

# STAFF RECOMMENDATION



NCPC File No. 6667

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**NEBRASKA AVENUE COMPLEX  
SATELLITE DISH**  
Nebraska Avenue, NW at Massachusetts Avenue, NW  
Washington, DC

Submitted by the General Services Administration

April 27, 2006

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## Abstract

The General Services Administration (GSA), on behalf of the Department of Homeland Security (DHS), has submitted preliminary and final site and building plans for the installation of a 4.8-meter satellite dish at the Nebraska Avenue Complex (NAC). The proposed satellite dish will be mounted on an elevated frame over an existing equipment shelter on the southwest side of Building 19. In addition to the satellite dish, the proposal consists of three additional components: the associated radio frequency (RF) subsystem and controllers, an iDirect modem subsystem, and a Network Operations Center (NOC). The additional components will be installed within the existing equipment shelter. The location was selected based on the look angles available in the domestic satellite arc and its close proximity to an existing equipment shelter that could adequately house the Satellite Ground Communications Equipment (GCE).

## Commission Action Requested by Applicant

Approval of preliminary and final building plans pursuant to 40 U.S.C. § 8722(b)(1) and (d).

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## Executive Director's Recommendation

The Commission:

**Approves** the preliminary and final building plans for the installation of a 4.8-meter satellite dish, and associated equipment, on the southwest side of Building 19 at the Nebraska Avenue Complex (NAC), Nebraska Avenue, NW and Massachusetts Avenue, NW, as shown on NCPC Map File No. 84.21(61.10)42013, for a period not to exceed ten years.

**Recommends** that Radio Frequency (RF) warning signs be posted on the outside of the existing equipment shelter to inform personnel of potential RF exposure in the area of the antenna beam above.

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**PROJECT DESCRIPTION**

Site

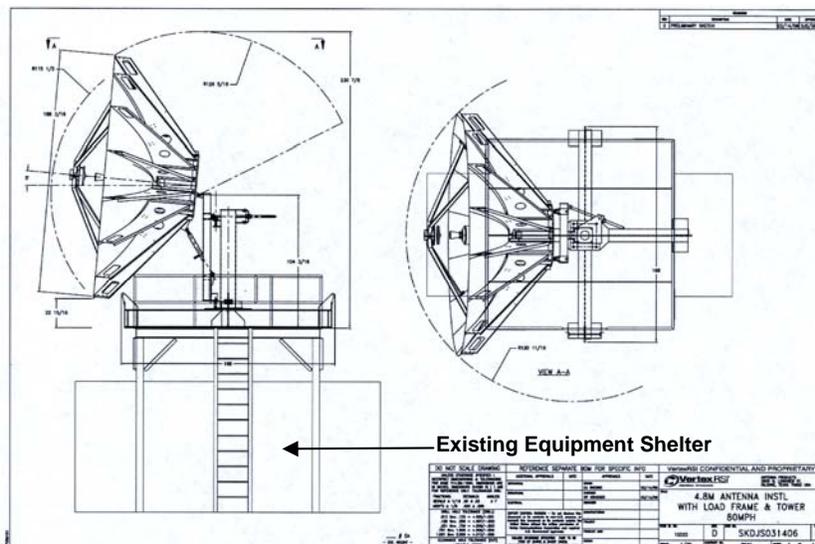
The Nebraska Avenue Complex (NAC) is a 38-acre site located in the northwest quadrant of Washington, DC at the intersection of Nebraska Avenue and Massachusetts Avenue. The site is bounded by residential communities, American University, the NBC television station, and Grover-Archbold Park. In April of 2005, the NAC was transferred by the U.S. Navy to the General Services Administration (GSA). The Department of Homeland Security (DHS) is currently the sole tenant at the NAC.



Background

The DHS has submitted plans for the installation of a 4.8-meter satellite dish on an elevated frame over an existing equipment shelter on the southwest side of Building 19 at the NAC. This satellite will transmit and receive data to/from remote satellite centers to assist in the operation of the Homeland Security Operations Center (HSOC) located at the NAC. All equipment associated with this satellite dish will be installed inside an existing equipment shelter.

Proposal



The proposal calls for the installation of one 4.8-Meter Tx/Rx satellite dish antenna on the southwest side of Building 19 at the NAC. This particular size of antenna is necessary to meet the availability requirements of DHS and to maximize bandwidth. The antenna will be located on an elevated frame above an equipment shelter on ground level with a clear view of the geostationary arch. In addition to the

antenna three other components are included in this proposal. These components include associated RF subsystem equipment and controllers, an iDirect modem subsystem, and the Network Operations Center (NOC). RF subsystem equipment will be mounted on the antenna with IFL cables running to the equipment shelter below. All other associated antenna equipment, controllers will be located inside the equipment shelter. The iDirect modem subsystem will also be installed in the equipment shelter with an interconnection to the convergence router in the main building at DHS HQ. The NOC can be located near the convergence router in DHS HQ or any location nearby with direct IP access.

The installation location, behind NAC 19, was selected based on the look angles available in the domestic satellite arc and its close proximity to an existing equipment shelter that could adequately house the associated Satellite Ground Communications Equipment (GCE). The satellite will serve the entire campus by supporting the Situational Awareness (SA) for the Secretary and his staff to include the Operations Directorate and Intelligence and Analysis.

**NEBRASKA AVENUE COMPLEX  
PROPOSED SATELLITE DISH LOCATION**





## PROJECT ANALYSIS

### Executive Summary

The **staff recommends that the project plans be approved.** The proposed location of the satellite dish does not appear that it will be visible from the surrounding community. The satellite dish will be mounted on an elevated frame over an existing equipment shelter that will house all of the associated satellite dish equipment. NCPC staff recommends that since the proposed area appears to be readily accessible by DHS personnel that RF warning signs are posted on the outside of the existing equipment shelter informing visitors to the area of potential

RF exposure. This proposal is consistent with the Commission's Antenna Guidelines, the Height of Buildings Act of 1910, and the Federal Elements of the Comprehensive Plan for the Nation's Capital. Staff recommends that the satellite dish be approved for a period of ten years, consistent with the Commission's recommendations in the Antenna Guidelines.

## ANTENNA PROPOSAL DETAILS

### Radiofrequency Radiation

The normal operating frequency of the proposed satellite dish complies with all FCC and OSHA standards. In addition, this particular type of antenna is dependant upon a satellite signal feed above the earth, and the transmitted RF radiation is pointed skyward at various angles of inclination. The new antenna is an aperture or "dish" antenna. Aperture antennas include those used for such applications as satellite-earth stations and point-to-point microwave radio. These types of antennas have parabolic surfaces and have circular cross sections. They are characterized by their high gain (power ratio), which results in the transmission of energy in a well-defined beam with little angular divergence. The signal strengths used for transmitting earth-to-satellite signals are concentrated and highly directional, similar to a light beam from a flashlight. Therefore, given the transmission angle characteristics of the proposed satellite dish, and the concentrated and highly directional transmission beam, there is very little chance for RF exposures in excess of the established maximum permissible exposure (MPE) standards.

The non-ionizing radiation exposure evaluation for the antenna has been conducted in compliance with the standards of the American National Standards Institute (ANSI) ANSI/IEEE C95.1-1992, and the Federal Communications Commission's (FCC) Guidelines for Evaluating Exposure to RF Emissions, updated on August 25, 1997. For this type of antenna configuration, the maximum permissible exposure (MPE) limit for persons in an uncontrolled public environment is a power density of 1.0 milliwatt/cm<sup>2</sup>. The MPE limit for persons in a controlled or occupational environment (usually technician workers) is 5.0 milliwatts/cm<sup>2</sup>. Both these limits are time averaged. The calculated power density levels for the antenna adheres to the MPE limits for public exposure at far field parameters below 1.0 milliwatt/cm<sup>2</sup>. The estimated maximum power density range would approach 0.39 milliwatt/cm<sup>2</sup> for this type of antenna design. The other power density points reviewed (near field, transition region, main reflector, and reflector and ground) would adhere to ANSI standards.

Because of the highly directional nature of these antennas, the likelihood of significant human exposure to RF radiation is considerably reduced. The power densities existing at locations where people may be typically exposed is substantially less because of the energy signal developed to and from the antenna is directed skyward. All necessary provisions to restrict exposure and access to the antenna are provided in the submitted design in accordance FCC recommendations. Radiation hazard signs will be recommend by staff to the applicant to be posted in the vicinity of the antenna location.

Cumulative RF effects have been taken into consideration in the review of the new antenna. All significant contributions to the RF environment have been considered. For purposes of such evaluation, "significant" is defined in accordance with FCC guidance to mean "considering any transmitter producing more than 5 percent of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at an accessible location."

Because none of the existing or proposed transmitter facilities near the site exceed MPE limits, except between the reflector and feed horn—that is not normally accessible, it was determined no cumulative RF effect occurs in the general area of the proposed antenna location.

## CONFORMANCE

### Comprehensive Plan for the National Capital: Federal Elements

Staff has determined that the proposed satellite dish antenna would not have an adverse affect on other federal facilities and is not inconsistent with the Federal Elements of the Comprehensive Plan for the Nation's Capital.

### National Environmental Policy Act (NEPA)

Pursuant to the regulations implementing the National Environmental Policy Act (NEPA), the applicant conducted an independent NEPA evaluation of this project and submitted the results to NCPC. According to the documentation submitted to NCPC the results of this evaluation suggest that this project qualifies for a Categorical Exclusion from the requirement to prepare an environmental assessment (EA) or an environmental impact statement (EIS). Staff's evaluation of this project has determined that the project is a categorical exclusion in conformance with the NCPC Categorical exclusion requirements under §8(C)(20) of the Commission's Environmental and Historic Preservation Policies.

### National Historic Preservation Act

NAC Building 19 has been identified as a contributing structure in the eligible NAC Historic District. The installation of the satellite dish will not require any irreversible alterations to Building 19 and will not adversely affect views into the site from the surrounding neighborhood, as most views are shielded by fences or wooded area.

The District of Columbia State Historic Preservation Office (DC SHPO) concurred with GSA that the project will have no adverse affect on those qualities allowing the installation location to be eligible for inclusion in the National Register of Historic Places.

NCPC staff has reviewed the photo and photo simulation submitted by GSA and has determined that no adverse visual effects on the surrounding historic resources would occur.

## COORDINATION

### Coordinating Committee

The Coordinating Committee reviewed this item at its meeting on April 12, 2006, and forwarded the proposal to the Commission with the statement that the project has been coordinated with all agencies participating. The participating agencies were NCPC; the District of Columbia Office of Planning (DCOP); the District of Columbia Department of Transportation (DDOT); the National Park Service (NPS); the General Services Administration (GSA); and the District of Columbia Fire and Emergency Medical Services Department (FEMS).



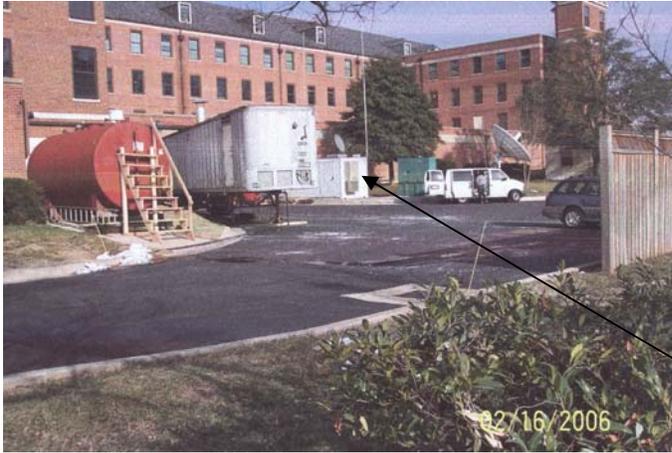
View from Massachusetts Avenue entrance



View from Massachusetts Avenue entrance



View from adjacent parking area



**Proposed satellite dish location**

**Existing Equipment Shelter**