



Figure 3-2, Photo 5 – Columbia Pike, west of AFM precinct



Figure 3-2, Photo 6 – Interstate 395, southbound lanes



Figure 3-2, Photo 7 – Western Portion of Monumental Core



Figure 3-2, Photo 8 – Eastern Portion of Monumental Core (The National Mall)



Figure 3-2, Photo 9 – Washington Channel waterfront in Southeast Washington D.C., looking west



Figure 3-2, Photo 10 – George Washington Memorial Parkway.

### **3.3 Transportation Systems**

#### **3.3.1 Roadway Traffic**

The proposed AFM site has good regional and local access. Interstate 395 provides easy access to and from the site vicinity, and connects to I-95/ Capital Beltway to the south and I-295 to the north. Route 27 (also known as Washington Boulevard), Route 110 and Columbia Pike (Virginia 244) link the proposed AFM site with Rosslyn to the north and the Route 1 corridor to the south.

In Virginia, I-395 extends 9.6 miles from the I-95/I-495 Capital Beltway at Springfield to the 14th Street Bridges over the Potomac River. According to the Virginia Department of Transportation (VDOT) counts, 1997 average daily traffic volume data for the section between VA-236 Duke Street and VA-27 Washington Boulevard varied from 229,000 annual average daily traffic (AADT) to 245,000 AADT. The section between US-1/VA-110 and the Potomac River carried 282,000 AADT.

Columbia Pike is a state highway and principal arterial street that carries between 30,000 and 40,000 vehicles per day (total for both directions). It is a major commuter route between Fairfax County and the Pentagon and Interstate 395, as well as the “main street” of South Arlington. The speed limit on Columbia Pike is 30 mph. Along its 3.5 mile length, Columbia Pike has two travel lanes in each direction, with additional turning lanes in some areas. On-street parking is permitted in two short sections. Arlington County is in the process of establishing a major redevelopment along Columbia Pike, which will require some road improvements along Columbia Pike. In FY 2000, \$150,000 in Regional Surface Transportation Program (RSTP) funding was provided to begin planning and preliminary design of rebuilding Columbia Pike within the existing right of way from Orme St. to Southgate Road.

Washington Boulevard is a state highway that runs predominantly in an east-west direction. It is a major commuter route between I-395, the Pentagon and the communities to the east. The speed limit on Washington Boulevard is 45mph. VDOT has completed a conceptual design for rebuilding the Washington Boulevard Bridge over Columbia Pike and redesigning the interchange and intersecting streets. However, funding to construct the project has not been identified.

There are two vehicle gates onto the Naval Annex north parcel; the southeast gate provides access to Columbia Pike and the northwest gate provides access to Southgate Road. Southgate Road is a limited access road for employees and service vehicles to the Naval Annex, Arlington National Cemetery, Henderson Hall and the three blocks of residential uses to the west of the Annex.

#### **3.3.2 Parking Availability and Proximity**

Parking for the Naval Annex is located on-site and across Columbia Pike from the main Naval Annex building Site. There are approximately 1,700 parking spaces on the three parcels.

Visitor parking within the FOB#2 compound and the designated area of Southgate Road is reserved for senior level staff, VIPs, handicapped individuals, and cleared visitors to FOB#2. Visitor parking on Southgate Road is limited to three hours between the hours of 6:30 AM and 3:30 PM from Monday through Friday, except on holidays. Visitor parking is available in Lot 5. Handicapped visitor parking is available on Cemetery Road.

### **3.3.3 Public Transportation**

There are several Metrorail stations in the vicinity of the Naval Annex site, including the Pentagon, Pentagon City, and Arlington National Cemetery. The stations are located less than one mile from the site and provide access to the Blue and Orange lines.

Bus routes serving the Annex include: Route 24 M,P (Ballston-Pentagon Line), which provides weekday service approximately every 25 minutes and weekend service approximately every one hour and ten minutes, the Route 16 A-G, J (Columbia Pike Line); and Route 16 S,U,W,X (Shirlington - Pentagon Line), which provides service every five to ten minutes during the week. Columbia Pike is the busiest local bus corridor in Virginia, with nearly 10,000 daily weekday transit riders using the corridor. The bus stop for these routes is located near the guardhouse on Columbia Pike, adjacent to the Site.

The Department of Defense (DOD) operates a free shuttle bus service (#3A) that runs from Crystal City and the Pentagon to the Naval Annex on a fifteen-minute schedule from 6:00 AM to 6:00 PM on a daily basis. The stop is located in front of the Naval Annex near Southgate Road. A DOD ID is required at all times to ride the bus, as it is intended to be used for official business only, and not for commuting.

Lee's Coaches and Quick's provides bus service from the Stafford/Route 17 Park and Ride lot to the Naval Annex. For security reasons, taxicabs are not allowed onto the Naval Annex; they must be met at the DOD bus shelter located on Southgate Road.

The *Columbia Pike Initiative* recommends that bus shelters and bus stops along Columbia Pike be improved. The first step to implementing this recommendation is currently in process. A consultant has been hired to inventory the bus stops in the county and develop a prioritized list of improvements. Arlington County has begun demonstrating the NextBus system on the 38B route between Ballston and Farragut Square; the system provides a real-time display at bus stops that indicates when the next bus will arrive. If the demonstration is successful, the plan recommends that the County deploy the system on Columbia Pike. In addition, the Washington Metropolitan Area Transportation Authority (WMATA) has been conducting a Regional Bus Study and will be establishing a working group to make recommendations for changes and improvements to bus service in the Columbia Pike corridor. Arlington County has hired a consultant to design and implement a system that will give buses priority at traffic signals along Columbia Pike; the system will extend the green light or shorten the red light as a bus approaches an intersection.

As a long-term project, WMATA is considering high-capacity transit for the Columbia Pike corridor. Along most of the corridor, the building setback is sufficient to provide additional

right-of-way for light rail or bus rapid transit. The *Columbia Pike Initiative – A Revitalization Plan* recommends that the County review development proposal specifics, such as setback and driveway entrance distances, carefully to keep the option for light rail a feasible one.

### **3.3.4 Pedestrian/Bicycle Circulation**

Pedestrian access to the Naval Annex site can be gained from two locations along Southgate Road and one location along Columbia Pike: the north pedestrian gate is located across from Wing 3, near Southgate Road; the northwest gate is located by Wing 1 near Southgate Road; and the south pedestrian gate is located on the Columbia Pike side of Wing 3. FOB #2 is also within walking distance from the Pentagon, which is approximately three quarters of a mile away.

According to the *Columbia Pike Initiative*, Columbia Pike has the highest number of recorded pedestrian accidents of any street in Arlington. Some sections of the Pike have narrow sidewalks directly adjacent to the roadway, with broken or uneven pavement. The Plan cites that the high volume of traffic, moderately high speeds, varying street widths, and long distances between signalized pedestrian crossings make crossing Columbia Pike difficult for a pedestrian.

Columbia Pike does not have designated bike lanes or an off-street trail. According to *Columbia Pike Initiative*, the high traffic volumes, high numbers of buses and trucks, varying lane widths, and narrow curb lanes make Columbia Pike difficult to bicycle upon. At the Naval Annex site, bicycles currently must be parked in the three available bike racks located inside the compound.

The County has a proposed project to widen the bicycle/pedestrian trail from Southgate Road to the Pentagon. This path will connect with an on-street bicycle route to be designated on South Orme Street and Southgate Road. The *Columbia Pike Initiative* identifies Columbia Pike in the vicinity of South Orme Street as a likely location for a new countdown pedestrian traffic signal. The *Columbia Pike Initiative – A Revitalization Plan* also suggests designating a bikeway along Southgate Road between South Joyce and South Orme Streets.

### 3.4 Physical/Biological Resources

#### 3.4.1 Air Quality

Air quality is a result of the local climate and the presence of air pollutants. In response to the Clean Air Act of 1970 and its amendments, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for criteria air pollutants, which include carbon monoxide (CO), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), and particulate matter equal to or less than 10 microns in size (PM<sub>10</sub>). The proposed action is located within the National Capital Interstate Air Quality Control Region, which currently meets NAAQS for all criteria pollutants except ozone. The EPA has designated the region as a “serious non-attainment area” for ozone (EPA, 2002).

Ozone is a colorless gas with a pungent odor that is formed in and downwind of urban areas when sunlight and high temperatures cause photochemical reactions between emissions of volatile organic compounds (VOCs), and oxides of nitrogen (NO<sub>x</sub>). Major sources of VOC and NO<sub>x</sub>, which are produced by combustion, include motor vehicles and construction equipment.

For nonattainment areas, such as this one for ozone, the Clean Air Act requires that each state identify how it will attain and/or maintain the NAAQS. To ensure that federal actions in a nonattainment area conform to an attainment plan, the federal agency responsible for an action must determine that the action is either exempt or conforms to the plan. Actions are exempt when the total of all predicted direct and indirect emissions (1) would be less than specified emissions rate thresholds, known as *de minimis*, and (2) would be less than ten percent of the area’s annual emissions budget.

The primary existing air pollutant sources on, and adjacent to, the project site are emissions from vehicular traffic and parking, and to a lesser extent, office building heating, ventilation and air conditioning (HVAC) equipment. Major highways that contribute to vehicular traffic and emissions in the surrounding area include I-395, Columbia Pike and Washington Boulevard.

#### 3.4.2 Noise Levels

Noise sensitive receptors are generally considered to be human activities or land uses that may be subject to the stress of significant interference from noise. Typically, the maximum allowable noise level for a sensitive receptor is 65 dBA. Land uses associated with sensitive receptors include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, and libraries. Sensitive receptors may also include threatened or endangered noise-sensitive biological species. Commercial, office and industrial land uses are not considered “noise sensitive” by most definitions. There are no noise sensitive receptors currently on or within line-of-sight of the AFM precinct. The off-site noise sensitive receptors in the project region would include any residences close to building construction and those closest to the roadways that would carry the greatest volumes of project-generated vehicle traffic.

The dominant noise sources to the site and environs are vehicle traffic from the adjacent roadways. The project site is adjacent to Columbia Pike, Interstate-395 and Route 27.

Arlington County's Noise Control Regulations (Chapter 15 of the County Code of Ordinance) establish limits for any sound that emanates from a property. The regulations limit construction noise levels to 90 dBA  $L_{eq}$ .

### **3.4.3 Water Resources**

Maps from the U.S. Geological Survey indicate that the Naval Annex site is located outside the Four Mile Run drainage basin. The area is identified to be within a minor drainage area and appears to be draining towards the Potomac River to the east. There are no permanent water bodies on the Naval Annex site. Also, the site is not located within a 100 year floodplain.

A large part of the site contains impervious surfaces that drain into the existing stormwater drainage systems.

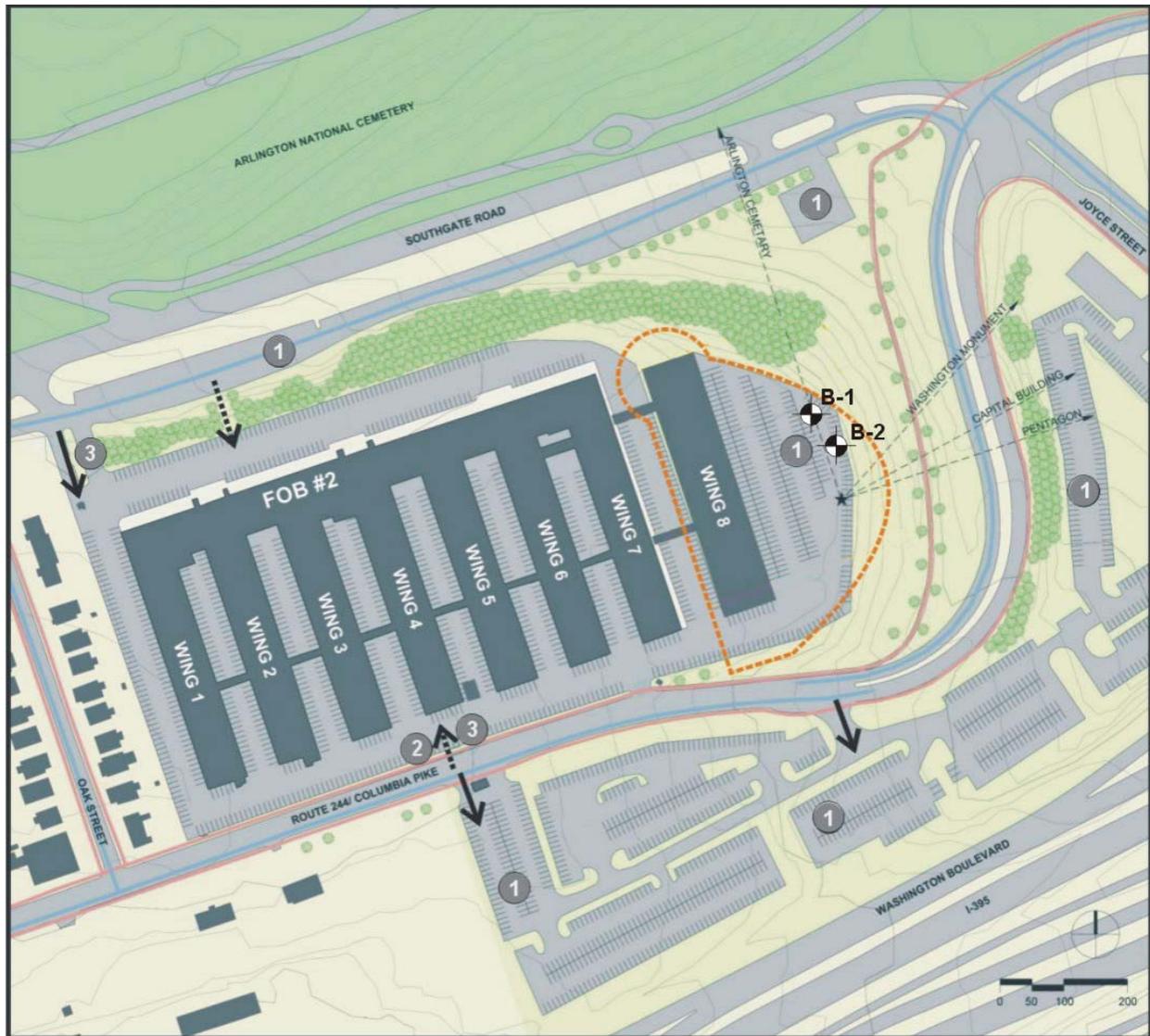
### **3.4.4 Geology, Soils and Topography**

Maps from the U.S. Geological Survey for the area indicate that the Naval Annex site is part of the Cretaceous Potomac Formation. The landforms in the site area have generally been identified as a combination of Sloping Valley Sides and lowlands. Sloping valley sides are moderate to steeply sloping valley walls transitional between uplands and lowlands underlain by colluvium and sediments with prevalent slopes between eight and forty percent. Lowlands are nearly level flood plains and valley bottoms underlain by alluvium with prevalent slopes between zero and eight percent.

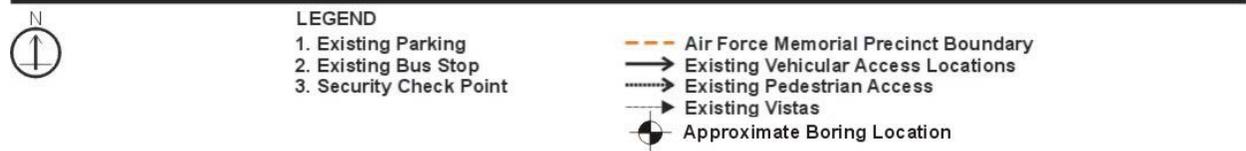
Maps from the U.S. Geological Survey for the area indicate that the generalized surficial material at the Naval Annex includes Artificial Fill and disturbed ground and Terrace Alluvium. Terrace Alluvium consists of sand, silt, clay, gravel and peat deposited by the ancestral Potomac River.

Three soil sample borings were undertaken at the site as part of a preliminary geotechnical study. Two of the borings were performed to a depth of 80 feet and one was performed to a depth of 30 feet. Soil borings B-1 and B-2 indicated fill material to an approximate depth of 25 to 30 feet below the existing grade (see Figure 3-3). The fill material consisted of a mixture of clay and fine to medium sand. From depths of approximately 30 feet to 55 feet, a stiff clay was encountered, which appears to be native soil. Beneath that, from a depth of approximately 55 feet to the end of the boring at 80 feet, a loose, fine sand was encountered.

The site is generally sloping in the easterly direction, towards the Potomac River. The parcel to the north of Columbia Pike has a large plateau area that extends for approximately 1,150 feet in the easterly direction and, at an average height of El 140 across the entire site, and El 135 within the AFM precinct, is the highest location within the site area. At the eastern end of the plateau is a severely graded bank that slopes down towards Columbia Pike (average height of El 91). The general slope of this embankment is approximately 22.5 percent, which is broken near its middle by an existing walking path. The other two parcels slope down gradually in the eastward direction at an average slope of less than seven percent. There are some pockets, specifically at the southeastern edge of the parcel south of Columbia Pike, where the slope exceeds seven percent.



Source: Pei Cobb Freed & Partners, Architects LLP



**Figure 3-3: Approximate Boring Locations**

### ***3.4.5 Vegetation and Wildlife Habitat***

All three parcels within the Naval Annex site are substantially altered from their original natural conditions. Some vegetation exists on each of the three parcels. The parcel north of Columbia Pike is mostly paved. Some vegetated areas border the northern, eastern and southeastern portion. These include grassy areas, and ornamental trees and shrubs that appear to have been introduced to the site within the recent decades. There are also some evergreen trees towards the northwestern portion of the parcel that act as buffer plantings between the site and Southgate Road. While a large number of trees appear to be mature, all trees on this parcel appear to be less than 30 feet in height.

The parcels to the south and east are largely paved and used as parking lots and a gas station area. There is some vegetation at the edges that consists of a combination of grassy areas, deciduous and ornamental trees and evergreen varieties. There is one continuous strand of trees along the edge of Columbia Pike that provide a visual buffer to the parking area. The remaining trees are mostly planted in isolation.

Due to its disturbed conditions, the original plant and wildlife species that may have existed on the site are no longer present. The existing wildlife on the property are likely to consist primarily of wildlife species such as squirrels, pigeons, sparrows, etc that are tolerant of urban and suburban conditions.

### ***3.4.6 Hazardous Materials***

Hazardous and non-hazardous wastes are accumulated in small quantities and stored within a freestanding waste storage/containment structure on the Naval Annex Site. This structure is located adjoining the eastern wall of Wing 7, at its southern end. This structure seems to be in good condition with no obvious signs of spills or leaks. Emergency power generation fuel is stored in two aboveground and one underground tank. The above ground 500-gallon tanks are located between Wings 4 and 5, and between Wings 3 and 4. The underground tank is 4,000 gallons in size and is located between Wings 2 and 3. Two 275-gallon underground storage tanks were closed-in-place in 1994. A release from one of these tanks is known to have occurred, but no remediation was completed as the contamination was determined to be limited to soils immediately below the tank and no groundwater contamination was observed. This contamination area is located between Wings 4 and 5. A 4,000-gallon underground storage tank was also removed in 1994 and replaced with the new 4,000-gallon tank. No contamination was identified with this tank.

The existing structures may contain lead paint on the window frames. In addition, there are asbestos containing materials at many locations throughout the buildings. These materials include floor tiles, mastic, mechanical piping and duct insulation, acoustic tile, and dry wall mud. A chemical inventory of FOB #2 conducted in 1998 indicated the presence of small quantities of paints, paint remover, paint thinner, adhesives, cleaners, refrigerants, and other similar maintenance related materials. Some small arms ammunition was also identified on the Site.

Boring samples from Borings B-1 and B-2 (see previous Figure 3-3) were also analyzed for the presence of total petroleum hydrocarbons, volatile organic compounds (VOCs), RCRA 8 metals and PCBs. During drilling operations, a photoionization detector (PID) was used to screen the recovered samples for the presence of VOCs. No obvious signs of contamination, such as dark discolorization or an unusual odor, were observed in the soils recovered. Field-screening of the collected soil samples did not indicate elevated VOC concentrations that would be indicative of contamination. Laboratory analysis of six soil samples indicated concentrations that were either below-detection or below the respective screening values established by Virginia Department of Environmental Quality and the EPA. The only exception was arsenic, which was identified at a concentration of 4.9 ppm in the 5-10 foot interval from boring B-1. While this arsenic concentration is above the 0.43 ppm screening concentration for residential soil and 3.8 ppm for industrial soil, established by EPA, it is within published, naturally occurring background concentrations for the Washington D.C. area. Since this arsenic concentration is within published background levels and the remaining five soil samples were below the laboratory reportable limit for arsenic, the environmental investigation concludes that the identified arsenic concentration should not pose a risk to the site.

### **3.5 Utilities/Infrastructure**

#### ***3.5.1 Stormwater Management System***

There is no on-site storm water retention/detention or filtering on the Naval Annex site. The majority of the parking area to the east of Columbia Pike drains eastward in a combination of overland flow and an inlet system of underground pipes to a 48-inch storm drain in the southeast corner of the Site. The remainder of the Site drains in the northeast direction through a series of inlets and pipes to an 18-inch storm drain in Joyce Street. This pipe then continues across the eastern parcel and eventually flows into the Boundary Channel of the Potomac River.

#### ***3.5.2 Sanitary Sewer***

The Naval Annex is served by a 16-inch sanitary connection at the eastern end of the building. This main runs north to Southgate Road and then east to an Arlington County sanitary sewer system. Two Arlington County sewer mains are located in Southgate Road, one is 30-inch and the other 12-inch. These flow eastward and connect to a 36-inch sanitary sewer main running through the Arlington National Cemetery. This main connects with a 54-inch County main that runs across the Pentagon service station area and south along Joyce Street. Effluent is treated at the Arlington County Sewage Treatment Plant located south of the Pentagon.

#### ***3.5.3 Water Supply***

The Naval Annex Building is supplied by a 12-inch Arlington County Main. This main runs north from I-395 across the Naval Annex parking area, and then turns west in Columbia Pike. An eight-inch site connector connects to the main and forms a rectangular loop around the Naval Annex building.

### **3.5.4 Energy Systems**

The Naval Annex is served by natural gas provided by Washington Gas Light Company from a 12-inch, high pressure main located in Columbia Pike. The building has one active service connection: a one-inch service to Wing 5. A ½-inch service to Wing 3 is no longer in use.

The Naval Annex receives steam and chilled water for heating and cooling purposes from the Pentagon Heating and Refrigeration Plant. A 12-inch steam main and parallel 6-inch and 2-inch condensate lines are located in the median of Southgate Road. A 10-inch line from this main serves the Naval Annex. The Naval Annex is also served by chilled water from the Pentagon plant. Two 24-inch chilled water lines enter the Site from Southgate Road and run under the parking lot to provide connections to the building.

There are both overhead and underground electric lines running through the Naval Annex Site. Overhead electric lines are located in the median of Southgate Road, on the north side of Columbia Pike and on the eastside of Joyce Street.

Underground telephone line runs along the south side of Columbia Pike and then runs through the parking area. Another line runs in the eastern slope of the Naval Annex, paralleling the sidewalk.