SECTION 3: SITE DEVELOPMENT

3.1 General. This section provides guidance on the siting of medical facilities. Each new facility or addition will be sited in conformance with an approved installation master plan developed by the using Military Department. The site will be coordinated with the using Military Department representative (i.e. Army Health Facility Planning Agency, Navy Bureau of Medicine and Surgery, and/or Air Force Health Facilities Division).

3.1.1 Community Planning. Siting of facilities shall consider the planning goals and objectives of the surrounding community to achieve a harmonious future relationship between the facility and the community. Such planning shall be coordinated in compliance with Executive Order 12372 (reference 3a) as implemented by DoD Directive 4165.61 (reference 3b).

3.2 Site Design. In siting facilities, emphasis shall be placed on operation, function, energy efficiency, safety, security, aesthetics, and preservation of natural site characteristics. Spacing of buildings shall allow for natural light, air circulation and fire safety. Parking, pedestrian access, vehicular traffic, and force protection also require careful consideration.

3.2.1 Topography and Natural Resources. A conscious and active concern for the value of topography and natural resources should be considered in the siting of facilities in accordance with DoD Directive 5500.5 (reference 3c). Natural site features such as ground forms, water, rocks, ledges, trees, and others shall be preserved and utilized in the design to the greatest extent feasible.

3.2.1.1 Multilevel Entrance Related to Grades. Hospital functions usually benefit from placing service activities, i.e. food service, materiel, housekeeping, and stores, on one floor level and patient contact functions such as inpatient admissions, emergency, and outpatient clinics on another floor level. If existing topographic characteristics permit, they may be used to obtain this multilevel configuration, with entrances placed at the appropriate functional level. Elevations for these floors are selected in relation to existing topography to balance cut and fill while providing drainage near the structure.

3.2.1.2 Drainage. Drainage design is a basic site design consideration and is accomplished with the siting and orientation of buildings, location of parking lots and roads, consideration of topography, and compliance with functional site requirements. All site support facilities, i.e. buildings, parking lots, roads and walks, must be graded to ensure positive drainage. Positive drainage for each major site element must be coordinated into a total site drainage system. Existing drainage ways are used to retain the original character of the site and to avoid unnecessary earthwork. Identify existing drainage ways as a part of the First (S1) Design Submittal and use as the basis for designing the drainage plan.

3.2.1.3 Earthwork:

3.2.1.3.1 Site Character. Reduce earthwork by respecting the character of the existing site, its topography and drainage patterns. Observing these criteria will result in site elements fitting comfortably into the terrain. Upon completion, structures should appear as belonging on the site and enhance the site aesthetics. When available and where appropriate, excess fill may be used for earth berms to blend with existing topography and to partially screen service and parking areas from offsite view.

3.2.1.3.2 Cut and Fill. Balance cut and fill for the entire site as closely as possible to eliminate the need for hauling earth on or off the site. If topography in areas for parking, roadways or other site features requires cut or fill, appropriate selection of floor elevations at the major structure provides a useful mechanism for balancing excavation with backfilling for the entire site.

3.2.1.4 Winds. Consider prevailing wind direction when siting health facilities near existing facilities whose functions may degrade air environmental quality. Avoid wind movement from such facilities to the air handling intakes of air-conditioned health facilities.

3.2.1.5 Site Noise. Analyze the project site acoustically to determine existing noise sources and compatibility with the environment required of a health care facility and applicable noise level reduction requirements. Base noise data, including the air installation compatible use zone (AICUZ) report, must be obtained from the installation engineer’s office during concept design.

3.2.1.6 Helipads.

3.2.1.6.1 When required, helicopter landing facilities will be incorporated as a requirement of the health facility site development plans. To preclude loss of time and effort in transporting patients from the helicopter, the location of landing facilities should permit manual transfer of patients to the emergency entrance of the hospital. This distance should normally not exceed 60 meters.

3.2.1.6.2 The site plan will show the helipad with its clear landing area, the approach-departure zones and take-off safety zones. Select the site during early planning to preclude other supporting facilities from encroaching upon a usable helipad site.

3.2.1.6.3 Site orientation of the helipad shall consider wind direction and possible wind currents caused by nearby buildings and structures.

3.2.1.6.4 Criteria for development of helipad facilities and associated air space requirements are contained in TM 5-803-4 (reference 3d) or other applicable criteria supplied by the Design Agent.

3.2.1.6.5 Pavement design criteria are contained in TM 5-823-2 (reference 3e) and TM 5-823-3 (reference 3f) or other applicable criteria supplied by the Design Agent.

3.2.1.6.6 Lighting design criteria are contained in TM 5-811-5

(reference 3g) and NAVFAC MIL-HDBK-1023/1, or other applicable criteria supplied by the Design Agent.

3.2.2 Orientation of Buildings. Views of buildings from key locations on the site shall take advantage of desirable vistas of the surroundings. Such views are especially important for the patient in the bedrooms of nursing towers. Views from roads, walkways and other site vantage points, coupled with effective signage and properly aligned walks, provide an important frame of reference for orientation and direction of visitors, patients, and other personnel.

3.2.3 Appearance. Locate utility meters, poles, transformers, vaults, pressure reducing station piping and valving, and other utility items so that they do not detract from the appearance of the building. The design should also reduce the negative visual impact of utility items and communication lines in accordance with the Joint Service Manual TM 5-803-5, NAVFAC P-960, and AFM 88-43 (reference 3h).

3.2.4 Restrictions. Land use restrictions dealing with runway clearances, helipad planning, aircraft noise, and use of airspace are to applied to the site location with MIL-HDBK-1190 (reference 3i).

3.2.5 Hazards and Nuisances. Hazard and nuisance effects on and off the site, such as excessive noise, odors, smoke, dust, etc., shall be considered during site design. Corrective action shall be planned in advance to diminish any adverse effect of such conditions, including proper orientation, grading, provision of planting screens, fencing, etc.

3.3 Construction in Floodplains or on Wetlands. The construction of facilities in floodplains and wetlands is not recommended but is permitted provided the provisions of MIL-HDBK-1190 (reference 3i), Executive Order 12372 (reference 3a), DoD Directive 4165.61 (reference 3b), Executive Order 11988 (reference 3j), Executive Order 11990 (reference 3k), 43 CFR 6030 (reference 3l), 44 CFR 59-79 (reference 3m), Executive Order 11514 and Executive Order 11991 (reference 3n), P.L. 91-190 (reference 3o), DoD Directive 6050.1 (reference 3p), and Chesapeake Bay Agreement (reference 3q) are all met.

3.4 Planning Procedures for the National Capital Region (NCR). Planning for all facilities in the NCR shall comply with MIL-HDBK-1190 (reference 3i) and OMB Circular A-11 (reference 3r). Master plans for facilities in the NCR shall be sent to the National Capital Planning Commission (NCPC) or the Commission of Fine Arts (CFA), or both, as required by the policies issued by the Commissions. The NCR is defined as the District of Columbia; Prince Georges and Montgomery Counties in Maryland; Arlington, Fairfax, Loudoun and Prince William Counties in Virginia; and all cities and towns within the outer boundaries of the foregoing counties.

3.4.1 Projects normally are not advertised for bids prior to resolution of any serious objections by either Commission. Requests for exceptions are to be submitted to TMA/DMFO together with a statement on the special circumstances involved.

3.4.2 The Military Departments and Defense Agencies are to

establish a day-to-day staff working relationship with the NCPC and the CFA to ensure expeditious handling of the reviews.

3.4.3 The provisions of OMB Circular A-11 (reference 3r) require the annual submission of five-year construction budget proposals to NCPC by the Military Departments and Defense Agencies.

3.5 Energy Conservation. Orient buildings on the site to decrease energy consumption within the constraints of the functional requirements, topography and site configuration. Enhance natural daylighting to the greatest extent possible. Consider the effect of local sun angles and wind conditions when orienting building on the site, along with temperature or humidity characteristics due to landforms or major stands of vegetation. The use of renewable energy resources and the design and siting impacts of recycling policies should also be included in the siting considerations. See Section 7, Energy Conservation.

3.5.1 Winds. In harsh climates and areas of consistently high or changing winds, building entry points must be designed to shelter the entrances from the effects of winds, including snow and dust. Consider prevailing and seasonal wind conditions where locating energy plants, incinerators, trash and trash collection points, and exhaust vents in relation to air intakes to minimize contamination of the site and building.

3.6 Accessibility for the Disabled. All buildings, support facilities and site developments shall be accessible to the disabled in accordance with the guidance provided in Section 12: Accessibility Provisions for the Disabled.

3.7 Security Fencing. Limit the use of fencing to enclose and separate areas within a medical complex to those conditions requiring security or the protection of life, separation of a construction site from operational facilities, isolation of a hazardous area, or as stipulated by the using Military Department. See Section 14, Security and Section 15, Force Protection for additional information.

3.8 Landscape Planting. Provide plant materials (grass, trees, shrubs) and irrigation system(s) as an integral part of the design as appropriate for each type of facility. Use low maintenance plants which are indigenous to the area. Existing mature trees and vegetation should be retained whenever practical. Develop the landscape design to optimize wind protection for the building and especially entry points where feasible. The costs of such planting(s) should be included in the funding of the facility. One source of detailed information is the Joint Service Manual TM 5-803-5, NAVFAC P-960, and AFM 88-43 (reference 3h). Specific guidance on this subject is available from the Design Agent.

3.8.1 Sidewalks. Sidewalks shall be designed to provide convenient and safe pedestrian access and necessary circulation. The width of walks shall be based on pedestrian traffic volume, accessibility requirements, and code requirements. The grade of walks will normally follow the natural pitch of the ground except at locations where physically disabled access is required.

3.9 Soil Conditions. Soil and foundation conditions shall be investigated to assure suitability for economical excavation, site preparation, building foundations, utility lines, grading, and planting. Bearing capacity tests shall be made to assure stable and economical foundations for buildings and other structures. The Design Agents are responsible for supplying or contracting for appropriate information early in the design process.

3.10 Siting of Utilities. Provision of utilities essential to efficient operation and of adequate size to serve future facilities requirements shall be considered in the early planning stages. Early planning is necessary to avoid conflicts in the design and layout of the various utility lines, and the early recognition of the need for additional production and/or supply capacity. All facility projects should specifically address the adequacy of existing utilities support and include any additional needs. Planning of utility lines should minimize utility easements, capital investments, and maintenance and repair costs. Heat distribution and chilled water lines should be located in concrete shallow trench systems. These lines should be separated to minimize heat transfer.

3.10.1 Underground Lines. Locate underground utilities to minimize the cost and effort of performing maintenance. Utility lines of all types should not be located under buildings, parking lots, paved terraces, sidewalks, and other paved areas in accordance with good design practice. If the above criteria cannot be fully satisfied due to existing site conditions, locate utility lines to minimize coverage by site improvements. Locate all underground utility lines, mains, and conduits at the minimum depth required in accordance with local code and frost line and water table requirements. When possible, locate underground utilities in common corridors to allow for ready access and maintenance. Size and locate utilities to allow for future expansion of buildings and/or utility systems.

3.10.2 Storm Drainage. Design the storm drainage system, including gutters, drains, inlets and culverts, to carry the anticipated runoff from the building site, including runoff from melting snow. Design of storm drainage and erosion control will be in accordance with design guidance provided by the Design Agent. Provide inlets where necessary to intercept surface flow. The building up of undeveloped areas may have a noticeable effect on installation drainage facilities. The location and design of new facilities may require major alterations or extensions to existing storm sewers and drainage channels.

3.10.3 Water Service. Provide a water service loop with proper valving to maximize reliability. Critical facilities, as designated by the using Military Department, shall be served by two water lines from separate sources where feasible.

3.10.4 Sanitary Sewer. New building elevations shall be coordinated with the existing sanitary sewer elevation to avoid the need for ejection pumps where feasible.

3.11 Vehicular and Pedestrian Circulation.

3.11.1 Street System. Design of the street system within each

project area shall be coordinated with the overall traffic circulation plans for the installation as well as the adjacent road system. Provide convenient and safe vehicular access and circulation for essential services, such as deliveries, trash and garbage collection, fire protection, and maintenance and repair. Through traffic should be kept to a minimum.

3.11.2 Separate Access. If feasible, provide separate roads from the site entrance to emergency services, patient parking, and support service areas. An additional road may be required from the helipad to emergency services.

3.11.3 Ambulance Traffic. Where possible, ambulances shall be provided a separate, dedicated route to the emergency entrance from the nearest primary arterial roadway.

3.11.4 Dumpsters. Provide visual screening of all dumpster locations from public view. Provide concrete pads for all dumpsters to prevent damage to parking lots and grounds.

3.12 Parking Facilities. Ninety-degree off-street parking is preferred for both organizational and non-organizational vehicles. Parking areas should be coordinated with the location of underground utility services. In the interest of economy and efficiency of land use, joint use parking may be considered where feasible. Where relatively large parking lots are unavoidable, natural terrain features and allocation of natural tree islands should be combined effectively to relieve the unfavorable view. When mature trees or vegetation exist on a site, every reasonable effort should be used to integrate them into the parking areas. Criteria and allowances for parking spaces for non-organizational vehicles shall be in accordance with Table 3-1 (reference 3s).

3.12.1 Parking Structures. Parking structures or garages will be considered when the site is too small to accommodate required parking, the value of the land is excessive, the site is located in a harsh climate, or the required amount of parking spaces creates an oversized area with extreme walking distances. TMA/DMFO will approve parking structures on a case-by-case basis.

3.12.2 Ambulance Shelters. Ambulance shelters in the form of a garage or carport are authorized as part of a facility as follows:

3.12.2.1 Ambulance Garage. A garage may be provided at installations where the heating design temperature on the 97.5 percent dry bulb is less than –12°C (11°F).

3.12.2.2 Ambulance Carport. A carport may be provided at installations where the air conditioning design temperature on the one percent dry bulb exceeds 31°C (87°F).

3.12.2.3 Design Temperatures. All building design temperatures shall be obtained from the Tri-Service Manual, Engineering Weather Data, AFM 88-8, chapter 6; TM 5-785; or NAVFAC P-89 (reference 3t).

TABLE 3-1

AUTHORIZED PARKING SPACES FOR
MEDICAL AND DENTAL TREATMENT FACILITIES [REV APR 03]

(.75)(X1)+(.40)(X2)+(X3)+(X4)+(X5) – Hospitals

or

(.75)(X1)+(.40)(X2)+(X3)+(X4)+(X5) – Ambulatory Health Care Facilities and Clinics

X1 = All personnel working in the Medical Treatment Facility on a full-time basis, minus the Dental Staff (see X4), plus an allowance for visitors and part-time staff. Include FTE's, contract maintenance, Red Cross volunteers, base exchange, clergy, interns, technical school trainees, Veterans Affairs and other Military Department liaison staff, Reserve, Guard, PME and visitors (i.e. Commander, CHAMPUS, RMO Security, Fire Department consultants, Salespersons, etc.) and shift change overlap. (Use 10 percent if statistics are unavailable for additional visitors, shift overlap, and part-time staff).

X2 = For hospitals, use average daily outpatient workload for "peak month" using 21 workdays per month and 250 workdays per year as a basis for calculation. Workload to be used in calculation is all outpatient visits to clinics plus outpatient O.T., P.T., immunizations, physical exams, inhalation therapy, EEG's, ECG's plus a 10 percent factor for pre-admission testing and paperwork, pharmacy visits (including refills), environmental health, records retrieval, partnership program visits, education programs (birthing, smoking cessation, nutrition), "drop-in" check-ups, school physicals, appointments, DEERS checks, meeting with family members in conjunction with a facility "visit", etc. For ambulatory and outpatient clinics, include average daily outpatient surgical workload for "peak month" using 21 workdays per month and 250 workdays per year as a basis for calculation.

X3 = One space for each patient bed. (Do not include in free-standing Outpatient Medical Treatment Facilities or Dental Facilities which are not co-located with an inpatient facility (Consolidated Medical Treatment Facility (CMTF)).

X4 = Dental Clinic (both free-standing and as a part of another facility (CMFT). Three (3) spaces per dental treatment room.

X5 = One space for each organizational vehicle.

Notes:

1. This formula should be used as a guide. Additional parking spaces need to be justified.

2. Carpooling, "Reserved" spaces for Command, General Officers, Rewards, and Disabled are included in the above factors.

3. Spaces for Disabled as required in Section 12. These spaces are included in and broken out from the above total and designated per Section 12 for both inpatient and outpatient facilities. Spaces for Disabled are to be allocated per Section 12: Provisions for the Disabled, for both inpatient and outpatient requirements as applicable.

4. Calculations may be adjusted for public transportation (if reliable and available within reasonable walking distance) and for Quarters/Housing (if within reasonable walking distance).

5. Parking lot segregation for staff, patients and visitors will be addressed by using Military Departments during design.

REFERENCES

3a. Executive Order 12372, “Intergovernmental Review of Federal Programs”, July 14, 1982, 47 Federal Register 30959.

3b. DoD Directive 4165.61, “Intergovernmental Coordination of DoD Federal Development Programs and Activities”, August 9, 1983.

3c. DoD Directive 5500.5, “Natural Resources—Conservation and Management”, May 24, 1965.

3d. Technical Manual 5-803-7/Air Force Regulation 86-14/NAVFAC P-971, “Airfield and Heliport Planning Criteria”, May 12, 1981.

3e. Technical Manual 5-823-4, “Marking of Army Airfield – Heliport Operational and Maintenance Facilities”, July 7, 1987.

3f. Technical Manual 5-824-4, “Airfields Other Than Army; Airfield Operational and Maintenance Facilities”, June 1, 1966.

3g. Technical Manual 5-811-5, “Army Aviation Lighting”, December 13, 1991.

3h. Joint Service Manual, TM 5-803-5, NAVFAC P-960, AFM 88-43, “Installation Design”, March 1, 1981.

3i. MIL-HDBK-1190, “Facility Planning and Design Guide”, September 1, 1987.

3j. Executive Order 11988, “Floodplains”, May 24, 1977.

3k. Executive Order 11990, “Protection of Wetlands”, May 24, 1977.

3l. Title 43, Code of Federal Regulations (CFR) 6030, “Floodplain Management Guidelines”, February 10, 1978.

3m. Title 44, CFR 59-79, “National Flood Insurance Program”

3n. Executive Order 11514, “Protection and Enhancement of Environmental Quality”, March 5, 1970 (as amended by Executive Order 11991, May 24, 1977).

3o. Public Law 91-190, “National Environmental Policy Act of 1969”, January 1, 1970.

3p. DoD Directive 6050.1, “Environmental Effects in the United States of DoD Action”, July 30, 1979.

3q. “Chesapeake Bay Agreement”, December 15, 1987.

3r. OMB Circular A-11, “Preparation and Submission of Budget Estimates”, May 27, 1979.

3s. MTMC Report 74-28, “Traffic Generations at Military Medical Facilities”, Military Traffic Management Command Transportation Engineering Agency, September 1974.

3t. “Engineering Weather Data”, Tri-Service Manual AFM 88-8, Chapter 6; TM 5-785; or NAVFAC P-89.