automatic sprinkler systems in all areas.
Special Requirements	
Storage	
Casework	
Security	<ul style="list-style-type: none"> • Access control and IDS
Equipment	<ul style="list-style-type: none"> • Passive Infrared Sensors
Furnishings	<ul style="list-style-type: none"> •
Doors	<ul style="list-style-type: none"> • Locking door with key pad

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Mission Equipment	<ul style="list-style-type: none"> Equipment racks, cable ladder, critical and non-critical a/c panel, and cable management system
Acoustical	Minimum STC 50
Construction and Finishes	
Floor	
Wall	
Ceiling	Acoustic
Window Treatment	<ul style="list-style-type: none"> No windows shall be installed at exterior walls

20) **Training and Testing Center (Lab):** Training and testing room to support the NSD and NSD-related personnel.

ROOM NAME	TRAINING AND TESTING CENTER (LAB)
Function	Lab used for testing network servers and network gear.
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to [insert number]
Security Zone	2
Adjacencies	<ul style="list-style-type: none"> NSD Information Security, Information Assurance CSCLC
Critical Power	
Building Systems	
Electrical	<ul style="list-style-type: none"> Power for workstations, computer equipment, and peripherals Wall mounted duplex receptacles
Lighting	<ul style="list-style-type: none"> General lighting, accent lighting, dimmer controlled per IESNA Lighting Handbook Emergency lighting during non-duty hours, auto shut off lighting during duty hours for high visible clarity while performing work orders or maintenance. Lighting shall be [Insert as appropriate: ceiling-mounted or suspended fluorescent fixtures] and shall provide a minimum of 50 foot-candles in the horizontal plane measured 36 inches above the floor in the middle of all aisles between equipment racks/cabinets.
Telecommunications	<ul style="list-style-type: none"> Telephone, NIPRNET , SIPRNET and CENTRIXS and CATV in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria, Version 6 (Current edition)
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	Passive Infrared Sensors
Equipment	<ul style="list-style-type: none"> (1) White board and (1) bulletin board or combo
Furnishings	<ul style="list-style-type: none"> [insert number] work benches with not less than 3 computer racks each

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Doors	3' x 7' locking solid wood or hollow metal door
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	•
Wall	
Ceiling	
Window Treatment	

21) **Network Operations Center (NOC):** The NOC is the place from which the network is supervised, monitored, and maintained. The NOC will be the centralized point for telecommunications into and out of the data center, as well as providing personnel with monitoring and management capabilities for most, if not all, devices within the data center. Ample space for monitoring devices, consoles, and workstations shall be provided. Working space about telecommunications equipment will be per I3A Criteria and TIA Standards.

ROOM NAME	NETWORK OPERATIONS (NOC)
Function	The NOC is the place from where the network is supervised, monitored, and maintained.
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to [insert number]. Typical 1 per technical staff section based on installation mission.
Security Zone	3
Adjacencies	LSCN, Server Room Help Desk, Information Security, Information Assurance, Network & Server Technicians. Provide minimum 10'-0" separation from non-secure areas.
Critical Power	Provide a parallel-redundant uninterruptable Power Supply (UPS) for all equipment within space a minimum of 30 minutes until backup generators start. (1) provide power to IT equipment in the event of an outage from the utility power source, and (2) to protect IT equipment daily from spikes, surges, and dips from the utility power source. Facility needs protection from an outage from the utility power source (Brown Out, Black Out or Surge). After the UPS detects a good power source, it will automatically switch over. UPS, climate control, and generator shall be monitored from the NOC
Building Systems	
Electrical	<ul style="list-style-type: none"> • Power for workstations, computer equipment and peripherals • Wall mounted duplex receptacles • In a raised floor environment, keeping all the data cabling overhead will keep the plenum free, which will aid air flow management. Power Distribution Units (PDU) takes higher voltage and amperage, and transforms it to common levels of electricity. PDUs will be installed throughout the data center floor to provide power to the data hardware. The data hardware connections should be configured to provide redundancy and maximum capacity at the PDU. Surge protection shall be provided on each voltage level. • The grounding system shall comply with all the requirements of NFPA 70, I3A Criteria, MIL-STD-188-124-B, UFC 3-520-01, and TIA Standard Criteria. Impedance from the ground ring to earth potential of five ohms or less, with impedance measurements made using a direct reading ground resistance meter. An Earth Electrode system shall be used

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	<p>consisting of exothermically bonded bare wire (minimum size of 4/0 AWG) to ground rods driven into the earth around the perimeter of the building or in a triangular pattern in an open area just outside the server room.</p> <ul style="list-style-type: none"> • Provide alarm status lights for UPS, generators and HVAC system.
Lighting	<ul style="list-style-type: none"> • General lighting, accent lighting, dimmer controlled per IESNA Lighting Handbook • The interior lighting will be installed and designed such that it complies with LEED. Recessed fluorescent fixtures with parabolic louvers to reduce glare on glass panels and monitor screens. Several lights throughout the facility will be circuited to function as night lights and will be the same fixtures that will be provided with battery backup ballast to satisfy emergency egress requirements
Telecommunications	<ul style="list-style-type: none"> • Telephone, NIPRNET, SIPRNET, CENTRIXS and CATV in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria, Version 6 (current edition) • A data center will require a backbone network cabling infrastructure. The infrastructure will include data cabling, switches, and core routers, and should complement the floor plan. It will provide connectivity to the LANs within the facility and the Internet. The backbone should be single mode fiber optic cabling. Copper backbone cabling will be run to the intermediate points. Choose the highest category cable allowed by the I3A Design Criteria to install. In a raised or solid floor setting, the cable infrastructure should be run overhead. Install cable trays that will allow you to separate the fiber and copper. Lay out the cable trays so that the trays for power cables should be installed in the hot aisle and trays for the data cabling should be installed in the cold aisle. Create a labeling standard, and ensure all cables are labeled. The floor plan for the racks should be designed for maximum energy efficiency, using a hot aisle/cold aisle floor plan and providing appropriate access ways. The type of air conditioning and air flow needs to be kept in consideration when creating the floor plans for the functional areas. The most efficient cooling architecture can be compromised with a poor floor plan. Overhead cable trays providing easy access to keep up with changes in a data center while being an effective way to manage data and power cabling. Network & Voice ports in strategic locations throughout space to include standard 120 Volt Receptacles. Do not place telecommunications equipment near building corners where there is a lightning protection system (LPS) down conductor. Distances away from the LPS down conductor shall be calculated from IEEE STD 1100.
Plumbing	Except for fire suppression, do not install plumbing or plumbing piping above server rooms.
Heating	Office environment
Ventilation	24 hour air conditioning
	Multi-zone HVAC system capable of heating cooling administrative area for personnel with the inclusion of spot cooling on the video wall to ensure electronics installed in the area do not overheat.
Special Requirements	
Storage	
Casework	
Security	<ul style="list-style-type: none"> • Passive Infrared Sensors • Remote wiring from generator and HVAC status panels to provide "On", "Off" indicators.

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	<ul style="list-style-type: none"> Limited access to the HVAC's outside components increases security levels. An engineered air system that re-circulates air instead of exchanging air from the outside to eliminate possible contamination also increases security. There is also a potential for PDS (Protected Distribution Systems) requirements if the facility is not designed to support SIPR extensions. PDS requirements for the facility shall be per SIPRNET Technical Implementation Criteria (current edition).
Equipment	<ul style="list-style-type: none"> Racks
Furnishings	<ul style="list-style-type: none"> ([insert number]) Network stations (desk & chair) Work Bench Storage Lockers
Doors	
Mission Equipment	
Acoustical	
Construction and Finishes	Durable materials to withstand heavy equipment moving through facility during infrequent changes in equipment.
Floor	<ul style="list-style-type: none"> 100mm max. combination low profile raised floor and cable management system may be considered. Electro static flooring to prevent conductivity
Wall	<ul style="list-style-type: none"> Concrete Mounts for large display monitors.
Ceiling	12-foot ceiling height above mountable surface
Window Treatment	<ul style="list-style-type: none"> No windows shall be installed at exterior walls

22) **Land Mobile Radio (LMR):** Provides technical assistance for handheld radios, configuration installation, and network management (wireless telecommunication systems). This function may include Antennae.

ROOM NAME	LAND MOBILE RADIO (LMR)
Function	Open area in support of LMR operations. Provides support for first responders such as: Police, Fire Department and Force Protection.
Min Ceiling Hgt	
Min Width/Length	
Occupants	[Insert number]
Security Zone	2
Adjacencies	<ul style="list-style-type: none"> LMR Storage Entry for customers Service drive access
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted duplex receptacles Charging wall for radios Refer to SOW for other electrical requirements
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> Telephone, NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria, Version 6 (current edition) Refer to SOW for telecommunications requirements

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	<ul style="list-style-type: none"> Provide allowance for multiple exterior RF antenna connections with an indoor base station as per USAISEC Information Systems Facility Design Criteria.
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	Lockable for radios
Casework	
Security	•
Equipment	•
Furnishings	<ul style="list-style-type: none"> [Insert number] desk(s) and chair(s) [Insert number] work table(s)
Doors	•
Mission Equipment	
Acoustical	
Construction and Finishes	Covered or internal vehicle bay with appropriate environmental and structural systems
Floor	
Wall	
Ceiling	
Window Treatment	No window

23) Outside Plant Storage: (Storage Yard): Exterior storage area for outside plant materials, supplies and equipment.

ROOM NAME	OUTSIDE PLANT STORAGE
Function	Storage area to store Outside Plant supplies and equipment.
Min Ceiling Hgt	[Insert dimension based upon vehicle(s) serviced
Min Width/Length	[Insert dimension based upon vehicle(s) serviced
Occupants	[Insert number]
Security Zone	2
Adjacencies	<ul style="list-style-type: none"> Service and semi-tractor trailer access
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted 120V 20A GFCI-type weather proof duplex receptacles
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	<ul style="list-style-type: none"> Provide for flammable, environmental, and gas bottle storage A covered exterior storage yard may be required for environmentally sensitive materials.
Casework	

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Security	<ul style="list-style-type: none"> • Motion sensor with manual override
Equipment	<ul style="list-style-type: none"> • Freestanding industrial shelving
Furnishings	<ul style="list-style-type: none"> • [Insert number] desk(s) and chair(s) • [Insert number] work table(s)
Doors	<ul style="list-style-type: none"> • Vehicle bay door [insert size]; lockable
Mission Equipment	
Acoustical	
Construction and Finishes	Durable finishes
Floor	Concrete with positive drainage to exterior of building or to drainage piping
Wall	
Ceiling	
Window Treatment	

24) **Transmission Branch Shop (Inside Plant):** Work area to be provided when the program requires provision and/or maintenance of external lines and telecommunications systems. Required when additions, moves or changes are undertaken. Materials, tools, and vehicles may be stored. Part of Network and Switch Branch

ROOM NAME	TRANSMISSION BRANCH SHOP
Function	Work bay / area to support the Outside Plant division and installation crews.
Min Ceiling Hgt	
Min Width/Length	
Occupants	[Insert number]
Security Zone	2
Adjacencies	<ul style="list-style-type: none"> • Service vehicle access • Exterior wall • Shower/Locker Room
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • NIPRNET and telephone in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	<ul style="list-style-type: none"> • Provide securable caged area for storage of testing equipment.
Casework	
Security	<ul style="list-style-type: none"> • Motion sensor with manual override
Equipment	<ul style="list-style-type: none"> •
Furnishings	<ul style="list-style-type: none"> •
Doors	<ul style="list-style-type: none"> • Lockable vehicle bay door; lockable person door to outside
Mission Equipment	
Acoustical	
Construction and	

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Finishes	
Floor	VCT, with recessed walk-off mat at entrance
Wall	
Ceiling	
Window Treatment	

Desktop and Systems Support Division

25) **Customer Service Center (CSC) Help Desk:** Large room to house help desk for customer service center for IT services for installation personnel.

ROOM NAME	CUSTOMER SERVICE CENTER (CSC) HELP DESK
Function	House help desk and service personnel for IT services; includes waiting area and service counter
Min Ceiling Hgt	8'-6"
Min Width/Length	
Occupants	[insert number]
Security Zone	1
Adjacencies	CSCIT
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for workstations, computer equipment and peripherals
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition). • Provide additional wall mounted data jacks.
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	Service counter with lockable base cabinets and open shelving spanning width of room with entry gate
Security	
Equipment	<ul style="list-style-type: none"> • (1) White board and (1) bulletin / tack board or combo
Furnishings	<ul style="list-style-type: none"> • Seating for a minimum of ([insert number]) chairs at waiting area • ([insert number] ea) telephone and PC work stations at waiting area • (1) Combination printer/copier/scanner
Doors	<ul style="list-style-type: none"> • 3' x 7' hollow metal door w/ keypad • [Double wide entry door (where large equipment loads are expected)]
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	Vinyl Composition Tile (Static Dissipative Tile (SDT))
Wall	
Ceiling	
Window Treatment	No window

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- 26) **Customer Service Center Information Technology (CSCIT):** Houses IT technical personnel to support and service customers' IT equipment.

ROOM NAME	CUSTOMER SERVICE CENTER INFORMATION TECHNOLOGY (CSCIT)
Function	House IT service tech personnel; lab testing, tech support center and life cycle upgrades for IT equipment
Min Ceiling Hgt	
Min Width/Length	
Occupants	[insert number]
Security Zone	1
Adjacencies	Provide interior window in wall partition between [insert RM NO] CSC LCC and [insert RM NO] CSC Help Desk
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles above work tables • Power for workstations, computers and peripherals
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	Telephone and NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	<ul style="list-style-type: none"> • Service counter/lockable base cabinets/open shelving spanning width of room with entry gate • (1 ea.) Ceiling mount bracket for TV
Security	
Equipment	<ul style="list-style-type: none"> • (1) White board and (1) bulletin / tack board or combo
Furnishings	<ul style="list-style-type: none"> • ([insert number]) L-shaped workstations • Minimum of [insert number] layout tables in a group collaboration area
Doors	3' x 7' hollow metal door w/ keypad
Mission Equipment	GSA approved Safe
Acoustical	
Construction and Finishes	
Floor	Vinyl Composition Tile (Static Dissipative Tile (SDT))
Wall	
Ceiling	
Window Treatment	

- 27) **Customer Service Center Life Cycle Center (CSCLC):** Work and delivery area in support of the CSC.

ROOM NAME	CUSTOMER SERVICE CENTER LIFECYCLE (CSCLC)
Function	Work / delivery area to support CSC
Min Ceiling Hgt	
Min Width/Length	

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Occupants	[insert number]
Security Zone	1
Adjacencies	[insert RM NO] CSC IT and [insert RM NO] CSC Help Desk
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted quadplex receptacles (Each table will require a minimum of 2 quad receptacles) Power for workstations, computers and peripherals
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	Telephone, NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	
Furnishings	<ul style="list-style-type: none"> Minimum of [insert number] work tables
Doors	3' x 7' solid core wood or hollow metal door w/keypad
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	Vinyl Composition Tile (Static Dissipative Tile (SDT))
Wall	
Ceiling	
Window Treatment	

28) **SIPRNET Café:** Secure room that provides SIPRNET access to authorized visiting personnel. Provide minimum 10'-0" separation from non-secure areas. Note that if the IPN is classified up to SECRET, it can also house the SIPRNET Café in lieu of providing a separate room. This allows additional flexibility in layout.

ROOM NAME	SIPRNET CAFE
Function	Secure room for SIPRNET access for customers.
Min Ceiling Hgt	10'-0"
Min Width/Length	<ul style="list-style-type: none"> Equipment layout and room size to allow for necessary equipment as well as equipment removal and maintenance. Provide 10'-0" separation between SIPR equipment and adjacent non-secure areas.
Occupants	[Insert number]
Security Zone	2
Adjacencies	Provide minimum 10'-0" separation from non-secure areas.
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted duplex receptacles Power as per the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture I3A document (current

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	edition)
Lighting	<ul style="list-style-type: none"> General lighting per the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture I3A document (current edition)
Telecommunications	<ul style="list-style-type: none"> Telephone NIPRNET and SIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria (current edition)
Plumbing	Except for fire suppression, do not install plumbing or plumbing piping above server rooms.
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	<ul style="list-style-type: none"> Access control and IDS Passive Infrared Sensors
Equipment	<ul style="list-style-type: none"> [Insert number] work station(s)
Furnishings	<ul style="list-style-type: none"> [insert number]) SIPRNET terminals (desk, chair, privacy screening)
Doors	<ul style="list-style-type: none"> Locking door with key pad
Mission Equipment	<ul style="list-style-type: none"> SIPRNET Terminal / Classified Cabinet; Information Processing System (IPS) combined [Insert number] 5-drawer GSA approved safes.
Acoustical	
Construction and Finishes	
Floor	<ul style="list-style-type: none"> Concrete structural / sub-floor shall be air and water-tight and shall have water drainage capability.
Wall	
Ceiling	No drop ceiling
Window Treatment	<ul style="list-style-type: none"> No windows shall be installed at exterior walls

- 29) **Secure Internet Protocol Router Network (SIPRNET) Room:** This space houses the mainframe panel of the secure system and a decoder for the entire network. Protective design system is required; this secure pathway is used to extend SIPRNET connectivity from SIPRNET Room to dedicated outlets where shown on the drawings. Refer to applicable USACE Division 27 specification regarding PDS system requirements including manufacturer and submittal requirements prior to ordering. Proposed solution must be approved in writing by local authority.

ROOM NAME	SECURE INTERNET PROTOCOL ROUTER NETWORK ROOM (SIPRNET NODE)
Function	Room to house SIPRNET Terminal / Classified Cabinet system (SIPRNET system) and associated computer terminals; central point of connectivity for all secure communications inside and outside the installation.
Min Ceiling Hgt	10'-0"
Min Width/Length	Equipment layout and room size to allow for necessary equipment as well as equipment removal and maintenance. Provide all clearances as required.
Occupants	[Insert number]
Security Zone	3
Adjacencies	<ul style="list-style-type: none"> Provide minimum 10'-0" separation from non-secure areas Information Security, Information Assurance

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	<ul style="list-style-type: none"> • NSD • Server Room (NIPR) – may share space within NIPR node if SIPRNET node is separately secured therein
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for SIPRNET Telecommunication Room as per the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture I3A document (current edition)
Lighting	General lighting per the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture I3A document (current edition)
Telecommunications	Telephone, NIPRNET and SIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria (current edition)
Plumbing	Except for fire suppression, do not install plumbing or plumbing piping above server rooms.
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	<ul style="list-style-type: none"> • Access control and IDS • Passive Infrared Sensors
Equipment	[Insert number] work bench(es)
Furnishings	[insert number]) SIPRNET terminals (desk, chair, privacy screening)
Doors	Locking door with key pad
Mission Equipment	<ul style="list-style-type: none"> • Equipment racks, cable ladder, critical and auxiliary a/c panel, and cable management system • SIPRNET Terminal / Classified Cabinet
Acoustical	
Construction and Finishes	
	Avoid materials that generate or hold static charges.
Floor	Vinyl Composition Tile (Static Dissipative Tile (SDT))
Wall	Wall construction must extend to structure above.
Ceiling	Suspended acoustical tile (“dropped”) ceilings are prohibited.
Window Treatment	No windows shall be installed at exterior walls

- 30) **SIPRNET Telecommunications Room:** Provides equipment termination point for SIPRNET. May be included in the CPOP room. However, if collocated, comply with security requirements _ for doors, walls, ceilings – and distance requirements between secure and non-secure cabling in accordance with AR 380-5, especially chapter 7.

ROOM NAME	SIPRNET TELECOMMUNICATIONS ROOM
Function	Telecommunications equipment; termination point for secure network (PDS)
Min Ceiling Hgt	10'-0"
Min Width/Length	Telecommunications Room (TR) Sizing shall be per I3A Technical Criteria. TR shall not be smaller than 10 feet x 8 feet (3 m x 2.2 m). The designer shall avoid irregular-sized TRs, such as narrow rooms or odd shapes.
Occupants	0

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Security Zone	3
Adjacencies	SIPRNET Cafe
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> Power for Telecommunication Room as per the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) UPS power for all active telecommunications equipment
Lighting	General lighting as per the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition)
Telecommunications	Comply w/ the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition). Termination point for secure network (PDS)
Plumbing	No piping over electronic equipment
HVAC	<ul style="list-style-type: none"> Provide HVAC system consistent with design criteria for design of data centers in section 3.11.1 Mechanical Design HVAC alarm for too high or too low room temperature and relative humidity. On-floor CRAC unit (down flow type) to meet the Latest ASHRAE Thermal Guidelines for room conditions. Provide alarm status at NOC.
Special Requirements	
Storage	
Casework	
Security	Vault complying with AR 380-5
Equipment	
Furnishings	
Doors	3' x 7' heavy gauge hollow metal door w/ keypad, comp.
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	Vinyl Composition Tile (Static Dissipative Tile (SDT))
Wall	Wall construction must extend to structure above.
Ceiling	Ceiling shall not be acoustical drop type.
Window Treatment	No window permitted

Information Assurance Division

- 31) **Information Assurance workspace:** Required. This area supports the information assurance requirements of the functional program.

ROOM NAME	INFORMATION ASSURANCE OFFICE (IA)
Function	Open office to support Information Security, Information Assurance administrative functions
Min Ceiling Hgt	
Min Width/Length	

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Occupants	[Insert number]
Security Zone	2
Adjacencies	COMSEC vault, SIPRNET cafe
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for workstations, computer equipment and peripherals
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone, NIPRnet and CATV in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	
Furnishings	<ul style="list-style-type: none"> • [Insert number] workstations (cubicle, desk, chair, computer terminal and telephone) • [Insert number] Desk and chair • [Insert number] Layout tables • [Insert number] File cabinets • [Insert number] guest chairs
Doors	Peep hole or view panel on door to Information Security, Information Assurance.
Mission Equipment	
Acoustical	STC 52 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

32) **Communications Security (COMSEC) Vault:** Vault for classified operations and while secure, is available for access from the main entry area.

ROOM NAME	COMMUNICATION SECURITY (COMSEC) VAULT
Function	Secured room / vault to work on and store classified communications material / equipment
Min Ceiling Hgt	
Min Width/Length	
Occupants	[Insert number]
Security Zone	3
Adjacencies	Information Security, Information Assurance, SIPRNET cafe
Critical Power	Yes
Building Systems	

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Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for workstations, computer equipment and peripherals
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • Telephone, NIPRNET , SIPRnet , CENTRIXS and CATV in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria .
Plumbing	No piping over electronic equipment
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	<ul style="list-style-type: none"> • Access control and IDS
Equipment	<ul style="list-style-type: none"> • White noise background or similar audio confidentiality protection that provides STC 52 equivalent for walls, ceiling and floor.
Furnishings	<ul style="list-style-type: none"> • [Insert number] desks and chairs • [Insert number] guest chairs
Doors	<ul style="list-style-type: none"> • GSA approved Class 5 vault door and day gate
Mission Equipment	[Insert number] 5-drawer GSA approved safes
Acoustical	
Construction and Finishes	
Floor	See above under security; anti-static flooring material system
Wall	See above under security
Ceiling	See above under security
Window Treatment	No window

Building Common shared Areas:

33) **Conference/Team Room(s):** Permitted for ISF with over 99 personnel on the basis of one (1) for every 99 staff positions as identified in the TDA or OTOE. Conference/staff meeting space shall be provided at each division or may be combined for common use.

ROOM NAME	CONFERENCE/TEAM ROOM(S) (Only at ISFs with over 99 personnel)
Function	Small conference room or area for staff meetings
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to 8
Security Zone	Varies with location
Adjacencies	Locate within each division
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for computers. • Power and data floor mounted [insert number] quadplexes centered under conference room table
Lighting	<ul style="list-style-type: none"> • General lighting, accent lighting, dimmer controlled per IESNA Lighting Handbook

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Telecommunications	Telephone, NIPRNET and CATV in accordance with the Technical Criteria for the Installation Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	<ul style="list-style-type: none"> • VTC equipment • A/V rack and connections • AV package • (1 ea.) Ceiling mount bracket for AV monitor and TV • (1) White board and (1) bulletin board or combo • (1) Recessed roll down video display
Furnishings	<ul style="list-style-type: none"> • (1) Conference table and (maximum 8) chairs • (maximum 8 side chairs • (1) AV monitor • (1) Television
Doors	3' x 7' locking solid wood or hollow metal door
Mission Equipment	
Acoustical	STC 45 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

- 34) **General Purpose Multi-functional Team Room:** These small 120 SF 8PN team rooms are dedicated spaces for general access and provided within open office areas. Provide one room per 50 staff positions as identified in the TDA or OTOE.

ROOM NAME	General Purpose Multi-functional Team Room
Function	small meeting rooms for staff.
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to 8 persons
Security Zone	Maintain security zone integrity. Does not require dedicated access controls
Adjacencies	Administrative area, work areas
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles
Lighting	<ul style="list-style-type: none"> • General lighting
Telecommunications	<ul style="list-style-type: none"> • Telephone (2 drops), • Data (NIPRNET)
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design

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Special Requirements	
Storage	(1) coat hook
Casework	As required
Security	
Equipment	<ul style="list-style-type: none"> • (1) White board and (1) bulletin board or combination unit • AV monitor and TV
Furnishings	<ul style="list-style-type: none"> • (1) small conference table and chairs
Doors	3' x 7' locking solid wood with 100+/- sq.in. vision panel
Mission Equipment	
Acoustical	STC 45 to adjacent spaces
Construction and Finishes	
Floor	
Wall	
Ceiling	Acoustic
Window Treatment	Dual fabric shade for semi shading and total blackout

35) **Reproduction Room:** This space provides copy/scan/fax functions for the whole facility. May be distributed or consolidated.

ROOM NAME	REPRODUCTION ROOM
Function	Open room for reproduction to serve the facility with lockable storage closet for storage of consumables.
Min Ceiling Hgt	
Min Width/Length	
Occupants	0
Security Zone	1
Adjacencies	Administrative area
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Power for copy/scan/fax machines
Lighting	General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • NIPRNET in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	<ul style="list-style-type: none"> • Base and wall cabinets
Security	
Equipment	[Insert number] combination network printer/scanner/copier(s)
Furnishings	<ul style="list-style-type: none"> • [Insert number] storage cabinet(s)
Doors	
Mission Equipment	
Acoustical	

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Construction and Finishes	
Floor	
Wall	
Ceiling	
Window Treatment	

36) **Break Room:** Break area for staff and customers. Provide 75 net SF + 25 net SF per person seated on average for a half hour lunch period. Break room may be either centralized or distributed for convenience in accordance with the architectural solution for the facility

ROOM NAME	BREAK ROOM
Function	Area for building's occupant to use as a multi-purpose room for lunch and break area. Shall accommodate preparation of light meals and beverages and storage of food items.
Min Ceiling Hgt	
Min Width/Length	
Occupants	Accommodates up to [insert number]
Security Zone	1
Adjacencies	Work areas
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles •
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	<ul style="list-style-type: none"> • (1) CATV outlet • Telephone and CATV in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition).
Plumbing	Sink
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	<ul style="list-style-type: none"> • Casework (base and wall cabinets) • Countertop • Wall mounted bracket for TV
Security	
Equipment	<ul style="list-style-type: none"> • (1) white board and (1) bulletin / tack board or combo • (1) Set of appliances (Refrigerator / Freezer, Microwave oven, Coffee maker) • (1) Television
Furnishings	<ul style="list-style-type: none"> • [Insert number] table(s) • [Insert number] chairs
Doors	
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	Durable, water resistant, easily cleaned

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Wall	Durable, water resistant, easily cleaned
Ceiling	Acoustic

- 37) **Vending Area:** This area is near the Main Entry and Break Room and is available to all building users.
- 38) **Recycling Area:** Required. This area is near the Vending Area and is accessible to the trash and recycling pickup area.
- 39) **Staff Locker/shower:** Required. Used primarily by Inside Plant and Transmission branch shop personnel. Accessible. Provide minimum STC 50 isolation from personnel spaces (meeting spaces, work spaces, office spaces, etc). May also get use from Unit tenants such as IAADS

ROOM NAME	Staff Locker/shower room
Function	locker room with partitioned showers.
Min Ceiling Hgt	8'
Min Width/Length	
Occupants	Shower count based on ratio of 30% of largest transmission branch shift, or number required for the LEED "Alternative Transportation credit", whichever is larger. Other fixtures (water closet, lav) based on User-specified allocation of number of Code required fixtures.
Security Zone	1
Adjacencies	adjacent to Inside Plant and Transmission branch shop. If tenant
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> Wall mounted duplex receptacles
Lighting	<ul style="list-style-type: none"> General lighting per IESNA Lighting Handbook
Telecommunications	
Plumbing	As required by Code.
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	
Security	
Equipment	1,2, or 3 tier securable lockers ; sized for minimum of full time transmission shop personnel. Coordinate required size with User.
Furnishings	Wood locker room benches
Doors	3' x 7' solid wood or hollow metal door
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	Ceramic Tile
Wall	Ceramic tile and gypsum bd.
Ceiling	Moisture resistant Gypsum bd
Window Treatment	

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40) **Distribution and receiving:** Required. This space is for the management and distribution of received material; it is convenient to Receiving and separated from the secure areas of the facility. Space is also used for unpacking materials as appropriate.

ROOM NAME	DISTRIBUTION
Function	Holding and material handling room or area for distribution of items through the facility
Min Ceiling Hgt	
Min Width/Length	
Occupants	0
Security Zone	1
Adjacencies	
Critical Power	No
Building Systems	
Electrical	Wall mounted receptacles
Lighting	General overhead lighting per IESNA Lighting Handbook
Telecommunications	
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	Adjustable heavy duty [insert: wall mounted, floor mounted] shelving [insert size(s)]
Security	Locking door if room provided
Equipment	
Furnishings	
Doors	3'-6" x 8'
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	Durable, damage resistant
Wall	Durable, damage resistant
Ceiling	
Window Treatment	

41) **General Building and Office Supply Storage (may be combined):** General storage for the facility as a whole.

ROOM NAME	GENERAL STORAGE
Function	General Storage
Min Ceiling Hgt	
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	
Critical Power	No

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Building Systems	
Electrical	Wall mounted receptacles
Lighting	General overhead lighting per IESNA Lighting Handbook
Telecommunications	Telephone
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	
Casework	Adjustable heavy duty [insert: wall mounted, floor mounted] shelving [insert size(s)]
Security	Locking door
Equipment	
Furnishings	
Doors	3'-6" x 7' interior [insert: solid core wood, heavy gauge metal]
Mission Equipment	
Acoustical	
Construction and Finishes	
Floor	Durable, damage resistant
Wall	Durable, damage resistant
Ceiling	Exposed to structure
Window Treatment	

42) **Transformer Room:** Required. May be housed external to the building perimeter.

ROOM NAME	TRANSFORMER ROOM
Function	Room to house transformer and associated equipment
Min Ceiling Hgt	
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	Service drive access
Critical Power	No
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles
Lighting	<ul style="list-style-type: none"> • General lighting per IESNA Lighting Handbook
Telecommunications	
Plumbing	
HVAC	Provide HVAC consistent with paragraph 3.11.1 Mechanical Design
Special Requirements	
Storage	

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Casework	
Security	•
Equipment	•
Furnishings	•
Doors	• Exterior double doors, locking. only accessible by DPW
Mission Equipment	•
Acoustical	
Construction and Finishes	Durable finishes
Floor	•
Wall	
Ceiling	
Window Treatment	•

43) **Generator Room:** Required. May be housed in a unit external to the building perimeter.

ROOM NAME	GENERATOR ROOM/AREA
Function	Room to house back-up generator and associated equipment
Min Ceiling Hgt	•
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	Rectifier Room, Battery Room, service drive access
Critical Power	Yes
Building Systems	
Electrical	<ul style="list-style-type: none"> • Wall mounted duplex receptacles • Provide status light at NOC if generator starts. • Provide status light at NOC for high temp condition.
Lighting	• General lighting per IESNA Lighting Handbook
Telecommunications	•
Plumbing	
Fire Protection	• Provide in accordance with UFC 3-600-01.
HVAC	• Provide HVAC consistent with paragraph 3.11.1 Mechanical Design Mechanical Design Provide appropriate separation between equipment exhaust and any intake and other openings
Special Requirements	
Storage	
Casework	
Security	• Perimeter fence with lockable double gate
Equipment	•
Furnishings	•
Doors	• Exterior doors sized for equipment servicing and/or removal
Mission Equipment	•
Acoustical	
Construction and Finishes	
Floor	•

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Wall	
Ceiling	
Window Treatment	•

44) **Pulverizer Room:** Space for shredding and/or otherwise destroying papers, drives and other materials. Houses equipment that generates dust and noise.

ROOM NAME	PULVERIZER ROOM
Function	Room to house various material destruction equipment (pulverizer, shredder and degausser), materials to be processed and procedure products
Min Ceiling Hgt	•
Min Width/Length	
Occupants	0
Security Zone	2
Adjacencies	Service drive access
Critical Power	No
Building Systems	
Electrical	• Wall mounted duplex receptacles
Lighting	• General lighting per IESNA Lighting Handbook
Telecommunications	• Telephone in accordance with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition). • Provide telecommunications outlet for wall mounted phone
Plumbing	
HVAC	• Provide HVAC consistent with paragraph 3.11.1 Mechanical Design • Negative room pressure for dust containment • Air filtration
Special Requirements	
Storage	
Casework	
Security	•
Equipment	•
Furnishings	• Recycle bin(s)
Doors	• Exterior doors, lockable, double
Mission Equipment	• Degausser • Pulverizer • Shredder
Acoustical	STC 52 to adjacent spaces
Construction and Finishes	Durable finishes
Floor	•
Wall	
Ceiling	
Window Treatment	•

Building Utility Spaces

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- 45) **Mechanical, Electrical, and Telecommunications Rooms:** Provide Telecommunications Rooms for voice and data. Provide a minimum of one room on each floor, located as near the center of the building as practicable, and stacked between floors. Spacing of Telecommunications Rooms within the facility shall be per the requirements of the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) document (current edition) and the ANSI/T-568-C.1-1 Commercial Building Telecommunications Cabling Standard (Addendum 1-Pathways and Spaces). Mechanical, server rooms, electrical and telecommunications rooms shall be provided as needed. Mechanical, electrical and telecommunications rooms shall be keyed separately for access by Installation maintenance personnel. Exterior access shall be provided for mechanical and electrical rooms located on the first floor. For smaller facilities (i.e. 1000 SF) provide a combined electrical and mechanical room separated from the user space.
- 46) **Men's and Women's Toilets:** Required. Public toilets for staff and patrons. Accessible. Provide minimum STC 50 isolation from personnel spaces (meeting spaces, work spaces, office spaces, etc).
- 47) **Janitorial:** Required. Separate closet for the handling and storage of janitorial equipment and supplies. Has a janitor's sink and racks for mops and broom.
- 48) **Corridors:** The minimum corridor width shall be in accordance with the International Building Code as referenced in UFC 1-200-01.
- 49) **Stairs:** The minimum stair width shall be in accordance with the applicable criteria. Stair construction shall be in accordance with the International Building Code as referenced in UFC 1-200-01.

3.3 SITE FUNCTIONAL REQUIREMENTS

- 3.3.1 **Site Design:** The following site requirements are applicable to an ISF. [Insert site diagram as appropriate and delete following site plan sample.]
- A. **Overall Site Organization:** The overall site features shall include parking for privately owned and organizational vehicles, tenant vehicles [insert as appropriate: an access controlled fenced, enclosed antenna farm], [loading and service areas], [an access controlled Tactical SCI Vehicle Area (TSVA) for Tactical Vehicle parking] and an area near the rear entrance to the [NOC area for storing transit cases for equipment. [This area also includes a securable enclosed space for staging equipment for loading and holding equipment when it is offloaded from tactical vehicles.]
- B. **Overall Site Size and Character:** The overall site dedicated to ISF function shall be sufficient to accommodate the facility; potential future expansion; utility equipment such as backup generators and fuel storage, and HVAC equipment; trash dumpsters; outside plant storage yard where co-located; parking lots for personally owned vehicle (POVs), leased vehicles, service vehicles and equipment; access and service drives; vehicle maneuver space; AT/FP setbacks and security measures; antennas where co-located; cable vault access and service; storm drainage and retention where required; handicap accessibility measures; landscaping as appropriate; and other related elements. A rule of thumb for preliminary site selection is four to five times the building footprint within its secure perimeter to which is added any area needed for antennas and storage yards.
- C. **Drive/Entrance:** An entrance area shall be provided on the community side (front door) of the facility. The facility entrances shall be provided with physical means of

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controlling access (e.g., mechanical gates with access control system) in accordance with antiterrorism and force protection, and life safety requirements.

- D. Service Drive/Entrance: The site shall provide a separate drive to access the services parts of the facility, such as the loading dock, trash and recycling pick-up area, and equipment service points. Service drive(s) and gates to outside plant materials and equipment service-storage yards shall be sufficiently wide to accommodate movement and maneuver of oversized equipment such as trailers for transporting communication poles and trailers for plastic conduit and cable reels. The drive shall connect to an area of sufficient size to permit the maneuver and turn-around of the largest shipment and service vehicles expected to serve the facility.
- E. IAADS – Installation as a Docking Station – accommodate tenant vehicles and docking station in a separately secured fenced parking area that provides exclusive access/egress control to that tenant. This area to be in close proximity to the building so that tenant unit personnel may use toilet, locker, and shower facilities of the building.
- F. Parking: All parking areas shall be located in accordance with life safety, antiterrorism and force protection requirements, including setbacks, controlled access and barriers. The required number of parking stalls shall consider the IDG. POV parking areas shall have designated space for handicapped individuals.
 - 1) POV parking shall be separate from government and utility vehicle parking and from outside storage areas and yards.
 - 2) In addition to POV parking, provide sufficient customer parking (sized in accordance with average number of peak customer loading) in close proximity to the customer entrance to the facility.
 - 3) Locate all handicapped accessible parking (POV and customer) in closest proximity to the respective entrance.
 - 4) [Not Used][Parking Area for non SCIF Ready tactical vehicles: A parking area for [18] [] HMMWVs with Trailers (High Mobility Multi-purpose Wheeled Vehicles) and [] General Officer non-tactical vehicles shall be provided. This area shall be adjacent and in close proximity to the Tactical SCIF Operations Area (TSVA)].

[Note to RFP preparer: Tactical SCI Vehicle Area for all Deployable Units]

- 5) [Not Used] [Tactical SCIF Vehicle Area (TSVA) (SZ 3): A secure parking area to accommodate [12] [] HMMWV's with trailers, MRAP (Mine-Resistant Ambush-Protected) vehicles, or other large tactical vehicles, as utilized by the unit, in addition to space for [4] [] shelters shall be located in the secure area and immediately adjacent to the interior SCIF. Size the gate width, approach turning radii and parking spaces for MRAP vehicles. Furthermore, this area shall be located to have an unobstructed exposure to the southern sky for direct satellite communication and shall also be provided with the following features:
 - a) A perimeter fence consisting of 8-foot high chain link fabric topped by a double outrigger with three-strand barbed wire anti-climber, non-sensored, designed in accordance with STD 872-90-04, FE-8 chain link security fence details. Provide organizational vehicle and personnel gates in accordance with paragraph 3.3.E. Loading and Service Area.
 - b) Rigid concrete pavement designed to support HMMWV's or other large tactical vehicles, as utilized by the unit, with trailers. The quantity of pavement shall be

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sufficient to accommodate both the number of vehicles identified at 3.3.1.C.3) above as well as the required vehicles turning radius.

- c) A 10-foot wide zone clear of trees and shrubs is required on each side of the fence. The clear zone should require minimal maintenance, and the area 5 feet each side of the fence should be provided with gravel and treated to discourage vegetation growth.
 - d) Refer to paragraphs 3.9.A.1) & 3.10.A.3) for data and power connections.
 - e) Provide 6-inch high concrete wheel stops for each parking stall 6 feet from the exterior wall of the facility to prevent damage to the building by vehicle impact.
 - f) Provide access control and intrusion detection system (IDS) security infrastructure as required by paragraph 3.9.G. Provide intercom between gate and Security Specialist Office (SSO) Office.
 - g) No aboveground transformers, generators, or mechanical equipment shall be located in this area].
 - h) In areas susceptible to heavy snowfall during winter months, allow additional area around parking lot and materials and equipment service yard for the storage of plowed snow.
- G. **Loading Dock and Service Area:** Provide the loading dock and service areas for receiving bulk shipment of supplies and material via semi-tractor trailers, and for service of installed equipment when necessary. Control access to these areas by a mechanically operated vehicle gate with an electronic card reader.

3.4 SITE AND LANDSCAPE REQUIREMENTS

- 3.4.1 Site Description: The project site consists of the ISF building within project limits of approximately [insert area] acres. The project site is situated within [insert Installation], [insert location]. The site is adjacent to [insert nearby facilities], and is currently used as [insert function] by [insert user]. [Insert site improvements, such as "There is a fully developed two lane road that runs along the proposed site." "This road is connected to the network of roads at the upper portion of [insert Installation] near main gate." "There are [no] existing buildings at the site requiring demolition [insert description and size if there are such buildings]."]

The topography of the site is [insert description, such as "generally flat with gentle slopes from 2% to 3% sloping in the direction of the existing road."] [Insert site features, such as "A shallow earthen swale runs alongside the existing roadway."]

[Insert additional notable site features and disposition thereof.]

- 3.4.2 Soils, Pavement and Earthwork: A comprehensive soils investigation report shall be furnished for this project. The report shall certify to the adequacy of the soil and foundation aspects of the design, including, but not limited to, special foundation types, earthwork construction, surface and subsurface drainage, erosion and siltation prevention during and after construction, and settlement or heave. The report shall also provide final pavement design sections.

The area surrounding the proposed site is generally composed of [insert soils description, such as "cultivated soil/ fat clay (CH) material."] Soils not suitable for

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pavement sub-grade shall be removed and replaced to a depth of [indicate depth]. The foundation of the proposed facility shall consist of [insert preferred foundation structure, such as "piles bearing on bedrock 30'-40' below grade."] Conventional shallow foundation system shall be considered pending the actual soil investigation findings.

The pavement thickness must be designed to withstand the anticipated traffic, categorized by type and weight of vehicles, measured by average daily volume (ADV) of each type for the design life of the pavement. ADV for the proposed parking shall be determined from the capacity of the parking lot. The design of pavement structures, vehicular parking areas and hardstands shall be according to the referenced standards.

The location of sidewalks may change during the design stage depending on the final site layout. Walk location and widths shall conform to Installation standards. Sidewalks shall be constructed.

Soil compaction shall be per local standards and as amended herein. Compact each layer to not less than the percentage of maximum density specified in the referenced standards.

The compaction requirements shall be verified or modifications shall be recommended by the soils engineer in the soils report wherever engineering, soils, or climatic factors indicate the necessity to do so. Any modification to the stated compaction requirements shall require the approval of the Contracting Officer.

3.4.3 Grading and Drainage:[Insert site-specific grading and drainage conditions.]

Unpaved surfaces of the project sites will follow existing flow patterns around the terrain of the proposed facility. The grading should maintain existing topography while recognizing standard gradients. The grading plan shall note a smooth transition of graded areas to any new & existing paved areas. All grading shall manage all on-site runoff to maintain rate of flow and quantity to pre-construction levels, or reduce site runoff where possible. The principles of positive drainage, with minimum slopes, shall be applied to control the conditions that remove storm flow away from facilities. Site design shall seek to minimize the disturbance of land, and utilize natural drainage paths where possible. Military, Installation, state and local regulations regarding the design of storm water management systems shall be considered as the minimum design criteria. In addition, the grading shall minimize the impact of construction activities on drainage and prevent loss of soils by water and wind erosion. Designs which improve on existing water quality by incorporating sustainable design principles are encouraged, consistent with budget constraints and activity requirements. Implement a storm water management plan that prevents post-development peak discharge rate and quantity from exceeding the pre-development peak discharge rate and quantity for the one-and two-year 24-hour design storms. Limit the disruption and pollution of natural flows by reducing impervious cover, promote infiltration, collect and treat storm water runoff from 90% of the average annual precipitation using acceptable best management practices.

The storm drainage system shall be properly coordinated with surrounding properties to ensure that runoff does not cause damage to other properties. All storm water management calculations and management design systems shall be in accordance with the referenced standards and with the requirements of the agency having jurisdiction. The Contractor shall obtain required permits from the agency having jurisdiction prior to construction. Construction materials, execution and testing shall be in accordance with the referenced standards.

Conduct an analysis of the existing storm drainage capacity where the proposed drainage system of this facility will be connected. Inform the government if any

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modification to the existing drainage system is needed to accommodate the storm water discharge from the new facility. Ascertain that the design of drainage system would not have a significant impact on the existing drainage system.

3.4.4 Parking: [Insert site-specific conditions.]

PRIVATELY OWNED VEHICLE (POV) PARKING: Provide POV parking and customer parking within the designated construction area. Base the location and design of the POV parking area(s) on the Installation's site constraints. The design shall ensure that the location, layout and dimensions of parking comply with the referenced standards for AT/FP. Provide POV parking spaces for 90 percent of the facility full-time equivalent personnel. Also provide parking for lease vehicles. Parking facilities shall be provided for handicapped individuals in accordance with ABA/ADA requirements and criteria.

Provide parking for tactical and organizational vehicles in accordance with the OTOE.

Provide secured parking for IAADS adjacent to the building. Refer to OPORD 12-0060. Provide minimum 6 spaces and UHNs.

Where feasible the use of pervious or porous pavements in the POV car park areas may be used to reduce storm water volume leaving the ISF site boundaries to the maximum extent possible as outlined in EISA Section 438 (Energy Independence and Security Act of 2007).

3.4.5 Access drives and lanes: [Insert site-specific conditions.]

Service Drive(s): Provide service drive(s) to the facility. Locate and restrict access to the drive(s) in accordance with the referenced standards for AT/FP. The minimum access drive width shall be 20 feet. The Drives shall be designed and provided with curb and gutter as necessary for drainage purposes.

Emergency Vehicle/Fire Access Lanes: Provide fire access lanes. The width of drives designed to support emergency vehicle traffic and the degree of access to the facility shall be in accordance with the referenced standards.

Emergency and Service Vehicles: Provide fire truck access to main fire department connection and all hydrants. Provide vehicle access to the mechanical room exterior doors. Provide adequate paved access for emergency and service vehicles and account for width, weight and turning radii of trucks of the size expected to utilize the facility and used locally at the installation. Service drive utilized by dumpster and recycle materials collection service shall be designed to support wheel loadings from such vehicles. Service drive at termination point near the dumpster station shall be concrete pavement and shall be designed such that the front wheels of compactor truck are on the concrete pavement when the compactor truck services and empties dumpster containers. Walks may need to accommodate emergency/service vehicles and must be designed and sized accordingly.

Provide bollards as necessary to protect the building from vehicles. Routinely accessed drives or walks shall provide a vehicle barrier drive gate to accommodate this access. Access shall meet AT/FP requirements.

Force Protection: The new building will have a 33-foot minimum standoff from all vehicle traffic areas (road and parking areas). A vehicle force protection barrier will separate the vehicle areas from the building at the standoff line. The curb will be 8 inches tall by 6 inches thick. No features over 6 inches tall will be allowed within 33 feet of the building.

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- 3.4.6 Water Supply: The existing water systems at [insert location] shall supply the ISF with domestic and fire water. The new facility shall be provided with domestic water service line with meter, with adequate flow and pressure calculated for the facility size, and a fire water service with line, backflow prevention and fire hydrant, designed in accordance with the referenced standards. Building connection for domestic water shall have an exterior shut off valve with valve box installed below ground. A post indicating valve shall be provided for the fire water service line or in accordance with local installation requirements.

Water distribution shall be of adequate size to provide adequate quantity at sufficient pressure of potable water to satisfy both facility domestic and fire flow requirements.

It is the Contractor's responsibility to confirm the specific locations of the existing utilities and to design and construct new utility services to provide water supply, including the fire protection requirements, and sanitary sewage for the new building(s). The water and sewage systems shall be designed and constructed in accordance with the criteria contained herein, and shall conform to [insert local jurisdictional requirements, as applicable]. [Insert if applicable: All cost associated with permitting and reviews shall be the Contractor's responsibility.]

The building facility shall be provided with a separate service and main shutoff valve, readily accessible to maintenance and emergency personnel. Shutoff valves in sidewalks or walkways are prohibited.

Determine existing water service pressures and provide reduced pressure principle backflow prevention device for building connection in accordance with the referenced standards.

Materials for water mains and clearances to sewer lines shall be in accordance with the referenced standards.

Sacrificial anodes, cathodic protection test stations, or a petroleum saturated wax tape will be provided for all below-grade valve fittings if field conditions indicate corrosion protection from backfill soil is required. Design shall be in accordance with referenced standards.

Disinfection of the waterlines, including flushing and bacteriological testing, will be in accordance with the referenced standards. Disposal of the water used to test the integrity of the pipeline will be in accordance with applicable provisions of the local standards.

All potable and fire water facilities and appurtenances required to support the ISF shall be designed in conformance with requirements of state, local community, UFC and NFPA criteria for water distribution systems and fire protection systems, engineering, construction, installation, testing and disinfection. Where there are differing design criteria requirements the most stringent shall be used for the basis of design.

- 3.4.7 Sewer: New sewer service lines shall be provided for the ISF. Sewage from the new building(s) shall be intercepted by sewer manhole(s) and discharged to existing sewer main(s).

The quantity of wastewater to be transported from the new facility is a function of the service needs, and the consumption of water. The quantity generated in a single day can vary greatly based on the use of the facility during full or limited operations. Therefore, the system shall be able to convey a wide range of flow rates. It shall be able to carry the intended maximum rate of flow without backing up, yet also carry the

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minimum rate of flow without depositing solids. The system will have adequate capacity for peak flow and maintain the minimum velocity to prevent deposits of solids and generation of odors.

The system will be designed for full flow, without surcharge, under peak flow conditions, which is equivalent to a depth of 80% of the pipe diameter at a constant friction factor.

Building connections will be planned to eliminate as many bends as practical and provide convenience in rodding. Sewage from the building shall flow through a gravity sewer pipe and into the proposed sewer manhole, then to the sewer main. Bends greater than 45 degrees made with one fitting should be avoided; combinations of elbows such as 45-45 or 30-60 degrees should be used with a cleanout.

Sewer cleanouts must be installed on all sewer building connections to provide a means for inserting cleaning rods into the underground pipe. An acceptable cleanout will consist of an upturned pipe terminating at, or slightly above, final grade with a plug or cap. Preferably the cleanout pipe will be of the same diameter as the building sewer.

Force mains shall be designed as pressure pipe, and must be adequate in strength to withstand an internal operating pressure equal to the pump discharge head, plus an allowance for transient pressures caused by water hammer. Velocity shall be designed to prevent settling of solids in the pipe.

Sewer laterals joints will be double-gasketed, push-on, and pressure-rated to provide water-tight joints.

Manhole(s) will be required to intercept sewage from the new building(s). Sewer manholes will have non-metallic manhole rungs. Base of manholes will be channelized. Influent pipe connections to manholes will be made at the channelized invert of the manhole, whether it is a direct connection or a drop connection. The maximum distance from cleanout to intercepting manhole or to a sanitary wye connection fitted with a cleanout should be limited to 100ft.

[Insert as required: Sewage lift station structure, number and capacity of the sewer pumps provided must be sufficient to discharge the minimum, average, peak daily and extreme peak flow rates as calculated from the building sewer rates based on the contributing population and domestic wastewater allowances for non-resident personnel and civilian employees. Each pumping unit will be of constant speed type, and will be capable of discharging the extreme peak wastewater flow rate. Install [insert number: two (2)] pull-up submersible pump units, vortex type, suitable for sewage pumping application complete with discharge head, base elbow, guide rails, bracket, pull-up chain, float switches, electrical cable and accessories. Pumps shall have a mechanical seal. The pumps shall operate alternately during normal flow conditions. However, when the lead pump is not adequate to handle the inflow during maximum usage, the two pumps shall operate simultaneously to handle the inflow during this time. Provide stainless steel pump control panel, combination alternating duplex pump controller mounted on stainless steel frame. A double flash strobe red warning light shall be installed on the control panel box to signal high or low liquid levels, pump failure, or a malfunctioning speed control system. The new lift station control panel box shall be connected to standby power.]

All wastewater/sewerage facilities and appurtenances required to support the ISF shall be designed in conformance with requirements of the state, local community and UFC

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wastewater collection, conveyance and treatment requirements. Where there are differing design criteria requirements the most stringent shall be used in basis of design

3.4.8 Site Fencing and Retractable Bollards (Access/Control): Provide fencing as shown in the design drawings and security as required by AT/FP references cited herein.

3.4.9 Site Structures: [Insert site-specific conditions.]

Dumpster Area: Provide dumpster enclosure area(s) and screening. Dumpster area shall be sufficiently sized to provide space for a recyclable materials container. Dumpster screening shall be aesthetically and architecturally compatible with the building it serves and shall be designed in accordance with the Installation's standards. Locate the dumpster area(s) convenient to the facility staff but also in accordance with the referenced AT/FP standards. Locate dumpsters outside of restricted areas to allow for servicing activities.

Landscaping/Hardscaping: [Insert site-specific grading and drainage conditions.]

Non-Vehicular Walks: Pedestrian walks within the designated construction area shall be provided and shall connect to existing sidewalks, where applicable. Sidewalks shall be a minimum of 6 feet wide. Restrict vehicular access to the sidewalks, as required by the referenced AT/FP standards.

[Note to RFP preparer: Verify with user that an Antenna Farms is required.]

3.4.10 Exterior Fenced Area: All secured fenced areas shall be provided with both manually operated personnel gates and 25-foot wide organizational vehicle gates at entrances. Access to all gates in these areas shall be by electronic card readers (touch / keypad) and equipped with intrusion detection systems and monitored by GFGI Closed Circuit Television Cameras (CCTV). Personnel emergency egress is required for these areas. Entrance shall be designed and configured to allow accommodation for tactical vehicle and trailer inspection area prior to entry into the controlled security line without impeding authorized traffic ingress/egress.

3.4.11 Fuel Storage Tanks: Fuel storage tank(s), where required, shall be located in close proximity to the standby generator(s) and sized to provide the required hours of continuous stand-by operation without refueling. The fuel tank(s) and generator(s) shall be located in a secure area outside of the building with the generator(s) in a weatherproof enclosure. Ensure that the generator exhaust shall not be pulled into the facility's HVAC intake or discolor the exterior surface of the facility.

3.4.12 Exterior Area Lighting: Exterior area lighting systems shall be provided as described in paragraph 3.10.B.3) Exterior Lighting.

[3.4.13 Antenna Farm: A secure space shall be provided for an antenna farm, which shall be sited in compliance with Communication Electronics – Life Cycle Management Command (CE-LCMC) alignment requirements. The antenna farm shall be provided with the following features:

A minimum 2,500, up to a maximum 10,000 square foot, enclosed area directly adjacent to the building (actual size, location and arrangement shall be coordinated with the user).

An antenna platform shall be provided in this area to facilitate performance and connectivity pursuant to the user and site requirements. Platform shall be designed in accordance with paragraph 3.6 Structural Requirements and in accordance with any antenna manufacturer specific requirements.

Under no circumstances are antennas to be mounted on the building or its structure.

Provide a 6-foot high type FE-6 fence with vehicle and personnel gates. The area shall have drive-through capability and a personnel gate located on the side adjacent to the ISF.

The paved surface inside the enclosed area shall be constructed of a pervious material that supports sustainable design initiatives and allows vehicular traffic.

A pathway system for telecommunications connectivity and power through underground pathways sized for required connectivity of each antenna from the antenna farm to the appropriate SZ-3 area of the facility for power and telecommunications. Telecommunications connectivity to the antenna farm will be via fiber optic cabling.

Provide lightning protection and grounding in accordance with paragraph 3.10.C.1).c)

Directional connectivity to the correct satellites shall be required and shall be provided by the user during the initial design phase.]

3.5 ARCHITECTURAL REQUIREMENTS

3.5.1. Architectural Systems

- A. **General:** The design of architectural systems shall be accomplished with a goal of protection of information and functions from compromise, destruction and theft. The project shall be designed and constructed as a complete and usable information system facility, in full compliance with design criteria listed and within available project funding.

Provide durable and easily maintainable materials. Do not use exterior materials that require periodic repainting or similar refinishing processes. Material exposed to weather shall be factory pre-finished and integrally colored or provided with intrinsic weather finish.

Consult the Installation Design Guide (IDG) for exterior materials and aesthetic requirements.

Provide attractive entry features, within compliance with Antiterrorism / Force Protection requirements.

- B. **AT/FP and Information Security, Information Assurance:**

Design Analysis: The Designer of Record shall provide details in the design analysis and design showing steps taken to comply with the referenced AT/FP requirements. Doors, windows, glass, glazing, storefronts, frames, louvers, grills, vents and all other openings, frames and hardware shall be designed as required to comply with AT/FP and Information Security, Information Assurance standards.

Building Hardening: Hardening of exterior walls and building enclosure will correlate to stand-off distances as required by the referenced AT/FP standards.

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The facility shall have one controlled access entry separating the secured area which includes the [list appropriate spaces: NOC and operations floor, as well as the DSN/MTCF, etc.]. Security infrastructure shall be installed to support government-furnished equipment including ICIDS systems, CCTV surveillance systems, and restricted access systems. Provisions shall include dedicated power circuit, telecommunications connections, raceways, and signal wiring for user-installed devices. Provisions for user-provided ICIDS intrusion detection and security systems will be provided for [insert as appropriate: SIPRNET rooms and secured DCO room]. Provisions for a CCTV surveillance system shall be provided for all exterior access doors and corridors as a minimum. Programmable Electronic Key Card Access System shall be provided for exterior and interior doors where access must be controlled and monitored. Interior doors shall have basic interior locking that provides the capability for potential deployment of shelter-in-place or "Active-shooter" measures.

A minimum standoff zone dimensioned according to the referenced standards will be established between the building and the nearest parking or roadway. The boundary of the zone will be protected by physical barriers such as security curbs, bums, concrete planters, picnic tables, benches, boulders, etc. to hinder operation of vehicles within the standoff distance. See elsewhere herein for perimeter fencing, gates and bollards.

A minimum unobstructed space dimensioned according to the referenced standards will have no vegetation or obstruction higher than 6" around the entire exterior of the building.

A drive up/drop off area shall not be provided within the standoff distance.

Access/service roads penetrating the standoff barriers will be protected by gate(s) at barrier crossing.

Building will be designed to avoid progressive collapse where required by referenced AT/FP standards.

Windows to the exterior shall not be placed in secure areas. See individual room/space descriptions above.

Windows will have insulating glass with thicknesses, panes and interlayment as required by the referenced AT/FP standards. Door, skylight, frame and window members' offset yield strength, equivalent static design loads shall be determined by the referenced standards. The glazing, structural and not, shall be designed per the referenced standards.

Permanent roof access will not be provided from the exterior.

Air intakes will be located a minimum of 10 feet above grade and away from generator or other noxious exhaust.

Noise hazards associated with mechanical and electrical equipment shall be mitigated to the greatest extent possible.

An emergency shutoff switch will be provided in the HVAC control system to immediately shut down air distribution throughout the building when situations warrant. The switch will be located for easy access by building occupants. Mission critical/fragile utility routing will be routed away from exterior or mail room walls. Redundant utilities will be designed so they are not collocated or share chases.

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A mass notification system will be provided to notify occupants and personnel in the vicinity of the building of threats and to instruct them in appropriate response.

The building will be located a minimum of 99 feet from any adjacent building.

Exterior surfaces will be illuminated to a minimum height of 10 feet.

Exterior doors serving inhabited areas will open outwards. Door hinge mounting screws should not be exposed to the exterior of the facility. If screws are exposed, they will be spot welded, peened, covered, or filled with material in a way to prevent removal. Nails will not be used to mount hinges or any other door hardware. Door hinge pins should not be exposed to the exterior of the facility. If they are, they will be spot welded covered, filled, or otherwise secured to prevent easy removal.

Doors and frames will be a minimum of 16 gauge hollow steel. Installation requirements for Risk Level I also apply. Alternatively, doors or pairs of doors will provide delay time equal to or greater than the response time.

U.S. Government key-operated, pin-locking deadbolts which project at least 1 inch into the door frame.

Windows: Windows higher than 12' above grade require no added security beyond that required by AT/FP. Windows below 12' shall have inoperable bars or mesh similar to Risk Level 1 and shall have laminated glass and other construction per the referenced standards.

Wall Assembly: Construction of exterior walls and walls/partitions at security zone three shall be at least equivalent to metal or wood studs with metal security mesh, and plywood sheathing on one side and gypsum board each side.

Floors and Ceilings: Construction shall comply with referenced standards.

Vault: Vaults shall be designed according to the referenced standards. Floor and walls require 8 inches of concrete reinforced to meet current standards. Walls are to extend to the underside of the roof slab above. The roof over the vault shall match vault wall thickness. A single story building will require an 8" concrete lid over this room. Vault door and frame unit will conform to the referenced standards.

The vault shall be protected by an IDS connected to a central monitoring station, with personnel on 24 hour duty who can provide an armed response to an alarm signal. The IDS will be installed to protect the storage area as well as the doors to the secure room. The IDS must be UL listed, or equivalent, and approved by the Department of the Army.

IDS Transmission Line Security: When the transmission line leaves the facility and traverses an uncontrolled area, Class 1 or Class II line supervision will be used.

Electronic Entry Control Systems: If an entry control system is integrated into an IDS, reports from the automated entry control system must be subordinate in priority to reports from intrusion alarms.

Access Controls: The facility perimeter entrance will be under visual control at all times during duty hours. This can be accomplished by several methods, such as an employee workstation, guard, or closed circuit television (CCTV). Uncleared persons will be escorted within the facility by a cleared person, who is familiar with the security

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procedures at the facility, and an announcement, either auditory or visual, will be used to alert others of the uncleared person's presence in secure areas.

An automated entry control system (AECS) can be used to control admittance during working hours instead of visual or other methods of control.

Protection must be established and maintained for all devices or equipment which constitute the entry control system. This can be accomplished by the following:

Location where authorization data and personal identification or verification data is entered or input, stored, or recorded, is protected.

Card readers, keypads, telecommunication or interface devices located outside the entrance to a controlled area will have tamper resistant enclosures and be securely fastened to the wall or other permanent structure. Control panels located within a controlled area will require that degree of physical security protection sufficient to preclude unauthorized access to the mechanism.

Keypad devices will be designed or installed in such a manner that an unauthorized person in the immediate vicinity cannot observe the selection of input numbers.

Systems that use transmission lines to carry access authorizations, personal identification data, or verification data between devices or equipment located outside the controlled area will have line supervision.

Electric strikes used in access control systems will be of heavy duty, industrial grade.

Electric, Mechanical, or Electromechanical Access Control Devices: Electric, mechanical, or electromechanical devices which meet the criteria may be used to control admittance to secure areas during duty hours, if the entrance is under visual or other command approved system of control by cleared authorized personnel located in the area. These devices are also acceptable to control access to selected or otherwise compartmented areas within a secure area.

C. **Walls:**

Exterior Walls: When exterior insulation and finish systems (EIFS) are used as exterior finish material they shall be in conjunction with masonry wainscoting. EIFS shall be "high-impact" type and shall be "drainable". Masonry units shall be tested for efflorescence according to the referenced standard.

Curtain Wall Systems: Curtain wall systems shall be not used.

Mold and Mildew: Materials and systems shall be selected that do not promote the growth of mold and mildew. The Designer of Record, in the design analysis and in the design documents, shall detail how to mitigate the potential growth of mold and mildew.

D. **Roof Systems:**

Minimum roof slope for membrane roof systems shall be 1/4 inch per foot. Minimum roof slope for pitched roof systems shall be 3 inches per foot. Membrane roof systems shall be fully adhered. Roof systems and structural standing seam metal roofs shall comply with the requirements of the referenced standards and shall comply with applicable criteria for fire rating.

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Roof-Mounted Equipment: For roof-mounted equipment, provide permanent access walkways and platforms to protect roof. Roof-mounted equipment on pitched roof systems is unacceptable. Roof-mounted equipment on membrane roof systems shall be completely screened by the roof parapet.

Roof Access: Permanent roof access from building exterior is prohibited. Where functionally sensitive equipment is located on the roof, secure access to the roof shall be provided.

Trim and Flashing: Gutters, downspouts, and fascia shall be factory pre-finished metal and shall comply with the referenced standards.

E. **Openings:**

Storefronts (Main Entrance Doors): In compliance with AT/FP standards, limited metal storefront doors and frames with factory finish may be used, and may be fully glazed, with medium or wide stile for entry into the lobby. Provide doors complete with frames, framing members, subframes, transoms, sidelights, trim, true or applied muntins, and accessories. Framing systems may have thermal-break design. Storefront systems shall be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and shall comply with applicable codes and criteria including AT/FP referenced standards.

Windows:

Material and installation shall comply with applicable codes and criteria including AT/FP referenced standards.

Exterior Windows: Provide insulated, high efficiency window systems, complying with applicable codes and criteria including AT/FP referenced standards. Window sills shall be designed to discourage bird nesting and skate boarding. Storefront walls and typical windows shall be of identical finish. Exposed metal surfaces shall be factory finished. Glazing shall be in compliance with the referenced AT/FP standards and shall provide ultra-violet protection. Window frames shall be designed and installed in compliance with the referenced AT/FP standards.

Interior Windows: Interior windows shall comply with applicable codes and referenced standards.

Doors and Frames:

Fire-rated and Smoke Control Doors and Frames: Comply with applicable codes, criteria and requirements of labeling authority. STC ratings shall be of the sound classification required and shall include the entire door and frame assembly.

Exterior Insulated Hollow Metal Doors & Frames: Provide insulated hollow metal exterior doors for entry to all spaces other than corridors, lobbies, or reception/waiting rooms. Doors and frames shall comply with applicable codes and criteria. Doors shall be minimum Level 3, physical performance Level A, Model 2. Frames shall be minimum 12-gauge, with continuously welded mitered corners and seamless face joints. Doors and frames shall be A60 galvanized, shall comply with ASTM A653 and shall be factory primed. Fire-rated openings shall comply with applicable codes, and the requirements of the labeling authority. Door and frame installation shall comply with applicable codes and criteria.

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Exterior entry doors will be metal on metal frame. Solid door assemblies are required other than at the main entrance. Exterior doors and frames shall be non-corroding prefinished materials. Exposed surfaces shall be factory finished to match windows. All exterior door and door frames shall be able to withstand the designed load pressure as calculated to withstand 180mph and the referenced AT/FP standards. All louvers will be pre-finished metal storm-proof louvers matching the windows and doors in finish material and color. All exposed metal hardware and fasteners shall be stainless steel or other extremely rust and corrosion resistant material.

Interior Insulated Metal Doors: Shall comply with applicable codes and criteria referenced. Doors shall be high-traffic durable and shall be factory primed.

Provide insulated metal doors at secure rooms, server rooms, shredder rooms, utility rooms, janitor closets, and stairwells.

Interior Hollow Metal Frames: Comply with the referenced standards. Frames shall be heavy gauge, with continuously welded mitered corners and seamless face joints and shall be factory primed.

Hardware:

Door Hardware: All hardware shall be heavy duty, consistent throughout the ISF and in conformance with the referenced standards. Provide closers for all exterior doors, all doors opening to corridors and as required by codes. Exit devices shall be installed on all building egress doors.

Finish Hardware (Master Keying System/Cores): All requirements for hardware keying shall be coordinated with the Contracting Officer. Keying shall be designed and complete with AT/FP and Information Security, Information Assurance standards in mind. Extension of the existing Installation keying system may be acceptable within security guidelines; the Installation keying system is [insert system]. Locksets for mechanical, electrical and telecommunications rooms may be keyed to the existing Installation Master Keying System within security guidelines. HVAC terminal units that are accessed from a central corridor shall have a deadbolt to minimize protrusion into corridor. Plastic cores are unacceptable.

Fire and Exit Door Labeling: Hardware for fire doors shall be installed in accordance with the requirements of applicable codes. Exit devices installed on fire doors shall have a visible label bearing the marking "Fire Exit Hardware". Other hardware installed on fire doors, such as locksets, closers, and hinges shall have a visible label or stamp indicating that the hardware items have been approved by an approved testing agency for installation on fire-rated doors. Hardware for smoke-control door assemblies shall be installed in accordance with applicable codes.

Auxiliary Hardware: Provide hardware as necessary for a complete installation, including weather-proofing at exterior doors and sound-proofing where required for Information Security, Information Assurance and security.

Door Stops: Provide wall or floor stops for all exterior doors that do not have overhead holder/stops.

Electronic Key Card Access System: A programmable electronic key card access system shall be provided on all exterior entry/egress doors, and at all secure spaces. Extension of the existing Installation key card system may be acceptable within security guidelines; the Installation key card system is [insert system]. A programmable electronic key card access system manufacturer's representative shall install all

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hardware and software necessary for the operation of the electronic key card access system and program all locksets. Provide [insert number] blank key cards for each personnel each building is designed to accommodate. All blank key cards shall be serially numbered and each key card shall have its number permanently inscribed on it. The Contractor shall furnish in three-ring binders, one full set of the system manufacturer's system training manual, system maintenance manual, and one training video (in a format provided by the system manufacturer), with each system installed. Each building shall be furnished with a complete stand-alone key card system package. System shall be capable of being compartmentalized so that each building has only the capability to produce key cards for that building. Provide a two (2) year warranty on the system and all components and locksets. All special tools, software, connecting cables and proprietary equipment necessary for the maintenance, testing, and reprogramming of the system shall be furnished to the Contracting Officer Representative.

Provide conduit for visual controls system at every exterior entrance to be monitored at both the security/reception station and the NOC.

F. Exterior Specialties:

Bird Habitat Mitigation: The ISF shall be designed to eliminate the congregating and nesting of birds at, on, and in the facility.

G. Raised Floor System: Raised flooring, for cable management and/or HVAC systems shall be considered where appropriate. In renovation projects, it may not always be feasible. If raised floor system is provided, it shall be no less than 18 inches.

H. [Insert as appropriate: Elevators. Elevators shall be multiple stop 4500-pound service / hospital type, in accordance with ASME 17.1, Safety Code for Elevators and Escalators (latest edition). Elevators shall be provided with pads to protect the interior wall surfaces of the cab. A minimum ceiling height of 9 feet is required. The design and provision of elevators and/or conveying systems shall be accomplished with AT/FP and Information Security, Information Assurance requirements in mind in order to forestall the circumventing of security requirements.]

I. Thermal Insulation: Provide exterior wall, floor, and roof/ceiling assemblies with thermal transmittance (U-values) required to comply with the proposed energy calculations for the facilities. Insulation shall not be installed directly on top of suspended panel ceiling systems.

J. Sound Insulation: Walls, ceiling assemblies, doors and frames, windows and frames, vents ducts, louvers and similar penetrations, and interior partitions shall be designed to provide for attenuation of sound transmission and of external noise sources in accordance with referenced standards and applicable criteria, but no less than the following:

Exterior Walls: STC 49

Interior Partitions: STC 49

Walls/Floors separating Module Spaces: STC 50 / IIC 55

Office Entry and Toilet Doors: STC 25

Sound conditions (and levels) for interior spaces, due to the operation of shredder, server, and mechanical and electrical systems and devices shall not exceed levels as recommended by the referenced standards and facility program requirements. Provide acoustical treatment for drain lines and other utilities.

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The room/space criteria tables provide guidance for acoustic requirements. Ventilation rooms will receive STC 62 separation, floors and walls, to surrounding occupied spaces and STC 52 floors and walls elsewhere. Rooms indicated to receive STC 52 to adjacent spaces require speech privacy or separation for containment of noise. The floors and walls around all of these spaces will be constructed to an STC 52 and walls shall be constructed full-height to the bottom of floor or roof structure above. Spaces listed to receive STC 47 to adjacent spaces are less sensitive. The floors and walls around all of these spaces will be constructed to an STC 47 and walls shall be constructed full-height to the bottom of floor or roof structure above except that the corridor walls of these spaces may stop 2" above the ceiling. Spaces for which an acoustical rating is not listed need not be acoustically separated and walls may stop 2" above the ceiling.

3.5.2 Finishes and Interior Specialties:

A. **GENERAL:**

Provide sustainable materials and furnishings that are easily maintained and replaced. Maximize use of day lighting within security limitations. Provide interior surfaces that are easy to clean and light in color.

B. **Finishes:**

Designers are not limited to the minimum finishes listed in this paragraph and are encouraged to offer higher quality finishes.

Minimum Finish Requirements: Wall, ceiling and floor finishes shall conform to the requirements of the referenced standards. Where code requirements conflict, the most stringent code requirement shall apply.

Walls: All wall finish shall be a minimum of 5/8" painted gypsum board, except where stated otherwise. All gypsum board shall achieve the highest level of performance for mold resistance and shall be transported, handled, stored and installed in accordance with the referenced standards. Use impact-resistant gypsum board in corridors, storage rooms, loading areas, distribution, pulverizer room, stairwells and all areas requiring the frequent or significant movement of materials.

Ceilings: Exposed gypsum board shall be minimum 5/8" and painted. All gypsum board shall achieve the highest level of performance for mold resistance and shall be transported, handled, stored and installed in accordance with the referenced standards. Provide ceiling access panels as appropriate for access to valves, equipment, SIPR conduit, etc. Coordinate location with Use. Acoustical tile ceilings shall be minimum 5/8" and mold/mildew resistant, and shall not be used in areas subject to moisture or chemicals.

Floors:

Resilient Flooring: Resilient flooring shall be durable easily maintained and asbestos free, with color and pattern uniformly distributed throughout the thickness of the tile.

Porcelain/Quarry Tile: Permitted in appropriate spaces, such as entries and lobby.

Ceramic Tile: Permitted in appropriate spaces, such as toilets and locker rooms.

Sealed Concrete: Permitted in appropriate spaces, such as mechanical and electrical rooms.

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Counter Tops: Countertops shall have waterfall front edge. Bathroom, break room, conference room, training room and public toilet countertops shall have integral covered backsplash.

Break Areas: Provide attractive, low-maintenance and durable materials and finishes.

Window Stools: Window stools shall be minimum ½-inch thick cast 100 percent acrylic polymer solid surfacing material.

[Insert as appropriate: Elevator(s) Finishes: Elevator interior walls, ceiling, doors and fixtures shall have a [insert finish and number] stainless steel finish. Floor finish shall be resilient flooring as specified above. All elevators shall be furnished with removable hanging protective pads and fixed hooks to facilitate conversion to use for moving freight.]

Minimum Paint Finish Requirements: All paints used shall be listed on the "approved product list" of the Master Painters Institute, (MPI). Application criteria shall be as recommended by Master Painters Institute (MPI) guide specifications for the substrate to be painted and the environmental conditions existing at the project site.

Exterior Surfaces: Provide durable and easily maintainable materials. Do not use exterior materials that require periodic repainting or similar refinishing processes. Material exposed to weather shall be factory pre-finished and integrally colored or provided with intrinsic weather finish. Except factory pre-finished material or exterior surfaces receiving other finishes, for incidental accouterments exposed exterior surfaces shall be painted a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, confirmed or suspected human carcinogens shall not be used on this project. Exterior paints and coating products shall be classified as containing low volatile organic compounds (VOCs) in accordance with MPI criteria. Application criteria shall be as recommended by MPI guide specifications. [Insert paint type.]

Interior Surfaces: Except factory pre-finished material or interior surfaces, receiving other finishes exposed interior surfaces shall be painted a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, confirmed or suspected human carcinogens shall not be used on this project. [Insert paint type.]

C. **Interior Specialties:**

Signage & Directories: If a building directory is provided, it shall be installed in compliance with the referenced standards.

Stair Exit Door Signage: Install exit signage in compliance with the referenced standards.

Visual Display Units/Cases: If a display case is provided, it shall be installed in compliance with the referenced standards.

Bulletin Boards: Bulletin boards shall be installed in compliance with the referenced standards.

Toilet Accessories: Furnish and install the items listed below and all other toilet accessories necessary for a complete and usable facility. All toilet accessories shall be of durable easily maintained materials.

Public Toilet(s): Toilet accessories shall, in applicable proportion, conform to the requirements of the referenced standards for building code and accessibility.

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Wall Protection:

Chair Rail: Chair rails shall be installed in areas prone to hi-impact use, such as conference rooms, classrooms, corridors and lobby.

Corner Guards: Provide surface mounted, high impact resistant, integral color, snap-on type resilient corner guards, extending from floor to appropriate functional height for wall/column outside corners in high traffic areas. Factory fabricated end closure caps shall be furnished for top and bottom of surface mounted corner guards.

Storage Shelving:

Janitor's Closet: Provide a minimum of six linear feet of 18-inch deep, heavy duty, stainless steel shelving for storage of janitorial supplies.

Storage Room Shelving: Provide durable shelving as required by the facility program for the purpose of each storage room space.

Fire Extinguisher Cabinets & Mounting Brackets: Furnish and install fire extinguisher cabinets and fire extinguisher mounting brackets as required by applicable codes and criteria. Furnish a list of installed fire extinguisher cabinets and mounting brackets (including location, size and type) to the Contracting Office Representative. Recessed cabinets shall not compromise AT/FP and IT requirements.

3.6 STRUCTURAL REQUIREMENTS

A. **General:**

- 1) [The ISF shall be designed as an "Essential Facility" in accordance with both ASCE-7 and IBC 2009 for wind, seismic, and snow design.]

B. **Design Loads:**

- 1) Live Loads. Design live loads per the IBC.
- 2) Raised Access Floor Loading. If included, the raised flooring system shall be designed to accommodate Code required loadings, and/or the weight of the heaviest equipment, whichever is greater.
- 3) Progressive Collapse Avoidance. Where a building is three stories or more in height, design shall conform to Unified Facilities Criteria UFC 4-023-03, Design of Buildings to Resist Progressive Collapse, 14 July 2009 Including Change 1, 27 January 2010.
- 4) Modifications to Existing Structures. Structural modifications may be required in the renovation of existing structures. The structural design shall fully comply with the applicable criteria.
- 5) AT/FP Requirements. Antiterrorism / Force Protection measures shall comply with UFC 4-010-01.
- 6) Foundations / Slabs-on-Grade. The foundation is site specific and must be designed upon known geotechnical considerations. Design the foundations as recommended by the geotechnical investigation. Coordinate the need for a vapor barrier with the architectural floor finishes and requirements of the geotechnical report. Reinforce slabs-on-grade and provide a minimum thickness

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of five (5) inches. Design floor slab thickness and reinforcing for the loads associated with the function of the specific area considered, but not less than five (5) inches.

- 7) Construction Materials. Construction materials shall be as required by applicable criteria.
- 8) Design Analysis. Computer generated calculations must identify the program name, source, and version. Provide input data, including loads, loading diagrams, node diagrams, and adequate documentation to illustrate the design. The schematic models used for input must show, as a minimum, nodes/joints, element/members, materials/properties, and all loadings, induced settlements/deflections, etc., and a list of load combinations. Results must include an output listing for maximum / minimum stresses / forces and deflections for each element and the reactions for each loading case and combination. All calculations shall be performed by a registered engineer and checked by an engineer other than the design engineer.

3.7 SEE PARAGRAPH 6.7 THERMAL PERFORMANCE

3.8 SEE PARAGRAPH 6.8 PLUMBING REQUIREMENTS

3.9 TELECOMMUNICATIONS AND SECURITY SYSTEM

A. **General:**

- 1) For AV / IT / VTC / Phone and Electronic Security System (ESS), operation concept development must precede building design. Coordinate with USAISEC and proponent.

B. **Exterior Telecommunication Services:**

- 1) [Omitted] [Data Connections for Tactical SCI Vehicle Area (TSVA). Provide DAC-2A2 approved Protective Distribution System (PDS) from the permanent SCIF to the TSVA for each SCIF-ready vehicle. Weatherproof tactical interface boxes (TIB) are required for each vehicle and shall be designed and provided to prevent damage from the vehicles. A TIB shall be provided for secure vehicle system connections, non-secure NIPRNET, Telephone, and IDS. Connectors for all systems shall be included in the TIBs that match the current Tactical Vehicle connections. The TIBs shall be connected into the underground pathway system that provides access to the building SCIF. Connection to all data networks (including NIPRNET, SIPRNET, NSANET/TDN-2, and/or any other network required) shall be established through single mode fiber optic cabling unless otherwise specified. Pathways terminating in the SCIF shall terminate in the SCIF server rooms. Connection requirements shall be coordinated with the User.]
- 2) Outside plant connectivity shall be designed and allocated in accordance with US Army Information Systems Engineering Command (USAISEC), guidance consistent with the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) (current edition). ISF facilities shall be connected to a minimum of two distribution nodes with single mode or better fiber optic cabling, and shall be considered as an Area Distribution Node (ADN) for engineering purposes. The ISF shall be connected to the two distribution nodes by physically diverse paths. The fiber optic cabling shall be sized to support the common user

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systems and critical systems. Minimum cabling size shall be 48 strands of single mode or better fiber to each distribution node for the common user systems, and 48 strands single mode or better fiber to each distribution node for the critical systems.

- 3) The criteria in the FDC will govern where conflicts occur between the information contained herein and the information contained in the FDC.

C. **Interior Telecommunications:** Refer to the “Information Systems Facility Design Criteria (FDC)” developed by USAISEC for additional information concerning telecommunications design. The criteria in the FDC will govern where conflicts occur between the information contained herein and the information contained in the FDC.

- 1) **Telecommunications Space.** Telecommunications infrastructure and cabling shall be designed and allocated in accordance with U. S. Army Information Systems Engineering Command (USAISEC), National Security Agency (NSA), and Defense Information Systems Agency (DISA) guidance consistent with ANSI/TIA-568-C.1-1 Commercial Building Telecommunications Cabling Standard (Addendum 1-Pathways and Spaces) and the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) (current edition). The approximate size for all telecommunications spaces within a facility shall be 2 to 4 percent of the net building area. The exact percentage of space allocated for telecommunications will be based upon the Information Systems Facility Design Criteria (FDC) developed by USAISEC for the specific facility. Examples of telecommunications spaces within an ISF are shown below. Multiple quantities of each type of room may be required and/or some room types may be combined based on the operational and security requirements of the building tenant. All telecommunications spaces within the ISF shall only be accessed from inside the building. No exterior access shall be provided.

a) **Entrance (Telecommunications) Room (ER).** A space in which the joining of inter or intra building telecommunications backbone facilities takes place. An entrance room may also serve as an equipment room. The Entrance Room shall be the main telecommunications entry point (service entry) for the facility. The ER will accommodate the equipment (e.g., data and voice switches, patch panels, etc.) used to transport, transition, and terminate all telecommunication services from the ISF, other local networks, and circuits. These rooms shall have the following requirements.

- i. UPS power shall be provided for all active telecommunications equipment.
- ii. Generator back up power shall be provided in all Entrance Rooms for all active telecommunications equipment.
- iii. All ERs shall be conditioned space and shall have individual temperature and humidity controls.
- iv. A double door (72 in wide x 90 in high) without doorsill and center post is required to facilitate movement of large equipment into and out of the room.
- v. All ERs shall have anti-static floor throughout.
- vi. No dropped ceilings are permitted.

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- b) Telecommunications Equipment Rooms (TER). The TER is an environmentally controlled centralized space for telecommunication equipment that usually houses a main or intermediate cross-connect. The TER also houses equipment such as data switches, servers, and radios and typically connects the ER to the Telecommunications Rooms. A separate TER shall be provided for TS/SCI equipment for JWICS and special mission networks as required. Each TER shall have an equipment area, operations area, and maintenance/staging area. These rooms shall have the following requirements.
- i. UPS power shall be provided for all active telecommunications equipment.
 - ii. Generator back up power shall be provided in all Telecommunications Equipment Rooms for all active telecommunications equipment.
 - iii. All TERs shall be conditioned space and shall have individual temperature and humidity controls.
 - iv. A double door (72 in wide x 90 in high) without doorsill and center post is required to facilitate movement of large equipment into and out of the room.
 - v. All TERs shall have anti-static floor throughout.
- c) Audio/Visual (A/V) Control Rooms. Each A/V control room shall contain an operations area and an equipment area. The operations area will contain the A/V control system workstations. The equipment area will contain all the centralized A/V equipment required to interface with and control all briefing and conference rooms. The operations area shall be acoustically isolated, to the greatest extent possible, from the A/V equipment area as well as any other adjacent operational areas. There shall be at least one A/V control room per ISF (provide separate A/V where TS/SCI is provided). See paragraph 3.9.F Audio/Visual Systems for more information. These rooms shall have the following requirements.
- i. UPS power shall be provided for all active telecommunications equipment.
 - ii. Generator back up power shall be provided in all A/V Control Rooms for all active telecommunications equipment.
 - iii. All A/V Control Rooms shall be conditioned space and shall have individual temperature and humidity controls.
 - iv. All A/V Control Rooms shall have anti-static floor throughout.
- d) Telecommunications Rooms (TR). TRs are used for the termination of horizontal cables to the user work areas and termination of cables and equipment to the backbone wiring systems within the building. There may be multiple types of TRs depending on the access area and associated classification level (e.g., one type containing Secret and below, one type containing TS/SCI and below to service the SCIF, etc.). TRs that house equipment of multiple classification levels will require more square footage than single classification TRs since they must be sized to meet RED/BLACK

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separation requirements. There shall be at least one TR of each required type per floor and TRs shall be vertically stacked to facilitate vertical backbone cable distribution throughout the ISF. More than one TR per floor is required if the total copper cable length to a work area exceeds 295 feet. These rooms shall have the following requirements.

- i. Refer to room table for UPS information.
 - ii. Generator back up power shall be provided in all A/V Control Rooms for all active telecommunications equipment.
 - iii. All TRs shall be conditioned space and shall have individual temperature and humidity controls.
 - iv. All TRs shall have anti-static floor throughout.
 - v. All TRs shall be sized in accordance with I3A Criteria and TIA Standards.
- 2) Telecommunications Pathways.
- a) Provide cable tray pathways throughout the facility to support the systems required for the construction of the facility as well as for the user's computer networks, A/V systems, telecommunication systems and other specialized electronic systems. All telecommunications pathways shall be provided in accordance with (IAW) U. S. Army Information Systems Engineering Command (USAISEC), National Security Agency (NSA), Defense Information Systems Agency (DISA) guidance consistent with ANSI/TIA-568-C.1-1, Commercial Building Telecommunications Cabling Standard (Addendum 1-Pathways and Spaces), and the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) (current edition) and shall meet the separation requirements of NSTISSAM, TEMPEST/2-95A, MIL-HDBK-232A, ICS 705-1, and JAFAN 6/9 as applicable. A separate cable tray system for each security level is recommended – unclassified (BLACK), SECRET/Top Secret (RED), and TS/SCI (YELLOW). Use of the BLACK cable tray system for any non-C4I/IT systems (e.g., access control, alarms, etc.) shall be coordinated with USAISEC. RED or YELLOW cable tray systems shall not be used for any non-C4I/IT systems. Some C4I/IT systems (e.g., DRSN, NSTS) may require a separate, dedicated pathway.
 - b) A Protected Distribution System (PDS) is required if any cabling that carries classified data traverses an area with a lower classification (e.g., SECRET or higher classification data traversing an unclassified area, or SCI data traversing a SECRET or an unclassified area). The PDS shall be designed and built to meet requirements of the National Security Telecommunications and Information Systems Security Instruction (NSTISSI) No. 7003 (NSTISSI 7003). The word "shall" shall be substituted for the word "should" or "will" in the referenced publication NSTISSI 7003. Specifications Section 27 05 28.39, Surface Raceways for Communications Systems shall be incorporated into this project. (This section can be obtained at the following URL: ftp://ftp.usace.army.mil/pub/sas/Surface_Raceways/). Surface mounted raceway shall be used instead of the surface mounted conduit unless otherwise directed by the local ISF or Physical Security Officer. All PDS and classified cable pathway systems shall be approved by the Designated Approving Authority (DAA) and the Certification Authority (CA). Facility will require a hardened protected distribution system (PDS).

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Requirements to protect sensitive mission data for combat leaders in Continental United States (CONUS) require that SIPRNET transport be provided to the wall plate. This facility will be one of the primary points of presence (POP) for the installation SIPRNET. The SIPRNET expansion will utilize the existing Campus Area Network (CAN) and building network infrastructure. The CAN will be used to distribute encrypted SIPRNET to the individual buildings, and the building's network infrastructure will be used to distribute the encrypted SIPRNET to the communication closet where the Encryptor is installed. If located in an Uncontrolled Access Area (UAA), the hardened PDS (consisting of raceway and EMT) will be extended from the cabinet/ Information Processing System (IPS) safe to a lockable user outlet box. If located in a Controlled Access Area (CAA), simple PDS will be used. Cat6 UTP or STP/ScT cable will be installed inside the PDS and will be terminated at the equipment cabinet in a RJ-45 plug that will plug into the switch. At the user's outlet box the cable will be terminated on a Cat6 RJ-45 jack module mounted inside the outlet box. In a UAA, the boxes will be secured. A minimum space of 24"W x 32"D will be reserved for the locking SIPRNET Node cabinets in the communications closets. The dimensions for the IPS container are 32"W x 44"D x 29"H, and additional 28" of unobstructed space is required in front and to one side of the IPS container for operation of door. The space may be an unused corner in the room. A standard 120Volts AC, 20-amp receptacle on a separate circuit breaker is required to power the uninterruptable power supply (UPS) in the container. All specifications can be found within the SIPRNET Technical Implementation Criteria, latest revision.

- 3) Telecommunication Cabling. All telecommunications cabling shall be designed, furnished, and installed in accordance with (IAW) U. S. Army Information Systems Engineering Command (USAISEC), National Security Agency (NSA), and Defense Information Systems Agency (DISA) guidance consistent with ANSI/TIA-568-C.1-1 and the Technical Criteria for the Installation Information Infrastructure Architecture (I3A) (current edition), labeled IAW TIA/EIA 606-A606-B, and shall meet the separation requirements of NSTISSAM, TEMPEST/2-95A, MIL-HDBK-232A, with ICS 705-1 and JAFAN 6/9 as applicable. Cable connectors and jacket colors shall be site specific. The number and type of connectors shall be defined by the User.
 - a) Backbone (Vertical) Cabling. All backbone cabling (i.e., cabling between the ER and TER and between the TER and TRs) shall be terminated at both ends between each room. Data backbone cabling shall be riser rated fiber and voice backbone cabling. The data backbone cabling shall be riser rated fiber or copper as described in the latest I3A Criteria. Site-specific security requirements may dictate that all cabling between the TER and SCIF or TRs and SCIF be fiber optic.
 - b) Horizontal Cabling. Cabling from outlets will terminate in the Telecommunication Rooms (TRs). Consolidation points shall be utilized in major areas of the facility between the TRs and the outlets to facilitate flexibility. All horizontal cables shall be terminated in the serving telecommunications room. Telecommunications cabling shall be copper (Category 6 or latest I3A Criteria specified category) for all voice connections. Data cabling will be a User specified combination of copper and/or fiber. Unclassified copper cabling shall be Unshielded Twisted Pair (UTP) and classified copper cabling shall be Shielded Twisted Pair (STP). Shielded cabling shall be used for all non-classified and classified cables in the SCIF.

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- 4) Telecommunications Outlets. Telecommunications outlets shall be provided throughout the facility per user requirements. Exact location and quantity of outlets will be determined during the design phase. The following minimum outlet configurations shall be provided for each workstation and each 80 square feet of other floor area with the exception of mechanical rooms, electrical rooms, storage rooms, TRs, corridors, etc.: for non-SCIF areas provide one unclassified telephone/data outlet containing one voice and two data jacks and one Secret/TS outlet containing two data jacks; for SCIF areas provide one unclassified telephone/data outlet containing one voice and two data jacks, one Secret/TS outlet containing two data jacks, and one TS/SCI outlet containing two data jacks. Outlets shall be a user specified combination of Cat 6 rated RJ-45 connectors and/or multi-mode fiber connectors as specified in the FDC. Mechanical rooms, electrical rooms, storage rooms, TRs, etc. shall receive one wall-mounted unclassified outlet per room containing one voice (Cat 6 UTP) jack. A minimum of six (6) additional wall mounted outlets (location TBD) per 10,000 square feet shall be provided for courtesy and convenience requirements. Each workstation in the NOC shall have three computers.
- 5) Telecommunications System Labeling. All labeling for both interior and exterior telecommunications systems shall be in accordance with The Administrative Standard for Commercial Telecommunications Infrastructure (TIA-606-B). Labeling shall include all telecommunications equipment and cabling (i.e. Grid coordinate system for equipment racks and cabinets, cable tray, cables, PDU, fire stopping, pathways, spaces, connecting hardware, grounding, etc.).

D. **Satellite / Cable TV (CATV):**

- 1) For additional information concerning Satellite/CATV design, refer to the "Information Systems Facility Design Criteria (FDC)" developed by USAISEC. The criteria in the FDC will govern where conflicts occur between the information contained herein and the information contained in the FDC.
- 2) Satellite/ (CATV) shall be provided in the [insert spaces as appropriate: all staff principal offices, all conference rooms (minimum two outlets), multi-purpose rooms, and in each of the open office areas. Additionally, (CATV) shall be provided in the NOC. The system shall consist of cabling, pathways, and outlets. All building systems shall conform to applicable criteria to include I3A Technical Criteria. Satellite/HDTV cables that enter or leave an open storage area, (SCIF) require isolation (SM Fiber) to prevent EMI bleed across copper.

E. **Audio/Visual Systems:**

- 1) For additional information concerning audio-visual system design, refer to the "Information Systems Facility Design Criteria (FDC)" developed by USAISEC.
- 2) Video teleconferencing (VTC).
 - a) Provisions for secure and non-secure VTC shall be provided in the Briefing Room and all conference rooms. Provisions generally consist of a power connection and two RJ45 SIPRNET outlets.
 - b) Provide all necessary power, telecommunications, and HVAC equipment to support the secure (TS/SCI) video teleconference equipment found in the Joint Worldwide Intelligence Communications System (JWICS).

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- 3) Paging systems. A zoned paging system shall be provided throughout the facility and integrated with the telephone system.
- F. **GFGI - A/V Equipment:** Provisions (consisting of a power receptacle and conduit for signal wiring) for GFGI A/V Equipment shall be provided in each conference room and training room.
- G. **Security Infrastructure (Security Equipment NIC):** The security infrastructure shall be installed to support Government-furnished equipment including proximity card readers, duress switches, motion detectors, contact switches, and CCTV cameras. All elements of the security system – hardware, software, key card devices, etc – shall be on critical power.
- 1) Intrusion Detection and Security Systems. Provisions for user-provided Integrated ICIDS intrusion detection and security systems are required for all exterior building entrances, all interior entrances to secure areas, secure conference rooms, secure communications rooms, server rooms, secure AV rooms, briefing room, and all other secure and restricted areas of the building, including the SIPRNET room, and the site, as indicated in paragraph 3.3.1.C.3).f). The NOC facility shall also have provisions. Provisions shall include rooms/cabinets, power circuits, telecommunications connections, and raceways and signal wiring for user installed devices. System requirements shall be coordinated with the Installation Security Office.
 - 2) TEMPEST Requirements. TEMPEST Requirements shall be met on a per site basis dependent on the facility zone type and the equipment NSTISSAM level.

3.10 ELECTRICAL REQUIREMENTS

A. **Exterior Electrical Distribution System:**

- 1) Provide redundant underground different primary feeder circuits from the primary substation to the facility in accordance with NETCOM Regulation 415-3 and TM 5-691. Primary circuits shall be installed in duct banks located at a sufficient distance apart to prevent a single point of failure.
- 2) Provide automatic start [exterior] [interior] standby generator(s) in accordance with paragraph 3.10.C.1).f). Locate the generator(s) inside a secure area if inside/outside of the building, in weatherproof enclosures if outside]. If required provide fuel storage tanks for standby generator in accordance with paragraph 3.4.N).
- 3) Computer server rooms shall be separately metered in accordance with the Uptime Institute requirements.

[Note to RFP preparer: Tactical SCIF Vehicle Area for all Deployable Units]

- 4) [Power Connections for Tactical SCIF Vehicle Area (TSVA). Provide underground systems for power connectivity to the TSVA. Power shall be capable of accommodating user power requirements to each SCIF vehicle, as determined by the Government for manned and unmanned platform support without using the platform's onboard power. 40% of the vehicles shall have a load of [] Amps and 60% of the vehicles shall have a load of [] Amps. Connection points shall be designed for ease of serviceability, with the

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appropriate MIL - STD connectors and shall prevent damage from the vehicles. Connection requirements shall be coordinated with the User.]

B. Exterior Lighting:

- 1) General: Exterior area lighting systems shall be provided for sidewalks, service yards, uncovered storage areas, and parking areas. Illumination levels shall be per IESNA for areas adjacent to the primary facility and for parking areas. Lighting circuits shall be controlled by a time switch and/or photocell to allow the flexibility of turning off lights after a set time. Exterior lighting circuits shall be provided as required.

C. Interior Electrical:

- 1) Electrical
 - a) Characteristics. Select electrical characteristics of the power system to provide a safe, efficient and economical distribution of power based upon the size and types of loads to be served. Use distribution and utilization voltages of the highest level that is practical for the load to be served, the facility system voltage shall be based on the interior load requirements as follows:
 - Provide three-phase, four-wire, 208Y/120V systems for demand loads less than 150kVA.
 - Provide three-phase, four-wire, 480Y/277V systems for demand loads greater than 150kVA unless 208Y/120V systems are shown to be more cost-effective.
 - b) Nonlinear Loads. The effect of nonlinear loads such as computers and other electronic devices shall be considered and accommodated as necessary. These loads generate harmonics, which can overload conventionally sized conductors or equipment and thereby cause safety hazards and premature failures. Circuits serving such devices shall be equipped with a separate neutral conductor not shared with other circuits and identify the system. When supported by calculations, K-rated transformers shall be specified when serving non-linear loads. Panel boards and any dry type transformers shall be rated accordingly. Passive filters and six pulse AC drives for Variable Frequency Drives (VFD) units or newer technology shall be considered as a technique to mitigate harmonics in the system. The electrical design shall meet the guidelines of IEEE-519-1992 for harmonic distortion.
 - c) Lightning Protection System (LPS) and Transient Voltage Surge Protection shall be in accordance with NFPA 780 and other referenced criteria. Inspection ports for the LPS shall be provided around the perimeter of the building for the grounding system.
 - d) A Transient Voltage Surge Suppression (TVSS) system shall be provided based on industry standards. Surge protection shall be provided for each voltage level in the facility.
 - e) Receptacles. Electrical Receptacles (including code required GFCI receptacles) shall be provided per NFPA 70 and in conjunction with the proposed equipment and furniture layouts. Provide power, data and telecommunications connectivity to each workstation. A quad receptacle shall be accessibly located adjacent to each voice, data, and CATV outlet. Power poles shall not be used. Convenience duplex receptacles shall be provided, with at least one in each room and in corridors on maximum 40-

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foot centers. Each workstation in the SCIF and NOC shall plan to have three computers. Receptacles shall be provided within 25-feet of any equipment requiring maintenance. Provide a minimum of (1) receptacle under each conference table. Receptacles that are connected to the UPS/generator back up shall be provided with a red or orange device cover plate to readily identify.

- f) Stand-by Power System. Stand-by power system includes generator(s) and automatic transfer switches or paralleling switchgear. Provide backup generators sized to meet the critical and life safety load requirements. The number of (N) generators shall be selected based upon the total load served in kW x125% and size of commercially available units. Generator sizing fuel capacity, air intake and environmental controls and monitoring shall be in accordance with UFC 3-540-04N. Generator shall be able to support load (including voltage regulation) within 30 seconds generators shall provide +/- 0.25% frequency regulation. The generator system shall be per manufacture's recommendations for altitude and temperature. Generators shall be sized for both starting kVA as well as running kW. Automatic transfer switches shall be provided in accordance with NFPA 70 for all loads and shall be equipped with isolation/bypass feature for ease of maintenance. When multiple generators are used, paralleling switchgear shall be provided in lieu of multiple transfer switches. Provide capability to provide a minimum of 72 hours of continuous back-up operation as recommended by UFC 3-540-04 paragraph 5.4.6.
- g) Uninterruptable Power Source (UPS) Systems. Provide a distributed-redundant on-line double conversion type UPS sized to meet actual load requirements to serve the [NOC,] [SCIF,] server rooms, telecommunication rooms, audiovisual control rooms, and the executive conference room shall be provided. Unit(s) shall have a minimum of thirty (30) minutes of capacity at full load to allow for generator override or orderly shutdown of critical loads if the generator power fails to go on line. Unit(s) shall have isolation/bypass capabilities for maintenance. Battery type selection to the UPS System shall be based upon local ISF direction that identifies other design considerations involved with a battery bank – ventilation, separation of strings, hydrogen sensor and any system monitoring requirements – that will reduce the potential for thermal runaway to occur. This additional information will allow standardization to occur or at minimum incorporate a requirement for a system operating hazard analysis (Mil STD 882E and AR 385-10) to be completed to identify hazards and required mitigations for the particular battery configuration to be used.
- h) Provide a minimum of 25% spare circuit and load capacity at all levels of the power distribution system including the stand-by power system.
- i) Computer Power Distribution. Power Distribution Units (PDUs) shall be provided for electrical distribution to telecommunications racks and cabinets. PDUs shall be provided with a 480:208Y/120V K-Rated transformers, transient voltage surge suppression (TVSS), distribution panel boards (complete with 120V 20A circuit breakers), power monitoring and metering, transformer disconnects, Emergency Power Off (EPO) controls and ground bus. The distribution system serving the telecommunications racks and cabinets shall be configured in a distributed isolated redundant (dual path) topology. Automatic Static Transfer Switches (ASTS) shall be used on the secondary side of the PDU to provide redundant power down to the rack level. The baseline ISF design shall provide PDU's sized to provide 125% of

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- calculated design load. See figure 3.10.D-1 for critical load system configuration.
- j) Emergency Power Off (EPO) System. An EPO system shall be provided as required by NFPA 70, Article 645.
 - k) Transformers. Where supported by calculations, dry type distribution transformers serving nonlinear electronic loads shall be K-Rated in accordance with IEEE standard 519-1992.
 - l) Single Line Diagram. Two electrical single line diagrams (laminated in plastic) along with operational procedures shall be provided and mounted in a prominent place in the main electrical room.
 - m) Raised Access Flooring Signal Grounds. All areas provided with raised access flooring shall have signal grounds provided in a grid pattern under all raised floor areas. The signal reference ground subsystem shall use a multi-point grounding topology in accordance with higher-frequency grounding and be in accordance with MIL-188-124B, MIL-HDBK-419A, and the latest version of IEEE 1100.
 - n) Grounding. The ground counterpoise shall be provided around the perimeter of the antenna farm and the building perimeter and shall be utilized for grounding incoming service, building steel, telephone service, piping, lightning protection, and internal grounding requirements. Ground straps shall be provided where required by function and will be connected to the building grounding system. Grounding points shall be provided under each raised access floor in accordance with paragraph 3.9(h). Additional grounding may be provided based on project requirements and in all areas where standby power is provided. Systems shall conform to MIL-HDBK – 419A, NFPA 70 National Electrical Code, local codes, and the US Army I3A Criteria. The earth electrode subsystem and the fault-protection ground subsystem shall be compliant with the latest versions of the National Electric Code (NFPA 70), MIL-188-124B, MIL-HDBK 419A, and IEEE 1100. The neutral-to-ground bonding scheme shall be in strict accordance with the National Electric Code.
 - o) Harmonics. Total voltage and current harmonic distortion shall comply with the FDC and IEEE Harmonic Standard 519-1992.
 - p) Abandoned cables. All abandoned cables shall be removed by the contractor.
 - q) Warning Signs. Provide warning signs for flash protection in accordance with NFPA 70E and NEMA Z535.4 for switchboards, panel boards, industrial control panels, and motor control centers that are in other than dwelling occupancies and are likely to require examination, adjustment, servicing, or maintenance while energized. Provide field installed signs to warn qualified persons of potential electric arc flash hazards when warning signs are not provided by the manufacturer. The marking shall be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.
- 2) Interior Lighting. Lighting and lighting controls shall comply with the recommendations of the Illumination Engineering Society of North America

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(IESNA) and the requirements of ASHRAE 90.1. Lighting shall be compatible with security cameras and security requirements.

- a) Interior Lighting. Interior ambient illumination shall provide a generally glare free, high quality lighting environment and conform to IESNA RP-1-04.
- b) Interior Lighting Controls. Provide lighting controls throughout the facility capable of controlling multiple zones and presets as stated in the FDC. Local manual controls shall supplement automatic controls in offices and specialized areas including all conference rooms, and the NOC, and SCIF areas. Control panel, occupancy, vacancy, and day lighting sensors shall be provided where applicable. Building scheduling control capabilities with local over rides shall also be included.
- c) Special Lighting Circuits. All conference rooms and classrooms shall have a circuit for general lighting, a circuit to focus light on the speaker, and a dimmable circuit to focus light over student desks (or conference table) without glare on audio-video displays. The NOC and SCIF areas shall have a circuit for general lighting and a dimmable circuit to focus light over the general work area without glare on audio-video displays. Dimming ballasts shall be capable of dimming to 5 percent. A single lighting system with control capability of meeting all these requirements may be used. The lamp temperature range shall be coordinated with the video camera light sensitivity utilized in all video teleconferencing rooms.
- d) Video Teleconferencing Room Lighting: Lighting shall have special diffusers so as not to wash out the participants and not impinge on the screens/displays. Controls shall include a central control system with a control interface that also has the capability of being controlled by the A/V equipment.
- e) Emergency egress and exit lighting shall be provided throughout the facility in accordance with NFPA 101 and shall be powered from the stand-by power system referenced in paragraph 3.10.C.1)(f) above.

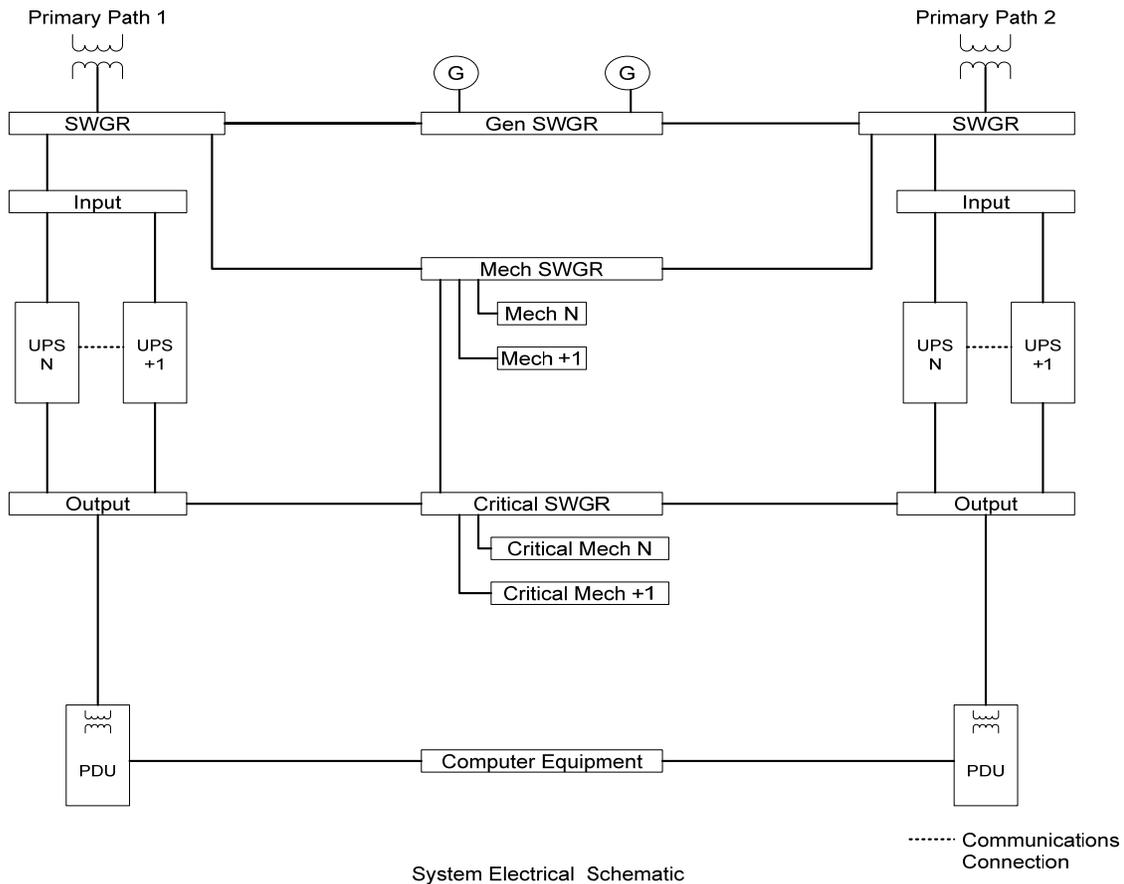
D. **Redundancy/Reliability:**

- 1) Redundancy/Availability:
- 2) If the electrical distribution system or a component of the distribution system fails resulting in an inoperative system, the redundant distribution systems shall be designed, configured and capable of automatic switching to provide 100% of the critical electrical load. Critical load refers to information technology equipment, connected life safety systems and, if required, mechanical support equipment that is required to support the mission. Electrical and mechanical system design for facilities that support critical IT missions should employ the following concepts during the design phase of the project: Component Reliability: The reliability of individual components is critical when establishing the availability of a system. This reliability may be made as a personal judgment of the selector, as a documented function of the mean time between failures (MTBF) or, for electrical systems, tested to validate reliability per NFPA 70, Informative Annex F. Component Count: This refers to the number of required units needed to support the system availability and to provide additional units during unanticipated failures or when maintenance is required. See Electrical Design Parameters for required component count. Topology: The topology of electrical systems shall avoid single points of failure where possible and use fast, automatic switching

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systems to transfer between units. System should be fully monitored for power quality. Path A and B shall be continually energized and capable of supporting the required loads. See Electrical System Schematic for a typical one line diagram. Maintenance: Design should consider future maintenance to lower the cost and time needed to perform any necessary maintenance actions. Cost: If Possible, cost should not be a factor when designing critical IT support systems. Systems should be selected first on historical reliability, low mean time between failures, availability of parts and support personnel, and ease of maintenance. Backup systems shall be provided to ensure that the critical load is supported and available a minimum 99.95% of the time, including during maintenance activities, and configured per Table 3.10.D-1. Mechanical piping systems shall have a single piping system and use electrically controlled valves to enhance the reliability. System should be monitored for flow rates, condition of attached equipment, temperatures, etc.

Figure 3.10.D-1, Single Line Diagram



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Table 3.10.D-1 Electrical Redundancy/Reliability Matrix

Component	Critical IT loads/data center/NOC	Other building areas	Remarks
Chilled Water (CW) Plant	- 15-Minute Backup Cooling capacity for IT loads without generators running	- Separate CW plants for 'other building' and IT/NOC/Data center loads.	15 minute Cooling capacity via CW storage tank and pumps. Pumps to be magnetic starter equipped (no VFD) and supplied from the Data Center (IT) UPS plant via a BPIS-type ATS to switch pumps between each UPS in a 2N UPS arrangement.
CW Piping	N	N	- Cross-connection between building and IT CW plants only when additional backup and redundancy is required
CW CRACs (if used)	Each CW system component must be maintainable without taking the entire system down	N (if used)	- Consider dual-fed supply and return piping loops. Units must be auto-restart after with return of power after power failure.
CW In-Row Coolers (if used)	N+1 (each HACS or every xx feet in open rows)	N/A	Adjust the 'xx feet' as appropriate. Generally, row coolers won't be used in Non HACS arrangements, and if you want to make that a rule, then add it in this block as a remark and delete the 'or every xx feet in open rows'.
Cooling Towers	N+1 with auto-failover	N	
Chillers	N+1 with auto-failover	N	
Packaged Chillers	N+1 with auto failover	N	
Pumps	N+1 with auto-failover	N	
Other in-room cooling systems (IT equipment/data centers)	N+x (see remarks)	N/A	includes overhead, in row units, rack-based systems, etc. use only by special permission from NETCOM. Redundancy requirement to be determined by NETCOM at the time of request.
Thermal Storage	- 15-Minute Backup Cooling capacity without generators running	N/A	Might want to delete this as a separate component, since it is described in the CW Plant, which is where Thermal Storage would be applied
Built-in Air handling Units (non IT, data center, NOC), DX or CW	N/A	N	
DX systems (when used)			
CRACs	N+2	N (if used)	Units must be auto-restart upon return of power after power failure
packaged outdoor units including roof-top units	N+2	N	Units must be auto-restart upon return of power after power failure
Built-In Air Handling units for DX systems.	N/A	N	Units must be auto-restart upon return of power after power failure
HVAC for UPS and UPS batteries			
HVAC for UPS Electronics	N+1 with Generator Backup	N (if used) (Gen backup if used)	Units must be auto-restart upon return of power after power failure
HVAC for UPS Batteries	'N+1 with Generator Backup	N (if used) (Gen backup if used)	Units must be auto-restart upon return of power after power failure
Ventilation for UPS Batteries	N+1 with Generator Backup	N+1 (If used) (Gen backup if used)	Units must be auto-restart upon return of power after power failure

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3.11 HEATING, VENTILATING AND AIR-CONDITIONING (HVAC)

3.11.1 Mechanical Design:

- A. **General:** The entire facility shall be heated and air conditioned, except that mechanical rooms, electrical rooms and similar utility spaces may be heated and ventilated if allowable operating temperatures for equipment installed can be met. All equipment/materials shall be installed in accordance with the manufacturer's instructions and/or recommendations. For HVAC systems serving high density critical areas, UPS shall be provided to enable cooling during a power fluctuation or outage. UPS power may be required for fans and pumps serving these loads.
- B. **Exterior Equipment:** No aboveground mechanical equipment (chillers, refrigeration equipment, condensers, air-handling equipment, and similar equipment) and miscellaneous equipment (including transformers and generators) shall be physically located within secure vehicle parking areas. Aboveground mechanical equipment will meet force protection and security standards and will blend into the architectural design of the building.
- C. **Exterior Construction:** Use sustainable, low maintenance finish materials for exposed mechanical equipment.
- D. **Design Data:** The outdoor design temperature for comfort cooling shall be the 1 percent dry bulb and the corresponding mean coincident wet bulb temperature for the locale. The outdoor design temperature for heating shall be the 99 percent dry bulb temperature for the locale. The indoor design relative humidity for cooling design calculations shall be 50 percent +/- 10%. Actual internal equipment loads (i.e. heat dissipation) for finalized HVAC system sizing purposes shall be acquired from the USER or applicable point-of-contact (POC), and is the responsibility of the Design/Build Contractor. For baseline purposes, estimated internal equipment loads (i.e. heat dissipation) shall be as follows: For the NOC (or other constantly manned location such as the EMCS/BMS or Network Management System), and SCIF and Telecommunication areas use Table 3.11.D-1. For all rooms / areas with the exception of the Classroom / Training area, it shall be assumed that each personnel / workstation area, cubicle, and office space is assigned a personal computer (desktop), for HVAC load calculation purposes. Unless otherwise indicated, the peak quantity of personnel within the Conference room / areas shall be based on one person per 20 square feet of floor area. Design of HVAC systems, approach and best practices shall be consistent with ASHRAE Handbooks and ASHRAE Standards and Best practices for Data Centers and Data Processing Environments.

Table below provides planning level estimates of equipment loads for general information only. These shall be validated/updated in design with actual loading.

Table 3.11.D-1 Equipment loads for planning

NOC/ SCIF Areas	
Room Description	Watts
SCIF (Open Office)	15,119
SIGINT	1,950

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Network Operations Area	2,700
GEOSPATIAL	1,290
Server Rm	6,300
Server Rm (NOC)	19,320
Targeting Office	1,460
Conf/VTC	405
CAIM	1,620
SIGINT Leadership	405
Printer/Copier/Files	4,870
SCIF (Open Office)	15,119
SIGINT	1,950

Table 3.11.D-2 Indoor Design Data

Heating**	
General Indoor Design Temperature	70°F
Unoccupied Space Design Temperature	55°F
SCIF , Telecomm. Rooms	72°F
*NOC and *Server Rooms	72°F/45% RH plus/minus 5%
Mechanical Rooms (freeze protection)	40°F
Cooling**	
General Indoor Design Temperature	75°F
SCIF , Telecommunications Rooms	72°F
*NOC and *Server Rooms	72°F/45% RH plus/minus 5%

*Areas in which humidity control (i.e. humidification, reheat, etc.) may be required.

** Values shown are notional and are recommended to comply with the latest ASHRAE Environmental Guidelines for Datacom Equipment. Present guidance is to allow wider temperature and humidity excursions to minimize reheat and humidification energy.

E. Air Handling Equipment:

- 1) The following areas shall each be provided and served by an independent and dedicated air-handling system: Network Operations Center (NOC), SCIF, Main Entrance Telecommunications Room, Telecommunication Equipment Rooms,

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Telecommunication Rooms, NOC, UPS Room, Battery Room, Communications rooms, IPN and Server Rooms. Individual temperature control shall be provided for each of the above listed areas/rooms. Equipment redundancy shall be provided for each of the above listed areas/rooms and for other associated areas (i.e. AV Controls, etc.) as indicated/addressed in Table 3.11.K-1.

- 2) The NOC, IPN and all server rooms shall be served and conditioned utilizing computer room air conditioning (CRAC) units or other equivalent equipment or systems such as row coolers, etc. Humidity control is required in the NOC and all server rooms in accordance with the latest ASHRAE guidance if active systems are required to maintain compliance with the ASHRAE guidance. All cooling systems for these areas shall be designed for continuous use.

F. **[Office Space on Raised Floor Systems:** Consider at least the following two systems in the LCCA:

- 1) Under Floor Air Distribution (UFAD) system. Conform to ASHRAE Under floor Air Distribution (UFAD) Design Guide.
- 2) Conventional Variable-Air-Volume (VAV) system.]

G. **HVAC system requirements for administrative areas:** The capability of extending the regularly-scheduled operating hours of the HVAC systems shall be provided. Provide HVAC provisions for accommodating the Duty Officer's 24/7 occupancy pattern. Provisions shall consider the normal after-hour shut-down of the main building heating/cooling system. Administrative areas shall be temperature-controlled by the DDC System. Temperature set point adjustment shall be accomplished via DDC System by authorized personnel not on site. Occupant set point-adjustable thermostats shall not be used. Note that NETCOM has waiver authority for DDC system setbacks for all operational spaces, such as below. Ensure the ability to maintain steady temperatures in these areas:

- i. Server farms,
- ii. Data centers,
- iii. Installation processing nodes,
- iv. Multi-Service technical control facility rooms
- v. Sensitive equipment rooms,
- vi. Controlled storage,
- vii. Local session controller nodes,
- viii. Network operations centers,
- ix. Transmitter rooms,
- x. Telecommunications rooms
- xi. Sensitive Compartmented Information Facilities,
- xii. Sensitive equipment storage,
- xiii. Test, measurement, and diagnostic spaces,
- xiv. Satellite communication operations rooms,
- xv. Uninterruptible power supply rooms,
- xvi. IT mission equipment heating and ventilating equipment,
- xvii. Battery rooms, and
- xviii. Other IT equipment and equipment related spaces.

H. **Multi-Purpose Conference/Classroom and Training Rooms:** Provide separate individual temperature control zone for each room. Provide blank zone temperature sensor with remote temperature setpoint via the DDC system by authorized personnel.

I. **Uninterruptable Power Source (UPS):** HVAC systems serving UPS and Battery rooms containing stationary battery systems shall be designed and provided to

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maintain appropriate interior environmental conditions (temperature, humidity, and pressure), and to limit hydrogen gas accumulation to less than an explosive mixture as noted in UFC 3-520-05, with the exception that battery spaces hall always be maintained at the manufacturer’s recommended temperature or 77 degrees F if not stated. Design of HVAC systems shall meet the system manufacturer’s requirements and applicable code requirements such as OSHA, NFPA 1, NFPA 111, NFPA 70, etc. Ventilation/exhaust system shall be provided as required and shall be an independent and dedicated system that is separate from all other building systems. Air recirculation within the battery area is not allowed, and where required, mechanical components of the ventilation system shall be explosion-proof. Appropriate alarms and automatic controls shall be provided to automatically detect and sound audible alarm in the battery room and at the NOC upon malfunction of the ventilation system. A malfunction of the ventilation system shall prevent the battery charging system from operating. Design features of the battery area/room shall address all requirements such as ventilation, fire protection, and hazardous material reporting, disposal, and spill control. Battery spaces with substantial ventilation loads should be considered for energy recovery with the exhaust air stream.

J. Plumbing Systems:

- 1) An emergency eyewash station shall be provided and located within the area of the battery room and UPS room.

- K. **Redundancy / Reliability:** If the HVAC system or a component of the main primary HVAC system fails resulting in an inoperative system, the redundant HVAC equipment shall be designed, configured, and capable of automatic switch-over to providing 100% of the load. Systems shall comply with the following Table:

Table 3.11.K-1 Redundancy/reliability matrix

REDUNDANCY/RELIABILITY MATRIX			
Category	Equipment or Area Served	Battery Back-Up for Controls (see note 4)	Requirement
Central Equipment and Associated Controls	Cooling and Refrigeration Equipment	Yes	100% Dedicated redundancy is required (See Note 7)
	[Heating Equipment]	[Yes]	[100% Dedicated redundancy is required (See Note 7)]
	Sump Pumps, Sewage Ejectors, and Lift Stations (as required)	Yes	Duplex, with each pump sized at 100 percent.
Air-handling Equipment and Associated Controls	COIC	Yes	100% Dedicated redundancy is required
	SCIF	Yes	
	NOC and Server Rooms	Yes	
	Entrance (Communications) Room, Telecommunications Equipment Rooms and Telecommunications Rooms	Yes	
	Command Suite	Yes	
	AV Control associated with the COIC, SCIF and ,NOC, Command Suite	Yes	
	UPS Rooms	Yes	

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REDUNDANCY/RELIABILITY MATRIX			
Category	Equipment or Area Served	Battery Back-Up for Controls (see note 4)	Requirement
	Briefing	No	No airside redundancy required.
	Other Spaces	No	No airside redundancy required.
Piping	General	NA	Provide isolation valves at equipment, riser feeds, and pipe branches serving two or more pieces of equipment.
	Server Rooms, Entrance (Communications) Room Telecommunications Equipment Rooms, Telecommunications Rooms COIC and NOC, Command Suite, SCIF , AV Control associated with the COIC, UPS Rooms	NA	[Provide 100% redundant cooling [and heating]] piping feeds utilizing separate, remote pathways from the redundant cooling [and heating] source equipment to air-handling equipment serving these areas. Provide valves to allow selection and isolation of independent piping feeds.
Notes:			
<ol style="list-style-type: none"> 1. Where redundancy requirements dictate the use of packaged equipment for an area or combination of areas, two (2) separate sets of packaged equipment, each at 100% capacity, are required to be provided. 2. The HVAC system must be capable of isolating non-critical areas in the event of failure of central equipment. 3. HVAC Equipment is not required to be on UPS. 4. Controls must have battery back-up or non-volatile memory to facilitate automatic re-start upon restoration of stand-by or normal power. 5. Where centralized underground piping distribution system is utilized as a cooling [and heating] fuel source, it must be available year-round, 24-hrs/day, 7-days/week, and an additional and separate cooling [and heating] system shall be provided to serve as the required 100% capacity backup. 6. Areas and systems requiring 100% dedicated redundancy shall include the capability of automatic monitoring and automatic system switch-over in the event of a system operational failure or malfunction, and also to equalize systems run time. System operational failure or malfunction shall produce an audible and visual alarm for the occupants. 7. Applicable only to the equipment serving the critical areas listed in the "Air-handling Equipment and Associated Controls" category where 100% dedicated redundancy is indicated to be required. 8. [Redundant heating piping feeds are not required to be extended to the individual air terminal units (i.e. VAV boxes) in VAV air handling systems.] 			

3.12 ENERGY CONSERVATION REQUIREMENTS

3.12.1 Energy Performance: The building, including the building envelope, HVAC, ventilation and exhaust systems, service water heating, power, and lighting systems shall be designed to achieve an energy consumption that is at or below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 189.1 (see paragraph 5.9 Energy Conservation). (Note: Plug loads shall be included in building energy modeling but are subtracted in the final calculation of Energy Performance. See section "Design After Award" for additional guidance.)

3.12.2 Required Energy Conservation Features. All items listed in the required energy conservation features table shall be provided as a minimum. Additional energy conservation features may be required to meet the above energy performance. The contractor is responsible for determining and providing additional energy conservation features to meet the energy performance requirement. Where equipment types are indicated, only minimum efficiencies apply.

3.12.3 Compliance Documentation. The required energy conservation features shown in the table above contributes to the achievement of the above energy performance and are life cycle cost effective for the facility. Use of the required energy conservation features does not eliminate the requirement for energy analysis calculations documenting compliance. The D-B contractor must document compliance with the above energy performance utilizing the methodology described in ASHRAE 189.1, Appendix D. The

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design analysis shall document each of the features selected to achieve the specified energy performance.

3.13 FIRE PROTECTION REQUIREMENTS

3.13.1 Fire Protection and Life Safety:

- A. Standards and Codes. All fire protection and life safety features shall be in accordance with UFC 3-600-01 and the criteria referenced therein. The facility shall be classified as MISSION CRITICAL and shall be provided with complete sprinkler protection. Electronic equipment areas that house data equipment, servers, and racks may have clean agent systems in addition to water based fire protection systems, if warranted. However, clean agent systems are NOT required.
- B. Qualifications of Fire Protection Engineer. The design of the fire protection features shall be by a qualified fire protection engineer meeting one of the conditions indicated in UFC 3-600-01.
- C. Fire Protection and Life Safety Analysis. A fire protection and life safety design analysis shall be provided for this project. The analysis shall be submitted with the preliminary design submittal. The analysis shall include classification of occupancy (both per the IBC and NFPA 101); type of construction; height and area limitations (include calculations for allowable area increases); life safety provisions (exit travel distances, common path distances, dead end distances, exit unit width required and provided); building separation or exposure protection; specific compliance with NFPA codes and the IBC; requirements for fire-rated walls, doors, fire dampers, etc.; analysis of automatic sprinkler and extinguishing systems and protected areas; water supplies; smoke control systems; fire alarm system, including connection to the base-wide system; fire detection system; standpipe systems; fire extinguishers; interior finish ratings; and other pertinent fire protection data. The submittal shall include a life safety floor plan for all buildings in the project showing occupant loading, occupancy classifications and construction type, egress travel distances, exit capacities, areas with sprinkler protection, fire extinguisher locations, ratings of fire-resistive assemblies, and other data necessary to exhibit compliance with life safety code requirements.
- D. Sprinkler System. The facility shall be fully protected with automatic sprinkler systems. All floors and all areas of the facilities shall be protected. The sprinkler system design shall be in accordance with UFC 3-600-01 and NFPA 13. Consult with the using agency to determine if the enhanced fire protection afforded by clean agent system, in addition to the water-based systems, is desirable considering the significant operations, maintenance, and cost to the user associated with the clean agent system. Do not use clean agent systems in renovations where existing sprinkler systems are otherwise available to tap into.
- E. NOC, Server Rooms, Telecommunication Equipment Rooms, Entrance Communication Room and other information technology equipment areas. Provide each area with a separate supervised zone-control valve assembly situated in an accessible location near the zone boundary. Provide a flow switch in the pipe serving each zone and wire to disconnect electric power from equipment upon sprinkler flow.
- F. Elevators. The fire protection features of elevators, hoist ways, machine rooms and lobbies shall be in accordance with UFC 3-600-01, ASME A17.1, IBC, NFPA 13 and NFPA 72.
- G. Protection of Piping Against Earthquake Damage. Sprinkler and fire pump piping systems shall be protected against damage from earthquakes. Seismic protection shall

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include both flexible and rigid couplings, sway bracing, seismic separation assemblies where piping crosses building seismic separation joints, and other features as required by NFPA 13 for protection of piping against damage from earthquakes.

- H. Fire Water Supply. [Fire flow test data is provided in the appendix.][The geographic district will provide the fire flow test data for preliminary fire protection system design. The contractor shall verify fire flow data by conducting necessary fire flow tests at the project site during project. The fire protection engineer shall base the design of the fire protection system on the results of these tests.]
- I. Fire Detection and Alarm. A fire alarm and detection system shall be provided. It shall comply with the requirements of UFC 3-600-01 and NFPA 72. The system shall be addressable and fully compatible with and integrated with the local base-wide central monitoring system.
- J. Mass Notification System (MNS). A mass notification system shall be provided as required by UFC 4-010-01
- K. Building Construction. Construction shall comply with requirements of UFC 3-600-01, the International Building Code, NFPA 101, and NFPA 75.

3.14 SEE PARAGRAPH 6.14 SUSTAINABLE DESIGN

3.15 SEE PARAGRAPH 6.15 ENVIRONMENTAL

3.16 SEE PARAGRAPH 6.16 PERMITS

3.17 SEE PARAGRAPH 6.17 DEMOLITION

3.18 SEE PARAGRAPH 6.18 ADDITIONAL FACILITIES

3.19 EQUIPMENT AND FURNITURE REQUIREMENTS

- 3.19.1 General: All electrical hook-ups, data outlets, structural support, wall brackets and additional infrastructure as required to support the GFGI equipment listed below shall be provided.

Furniture, fixtures and equipment (FF&E) will be provided according to a schedule that will designate what items are contractor-provided/contractor-installed (CP/CI), government-provided/contractor-installed (GP/CI) or government-provided/government-installed (GP/GI).

[RFP Preparer will be provided with a detailed, descriptive and quantifiable list of equipment. The list shall also be coordinated with the Facility Design Criteria Manual developed by USAISEC for each unique facility.]

- 3.19.2 Furnishings:

- A. Furniture Systems: The criteria contained in Table 3.19.1-1 (following page) describe the furnishing requirements for all room types for these facilities. Furnishings, other than installed equipment, are to be Government furnished and Government installed (GFGI) unless otherwise specified in this document. All computers and related hardware, copiers, faxes, printers, video projectors, video playback equipment and TVs and other items indicated in the Equipment List above are GFGI. The following

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furnishings list is provided for coordination of room and office layouts to ensure suitability for their intended function. Large interior spaces such as open office areas can be subdivided into smaller areas by using office partitions, storage units and file cabinets or similar devices. In general, the interior design shall provide a comfortable, efficient and flexible work environment. The Room Furnishings Chart on the following pages provides typical furnishings associated with each category of space in the facility program.

Table 3.19.1-1- Room Furnishings Chart [Insert descriptions as appropriate]

Room Type	Description	SF	Comments	Sample Furniture Description
P3	Director's Office	[200]	PRIVATE OFFICE	Desk unit with executive single pedestal desk w/ center drawer, box/box/file pedestal, full modesty panel; executive bridge 42" min.; credenza unit w/ two drawer lateral file and hutch unit w/ door storage, one wardrobe cabinet, one 5-shelf bookcase, one 4-drawer lateral file, two guest chairs, one executive chair.
P4	Division Chief Office	[150]	PRIVATE OFFICE	Desk unit with executive single pedestal desk w/ center drawer, box/box/file pedestal, full modesty panel; executive bridge 42" min.; credenza unit w/ two drawer lateral file and hutch unit w/ door storage, one wardrobe cabinet, one 5-shelf bookcase, one 4-drawer lateral file, guest chair, one executive chair.
O3	Open Workstation (Regular)	[60]	OPEN WORKSTATION	<i>[Note to preparer – Use 60 SF workstation with 36 SF filing space.]</i> Systems furniture workstation with work surfaces, file drawers and overhead storage. Min. [36] SF filing space.

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Table 3.19.1-1- Room Furnishings Chart [Insert descriptions as appropriate]

Room Type	Description	SF	Comments	Sample Furniture Description
EC	Executive Conference Room	[insert sf]	EXECUTIVE CONFERENCE / VTC ROOM	Conference Table with [insert number – maximum 8] conference chairs and [#]side chairs, [#] Buffet Credenzas.
CL	Multi-Purpose Conference Classroom	[sf]	[#] PN VTC CONFERENCE ROOM	Conference Table with [#] conference chairs and [#] side chairs. (2) Buffet Credenzas.
BR	Break Room	[sf]	BREAK ROOM	Contractor furnished, contractor installed minimum [insert number] LF base and wall cabinets, dishwasher (if required by User), disposer, and space for a full size refrigerator with ice-maker. [#] Break room tables, and [#] chairs. Provide one [insert size] wall mounted bulletin board.
CE	Security Office	[sf]	SCREENING/ LOBBY	Metal detectors Systems furniture office area / pass issue counter with security window, approximately [sf], for [#] staff members
DC	Distribution	[sf]	STORAGE AT RECEIVING	Provide 24" deep, 36" high counter equivalent to the length of the room.
PC	Printer/Copier	[sf]	PRINTER/COPIER	Contractor furnished, contractor installed minimum [#] LF base and wall cabinets to accommodate GFGI laser printer, fax machine, and supplies.
RA	Lobby	[sf]	MAIN RECEPTION AREA	Minimum [#] lounge chairs and [#] side table(s).
ST	General Purpose Storage Room	[sf]	SUPPLIES/STORAGE ROOM	(1) 6-shelf steel shelving unit measuring approximately 48" W X 16" D X 72" tall for every 20 SF of storage room space.
TE	Conference/Team Room/Area	VARI ES	8 PN TEAM ROOM	Conference Table with [8] conference chairs and [4] side chairs.
			6 PN TEAM ROOM	Conference Table with 6 conference chairs.

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Table 3.19.1-1- Room Furnishings Chart [Insert descriptions as appropriate]

Room Type	Description	SF	Comments	Sample Furniture Description
NOC	Network Operations Center	[sf]	OPEN OFFICE WITH WORKSTATIONS AND SERVER ROOM	[#] total systems furniture workstations, approx. 48 SF, with work surfaces, file drawers and overhead storage as indicated on standard floor plans. Space for GFGI communication racks, equipment, and 3 each workbenches in server room and bare all for large monitors. Bare wall to accommodate large display monitors

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3.18.3 Equipment:

A. Equipment in Conference Rooms

- 1) [Video display with projector (at least 72 inches wide)]
- 2) [VIDEO PLAYBACK EQUIPMENT]
- 3) [Control console for integrated video system]
- 4) [Smart podium with control of video system]
- 5) [Adjustable lighting levels]
- 6) [Video conference secure and non-secure VTC capabilities]
- 7) [White boards and map rails]
- 8) [___]

B. Equipment in NOC.

- 1) [Integrated video display wall (Wall of Knowledge).]
- 2) [Large video display with projector.]
- 3) [Video playback equipment]
- 4) [Control console for integrated video system]
- 5) [PA System with hardwired microphones.]
- 6) [Adjustable lighting levels.]
- 7) [Video conference secure and non-secure VTC capabilities.]
- 8) [Each station shall have connectivity to audio, secure and unsecured networks.]
- 9) [White boards and map rails.]
- 10) [Cabinets to support the User's computer networks, video integration system, communication systems and other specialized electronic systems.]
- 11) [Large-screen projectors and/or monitors/displays.]
- 12) [___]

C. [Audio Visual Control Rooms]

- 1) [Specialized video integration control systems require cabinet space (on average two 72-inch tall cabinets per VTC with an operations desk and space for mounting control monitors for each VTC.)]

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2) [Cabinets to support the User's computer networks, video integration system, communication systems and other specialized electronic systems.]

3) []

D. [Class Rooms]

1) [The space requires [#] video display equipment and [#] 10 ft wide motor operated video displays. An unobstructed view to the front of the room by all students is required. The instructor has digital access to each student computer. The instructor station has a computer, document camera, video display control, lighting and a sound system. Each student must have a networked computer on a desk. Rooms are generally square in plan and a wall at least 30 ft long is preferred. A communication rack is required for the Video Teletraining (VTT) function in each classroom.]

3.20 REFERENCES

Mechanical:

- Air Conditioned Buildings in Humid Climates, Guidelines for Design, Operation, and Maintenance
- ASHRAE 55 Thermal Environmental Conditions for Human Occupancy
- ASHRAE 62.1-(current edition) Ventilation for Acceptable Indoor Air Quality
- ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
- ASHRAE Handbooks (Fundamentals, Systems and Equipment, Applications)
- ASHRAE Hdbk-IP Handbook, HVAC Applications I-P Edition
- ASHRAE Hdbk-IP Handbook, HVAC Systems and Equipment I-P Edition
- ASHRAE Hdbk-IP Handbook, Refrigeration I-P Edition
- ASHRAE Underfloor Air Distribution (UFAD) Design Guide, (current edition)
- ASME B31.1 Power Piping
- International Mechanical Code (IMC), (current edition)
- NFPA 90A Air Conditioning and Ventilating Systems, (current edition)
- Sheet Metal and Air Conditioning Contractors' National Association (SMACNA), HVAC Duct Construction Standards
- SMACNA Duct Construction Standards
- State/Local Regs Environmental Control Requirements
- TM 5-691 Utility Systems Design Requirements for Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Facilities
- UFC 3-410-01FA Heating, Ventilating, and Air Conditioning, with Change 3, (current edition)
- UFC 3-410-02A Heating, Ventilating, and Air Conditioning (HVAC) Control Systems, with Change 1, (current edition)
- UFC 3-410-02N, Heating, Ventilating, Air Conditioning and Dehumidifying Systems, (current edition)

Electrical, Telecommunications:

- ANSI/IEEE C2-(current edition) National Electrical Safety Code
- ANSI/IESNA RP-1-04 American National Standard Practice for Office Lighting
- ANSI/NEMA C12.1
- ANSI/TIA/EIA606-B Administration Standard for Commercial Telecommunications Infrastructure (current edition)
- ANSI/TIA-568-C.0 Generic Telecommunications Cabling for Customer Premises (and all applicable addenda)
- ANSI/TIA-568-C.1 Commercial Building Telecommunications Cabling Standard (and all applicable addenda)

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- ANSI/TIA-568-C.1-1 Commercial Building Telecommunications Cabling Standard (Addendum 1-Pathways and Spaces)
- ANSI/TIA-568-C.2 Balanced Twisted-Pair Telecommunications Cabling and Components Standard (and all applicable addenda)
- ANSI/TIA-568-C.3 Optical Fiber Cabling Components Standard (and all applicable addenda)
- ANSI/TIA-568-C.4 Broadband Coaxial Cabling and Components Standard (and all applicable addenda)
- ANSI/TIA-606-A Administration Standard for Commercial Telecommunications Infrastructure (and all applicable addenda)
- ANSI/TIA-607-B Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises (and all applicable addenda)
- ANSI/TIA-942 Telecommunications Infrastructure Standard for Data
- ANSI-J-STD-607-A Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications October (current edition)
- AWWA D104 Sacrificial Anodes
- Defense Information Systems Agency DISA Circular 310-130-2 Communications Requirements
- DoD MIL-HDBK-419A, Grounding, Bonding, and Shielding for Electronic Equipments and Facilities Volume I, Theory, Volume II, Applications (current edition)
- DoD MIL-STD-188-124B, Grounding, Bonding, and Shielding for Common Long Haul/Tactical Communication Systems Including Ground Based Communications-Electronics Facilities and Equipments, Notice 3, (current edition)
- IEEE Standard 519 Recommended Practice and Requirements for Harmonic Control in Electrical Power Systems (current edition)
- IESNA The Lighting Handbook, (current edition)
- Illuminating Engineering Society (IES) of North America, 9th Edition
- MIL-HDBK-1004/6, Lightning Protection, (current edition).
- MIL-HDBK-232A, Red/Black Engineering-Installation Guidelines
- MIL-HDBK-419A, Grounding, Bonding, and Shielding for Electronic Equipment and Facilities
- MIL-STD-188-124B, Grounding, Shielding and Bonding
- NEMA PE 1 Uninterruptible Power Systems
- Network Enterprise Technology Command NETCOM Regulation 415-3 Construction Strategic DISN Utilities Reliability
- NFPA 110 Standard for Emergency and Standby Systems
- NFPA 70 National Electrical Code, (current edition) edition
- NFPA 780, Standard for Installation of Lightning Protection Systems, (current edition) edition
- NSTISSAM/2-95, National Security Telecommunications and Information Systems Security Advisory Memorandum, Red/Black Installation Guidance
- NSTISSI NO 7003, National Security Telecommunications and Information Systems Security Instruction, Protected Distribution System (PDS)
- Secret Internet Protocol Router Network (SIPRNET) Technical Implementation Criteria (current edition)
- Technical Criteria for the Installation Information Infrastructure Architecture (I3A) Document (current edition) and I3MP Grounding and Bounding Version 2.2, September (current edition)
- TIA-569-B, Commercial Building Standard for Telecommunications Pathways and Spaces, October (current edition)
- TM 5-690 Grounding and Bonding in Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Facilities, (current edition)
- UFC 3-500-10N Final Draft Electrical Engineering, July (current edition)
- UFC 3-501-03N Electrical Engineering Preliminary Considerations (current edition)
- UFC 3-520-01 Interior Electrical Systems, (current edition)
- UFC 3-520-05 Stationary Battery Areas (UFC), (current edition)
- UFC 3-530-01 Design: Interior and Exterior Lighting and Controls, (current edition)
- UFC 3-540-04N Diesel Electric Generating Plants
- UFC 3-550-01 Exterior Electrical Power Distribution

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- UFC 3-550-03FA Electrical Power Supply and Distribution (current edition)
- UFC 3-550-03N Power Distribution Systems, (current edition)
- UFC 3-570-02A Cathodic Protection
- UFC 4-020-04A Electronic Security Systems: Security Engineering, with Change 2
- UFC 4-021-01 Design and O&M: Mass Notification Systems, (current edition).
- UL 1008 Transfer Switch Equipment
- UL 1440 Transient Voltage Surge Suppressors
- UL 1778 Uninterruptable Power Systems
- USAISEC Lightning Protection, Power Quality analysis, Grounding, Bonding, and Shielding, V1.0, Nov (current edition), or latest version
- USAISEC Secret Internet Protocol Router (SIPRNET) Technical Implementation Criteria, Version 6 (current edition)
- USAISEC Technical Criteria for the Installation Information Infrastructure Architecture (I3A) (current edition)

Plumbing, Fire Protection:

- AWWA C217 Standard for Petrolatum and Petroleum Wax Tape Coatings for the Exterior of Connections and Fittings for Steel Water Pipelines
- AWWA C651 Disinfecting Water Mains
- AWWA M27 External Corrosion
- AWWA M31 Distribution System Requirements for Fire Protection
- International Plumbing Code (IPC) (current edition)
- NFPA 1 Fire Code
- NFPA 10 Portable Fire Extinguishers, (current edition)
- NFPA 101 Life Safety Code, (current edition)
- NFPA 13 Installation of Sprinkler Systems, (current edition)
- NFPA (current edition) Clean Agent Fire Extinguishing Systems, (current edition)
- NFPA 24 Standard for the Installation of Private Fire Service Mains and Their Appurtenances
- NFPA 30 Flammable and Combustible Liquids Code, (current edition)
- NFPA 37 Stationary Combustion Engines and Gas Turbines, (current edition)
- NFPA 72 National Fire Alarm Code, (current edition)
- NFPA 75 Protection of Information Technology Equipment, (current edition)
- NFPA 76 Fire Protection of Telecommunications Facilities, (current edition)
- UFC 3-420-01, Plumbing Systems, 25 October (current edition)
- UFC 3-460-01 Design: Petroleum Fuel Facilities
- UFC 3-600-01 Fire Protection Engineering For Facilities, Change 1, (current edition)

Structural, Civil:

- American Concrete Institute (ACI) 318-05/318R-05, Building Code Requirements for Structural Concrete and Commentary
- ASTM A706/ASTM A706M Standard Specification for Low-Alloy Steel Deformed for Concrete Reinforcement
- ASCE 7-05 Minimum Design Loads for Buildings and Other Structures
- Engineering Technical Letter (ETL) 08-6: Design of Surface Drainage Facilities
- FAA AC 150-5320-5C, Surface Drainage Design
- State/Local Regs Sediment and Erosion Control Design Requirements
- State/Local Regs State Highway Dept. Specs for Highway & Bridge Construction
- State/Local Regs Storm Water Management Requirements
- State/Local Regs Sediment and Erosion Control Design Requirements
- State/Local Regs State Highway Dept. Specs for Highway & Bridge Construction
- State/Local Regs Storm Water Management Requirements
- TM 1-803-13 Landscape Design and Planting

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- TM 5-822-2 General Provisions and Geometric Design For Roads, Streets, Walks, and Open Storage Areas
- UFC 3-210-01A Design: Area Planning, Site Planning, and Design
- UFC 3-210-02 Design: POV Site Circulation and Parking
- UFC 3-210-05FA Landscape Design and Planting Criteria
- UFC 3-210-06A Design: Site Planning and Design
- UFC 3-210-10 Low Impact Development, (current edition)
- UFC 3-230-04A Water Distribution
- UFC 3-230-10A Design: Water Supply: Water Distribution
- UFC 3-230-17FA Drainage for Areas Other Than Airfields
- UFC 3-230-19N Water Supply Systems
- UFC 3-240-04A Design: Wastewater Collection
- UFC 3-240-07FA Design: Sanitary and Industrial Wastewater Collection: Gravity Sewers and Appurtenances
- UFC 3-240-08FA Sanitary and Industrial Wastewater Collection: Pumping Stations and Force Main
- UFC 3-250-01FA Design: Pavement Design for Roads, Streets, Walks and Open Storage Areas
- UFC 3-250-03 Standard Practice Manual for Flexible Pavements
- UFC 3-250-04FA Standard Practice for Concrete Pavements
- UFC 3-250-08FA Standard Practice for Sealing Joints and Cracks in Rigid and Flexible Pavements
- UFC 3-250-10FA Pavement Design for Roads, Streets and Open Storage Areas, Elastic Layered Methods
- UFC 3-310-01 Structural Load Data, with Change 2, (current edition)
- UFC 3-310-02A Structural Design Criteria for Buildings (current edition)
- UFC 3-310-03A
- UFC 3-310-04 Seismic Design for Buildings, (current edition)

Environmental, Energy Conservation:

- Clean Air Act Amendment of (current edition)
- ECB 2011-1 High Performance Energy and Sustainability Policy (current edition)
- ECB 2012-13 Energy Implementation Guidance Update, ASHRAE 189.1, Life-Cycle Cost Analysis Requirements
- ECB 2012-14 Update to High Performance Energy and Sustainability, Leadership in Energy and Environmental Design (LEED) Certification Guidance
- Energy Independence and Security Act of (current edition)
- Energy Policy Act (EPAct) of (current edition)
- Energy Star Program
- Executive Order 12902 Energy Efficiency and Water Conservation at Federal Facilities
- Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management
- EPA "Asbestos/NESHAP Regulated ACM Guidance"
- Federal Energy Management Program (FEMP)
- International Energy Conservation Code (IECC), (current edition) Edition
- Leadership in Energy & Environmental Design (LEED) for Design, Construction and Major Renovations of Commercial and Institutional Buildings, (current edition) Edition
- Leadership in Energy and Environmental Design for New Construction (LEED-NC) 3.0
- UFC 3-400-01 Energy Conservation, (current edition), including Change 4, (current edition)
- UFC 4-030-01 Sustainable development, (current edition)

Security, AT/FP, Information Security, Information Assurance:

- AR 25-2 Information Assurance
- AR 190-11 Physical Security of Arms, Ammunition, and Explosives

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- AR 190-13 The Army Physical Security and Crime Prevention Program
- AR 190-51 Security of Army Property at Unit and Installation Level
- AR 380-27 Acquisition and Storage of Information Concerning Non-affiliated Persons and Organizations
- AR 380-381 Special Access Programs (SAPS) and Sensitive Activities
- AR 380-40 Policy For Safeguarding And Controlling Communications
- AR 380-5 Department of the Army Information Security Program
- Army Regulation 525–13, Antiterrorism, (current edition)
- ICD/ICS 705 Technical Specifications for Construction and management of Sensitive Compartmentalized Information Facilities.
- DoD 5105.21-M-1 Sensitive Compartmented Information Administrative Security Manual
- DoD 8500.2 Information Security, Information Assurance Controls
- DoD Regulation 5200.1-R, Information Security Program, Appendix 7 – Physical Security for Vault and Secure Room Construction Standards
- DoDI 8500.2, Information Security, Information Assurance Implementation, (current edition).
- JAFAN 6/9 – Physical Security Standards for Special Access Program Facilities, (current edition)
- Office of the Director of National Intelligence – Intelligence Community Standard (current edition)-705-1
- TB- 380-41 Procedures for Safeguarding, Accounting and Supply Control of COMSEC Material
- Information Community Standard 70J Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities. Version 1.2
- UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings, (latest edition including changes, amendments).
- UFC 4-010-02 Department of Defense Minimum Standoff Distances for Buildings

Planning, Cost Estimating:

- 10 CFR 436 Sub Part A Methodology and Procedures for Life Cycle Cost Analyses
- AR 405-70 Utilization of Real Property
- AR 420-1 Army Facilities Management Chapter 4 - Army Military Construction and Non-appropriated-Funded Construction Program Development and Execution (http://www.apd.army.mil/pdf/files/r420_1.pdf)
- Costing for MILCON Design (March (current edition))
- Discount Factors for Life-Cycle Cost Analysis, Annual Supplement to NIST Handbook 135
- Engineering Regulations, ER 1110-3-1300, Military Programs Cost Engineering
- DOE Guidance on Life Cycle cost Analysis Required by Executive Order 13123
- ECB 2002-13, Design Charrette for Army Military Construction (MILCON) Programs, (http://155.84.70.195/Training/PDF/ecb_2002_13.pdf)
- ER 5-1-11 U.S. Army Corps of Engineers (USACE) Business Process
- Memorandum of Agreement (MOA) on Criteria/Standards for Economic Analyses/Life Cycle
- National Defense Authorization Act (current edition)
- Title 10 U.S.C. Sec. 2807(b) Architectural and Engineering Services and Construction Design Defense Federal Acquisition Regulation Supplement 236.601
- USACE Instructions for Parametric Design (Code 3) (current edition)

Accessibility:

- 28 CFR Part 36 ADA Standards for Accessible Design Architectural
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines, (current edition)
- Architectural Barriers Act

General:

- ANSI/TIA-758-B Customer Owned Outside Plant Telecommunications Infrastructure

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- Army Installation Design Standards
- Army Publishing Directorate. (<http://www.apd.army.mil>)
- BICSI Customer-Owned Outside Plant Design Manual, Third Edition, (current edition)
- Construction Criteria Base (CCB)
- Data Center Engineering Guide, March (current edition)
- DoD Unified Facilities Criteria Memorandum, (current edition)
- DoDI 8100.04 DoD Unified Capabilities
- ECB 2003-08 (http://www.wbdg.org/ccb/ARMYCOE/COEECB/ecb_2003_8.pdf)
- FM 6-02.71 NETWORK OPERATIONS July (current edition)
- International Building Code, (current edition) Edition
- Information Systems Facilities Standard Design Criteria (USACE)
- MIL-STD-3007B, Standard Practice for Unified Facilities Criteria (UFC) and Unified Facilities Guide Specifications, (current edition)
- NIST Handbook 135 (with the annual supplement of discount factors)
- OPOD 12-0060
- TI 800-03 Technical Requirements for Design-Build, (current edition)
- TIA -758, Customer Owned Outside Plant Telecommunications Infrastructure Standard
- TM 5-803-5 Installation Design
- TR No. AMSEL-IE-TI 09-001-7A, (current edition)
- UCR (current edition), Change 3
- UFC 1-200-01 Design: General Building Requirements, (current edition)
- UFC 3-400-02 Engineering Weather Data, (current edition)
- UFC 3-440-05N, Tropical Engineering, 16 January (current edition), including Change 2, (current edition)
- US Army Corps of Engineers Cost Engineering Instructions and Regulations
- USACE Center of Standardization (Standards, Criteria and Designs) (https://eportal.usace.army.mil/sites/COS/_layouts/viewlists.aspx)
- USAISEC Information Systems Facility Design Criteria (FDC)
- USAISEC Installation Information Infrastructure Modernization Program (I3MP) Guide for Facility Requirements of Core Communications Nodes, July (current edition) (TR No. AMSEL-IE 08014)
- USAISEC Outside Plant Design and Performance requirements (OSPDPR), February (current edition)
- Whole Building Design Guide (www.wbdg.org)

3.21 GLOSSARY:

INFORMATION SYSTEMS FACILITIES	
ACSIM	Assistant Chief of Staff for Installation Management.
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ADN	Area Distribution Node
APM	
AR-(10-8, etc.)	Army Regulation

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Army Standard	When adopted, the Army Standard for Information Systems Facilities
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
AT/FP	Antiterrorism/ Force Protection
AWWA	American Water Works Association
BIM	Building Information Model
BLDG	Building
C4I	Command, Control, Communications, Computers and Information
C4IM	Command, Control, Communications, Computers and Information Management
C4IT	Command, Control, Communications, Computers and Information Technology
CA	Certification Authority
CATCD	Facility Category Code
CATV	Cable Television
CBT	Computer-Based Training
CCTV	Closed-Circuit Television
CE-LCMC	Communication Electronics- Life Cycle Management Command
CESNO	U.S. Army Corps of Engineers, Norfolk District
CEV	Controlled Environment Vault
CFCI	Contractor Furnished/Contractor Installed
Classroom XXI	A fully networked multimedia classroom with interoperable video tele-training, internet access, and full distance learning capability. The classroom is specified in the GIB and ACES GENERAL INSTRUCTION BUILDING (GIB) and ARMY CONTINUING EDUCATION SYSTEM (ACES) Standard Design Criteria authored by the U. S. Corps of Engineers, Norfolk District.
COMM	Communications
COMMO	Communications Center (CATCD 13120 - not included in these standards)
COMSEC	Communication Security
COOP	Continuity of Operations Plan
COR	Contracting Officer's Representative
COS	Center of Standardization
CRAC	Computer Room Air Conditioning
CSC	Customer Service Center
CTR	Center
DA	Department of the Army
DA PAM	Department of Army Pamphlet
DAA	Designated Approving Authority
DAC	Department of the Army Civilian
DAIM-ODC	Department of the Army, Assistant Chief of Staff for Installation Management, Construction Division.
DAIM-ZS	Department of the Army, Assistant Chief of Staff for Installation Management, Plans and Operations Directorate.
DAMO-CIR	Department of the Army, Assistant Chief of Staff for Installation Management, Resource Analysis and Integration.
LSCN	Local Session Controller Node
DDC	Direct Digital Control
DIA	Defense Intelligence Agency
DIACAP	Defense Information Assurance Certification and Accreditation Program

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DIA/DAC-2A2	Defense Intelligence Agency/Directorate of Administration of Counterintelligence
DISA	Defense Information Systems Agency
DOD	Department of Defense
DOIM	Directorate of Information Management
DRSN	Defense RED Switch Network
DSN	Defense Switched Network
DT/CBT	Distributed/Computer-Based Training Program
EIFS	Exterior Insulation and Finish System
EMI Bleed	Electromagnetic Interference (causing information to migrate).
EMT	Electrical Metallic Tubing
ER	Entrance (Communications) Room
ER-(1110-3-13 etc.)	Engineer Regulation (followed by number. Available at: http://www.usace.army.mil/publications/eng-regs/)
FACP	Fire Alarm Control Panel
FB-6 Fence	Fence utilizing green knitted fabric for visual screening.
FE-6 Fence	Fence detailed in U. S. Army Corps of Engineers Protective Design Center web site (https://pdc.usace.army.mil/library/drawings/fence)
FDC	Facility Design Criteria
FDT	Facility Design Team (for this ISF Standard Design)
FF&E	Furniture, Fixtures and Equipment
FISMA	
FY06, FY08, etc.	Fiscal Year
GBS	Global Broadcast System
GFCI	Government Furnished/Contractor Installed
GFGI	Government Furnished, Government Installed.
GP Briefing Room	General Purpose Briefing Room
gpm	Gallons Per Minute
GPS	Global Positioning System
GSF	Gross Square Feet
GSM	Gross Square Meters
GWB	Gypsum Wall Board
HVAC	Heating, Ventilating and Air Conditioning
HMMWV	High-Mobility Multi-Purpose Wheeled Vehicle.
HQDA-G3/5/7	Headquarters, Dept. of the Army, G-3, G-5 and G-7 sections
I3A	Installation Information Infrastructure Architecture
I3MP	Installation Information Infrastructure Modernization Program
IAW	In Accordance With
ICIDS	Integrated Commercial Intrusion Detection System
IDG	Installation Design Guide
IESNA	Illumination Engineering Society of North America
IEEE	Institute of Electrical and Electronics Engineers, Inc.
INFO PROC CTR	Information Processing Center (CATCD 13131 - not included in these standards)
INFO SYS COM EQ	Information Systems Communication Equipment Facility (CATCD not included in these standards)

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INFO SYS PROC	Information Systems Processing Center (CATCD 13140 - not included in these standards)
IPN	Installation Processing Node
ISA	Information Support Activity
ISF	Information Systems Facility
IT	Information Technology
JAFAN 6/9	Joint Army Force-Army-Navy Physical Security Standards for Special Access Program Facilities.
JTF	Joint Task Force
JWICS	Joint Worldwide Intelligence Communications System
LAN	Local Area Network
LCCA	Life-Cycle Cost Analysis
LEED-NC	Leadership in Energy and Environmental Design. The LEED-NC Version 2.0 is the current Green Building Rating System.
LMR	Land Mobile Radio
LSCN	Local Session Controller Node
MARS	Military Affiliated Radio System Station (CATCD 13125 - not included in these standards)
MCA	Military Construction Army
MEVA	Mission Essential Vulnerable Area
MGMT	Management
MNS	Mass Notification System
MILCON	Military Construction
MM Fiber	Multi-mode Fiber
MPOC	Special Area Message Processing Operations Center
MTCF	Multi-service Technical Control Facility
MTOE	Modified Table of Organization and Equipment
NAC	Notification Appliance Circuits
NFPA	National Fire Protection Agency
NIC	Not In Contract
NIPR	Non-Classified Internet Protocol Router
NMT	Not More Than
NLT	Not Less Than
NEC	Network Enterprise Center
NETCOM	Network Enterprise Technology Command
NOC	Network Operations Center
NOSC	Network Operations Security Center
NSA	National Security Agency
NSD	Network and Switch Division
NSF	Net Square Feet
NSM	Net Square Meters
NSTISSAM	National Security Telecommunications and Information Systems Security Advisory Memorandum
NSTISSI	National Security Telecommunications and Information Systems Security Instruction
NSTS	National Secure Telephone System
NTE	Not To Exceed
O&M	Operation and Maintenance
OACSIM	Office of the Assistant Chief of Staff for Installation Management.
ODNI	Office of the Director of National Intelligence

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OPEN STORAGE	Storage of classified information within an accredited facility while the facility is occupied by unauthorized personnel.
OS&Y	Outside stem & yoke (a type of plumbing gate valve)
OTOE	Objective Table of Organization and Equipment
PAO	Public Affairs Office
PDS	Protective Distribution System
PDU	Power Distribution Units
PHOTO LAB	Photographic Laboratory (CATCD 13135 – not included in these standards)
PIV	Pressure Indicator Valve
PKI	Public Key Infrastructure
PRINT PLANT	Print Plant Building (CATCD 13185 – not included in these standards)
POV	Privately-Owned vehicle
QA/QC	Quality Assurance/Quality Control
RCC	Regional Combat Commanders
RECEIVER BLDG	Receiver Building (CATCD 13170 – not included in these standards)
RFP	Request for Proposal
RH	Relative Humidity
SA	Secretary of the Army
SAP	Special Access Program. Construction Standards are specified in AR 25-2, AR 380-5, DODI 8500.2, NSTISSAM TEMPEST/2-95A, ICS 705-1, DCI Special Access Programs (SAP) Policy, and JAFAN 6/9.
SATCOM	Satellite Communications Facility (CATCD 13181 – not included in these standards)
SDD	Sustainable Design and Development
SDT	Static Dissipative Tile
SIPR	Secret Internet Protocol Router
SM Fiber	Single-Mode Fiber
SLC	Single Line Circuits
SOW	Scope of Work
STC	Sound Transmission Coefficient
STP	Shielded Twisted Pair
SZ 1, SZ 2, etc.	Security Zone 1, 2, etc.
TDA	Table of Distribution and Allowance
TELEVIDEO CTR	Televideo Center (CATCD 13175 – not included in these standards)
TER	Telecommunications Equipment Room
TERM EQP FAC	Terminal Equipment Facility (CATCD 13181 – not included in these standards)
TIA/EIA-(569-B, etc.)	Telecommunications Industry Association/Electronic Industries Alliance
TIB	Tactical Interface Box
TTNG	Training
TNOSC	Tactical Network Operations Security Center
TR	Telecommunications Room
TS	TOP SECRET
TS/SCI	TOP SECRET /Sensitive Compartmented Information
TSVA	Tactical SCI Vehicle Area
UFAD	Underfloor Air Distribution

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UFC	Unified Facilities Criteria
UPS	Uninterruptible Power Supply
USAISEC	U. S. Army Information Systems Engineering Command
UTP	Unshielded Twisted Pair
VAV	Variable Air Volume
VCT	Vinyl Composition Tile
VI	Visual Information Office (Photo Lab – not part of these standards)
VOIP	Voice Over Internet Protocol
VOSIP	Voice Over Secure Internet Protocol
VTC	Video Tele-Conferencing
VTP	Video Tele-Training
WAN	Wide Area Network
XMITTER BLDG	Transmitter Building (CATCD 13160 - not included in these standards)

ATTACHMENT A- PROGRAM DEVELOPMENT WORKSHEET

Images provided for reference. Excel spreadsheet
available for download at:

[http://mrsi.usace.army.mil/cos/norfolk/SitePages/Info
Sys.aspx](http://mrsi.usace.army.mil/cos/norfolk/SitePages/InfoSys.aspx)

Information Systems facility Planner: Sample Project						
Date:						
(Yellow Blocks require user input)						
(Green Blocks are derived from formulas)						
Total TDA Staff	140	268	Total GSF per TDA staff			
Total TDA in administrative space	??					
provide either lower case "y" or "n"- all other entries will return a 0 value						
Switch room?	y					
Commercial Vendor POP (CPOP)?	n					
Server Room?	y					
Customer Service Center?	y					
LMR services?	y					
Support IADS?	y					
Basic Facility Requirements						
Spaces	Net SF	Qty	SF	Total SF	Staff/PN	References
Director suite			1,160	1,160	4	
Director administrative space						
Director	150	1	150		1	
Dpty Director	110	1	110		1	
Administrative Asst.	60	1	60		1	
receptionist/security station	60	1	60		1	
Other admin	60	0	0		0	eg clerical, etc.
Director Special Purpose						
Executive Conference Room		1	500		24 PN	AR405-70 appendix D-4 table
Waiting area		1	80		8 VIS	Input # of visitors (AR405-70: 10 NSF per expected visitor). Serves as the building reception area.
Multi-purpose conference/classroom		1	600		20 PN	AR405-70 based on 30 NSF per person for desks and chairs arrangement
VTC Equipment room	100	1	100			

Spaces	Net SF	Qty	SF	Total SF	Staff/PN	References
Business and Plans			1,770	1,770	19	
Business and Plans administrative space						
Division Chief	110	1	110		1	
Branch Chief Offices	100	3	300		3	
Management Analyst	90	8	720		8	
Specialists	90	4	360		4	eg contracts specialists, legal specialists, general supply specialists, etc..
Other admin and/or contractors	60	3	180		3	eg clerical, etc.
Business and Plans special purpose space						
Plans and Blueprint Room	100	1	100			Space for technical document storage and document printing equipment
Network and Switch Division			11,366	11,366	34	
Network and Switch administrative space						
Division Chief	110	1	110		1	
Branch Chief Offices	100	3	300		3	
Other admin and/or contractors	60	0	0		0	eg clerical, etc.
Network and Switch special purpose space						
Network and Switch Technicians workspace	90	30	2,700		30	
Local Session Controller Node (LSCN)	2450	1	2,450			Switch node space ; adjust square footage as needed. Currently based on actual equipment SF x2.8
Battery Room		1	613			Based upon 25% of switch room space
UPS Room	100		100			
Rectifier Room			306			approximately half the size of UPS room
Commercial Point of Presence (CPOP)	0	0	0			based upon commercial vendor requirements.
Cable Vault	424	1	424			based on typical dimensions; adjust to suit project requiremnts.
Installation Processing Node (IPN)	1781	1	1,781			Server room ; adjust square footage as needed. Currently based on actual equipment SF x 3.8
Training and Testing Center Lab	600	1	600			required if Customer Service Center is provided. Area based on 30 SF/PN, average 20 PN.
Network Operations Center (NOC) and NOC storage	1232	1	1,232			
Land Mobile Radio (LMR) technician space	200	1	200			square footage based on NEC command engineer
Transmission Branch shop space (Inside Plant)	350	1	350			square footage based on NEC command engineer. Shop space for transmission personnel tools, repair equipment, and supplies
Division computer and equipment storage	200	1	200			computer and related equipment, LMR, etc.
Desktop and Systems Support Division			2,790	2,790	30	
Desktop and Systems Sppt administrative space						
Division Chief	110	1	110		1	
Branch Chief Offices	100	3	300		3	
Other admin	60	0	0		0	
Desktop and Systems sppt special purpose space						
Customer Service Center (input # of technicians)	80	26	2,080		26	includes CSC/CSCLC, IT personnel. SF allocation based on call center industry stnd
Customer Service Center storage	100	1	100			Colocated with CSC to gain space efficiencies
SIPRNET Café	200	1	200			square footage based on NEC command engineer. Can accommodate up to about 4 persons simultaneously
Information Assurance Division			5,010	5,010	53	
Information Assurance administrative space						
Division Chief	110	1	110		1	
Branch Chief Offices	100	2	200		2	
Other admin	60	0	0		0	
Information Assurance special purpose space						
IA technician workspace	90	50	4,500		50	SF allocation based on industry stnd
Division equipment Storage	100	1	100			

Spaces	Net SF	Qty	SF	Total SF	Staff/PN	References
Communications Security (COMSEC vault)	100	1	100			
Building Common Areas			3,368	3,368	0	
8PN general purpose team rooms	250	2.8	700			shared among divisions. One room per 50 TDA.
Reproduction /media work rooms	2		280			Provide 2 SF per TDA.
Break Areas	15	35	525			Based on providing 15 SF for 25% of largest shift of TDA staff. May be shared and consolidated or distributed throughout.
vending and recycling	40	1	40			
Locker/Shower room	2	280	560			Provide 2 SF per TDA. For Staff and tenants (eg IADS). Provide separate male/female. May be co-located with main toilets
loading dock	120	1	120			semi-enclosed loading dock
Distribution/shipping/recieving area	200	1	200			enclosed area for staging/distribution, unpacking, etc.
General Building Storage			663			typical 3% of subtotal NSF. Co-locate with loading dock.
Office supply storage	2	140	280			Provide 2 SF per TDA staff. office supplies may be shared or distributed among divisions. Minimum 100SF. Less than 30 days
Transformer room	100	1	100			preferred to be located outside due to code and cost issues.
Generator Room	200	1	200			preferred to be located outside due to code and cost issues.
Pulverizer facility	200	1	200			
				Total NSF	Staff	
Net SF:				25,464	140	
Gross Allowance:			35%	8,912		covers circulation, structure, vertical pemetrations, lobby, vestibules, toilet rooms, janitorial
Subtotal:				34,376		
Mechanical/Elect Allowance:			8%	2,750		
Telecom (1.1% of gross)				408		
Total Gross SF:				37,534		
Exterior plant storage (non-climate controlled)				3000		adjust size to suit requirement. Sometimes has overhead cover.
Staff Parking Spaces (POVs):				126		based upon 90% of FTE staff
Customer Parking Spaces:				7		based upon 5% of FTE staff, unless more accurate info is obtained from work order or log data.
IADS support				6		minimum 6, adjust as needed.
other tactical/organizational vehicles (including lease vehicles)				6		adjust per TDA
Total Parking Spaces:				139		

ATTACHMENT B- PROGRAM DEVELOPMENT INSTRUCTIONS

STATEMENT OF WORK

- 1 **Purpose:** To provide procedures for developing a standard space program for organizations authorized an information systems facility (ISF). This attachment refers to the activity for which a program is being developed hereafter as the using or supported activity. These procedures apply to space programs for organizations authorized this facility type CATCD 13115 that are not included in other category codes.

- 2 **General Process:** The space program development process has 11 steps:
 - 2.1 Identify the supported population.
 - 2.2 Organize the supported population by directorate and division equivalent level.
 - 2.3 Identify organizational elements authorized special use space.
 - 2.4 Identify admin workspaces by type (private or open) for each individual on the approved personnel document.
 - 2.5 Identify special space allowances by directorate equivalent. In some cases, for very large organizations (1,000 or more) allowances by division may be appropriate. In other cases, for small directorates (fewer than 20 personnel) allowances, groups of compatible small directorates may be appropriate.
 - 2.6 Identify special use space requirements (MTCF, NOC, DSN and the like).
 - 2.7 Identify mission space and add when applicable.
 - 2.8 Aggregate space by admin, special space, and special use space to determine total net area required.
 - 2.9 Apply approved support space factors (e.g., electrical, communications, building circulation and support factors, mechanical).
 - 2.10 Divide total gross area by total building population to determine GSF per person.
 - 2.11 Adjust special space allocations in steps 2.5 and 2.6 as needed to reduce total to 230 NSF per person.

- 3 **Definitions**
 - 3.1 **Space related definitions**
 - 3.1.1 Administrative work spaces are areas intended to provide a *private office* or *cubicle* (*open office*). They serve as a primary workplace for managers, supervisors, analysts, administrative specialists, instructors and others whose duties require a desk, or similar workstation, with a computer, working files, desk-side printers and / or other peripherals. Administrative workspaces may be located in any security zone. Administrative workspaces in special use areas are included in the calculation of special use spaces when authorized, and not reflected in the total administrative workspace.
 - 3.1.2 Administrative support includes meeting and collaborative spaces and work support spaces. Meeting and collaborative spaces are areas intended to support meetings, video teleconferences and other collaborative activities. Work support spaces are areas that provide space for files, printers / copiers, break, organizational equipment, storage and supplies. Depending on the size of the organization, they may be distinct areas or rooms or dispersed areas within occupied spaces.

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- 3.1.3 Core spaces are workspaces and work support areas that are required to conduct standard operations in restricted areas. They may include an installation processing node or server farm (IPN), a local session controller node (LSCN), defense switch network (DSN), a commercial point of presence (CPOP), and their associated functional areas.
- 3.1.4 Mission spaces are functional areas other than those in paragraph 3.1.1 – 3.1.3 that an organization requires to perform its specific missions. These spaces have characteristics and attributes that contribute directly to the unique functions associated with a specific facility. They are included in the net area of a building. They may include a multi-service technical control facility (MTCF), a network operations center (NOC) and the like, and their associated functional areas.
- 3.2 **Personnel related definitions.** One factor related to space management is the definition of who receives private enclosed office space. The level of an individual within an organization directly affects decisions concerning who may have a private office. Authorization documents use different terms for positions otherwise equivalent. The following definitions apply in space planning without regard to the position title in a TDA or TOE.
 - 3.2.1 Director Equivalent Position: Director equivalent position is a position in a headquarters with a general officer or civilian equivalent commander or director that reports directly to the commander, the chief of staff, or an equivalent position, or an individual in a TDA organization commanded by an O6 who reports to the commander.
 - 3.2.2 Division Equivalent Position: Division equivalent position is a position in a TDA headquarters that reports to a director equivalent position as defined above.
 - 3.2.3 Branch Equivalent Position: Branch equivalent position is a position in a TDA headquarters that reports to a division equivalent position as defined above.
- 4 **Develop the Space Program** (*use of MS-Excel, MS-Access or similar is recommended for this process*)
 - 4.1 **Identify the supported population.** This step requires interaction with the supported activity and may involve interaction with the parent organization or proponent over the using activity. Interviews with the supported activity help validate data and produce a greater understanding of the organization and its requirements.
 - 4.1.1 Obtain personnel authorization document or documents of the using activity. Sources of information are the Army Stationing and Installation Plan (ASIP), FMS Web or the activity itself. There may be multiple personnel authorization documents that need to be merged.
 - 4.1.2 Obtain at least three years of records from organizations that customarily or habitually employ interns, temp-hires, or budget-based staffing (three continuous years). Merge final calculations with authorized personnel documents.
 - 4.1.2.1 From the monthly number of hires over the three-year period, calculate the nominal average for the number of interns, temp-hires, or budget-based staff. The number of workstations is 35% of the nominal average.
 - 4.1.2.2 If only two years of records, calculate the nominal average for the number of interns, temp-hires, or budget-based staff. The number of workstations is 25% of the nominal average.
 - 4.1.2.3 Include this calculated number of workstations with the number of authorized

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personnel for final calculations in the appropriate workspace (i.e., admin in admin workspace, special in special workspace, and similar.)

- 4.1.3 Identify planned activity changes in personnel strength, organization, or mission by interview and verify through the supported activity's higher headquarters.
- 4.1.4 Identify activities or elements affiliated with the using activity and require space in the building. Examples include commercial service, or foreign nationals.
- 4.1.5 Identify elements of the supported activity that are not collocated with the proposed facility, and elements that by mission or function require specialized workspace (e.g., MTCF, etc.).

4.2 Organize the supported population by directorate and division equivalent level.

- 4.2.1 If there are more than one authorization documents associated with the using activity or activities, combine them into a consolidated document.
- 4.2.2 Using the definitions in 3.2 above, identify distinct staff elements (directorates, divisions, and branches). Identify all personnel authorizations that operate as part of a single director equivalent regardless of the authorization document on which the position is listed.
- 4.2.3 Insert approved positions not included on an authorization document into the directorate equivalent with which they are associated.

4.3 Identify organizational elements authorized special use space.

- 4.3.1 Identify operational functions that require a network operations center, if any (division or branch labeled "current operations" or positions labeled watch or duty officer may be indicators). Flag positions associated with these functions for exclusion from steps 4.4 and 4.5 and calculate requirements in step 4.6.
- 4.3.2 Identify communications, network, or information systems functions requiring a network operations center, if any (division or branches labeled network operations, database administration may be indicators). Flag positions associated with these functions for exclusion from steps 4.4 and 4.5 and calculate requirements in step 4.6.

4.4 Identify admin workspaces by type for each individual (private or open), authorized admin workspace. Assign each position that requires an admin workspace a type of space based on the following guidelines. Repeat this procedure for personnel identified in paragraph 4.3 to determine the workspaces within security zone 3.

- 4.4.1 **Determine Private Office Space Requirements:** Private offices are enclosed occupied spaces appropriate for use as a single workstation. Provide private offices for director equivalent positions and for their senior enlisted advisor, deputy directors, one position for the human resources professional at the director level, if present, and division chiefs. Branch chiefs who supervise 10 or more individuals are eligible for a private office as long as the organization does not exceed overall caps on net area. Private offices may also be appropriate for staff positions that involve recurring discussions of potentially sensitive personal information. The standard defines directors as individuals who report directly to the commander or the chief of staff. Division chiefs are individuals who report to a director. Branch chiefs are individuals who report to a division chief. These definitions take precedence over the position name in the authorizing TDA or other authorization document for the purpose of assigning private office space.
- 4.4.2 **Determine Open Office Space Requirements.** By default, provide open office space to individuals who require a desk to perform their assigned duties unless they meet the criteria in paragraph 4.4.1 of this attachment. The default workspace allotment is 90 net square feet. Adjust size (up to allowable) when special circumstances justify a larger space. Examples include analysts or similar positions

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that require multiple computer workstations and monitors, customer service staff that require desk side meeting areas, engineers or other staff that require room to work with maps and files at their workstations and other similar situations.

- 4.4.3 **Assign each position requiring admin space a type work space type** based on AR 405-70 or industry standard.

- 4.5 **Identify building common (special) space allowances.** In some cases, for very large organizations (1,000 or more), calculating allowances by division may be appropriate. In other cases, for small directorates (fewer than 20 personnel), calculating allowances with adjacent groups of directorates may be appropriate. Special space includes space for files, printers / copiers, break, organizational equipment, directorate or division storage and supplies. It also includes space such as the entry control lobby, distribution space and distributed learning. Space efficiencies can be gained by grouping/consolidating divisions.
 - 4.5.1 Evaluate each directorate for special space using the total number of personnel authorized minus personnel identified in step 4.3.
 - 4.5.2 If a spreadsheet format is used, insert a line for each allowed special space by type and quantity following the listing of directorate personnel.
 - 4.5.3 A general description of each type of special space follows:
 - 4.5.3.1 **Conference Rooms:** Conference rooms are collaborative spaces that provide areas for meetings, internal training, and video teleconferences. Base the size of conference rooms on the required capacity. Base the requirements on organizational structure. However, position and assign conference rooms in a way that minimizes their number and promotes shared use when possible. Provide dedicated conference rooms only when there is a strong justification. Command elements, contracting activities that conduct bidder debriefings for private companies, and internal review are examples of activities that may warrant a dedicated conference room.
 - 4.5.3.2 **A team room** is a collaborative space general functional area. It should be an austere enclosed space within an open office area. It may be either a hard walled room or an enclosed modular-walled room. It provides a space for impromptu internal collaboration, counseling, and other activities that require privacy or sound separation. It should provide space for up to eight people around a small table. Provide up to a 150 NSF space for each division. However, it is encouraged to share space among divisions and thus decrease the space requirement.
 - 4.5.3.3 **A break area** is an area where individuals may prepare beverages, store and heat food, and obtain items from vending machines. For a secure area, such as Security Zone 3 (SZ3) provide the break area near to, but outside, the secure area. Use the combined staffing of the largest shift of permanent staff to determine the size. Provide seating capacity for up to 25% of the largest shift.
 - 4.5.3.4 **Lobby spaces** are areas near the main entrance to a building that facilitate access control. This type of space is distinct from large meeting rooms because it does not provide significant seating and does not accommodate meetings or conferences. These areas may be open as multi-story spaces

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or atriums. Base the size and capacity of assembly areas on the total capacity of the building. As a planning factor, allow 500 NSF plus one (1) NSF per person over 500 PN, rounded up in increments of 25 NSF. Do not confuse this space with vestibules or foyers, which are support functional areas that provide a transition between exterior spaces and interior spaces for limiting infiltration of heat or cold into conditioned spaces. Lobby space is accounted for in the building net to gross allowance.

4.5.3.5 **A Distributed Training / Computer-Based Training (DT / CBT) room** is a dedicated computer-enabled digital training room. Provide one room minimum. The DT / CBT Room shall not exceed 572 NSF. Report DT / CBT rooms using the same category code as their parent admin space.

4.5.3.6 **A distribution room** is a general functional area that provides a central location for processing incoming and outgoing correspondence, staff papers, packages, and other similar items. Allow 200 NSF. If the distribution room has a full-time staff, provide one regular open office space of 90 NSF for each full-time worker. Exclude these personnel positions from calculations for other admin workspaces. This room is not a postal facility unless the using activity or facility has been designated as an alternate postal facility.

4.5.3.7 **File storage areas** are a general functional area for shared or organizational files. The allowances for occupied areas include individual files. The file storage area will normally be part of the open office area rather than a separate room, unless security considerations apply. Adjust the requirement upwards for organizations that have a mission to retain records for extended periods. An example of this is a contracting organization, which has both large files and the need to keep files for a long period of time, or business and plans offices that maintain maps, plans and other engineering documents.

4.5.3.8 **General supply storage** refer to the space an activity needs to store routine administrative supplies, spare parts for computers and peripherals, shared small hand tools and devices and consumables. General-purpose storage is associated with the people and functions in the supported general functional area. However, it is encouraged to centralize as shared storage, perhaps adjacent to the loading area. Storage for authorized organizational items or specialized mission related equipment is additive to this storage function.

4.5.3.9 **Reproduction/Media spaces** are general functional areas that provide shared printers and copiers and associated functions. Associated functions include, but are not limited to scanners, paper punches, binding equipment, and shredders. The printer / copier area may be part of the open office area rather than a separate room, unless security considerations apply. **able 1: Special and Special Use Space Allowances**

4.6 Identify special use space requirements.

4.6.1 Repeat the steps in 4.5.1 and 4.5.2 for each of the applicable special use spaces as identified in step 4.3.

4.7 When applicable, identify mission space and add.

4.7.1 Analyze the authorization document for personnel requiring space other than administrative type space, e.g. instructors in Army schools, laboratory scientists.

4.7.2 Identify by paragraph activities that require mission space.

4.7.3 Exclude personnel in mission space from administrative space.

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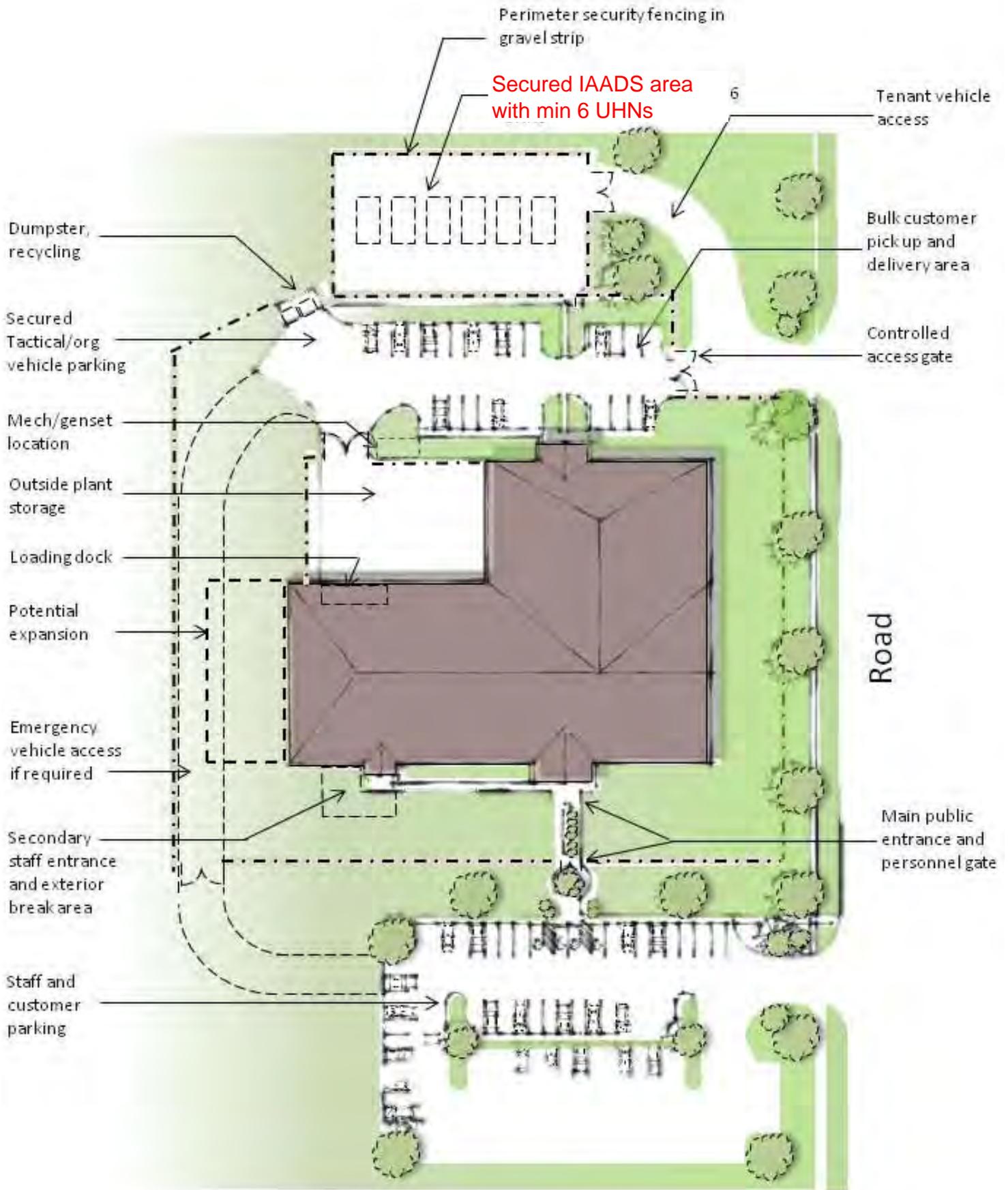
- 4.7.4 Calculate mission space in a planning charrette using approved mission statements and validated planning assumptions. Validation may come from the parent proponent. Personnel support space integrated into mission space (e.g., instructor workstations, scientist / researcher workstations, conference rooms) are governed by the same criteria as the supported ISF.
- 4.8 **Determine total net area required.** Aggregate space by administrative, special space, and common use space to determine total net area required by program.
- 4.9 **Apply approved support space factors.** The worksheet applies approved support space factors (e.g., electrical, communications, building circulation and support factors, mechanical). For planning purposes, it applies 1% of subtotal 1 for electrical, 1.1% for telecommunications, 25% for building service (circulation, structure, penetrations, etc) and 7% for mechanical as a rule of thumb. Consider climate, OCONUS building codes, and other factors that may increase the requirement. Any increases must be validated by the COS on a project by project basis.
- 4.10 **Determine GSF per person.** Divide total gross area by total building population to determine GSF per person. Mission space and personnel allocated primary workspaces in mission space are excluded from this calculation.
- 4.11 **Adjust allocations.** Adjust allocations in steps 4.5 and 4.6 as needed to reduce total to 230 GSF per person or less.

Attachment A is an example of a summary program. The excel programming worksheet is available from the COS as appendix A.

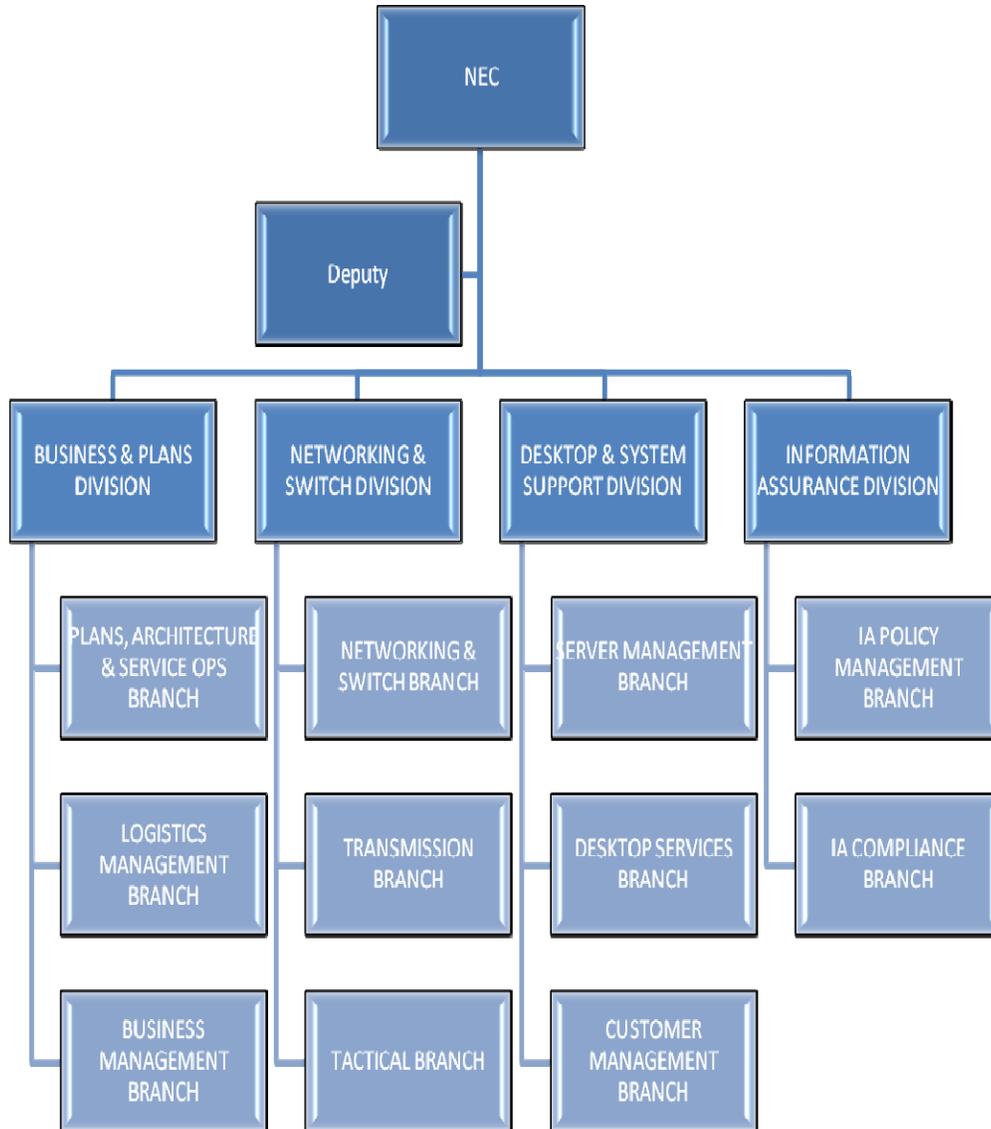
ATTACHMENT C- DIAGRAMS AND DRAWINGS

(Drawings should be used as a guide to a solution,
rather than the final solution)

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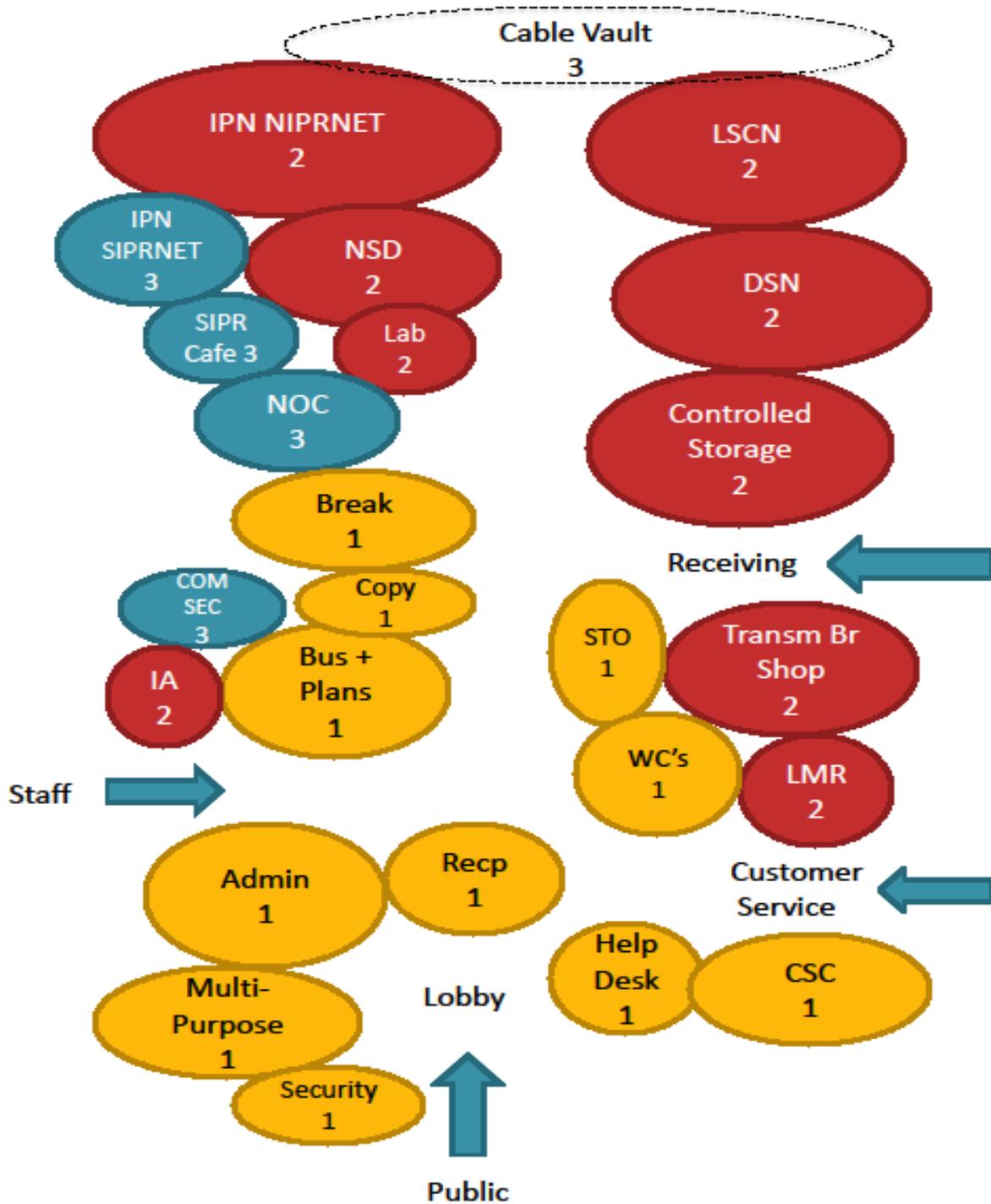
ISF ORGANIZATIONAL CHART (TYPICAL 4 DIVISION)



ISF ORGANIZATIONAL CHART (TYPICAL 4 DIVISION)



BUBBLE DIAGRAM



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ADJACENCY MATRIX

		SECURITY ZONE 1									SECURITY ZONE 2									SECURITY ZONE 3												
		SECURITY STATION	ENTRY LOBBY	ADMIN AREAS	MULTI-PURPOSE*	BUSINES & PLANS	BREAK ROOM	COPY ROOM	OFFICE SUPPLIES	CSC	RECEIVING	IA OFFICE	LMR	DSN	LSCN	IPN NIPRNET	TRAINING TEST LAB	TRANSM BR SHOP	INSIDE PLANT	COMPOP	CONTR STORAGE	PULVERIZER	COMSEC VAULT	IPN SIPRNET	SIPRNET CAFÉ	CABLE VAULT	VTC	NOC	MTCF	TSVA		
SECURITY ZONE 1	SECURITY STATION		5	3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3		SECURITY STATION
	ENTRY LOBBY			5	3	3	3	3	3	3		3	1	1	1	1	4	1	1	1	1	1		1	1	1	3	1	1	1	1	ENTRY LOBBY
	ADMIN AREAS				5	5	3	5	5	3	1		2	2	2	2	4	1	1	1	1	1		1	1	1	3	1	1	1	1	ADMIN AREAS
	MULTI-PURPOSE*					5	5	3	3	3	1		1	1	1	1	4	1	1	1	1	1		1	1	1	1	1	1	1	1	MULTI-PURPOSE*
	BUSINESS & PLANS						3	3	3	3	3		2	2	2	2	2	1	1	1	3	1		1	1	1	1	1	1	1	1	BUSINESS & PLANS
	BREAK ROOM							3	3	3	3		2	2	2	2	2	2	2	2	2	2		1	1	1	1	1	1	1	1	BREAK ROOM
	COPY ROOM								3	3	3		3	3	3	3	3	3	3	3	3	3		2	2	2	2	2	2	2	2	COPY ROOM
	OFFICE SUPPLIES									3			3	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	OFFICE SUPPLIES
	CSC										3		3	1	1	1	1	3	1	1	1	1		1	1	1	1	1	1	1	1	CSC
RECEIVING											1	1	1	1	1	1	4	4	1	4	4		1	1	1	1	1	1	1	1	RECEIVING	
SECURITY ZONE 2	IA OFFICE											3	3	3	3	3	3	3	2	3	3		1	2	2	2	2	2	2	2	IA OFFICE	
	LMR												3	3	3	3	3	3	3	3	3		1	1	1	1	1	1	1	1	LMR	
	DSN												3	3	3	3	3	3	3	3	3		3	3	3	5	3	3	3	3	DSN	
	LSCN													3	3	3	3	3	3	3	3		3	3	3	5	3	3	3	3	LSCN	
	IPN NIPRNET														3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	IPN NIPRNET	
	TRAINING TEST LAB															3	3	3	3	3	3		4	4	4	4	4	4	4	4	TRAINING TEST LAB	
	TRANSM BR SHOP																3	3	3	3	3		1	1	1	1	1	1	1	1	TRANSM BR SHOP	
	INSIDE PLANT																		5	1	3	1		1	1	1	1	1	1	1	1	INSIDE PLANT
	COMPOP																				1	3	1		3	3	3	3	3	3	3	COMPOP
CONTR STORAGE																					3	1		3	3	3	3	3	3	3	CONTR STORAGE	
PULVERIZER																						3		3	3	3	3	3	3	3	PULVERIZER	
SECURITY ZONE 3	COMSEC VAULT																						1	1	1	1	1	1	1	1	COMSEC VAULT	
	IPN SIPRNET																							3	3	3	3	3	3	3	3	IPN SIPRNET
	SIPRNET CAFÉ																								4	4	4	4	4	4	4	SIPRNET CAFÉ
	CABLE VAULT																									3	5	3	3	3	3	CABLE VAULT
	VTC																										3	3	3	3	3	VTC
	NOC																											3	3	3	3	NOC
	MTCF																												4	4	4	MTCF
	TSVA																													3	3	TSVA

Table Legends

5	Strong positive adjacency correlation
4	Positive adjacency correlation
3	Neutral adjacency correlation
2	Negative adjacency correlation
1	Strong negative adjacency correlation

SZ 1	Controlled Access for physical/personal security; access for support staff and limited public access.
SZ 2	Controlled Access for operational and information security; electronic or mechanical access control.
SZ 3	Authorized Operational Staff Only - Restricted (OPEN STORAGE). Limited to fewest possible access points with electronic or mechanical control. All access points have proximity card readers.

Note :
1. Security Zone 4 is omitted for clarity. Refer to RFP standard.

Security Zones shall be equipped with programmable electronic key card systems to control access.
* Multi-Purpose Conference/Classroom is SZ 3 when SIPRNET is used.