United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

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To: Assistant Secretaries
Heads of Bureaus and Offices

Through: Rhea Suh
Assistant Secretary - Policy, Management and Budget

Andrew Jackson
Deputy Assistant Secretary - Human Capital, Performance, and Partnerships

From: Sanjeev (Sonny) Bhagowalia
Chief Information Officer

Subject: Department of the Interior Radio Communications Site Standards

Purpose:

This directive establishes guidance for the efficient use of the Department's radio infrastructure and ensures adherence to standards and guidelines for the design, construction, operation and maintenance, inspection, and safety of radio communications systems sites.

Background:

The Department, with its various bureaus, has an extensive portfolio of over 2,100 radio systems electronic sites. These sites provide day-to-day and emergency communications in support of multiple programs. Radio sites have been installed in multiple locations, some remote, over a period of many years. In some instances, radio infrastructure for the different bureaus is located on the same site. A Departmental standard for the design, construction, operation, maintenance and safety of these sites ensures the safety of Government personnel and the general public and the proper execution of various mission related programs.

Additionally, this directive addresses needed site design, modification of existing structures, and safety requirements. This directive also aids in the merging of Capital Planning and Investment Control for both the Information Technology (radio systems) and facilities management (communication sites), which is addressed in the Department's response to the Office of the Inspector General's audit of the Department's programs reference (C-IN-MOA-0007-2005, January 30, 2007).

Scope:

This directive applies to all bureau level radio programs and facility management programs that support radio communications, including tenant and leased sites.

Timeframe:

This directive becomes effective upon the date of signing.

Policy:

The design, construction, operation and maintenance, and inspection of all departmental radio communications sites[1] will adhere to the following regulations, minimum acceptable standards and guidelines as defined by the following standards organizations:

- Occupational Safety and Health Administration (OSHA);
- Environmental Protection Agency (EPA);
- Motorola R56 Committee;
- Electronics Industries Alliance/Telecommunications Industry Association (EIA/TIA);
- ANSI American National Standards Institute (ANSI); and
- National Fire Prevention Association (NFPA).

These regulations and standards shall be applied using Departmental Guidelines to ensure that these sites are developed, operated, properly maintained, and inspected according to applicable standards.

Effective immediately existing radio communications systems sites will begin a schedule of annual inspection by qualified radio technicians.[2] Baseline condition assessments performed by qualified independent personnel[3] must be completed by the bureaus at their owned and leased radio sites by December 31, 2014, and be brought into compliance with the new policy standards by December 31, 2016.

All departmental radio communications systems sites will be under the authority of the bureau director or their designee inventoried, managed, and monitored in bureau property management and deferred maintenance tracking systems, and rated in accordance with the Departmental Risk Assessment System (RAS) guidelines.

The Department will establish a Radio Electronic Site Standards Committee (RESSC) that will meet annually to review the minimally acceptable standards and guidelines. Representatives from the bureaus must include radio, safety, and facilities personnel qualified and knowledgeable in this field.

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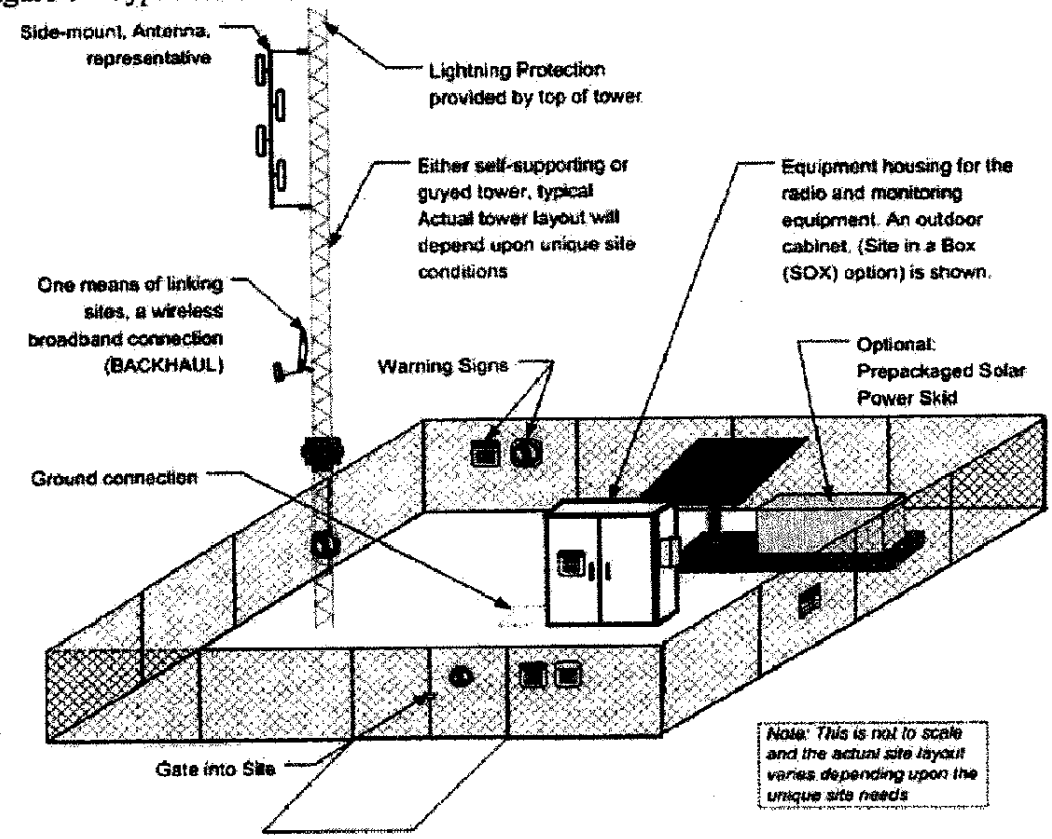
[1] A typical LMR communication system site is comprised of an access road, parking area, compound with perimeter fencing, communications shelter, tower(s), antenna, ancillary equipment, external and internal grounding, and their subsystems. See illustration on page 3.

[2] A qualified radio technician must have capabilities with installation, maintenance, and repair of base systems, repeaters, remote controls, multiplexers, antenna systems, microwave systems, battery backup systems, and solar power systems. Experience with dispatch consoles, paging infrastructure and trunked radio systems may be required depending on application. Additionally a qualified radio technician must be able to work on large radio network projects requiring skills in cabling, connectorization, and system optimization. Extensive knowledge is required with radio communications sites construction, operations and maintenance, radio frequency emission safety, and relevant standards (EIA/TIA, ANSI, NFPA, OSHA, R56, etc.)

[3] Qualified personnel include a radio technician, a facilities management specialist, and an occupational safety and health specialist (or Contractor personnel if qualified).

A typical radio communication system site is illustrated below.

Figure 1 - Typical radio communication site



Standards and Guidelines:

Radio communications systems sites standards and guidelines that will be employed include the following OSHA, EPA, EIA/TIA, ANSI, NFPA, Federal Communications Commission's Office of Engineering and Technology citations.

Baseline Standards:

ANSI/EIA-TIA/J-STD/NFPA Standards	OSHA/SAFETY Standards
ANSI A10.14 (fall)	FCC 47 CFR 17.21
ANSI A11.1-1965, R1970 (lighting)	OET 65 Section 4
ANSI T1.313-1997 (electrical protection)	OSHA 1910.141(a)(5)
ANSI Z308.1 (first aid)	OSHA 1910.141(a)(5)
ANSI Z33.1-1961 (exhaust)	OSHA 1910.268(b)(1)(i)
ANSI Z359.1-1992 (fall)	OSHA 1910.268(b)(2)(i)
ANSI Z535.1-1998 (safety colors)	OSHA 1910.268(b)(2)(ii)
ANSI Z535.2-1998 (safety signs)	OSHA 1910.268(b)(6)

ANSI/EIA-TIA/J-STD/NFPA Standards

ANSI Z535.3-1998 (safety symbols)
ANSI Z535.4-1998 (safety labels)
ANSI Z535.5-1998 (accident prevention tags)
ANSI/IEEE C95.1-1992(RF-Radiation)
ANSI/TIA/EIA-569-A (telecom spaces and pathways)
ANSI J-STD-607-A-2002 (grounding and bonding)
ANSI J-STD-607-A-2002 (4.1.1)
ANSI J-STD-607-A-2002 (4.1.2)
ANSI J-STD-607-A-2002 (4.1.3)
ANSI J-STD-607-A-2002 (4.1.4)
ANSI J-STD-607-A-2002 (4.1.5)
ANSI J-STD-607-A-2002 (4.2)
ANSI J-STD-607-A-2002 C.10.1
ANSI J-STD-607-A-2002 C.10.2
ANSI J-STD-607-A-2002 C.10.3
ANSI J-STD-607-A-2002 C.10.4
ANSI J-STD-607-A-2002 C.10.5
ANSI J-STD-607-A-2002 C.4.1
ANSI J-STD-607-A-2002 C.4.2
ANSI J-STD-607-A-2002 C.4.3
ANSI J-STD-607-A-2002 C.4.4
ANSI J-STD-607-A-2002 C.4.5
ANSI J-STD-607-A-2002 C.4.6
ANSI J-STD-607-A-2002 C.4.7
ANSI J-STD-607-A-2002 C.4.8
ANSI J-STD-607-A-2002 C.4.9
NFPA 10A-1970 (Fire Protection)
NFPA 70, Article 318-2
NFPA 70-1971
NFPA 780, Section 3-14.1
EIA/TIA-222 (tower)
EIA-TIA222 (Annex E) (Tower)
EIA-TIA222-G (13.2) (Tower)

OSHA/SAFETY Standards

OSHA 1910.268(j)(4)(iv)(F)
OSHA 1910.268(n)(4)
OSHA 1910.268(p)(3)
OSHA 1910.268(p)(3)
OSHA 1910.269(q)(1)(i)
OSHA 1910.269(s)(1)(iii)
OSHA 1910.303(g)(1)(ii)
OSHA 1910.303(g)(2)
OSHA 1910.308(e)(5)(ii)
OSHA 1910.94(a)(4)(i)
OSHA 1926.24
OSHA 1926.403(b)(1)(ii)
OSHA 1926.403(l)
OSHA 1926.404 (f) (1) (IV)
OSHA 1926.408 (C) (2) (ii)
OSHA 1926.432
OSHA 1926.441(a)(2)
OSHA 1926.50(d)
OSHA 1926.501
OSHA 1926.502(a)(2)
OSHA RF Shock Hazard Study

Guidelines: Standards will be applied using the Motorola R56 Standards and Guidelines for Communication Sites release number 9880384V83-O, September 1, 2005, as well as subsequent releases of the guidelines. The R56 Standards and Guidelines can be accessed at: https://portal.doi.net/NRSPMO/Shared%20Documents/68P81089E50-B.pdf

Special Guidelines for Fencing/Access Requirements: Due to the remoteness of some of the Department's communication sites, the following criteria will be used to determine whether or not R56 Guidelines will be employed for the installation of fencing or access controls.

1. Restricting access to climb a tower is required on every Department owned tower, except towers that are only accessible through the use of a helicopter.

2. Restricting access to a tower must be accomplished by one of the following methods:
    a. Fencing that meets the requirements of the R56 standards;
    b. Anti-climb shields that are secured to all three sides of a lattice tower to a height of at least 10 feet above the base of the tower;
    c. Anti-climb shields or cage that covers both sides of the access ladder to a height of at least 10 feet above the base of the tower (if ladder is not accessible from both sides, a shield or cage is only required on the accessible side); or
    d. Removal of climbing pegs from the bottom 20 feet of a monopole.

3. Fencing of entire radio sites including towers, guy anchors/piers (these may be fenced separately if necessary), generators, and other radio related equipment is required if one or more of the following are applicable:
    a. RF energy levels pose a hazard to the public (OET Bulletin No. 65 - http://www.fcc.gov/oet/info/documents/bulletins/Welcome.html#65);
    b. The radio site is located adjacent to or within a recreation site, trail, or other facility the public utilizes;
    c. Public access is not restricted by a locked gate or fence across the road or trail used to access the radio site; and/or
    d. There is a history of vandalism of the radio site.

4. Requirements if fencing is installed are:
    a. The fence including posts, gates, barbed wire outriggers, and fence fabric (e.g., chain link) must be grounded and bonded per standards in Motorola R56 Section 4.7.10.1;
    b. Fencing must be installed at least six feet from the tower foundation to ensure an authorized person climbing does not come in contact with the fence before the fall arrest system stops the fall;
    c. Fencing must be installed per R56 standards; and
    d. Appropriate signage notifying restricted access to the tower area and identification of tower shall be affixed to the fence in a conspicuous location per R56 standards.

5. If an anti-climb shield or cage is installed, provisions must be made to lock it in a position that does not pose a hazard to authorized personnel climbing the tower in the event they fall and their fall arrest system allows them to drop six feet. If these provisions are not made, the shield or cage door must be completely removed and placed in a location that does not pose a hazard to authorized personnel climbing or working near the tower.

6. Removed anti-climb shields or cages must be reinstalled and secured to a position restricting the ability to climb the tower each day prior to leaving the radio site.

Procedures:

Within 45 days of the issuance of this directive, bureaus will prepare a plan of action with measurable milestones to comply with this directive and procedures and submit it to the Department's Office of the Chief Information Officer (OCIO) for review and approval. Bureaus

will resubmit, as necessary, to fully address comments from the OCIO. Due dates for completion may not exceed one year.

1. Bureaus will designate a responsible point of contact (POC) and a secondary POC for each radio communications site and will keep a centralized, updated list with their Radio Liaison Officer (RLO). A copy of the lease agreement for sites that are not Department owned and the Radio Frequency Authorization for every site will be maintained with the centralized list of radio sites. For joint DOI tenant sites, participating bureaus will designate one representative for the site.

2. Bureaus will enter and maintain information on each radio communications site including leased sites in their facilities asset management system and the Federal Real Property Profile (FRPP). For leased or non-DOI owned radio sites, the field will provide leasing agreement information (Memorandum of Understanding, etc,) to their Radio Liaison Officer. For their owned and leased radio communications sites reported in the FRPP, the bureaus are to maintain the data elements required by the Federal Real Property Council.

3. The Department will create and provide standard leasing language requiring any organization that is co-located in a DOI-owned radio site to install their equipment (including tower) in accordance with the standards and guidelines referenced in this policy. Bureaus must notify organizations and cooperators in DOI-owned radio sites by May 31, 2009, in writing of the requirement to bring their equipment into compliance with this directive. The notification must inform organizations and cooperators that if they do not bring their equipment into compliance by December 31, 2016, they must remove it from the site.

4. Bureaus who lease communications sites will ensure that the lessee adheres to this directive by incorporating the DOI standard leasing language, which requires any organization that receives payment from any bureau for the use of their radio site that they maintain the site in accordance with the standards and guidelines referenced in this directive. The leasing agreement must allow the bureau to divert payments to correct identified deficiencies that the owner does not fix in a timely manner.[4] This new language will be incorporated into leases as they are renewed.

   If the field is not paying any service cost for use of site and/or the site owner is not interested in upgrading the site to meet the guidelines within this directive, the bureau will investigate other alternatives (e.g., co-location at another site or construction of a new radio site), select the best alternative, and program funding to relocate the site. Bureaus are not required to move from a site that does not comply with this directive until a compliant replacement site is found or constructed. The decision to stay at a non-compliant site until such a time that a replacement is found or constructed will be documented by the RLO and filed with the other documentation required in this directive.

[4] Deficiencies and timely manner will be determined through the site inspection process as risk adjusted using the Department's Risk Assessment Sytem (RAS). See http://www.doi.gov/safetynet/information/general/risk_manager/ras.html for more details.

5. Each bureau will establish a radio site condition assessment process that includes, but is not limited to, the following:
   - In accordance with Attachment G of the annual budget guidance (http://www.doi.gov/pam/2011budgetattG0308.pdf), the bureaus are to inventory all owned and leased sites and enter them into the bureau facility asset management system and the FRPP. Projects for construction and deferred maintenance work must follow the requirements of Attachment G and be included in the bureaus 5-year construction and deferred maintenance plans. Where Federal appropriation use restrictions are applicable, projects for maintenance and upgrade of information technology (IT) equipment and systems are not to be included in the 5-year plans, but should be incorporated into each bureau's CIO budget request.
   - Bureaus are to conduct annual condition assessments by radio personnel using the checklist provided at: https://portal.doi.net/NRSPMO/default.aspx. Completed checklists are to be reviewed by management, safety, and other appropriate personnel for necessary actions.
   - Baseline condition assessments by qualified personnel that address all topics in the checklist contained in Appendix A. To ensure that funds can be programmed to perform work and bring the sites into compliance, each radio bureau is requested to consider establishing a Corrective Action Fund (CAF) for implementation of assessment recommendations by December 31, 2010.
   - Track the status of baseline and annual condition assessment findings.
   - Facility management experts are to identify the systems that must be in good working order for an asset to function effectively. Deficiencies are prioritized based on the severity of the impact they have on the system. An acceptable level of condition exists when all of an asset's critical systems have no critical or serious deferred maintenance; critical systems with minor deferred maintenance and non-critical systems with any priority of deferred maintenance may exist. An unacceptable level of condition for an asset exists when some of an asset's critical systems have critical or serious deficiencies. The following terms define the levels of priority.
     1. Minor Deficiency (low-priority)–Condition with long-term impact beyond five years; or reduced life expectancy of affected materials or related equipment/features.
     2. Serious Deficiency (high-priority)–Deterioration, which if not corrected within two to five years, will result in the failure of the equipment/feature or the asset of which it is a part of; or create a threat to health and/or safety of the user.
     3. Critical Deficiency (high-priority)– Advanced deterioration which has already resulted in the failure of the equipment/feature, or if not corrected within 1 year, will result in the failure of the equipment/feature; or has created a threat to health and/or safety of the user, or there is a failure to meet a legislated requirement.
   - Annual reporting to the Department's National Radio and Spectrum Program Management Office (NRSPMO) on progress made towards bringing all their sites into compliance with this directive. Reporting will be due on the first business day of the second quarter of the fiscal year.

- Incorporation of Department-wide standard leasing language that requires any organization or cooperator that is allowed to use a radio site owned by any bureau must install their equipment (including tower) in accordance with the standards and guidelines referenced in this directive.
- Establishment and implementation of minimum competency criteria for radio technicians to ensure they can inspect and maintain radio sites in accordance with the standards identified in this directive.
- Establish a bureau mechanism that will ensure that funding is available to complete high priority (RAC 1, 2, 3) projects in a timely manner.

6. Program Management Reviews (PMR) will be conducted to review the bureaus' compliance with this directive including independent inspections of radio sites to verify that condition assessment findings have been properly corrected and that the annual inspections were performed by each bureau's radio office. PMRs are to be performed at every regional and state radio program on a 5-year cycle (20 percent yearly).

7. Bureaus are to establish design and construction inspection expertise, either in-house or by contract, to ensure that renovated and newly constructed radio sites are designed and built in accordance with the regulations and standards identified in this directive. All projects over $10,000 will be designed, reviewed, tested, and inspected by personnel, independent of the construction contractor, with expertise and knowledge of all of the standards identified in this directive, most importantly the Motorola R56 Standards and Guidelines. Testing and inspecting includes, but is not limited to the following: meggering or impedance testing of new or upgraded internal and external grounding and cable analyzer testing of each DOI-owned cable or antenna systems to ensure these systems comply with all applicable standards. This testing and inspection is to be performed prior to acceptance of the contractor's work, and identified deficiencies are to be corrected prior to final payment.

8. To the greatest extent environmentally, technically, and economically feasible, radio communication sites will be constructed or retrofitted utilizing on-site renewable energy power systems, e.g., Photovoltaic (solar), wind, etc.

Disposal:

Radios and radio equipment must be disposed of in an environmentally responsible manner. Environmentally responsible disposal includes any allowable type if equipment is in good working order, and recycling if equipment is not in good working order. Environmentally responsible recycling is available through Federal Prison Industries (UNICOR), the Environmental Protection Agency Recycling Electronics and Asset Disposition Government Wide Acquisition Contract, and at local recyclers throughout the country. To ensure a local recycler is environmentally responsible, please visit the recycler and use EPA's Responsible Recycler (R2) as guidance. More information is available at www.doi.gov/greening/electronics/.

Contact:

The DOI OCIO point of contact for this initiative is Mr. Ramon Gladden, Radio Communications Specialist, National Radio and Spectrum Program Management Office, Enterprise Infrastructure Division, (703) 648-5552 or ramon_gladden@ios.doi.gov.

Attachment

cc: Bureau Chief Information Officers
Deputy Chief Information Officer
Bureau Radio Liaisons
Daniel Fletcher, Director, Office of Financial Officer
Debra Sonderman, Director, Office of Acquisition and Property Management