

Civil Engineering, Planning, Programming and Design

AIR NATIONAL GUARD PLANNING FACTORS

This regulation contains guidelines and information for facility requirements in support of Air National Guard missions. Responsibility for these guidelines applies to personnel in Air National Guard Engineering and Services, and to personnel

in other Air National Guard organizations who have the responsibility for planning, allocation of space, or developing facility requirements. This regulation also implements facilities requirements criteria in DoD Instruction 1225.7.

	Para	Page		Para	Page
Chapter 1 - General			Basic Item 123-335, Vehicle		
Purpose	1-1	4	Fueling Station	3-3	8
Developing Requirements and			Basic Item 124-135, Jet Fuel		
Criteria	1-2	4	Operating Storage	3-4	8
Programming Directives	1-3	4	Basic Item 126-925, Truck		
ANG Composite and Joint Use	1-4	4	Liquid Fuel Fill Stand	3-5	8
Facilities					
Joint Use Facilities	1-5	4	Chapter 4 - Category Group 13, Communications,		
Functional Criteria Guidance	1-6	5	Navigational Aids, Air Traffic Control, and		
			Airfield Lighting		
Chapter 2 - Category Group 11, Airfield			General Criteria	4-1	9
Pavements			Special Criteria	4-2	9
General Criteria	2-1	6	Basic Item 131-111,		
Civil Airport Criteria	2-2	6	Communications Facility	4-3	9
Basic Item 111-111, Runway	2-3	6	Basic Item 136-635, Beacon Light	4-4	9
Basic Item 111-115, Paved			Basic Item 136-661, Approach		
Overrun	2-4	6	Lighting	4-5	9
Basic Item 112-211, Taxiway	2-5	6	Basic Item 136-662, Obstruction		
Basic Item 113-321, Apron	2-6	6	Lighting	4-6	9
Basic Item 116-116, Shortfield			Basic Item 136-664, Runway		
Takeoff and Landing Zone	2-7	6	Lighting	4-7	9
Basic Item 116-642, Paved			Basic Item 136-666, Airfield		
Shoulders	2-8	6	Special Lighting	4-8	10
Basic Item 116-66X, Criteria			Basic Item 136-667, Taxiway		
for Pads	2-9	6	Lighting	4-9	10
Basic Item 116-922, Aircraft					
Arresting System	2-10	7	Chapter 5 - Category Group 14, Land		
			Operational Facilities		
Chapter 3 - Category Group 12, Petroleum			Basic Item 141-181, Aircraft		
Dispensing and Operating Facilities			Shelter (Alert)	5-1	11
Basic Item 121-111, Composite			Basic Item 141-453, Base		
Petroleum Operations			Operations	5-2	11
Building	3-1	8	Basic Item 141-459, Readiness		
Basic Item 121-122, Hydrant			Crew	5-3	11
Fueling System	3-2	8	Basic Item 141-743, Basic Photo		
			Laboratory	5-4	11

	Para	Page		Para	Page
Chapter 5 (Cont'd)			Basic Item 211-153, Non-Destructive		
Basic Item 141-745, Photo			Inspection Shop	7-4	14
Laboratory, Reconnaissance	5-5	11	Basic Item 211-154, Aircraft		
Basic Item 141-747, Photo			Maintenance Organizational Shop	7-5	14
Processing and Interpretation			Basic Item 211-157, Aircraft		
Facility (PPIF) Support Building	5-6	11	Organizational Maintenance Shop	7-6	14
Basic Item 141-753, Composite			Basic Item 211-159, Aircraft		
Squadron Operations (Includes			Corrosion Control	7-7	14
Command Post and Base			Basic Item 211-173, Large Aircraft		
Operations)	5-7	11	Maintenance Dock;	7-8	14
Chapter 6 - Category Group 17, Training			Basic Items 211-175, Medium Aircraft		
Facilities			Maintenance Dock;		
Basic Item 171-158, Band Center	6-1	12	211-177, Small Aircraft		
Basic Item 171-212, Flight			Maintenance Dock		
Simulator Training Facility	6-2	12	Basic Item 211-179, Aircraft Fuel		
Basic Item 171-443, Reserve			System Maintenance and		
Forces General Training Support			Corrosion Control Facility	7-9	15
Facility	6-3	12	Basic Item 214-425, Vehicle		
Basic Item 171-445, Reserve			Maintenance Shop	7-10	15
Forces Operational Training			Basic Item 214-428, Vehicle		
Facility	6-4	12	Operations Parking Shed	7-11	15
Basic Item 171-447, Reserve Forces			Basic Item 214-467, Refueling		
Communications Electronics			Vehicle Shop	7-12	15
Training Facility	6-5	12	Basic Item 215-552, Weapons and		
Basic Item 171-449, Reserve Forces			Release Systems Shop	7-13	15
Aeromedical Evacuation Training			Basic Item 216-642, Conventional		
Facility	6-6	12	Munitions Shop	7-14	15
Basic Item 171-450, Reserve Forces			Basic Item 217-712, Avionics		
Medical Training and Administration			Shop	7-15	15
Facility	6-7	12	Basic Item 217-713, ECM Pod Shop		
Basic Item 171-873, Aerial Port			and Storage Facility (Including		
Training Facility	6-8	12	LANA Pods)	7-16	15
Basic Item 171-875, Munitions			Basic Item 218-712, Aircraft		
Loading Crew Training	6-9	13	Support Equipment Shop and		
Basic Item 179-475, Small Arms			Storage Facility	7-17	15
Range System (Combat Arms			Basic Item 218-852, Survival		
Training and Maintenance)	6-10	13	Equipment Shop	7-18	16
Basic Item 179-481, Aircraft			Basic Item 219-943, Base Engineer		
Range	6-11	13	Pavements and Grounds Facility	7-19	16
Chapter 7 - Category Group 21, Maintenance			Basic Item 219-944, Base Engineer		
Facilities			Maintenance Shop	7-20	16
Basic Item 211-111, Maintenance			Basic Item 219-947, Base Engineer		
Hangar	7-1	14	Storage Shed (Unheated)	7-21	16
Basic Item 211-147, Aircraft			Chapter 8 - Category Group 41, Liquid		
Weapons Calibration Shelter	7-2	14	Fuel Storage		
Basic Item 211-152, Aircraft			Basic Item 411-134, Diesel Storage		
General Purpose Maintenance			and 411-137, Mogas Storage	8-1	17
Shop	7-3	14	Basic Item 411-135, Jet Fuel		
			Storage	8-2	17

	Para	Page		Para	Page
Chapter 9 - Category Group 42, Explosives Storage			Basic Item 610-287, Specified Headquarters (ANG HQ)	11-10	20
Basic Item 422-256, Rocket Checkout, Assembly and Storage Building	9-1	18	Basic Item 610-711, Data Processing Installation	11-11	20
Basic Item 422-257, Segregated Magazine Storage	9-2	18	Basic Item 610-911, Social Actions	11-12	20
Basic Item 422-258, Above Ground Magazine Storage	9-3	18	Basic Item 610-913, Disaster Preparedness	11-13	20
Basic Item 422-264, Igloo Storage	9-4	18			
Chapter 10 - Category Groups 44 and 45, Storage Facilities - Covered, Open, and Special Purpose			Chapter 12 - Category Group 72, Troop Housing		
Basic Item 442-257, Base Hazardous Storage (Including Hydrazine Storage and Servicing Facility)	10-1	19	Basic Item 722-351, Dining Hall	12-1	21
Basic Item 442-258, Liquid Oxygen/Nitrogen Storage (LOX/LIN)	10-2	19	Basic Item 725-517, Troop Camp (Quarters)	12-2	21
Basic Item 442-628, Base Supply and Equipment Shed	10-3	19	Chapter 13 - Category Group 73, Personnel Support Facilities		
Basic Item 442-758, Base Supply and Equipment Warehouse	10-4	19	Basic Item 730-142, Fire Station	13-1	22
Basic Item 452-252, Base Supply Open Storage	10-5	19	Basic Item 730-835, Security Police Operations	13-2	22
Basic Item 452-255, Base Civil Engineer Open Storage	10-6	19	Chapter 14 - Category Groups 74 and 75, Morale, Welfare and Recreational Facilities		
Chapter 11 - Category Group 61, Administrative Facilities			General Guidance	14-1	23
General	11-1	20	Basic Item 750-177, Athletic Field Track,	14-2	23
Basic Item 610-121, Vehicle Operations Administration	11-2	20	Chapter 15 - Category Group 85, Roads and Streets		
Basic Item 610-122, Base Supply Administration	11-3	20	Basic Item 852-261, Operations Vehicle Parking	15-1	24
Basic Item 610-127, Base Civil Engineer Administration	11-4	20	Basic Item 852-262, Non-Organizational Vehicle Parking	15-2	24
Basic Item 610-128, Base Personnel Office	11-5	20	Basic Item 852-269, Refueling Vehicle Parking	15-3	24
Basic Item 610-129, Weapons Systems Maintenance Management (DCM Complex)	11-6	20	Attachments		
Basic Item 610-142, Traffic Management Facility	11-7	20	1. Air National Guard Facility Requirements Programming Guide		25
Basic Item 610-243, Group Headquarters	11-8	20	2. Air National Guard Facility Requirements Programming Guide Combat Readiness Training Centers, ANG Red Horse Units and Aircraft Ranges		35
Basic Item 610-249, Wing Headquarters	11-9	20			

## Chapter 1

### GENERAL

**1-1. Purpose.** The guidelines in this regulation are applicable to the Air National Guard (ANG) and implement DoD construction criteria directives.

**1-2. Developing Requirements and Criteria:**

a. The guidelines in this chapter constitute the recommended space allowances for the ANG. Actual space requirements for each category (or facility to be constructed) will be programmed and justified on the basis of the authorized ANG strength and the quantity and type of equipment, materials and supplies required. The use of existing facilities to fulfill space requirements by ANG should not exceed the authorizations of this regulation consistent with the physical characteristics of the existing structures to accomplish the assigned mission.

b. In cases where repetitive type requirements occur that are not described, criteria will be developed by ANGRC/CEP in concert with the ANG staff of the National Guard Bureau.

c. All facility space requirements are given in terms of gross area, unless noted otherwise. Gross area is computed to the outside of enclosure walls. For these computations:

(1) Include full area for: basements; above grade floors; permanently affixed mezzanines; mechanical equipment (heating/utility) rooms; penthouses; enclosed passages, walks, porches, and balconies; raised covered loading platforms.

(2) Include half area for: covered (but not enclosed) passageways, porches, and balconies; uncovered raised platforms; covered or uncovered ground level or depressed, loading facilities.

(3) Exclude areas for: Exterior or interior stairs, exterior uncovered ramps, stoops, and paved terraces; covered or enclosed passages and walks for troop's and officer's quarters/dormitories; generally enclosed space having a maximum ceiling height of less than seven feet; moveable/relocatable supply purchased equipment such as free standing messanines and modular offices that are classified as supply/-

expense item (See NGR (AF) 86-1 for definitions). All space allowances indicated in this regulation include the required mechanical equipment space, where applicable.

**1-3. Programming Directives.** In programming facilities for the ANG, AFR 86-12, "Air National Guard and Air Force Reserve Facilities" and NGR (AF) 86-1, "Policies and Procedures", should be consulted.

**1-4. ANG Composite and Joint Use Facilities.** Composite and/or multistory facilities are encouraged. Each functional area will be within authorized scope and fully justified on the basis of assigned equipment and/or personnel. Composite facilities can be programmed for the use of two units with like category codes, the use of different functions (different category codes) within the same unit, or other combinations of units and function. General guidance is as follows:

a. Same Category Code - These facilities consist of shared ANG facilities with the same function. Space requirements are calculated by adding to the basic scope for one unit, the additional space required for equipment, libraries, storage, and files. Additional space for offices, classrooms, restrooms, hallways, etc. can seldom be justified. Normally an increase of 10% is made to the basic authorization for a single unit.

b. Different Category Codes - These facilities consist of shared ANG facilities with different functions. Space requirements are calculated by the addition of the scope authorizations for different category codes. A minor amount of reduction can be made for economy of scale. Reductions of space for classrooms, restrooms, utility rooms, etc., should be considered. Normally a decrease of 10 percent is made to the basic authorization of a single unit.

**1-5. Multi-Service Joint Use Facilities.** Where the ANG, USAFR and other DoD agencies are co-located, joint use projects will

be programmed to the maximum extent practicable. Facilities such as medical training, dormitories, dining halls, bulk fuel storage, operation centers, communication centers, small arms ranges, fire stations and munitions/pyrotechnics storage facilities will be considered for joint use. Justification must be provided for non-joint use. Programming procedures for joint use facilities are detailed in AFR 86-12. For the same category code or different category codes, minor reduction of space for classrooms, restrooms, utility rooms, etc., should be considered. Normally a decrease of 10% is made to the basic authorization of a single unit.

#### **1-6. Functional Criteria Guidance:**

a. This guidance provides general policy for the ANG. Specific justification is required for each proposed facility. Emphasis will be placed on the following areas to ensure maximum use of resources.

(1) Readiness. Facilities will be constructed to make the greatest contribution to readiness, and promote economy and efficiency.

(2) Existing Facilities. Maximum use will be made of existing facilities to satisfy proposed facility requirements, partially or fully, with economy and efficiency considered.

(3) Flexibility. Facilities will be designed so as to lend themselves to occupancy by new units, reorganized units, and units with new missions with the minimum of additional construction.

(4) Economical Design. Reserve component facilities will be designed with consideration for life-cycle cost of both construction and maintenance.

b. Standards of Construction. New facilities generally will be of permanent construction and the quality of construction will be consistent with the life-cycle cost analysis. However, for new facilities at training areas and for facilities of uncertain useful life, construction may be permanent, semi-permanent or temporary, as appropriate. Design will make appropriate provisions for future expansion.

c. Other Facilities. Other facilities required on an infrequent basis, and for which criteria are not specifically provided here, will be established by criteria for similar facilities, but

adjusted according to the actual mission requirements.

d. Administrative Space. Wherever possible, administrative space should be open, joint use space with only the minimum essential number of enclosed offices constructed. Open office design and use of systems furniture will be considered.

e. Administrative Support Space. This will include consideration for Automated Data Processing workstations, filing systems, reproduction, and publication libraries.

f. Storage. Facilities will include adequate space for storage of equipment in the proper locations (home station, mobilization station, central storage, etc.).

g. Special Use Space. Consider classrooms, conference rooms, auditoriums, locker rooms, physical training, vending and other space, which may be appropriate for the function.

h. Service Support Space. This includes janitor and storage areas, mechanical and electrical rooms, and loading docks/receiving areas.

i. Unaccompanied Personnel Quarters (Home Station). Requirements for personnel quarters for reservists will include an economic analysis of constructing unaccompanied personnel quarters on the installation versus contract billeting with commercial establishments. See AFR 86-12.

j. Mobility Workcenters. The Base Master Plan will identify facilities that will be used as mobility workcenters during wartime, contingencies and mobility exercises. These facilities will not necessarily be separate facilities, but will be existing facilities that are designated for mobility workcenter use in addition to their normal use.

k. Airfield Criteria. General guidance for airspace and airfield criteria is given in NGR (AF) 86-1.

l. Redundant Space. Space shall not be constructed in more than one place for the performance of an individual's function.

## Chapter 2

## CATEGORY GROUP 11, AIRFIELD PAVEMENTS

**2-1. General Criteria.** Requirements for items in this group for ANG units are determined in the same manner as for active units when located at Air Force bases. Adherence to these requirements at other bases is not always possible due to multiplicity of situations under which ANG operates. Federal Aviation Administration (FAA) airfield criteria will normally be used for construction of runways, taxiways and associated work located on civil airports. Naval airfield criteria will be used for construction of airfield facilities located at naval air stations. AFR 86-14 will be used at all other military installations.

**2-2. Civil Airport Criteria.** FAA criteria relative to airfield and airspace dimensions, clearances and slopes are to follow FAA criteria on civil airports rather than Air Force criteria in AFR 86-14.

**2-3. Basic Item 111-111, Runway.** Use active force criteria for runway length and other design elements except limit runway width to 150 feet. The minimum runway length is 8,000 feet for fighter type aircraft, 7,000 feet for cargo aircraft and 10,000 feet for tanker aircraft.

**2-4. Basic Item 111-115, Paved Overrun.** The runway overrun is the portion of the overrun area that is an extension of the runway pavement (excluding shoulders). The overrun is designed for possible short landings or unobstructed run-out for aircraft arresting systems. The overrun should be 1,000 feet long and as wide as the runway (excluding runway shoulders). Approach lighting systems located in the overrun area should be semi-flush-mounted.

**2-5. Basic Item 112-211, Taxiway.** Use active force criteria, except provide taxiway widths of 50 feet minimum for normal use taxiways and 40 feet maximum for taxiways used only by towed aircraft.

**2-6. Basic Item 113-321, Apron.** Active force criteria should be followed except omit apron space for transient aircraft unless an

exception is approved by NGB. Calculate the apron spaces authorized by starting with the PAA assigned aircraft and deducting any aircraft located on separate aprons, such as alert aircraft and also deduct the aircraft that are located in maintenance hangars or docks required for normal maintenance schedules and also deduct any aircraft that may be parked elsewhere on existing paving of a suitable nature and location. Adherence to these requirements is not always possible due to multiplicity of situations under which ANG operates.

**2-7. Basic Item 116-116, Shortfield Takeoff and Landing Zone.** The facility is used to train crews of medium size cargo aircraft (C-130 & C-17) in conducting airfield operations within the type of airfield environment found at forward operating locations. Training needs are prescribed in MAJCOM supplements to AFM 51-130. For additional information, see AFM 86-3, AFR 86-14, and AFM 86-16.

**2-8. Basic Item 116-642, Paved Shoulders.** Paved shoulders may be provided next to airfield pavements wherever jet blast causes shoulder erosion and turf capable of controlling such erosion cannot be established. Paved shoulders--normally flexible--are designed to support a 10,000 pound wheel load with 100 psi tire pressure. Shoulder widths should not exceed 25 feet.

**2-9. Basic Item 116-66X, Criteria For Pads.** Pads are designed for aircraft load as defined by Air Force criteria. It is usually advantageous to co-locate noise suppressed power check pad (116-665) and noise suppressed test stand (211-193). Basic items:

a. 116-661, Arming and Disarming Pad. Bases having tactical fighter or tactical combat crew training missions require two arm/disarm pads--one near each end of the primary runway. The pads are used for arming four aircraft simultaneously immediately before take-off and for disarming (safing) weapons retained or not expended upon their return. For additional information see AFM 86-2.

b. 116-664, Power Check Pad (Unsuppressed). An aircraft power check pad is a paved area used in full-power checks of jet engines. Requirements for flood-lighting, water supply, and communications are dependent upon individual justification. For additional information see AFM 86-2.

c. 116-665, Power Check Pad With Suppressor. Use active force criteria; however, a separate personnel shelter is only authorized upon individual justification. The Hush House/ Suppressor is an equipment item. For additional information see AFM 86-2.

d. 116-672, Aircraft Washrack. This function is normally included in 211-179, Fuel Systems Maintenance/Corrosion Control Dock..Open Wash Rack may be justified separately and may include de-icing capability.

**2-10. Basic Item 116-922, Aircraft Arresting System.** Aircraft arresting systems consist of engaging devices and energy absorbers. Active force criteria (AFM 86-2) apply except that the installation of barriers at municipal airports must follow and comply with AFR 55-42 and FAA advisory circular(s) on barrier installations at joint-use airports.

### Chapter 3

#### CATEGORY GROUP 12, PETROLEUM DISPENSING AND OPERATING FACILITIES

**3-1. Basic Item 121-111, Composite Petroleum Operations Building.** A petroleum operations building is required to provide a centralized facility for administering all base functions related to the receipt, storage, and issue of petroleum products and, when required, liquid oxygen and nitrogen (LOX and LIN). It also provides space for a laboratory where prescribed tests must be made to assure that quality fuel is issued to all aircraft.

**3-2. Basic Item 121-122, Hydrant Fueling System.** Generally, hydrant fueling systems for units possessing Cargo and Tanker aircraft will be considered.

**3-3. Basic Item 123-335, Vehicle Fueling Station.** Two dispensing pedestals for ground fuels will be provided for each increment

of 150 motor vehicles authorized to be served. At least one pedestal will be for mogas and one for diesel fuel. This item includes fuel storage tanks.

**3-4. Basic Item 124-135, Jet Fuel Operating Storage.** Combined storage requirements for both operating and bulk storage will be provided based on the individual requirements of the weapon system.

**3-5. Basic Item 126-925, Truck Liquid Fuel Fill Stand.** Truck fill stands are provided to supply vehicles and tank trucks with fuel. A minimum of two fill stand outlets will be provided for each type or grade of fuel to be dispensed. These outlets are to be located in the storage area.

## Chapter 4

## CATEGORY GROUP 13, COMMUNICATIONS, NAVIGATIONAL AIDS, AIR TRAFFIC CONTROL, AND AIRFIELD LIGHTING

**4-1. General Criteria.** Installation of ground-based aids to air traffic control, air navigation facilities, and airfield lighting at civil airports is normally accomplished by the FAA and airport authority. The FAA has the responsibility for and normally programs for these facilities.

**4-2. Special Criteria.** In exceptional instances where little or no commercial/civil traffic exists at base and no additional traffic is generated by other military services, consideration will be given for installation of terminal navigational aids such as VOR and TACAN. The ANG does not normally have the capability or financial responsibility for operating and/or maintaining permanently installed navaid systems such as ILS, GCA, or RAPCON. The need for a terminal aid should be fully documented and submitted to the ANG for review and assistance. A study of the safety deficiency will be accomplished and submitted to ANG for evaluation. With concurrence in the need for improvement, action will be taken to obtain the necessary navigation equipment and program its installation using ANG and AFCC personnel resources. In the event approval is obtained for installing a terminal navaid (TACAN or VOR), consideration should be given to increased power costs and maintenance. Normally, maintenance must be provided utilizing limited manning. In the event recurring AFCC technical assistance is necessary, AFCC approval must be obtained because of the impact on programmed maintenance manpower.

**4-3. Basic Item 131-111, Communications Facility.** This facility provides a centrally located communications system, both for intra-base and off-base communications. This facility normally includes a switchboard room, frame room, administration, radio maintenance and communication/crypto centers for base communications, communications systems flight, and Automated Data processing (ADP) center.

**4-4. Basic Item 136-635, Beacon Light.** The airport beacon is the internationally recognized lighted signal indicating an airfield. The beacon generally is mounted on the highest structure on the installation. Beacon installations on ANG bases will be according to AFR 88-14.

**4-5. Basic Item 136-661, Approach Lighting.** This facility is designed to form the visual couplers between the electronic precision low-approach guidance and the visual reference provided by runway lighting for aircraft landing.

a. The system of approach lighting provided on instrument runways at ANG bases will be 3,000 feet of a configuration as set forth in AFR 88-14. Approach lighting of the designated configuration will be provided on the primary precision approach. Each system of approach lighting will be separately justified. Justification will include data showing the total number of IFR operations for which project approval is requested, the number of diversions required by below-minimum conditions, meteorological conditions that require IFR operation on other than the instrument runway, and clearance for operating this approach according to AFR 60-27.

b. The system of approach lighting system at other locations will be according to the agreement between the airport authority and NGB.

c. Approach lighting will be remoted into the airport control tower facilities according to AFR 88-14.

**4-6. Basic Item 136-662, Obstruction Lighting.** Objects that penetrate clearance planes will be lighted as obstructions to air navigation as provided in AFR 88-14.

**4-7. Basic Item 136-664, Runway Lighting.** High or medium intensity runway lighting is acceptable as authorized and permitted by NGB and installed according to AFR 88-14.

**4-8. Basic Item 136-666, Special Airfield Lighting:**

a. Visual Approach Slope or Glide Path Indicator Systems. The Visual Approach Slope Indicator (VASI) system furnishes the pilot visual approach slope or glide path information to provide safe descent guidance and is primarily intended for use during visual flight rules (VFR) weather conditions. The Precision Approach Path Indicator (PAPI) and the Pulsed Light Approach Slope Indicator (PLASI) systems provide visual glide path guidance for safe descent guidance and are more precise than the guidance provided by VASI. VASI systems, normally, are no longer installed as new installations but existing systems can be relocated if it is considered appropriate. Runways installed with Runway End Identifier Lights (REILS) will not be served by PLASI. PLASI and PAPI will be considered on an individual basis.

b. Basic FAA standard 4-box configuration (or other FAA follow-up configurations) may be used on civil airports. Reference is made to FAA Handbook 6850.2, Visual Guidance Lighting Systems.

c. Lighted runway distance-remaining signs and lighted runway/taxiway signs will comply with FAA criteria at civilian airports and military standards at the respective service airfields.

**4-9. Basic Item 136-667, Taxiway Lighting.** Taxiway lighting may be provided for primary taxiways. See AFR 88-14 for details. Reflectors may be installed as an interim measure in place of lighting on the primary taxiway or as permanent installation on secondary or seldom used taxiways.

## Chapter 5

## CATEGORY GROUP 14, LAND OPERATIONAL FACILITIES

**5-1. Basic Item 141-181, Aircraft Shelter (Alert).** A space is authorized for each fighter aircraft assigned to an active runway alert commitment. Heated shelters may be necessary for northern tier rigorous climatic areas. Where the ANG stands alert on an Air Force base, it is normally the Air Force responsibility to provide and support alert facility requirements. This facility must be sited to comply with Quantity-Distance separation criteria established in AFR 127-100.

**5-2. Basic Item 141-453, Base Operations.** Included in 141-753, Squadron Composite Operations.

**5-3. Basic Item 141-459, Readiness Crew.** An ANG readiness crew facility includes administration areas, sleeping area, briefing areas, day room, exercise room, kitchen, and dining facilities.

**5-4. Basic Item 141-743, Base Photo Laboratory.** A base photography laboratory is required to provide audiovisual services which include CCTV, graphics, and photographic support.

**5-5. Basic Item 141-745, Photo Laboratory, Reconnaissance.** This category has a requirement for three photo labs (two labs for operations and an additional one for training). Two photo laboratories are required for reconnaissance technical squadrons to provide photographic processing, interpretations, and reproductions of aeronautical charts. Another photo laboratory is required for unit training of Tactical Reconnaissance Squadrons (TRS). Functions include administrative, classroom, debriefing and storage. Facilities should be

adjacent to or composite with 171-753, Composite Squadron Operations.

**5-6. Basic Item 141-747, Photo Processing and Interpretation Facility (PPIF) Support Building.** This pad is required to support the operation of WS-430B PPIF (a specially designed shelter/equipment item obtained through the supply system). ANG tactical reconnaissance units are provided photo laboratory facilities by a WS-430B Photographic Processing Interpretation Facility (PPIF) in a specially designed relocatable shelter. The facility is an equipment item and not real property such as Item 141-745. Although the shelter is designed for use in short-term contingency operations, its use by the ANG units in CONUS is generally long-term. Long-term operations require utility services, an equipment pad, and a support building.

**5-7. Basic Item 141-753, Composite Squadron Operations (Includes Command Post and Base Operations).** Each flying squadron requires an operational facility for planning, briefing, administration, and critique of combat crews. Space for a USAF Command Post (141-461) and Base Operations (141-453) are included in the facility and will not be duplicated. Functions within this facility include weapons and tactics, intelligence, briefing/debriefing, standardization and evaluation, flight planning, flying safety, air advisor, flight records, physical training, life support, scheduling, general training (i.e., CFT, EPT, etc.), group or wing operations and space for unit administration of PPIF functions where assigned. Additional space will be provided for storage of air crew chemical warfare ensemble in the personal equipment area.

## Chapter 6

## CATEGORY GROUP 17, TRAINING FACILITIES

**6-1. Basic Item 171-158, Band Center.**

The facility provides space to operate and administer a band which includes: studios, individual practice rooms, music library, secure storage area for musical instruments/supplies, lockers, restrooms, and administrative space.

**6-2. Basic Item 171-212, Flight Simulator Training Facility.**

This facility is used for all flight training facilities including ACMI. The facility houses administration and records, classrooms, restrooms, trainer maintenance, supply storage, counseling space, technical library, and security storage space. Facility will be authorized and scoped as determined by ANG based on equipment availability, assignment and mission.

**6-3. Basic Item 171-443, Reserve Forces General Training Support Facility.**

The facility supports various ANG mission support units not otherwise defined including, but not limited to Weather Flights and ALCE Flights, etc. The space includes office and administrative areas, administrative support space, and classrooms. Additional space requirements for mobility equipment storage, training mockups, work areas, or other requirements unique to a particular unit will be separately determined.

**6-4. Basic Item 171-445, Reserve Forces Operational Training Facility.**

The basic reserve forces operational training facility is designated as common for ANG units. The facility includes group staff functions (i.e., administration, public affairs, and safety), DCR, DCS, SJA, chaplain, historian, CBPO, social actions, IMF, counseling, recruiting, comptroller, FM, conference area, and classrooms. See CC 610-249 for additional space entitlement, when a wing headquarters is authorized.

**6-5. Basic Item 171-447, Reserve Forces Communications-Electronics Training Facility.**

Communications-Electronics units require facilities containing space for

operational functions, administration, radar and electronic shops, classrooms and storage. C-E training includes units (e.g., Combat Communications (Combat Comm)), Tactical Air Control (FACP & CRC), Engineering & Installation (E&I), Aircraft Control and Warning (AC&W), NATO Based Satellite Communications (NABS), and Air Support Operations Centers (ASOC)), which includes an operations and maintenance component.

**6-6. Basic Item 171-449, Reserve Forces Aeromedical Evacuation Training Facility.**

This facility provides space for training and operations of Aeromedical Evacuation (AE) units. Space is required for the commander, chief nurse, aircrew briefing, classrooms, locker rooms, medical and mobility storage, unit administration, training and control center.

**6-7. Basic Item 171-450, Reserve Forces Medical Training and Administration Facility.**

Facility provides space for Medical Training and Administration. Space is required for the commander, chief nurse, physical and dental exams, immunization, classroom, nurses station, bioenvironmental engineering/ environmental health, and medical administration to support a unit.

**6-8. Basic Item 171-873, Aerial Port Training Facility:**

a. The facility provides for the administrative training and cargo functions of an Aerial Port Flight and Aerial Port Squadron. An Aerial Port Flight with C-130, C-141, C-17, C-5, and other similar aircraft requires an area to pack cargo parachutes, store prepacked training loads and supplies, and conduct administrative functions and classroom training. A drying tower will be included in this facility if no other drying facility is available on base.

b. An Aerial Port Squadron with an aerial delivery requirement needs 3,000 additional square feet. Also required is an adjoining secure

parking area to accommodate assigned cargo handling equipment.

c. Aerial Port Squadrons or Mobile Aerial Port Squadrons co-located with associate units are trained to provide cargo, mail, passenger, and patient handling services. Space for unit administration (1200 square feet) classroom training (1000 square feet) and the active duty advisor is included.

d. Aerial Port Flights or Mobile Aerial Port Flights attached and not co-located to associate units may be provided up to 400 square feet for unit administration. Regularly deployed Aerial Port units may be provided 400 square feet of administrative space in the host ANG Aerial Port unit. Facilities for housing these units can be provided by host base or gaining command, and maintained by the host.

**6-9. Basic Item 171-875, Munitions Loading Crew Training.** This training is conducted in a classroom environment on aircraft parked preferably inside a facility. This facility would provide an all weather environment to conduct proper training.

**6-10. Basic Item 179-475, Small Arms Range (Combat Arms Training and Maintenance).** A typical small arms range consists of an outdoor 50 meter range with 21 firing points. The facility will be baffled. Surface danger zone will be a minimum of 315 yards. Ranges of other branches of the Armed Services and Federal/State agencies in the local area will be surveyed for joint use before programming a small arms range. A Combat Arms Training and Maintenance building attached to the range is authorized. It includes a classroom, office space, target repair/storage, restrooms and an emergency eye wash. This building may be a

joint use building with construction and operations costs shared with the other Federal/State agencies. Contact NGB/DEP prior to planning or programming these joint use facilities.

**6-11. Basic Item 179-481, Aircraft Range.** An aircraft range system consists of an outdoor impact range and basic support facilities that consist of:

a. Range Control House, (171-471). This facility is for operations maintenance/workshop and minor storage functions.

b. Base Engineer Storage Shed (219-947). This facility consists of secure storage space for miscellaneous supplies tools, and equipment to support ranges.

c. Control Tower (149-962). Each manned, scorable (Class A) weapons range will require a main control tower. The main tower should contain approximately 225 square feet of work space. A radio equipment room may be incorporated in the main structure or developed as a stand alone building adjacent to the tower (100 square feet).

d. Observation Tower (149-967). Each manned scoreable (Class A) weapons range will require one or two towers as required by the range layout.

e. Vehicle Maintenance Shop (214-425). Only applicable where no host support is provided.

f. Vehicle Operations Parking Shed (214-428). Normally, only for vehicles without cabs or other equipment that would be adversely affected by the weather. Covered, unheated storage space may be authorized and provided for certain selected essential vehicles.

g. Above Ground Magazine Storage (422-258). For smoky sams, triple A burst simulators and other approved pyrotechnics such as smoke generators.

h. Base Hazardous Storage (442-257). Required for storage of hazardous materials.

## Chapter 7

## CATEGORY GROUP 21, MAINTENANCE FACILITIES

**7-1. Basic Item 211-111, Maintenance Hangar:**

a. Hangars are structures with heat, plumbing, electrical, and compressed air distribution and are usually insulated to provide a protected area for the performance of certain aircraft maintenance. For ANG, all enclosed aircraft hangars and docks will be equipped with fire detection and extinguishing systems including underwing capability.

b. For maintenance hangars or docks without shops or administrative areas, space requirements in addition to maintenance floor area may include limited space for tool crib, parts storage, latrine, and heating/utility room. For shop and administrative requirements as an addition to a dock or hangar, see 211-152, Aircraft General Purpose Maintenance Shop and 211-154, Aircraft Organizational Maintenance Shop. Requirements for missions not shown will be computed according to active Air Force criteria (See AFM 86-2).

**7-2. Basic Item 211-147, Aircraft Weapons Calibration Shelter.** The facility provides space for performing boresighting and harmonization on fire control and reconnaissance equipment only on the F-4 aircraft. This shelter can be used for Weapons Upload Training.

**7-3. Basic Item 211-152, Aircraft General Purpose Maintenance Shop.** Preferably, this requirement should be satisfied as an addition to existing maintenance hangars or docks. The functions include field maintenance office, wheel and tire shop, environmental shops, electric shop, welding shop, sheet metal and machine shop, tool crib, egress shop, bench type maintenance, aero-reclamation, pneudraulics, and electro-environmental and battery shops. Canopy storage and composite repair shop are also included if authorized.

**7-4. Basic Item 211-153, Non-Destructive Inspection Shop.** The facility provides space for field-level Non-Destructive Inspection of aircraft components. The process

investigates the quality, integrity, properties, and dimensions of materials and components without damaging or impairing their serviceability by use of optic, magnetic, eddy current, ultrasonic, radiographic, infrared, ultraviolet, and spectrometric devices. The spaces include S.O.A.P. lab, X-ray room, film developing room, tool crib/parts storage, locker space, penetrant and magnetic particle lines and office areas.

**7-5. Basic Item 211-154, Aircraft Organizational Maintenance Shop.** The facility includes equipment storage, tool kit storage, tool crib, bench stock, non-powered support equipment maintenance and storage (misc. -21 equipment), and administration and locker areas. See active force definition for additional information.

**7-6. Basic Item 211-157, Aircraft Engine Inspection and Maintenance Shop:**

a. The engine inspection and maintenance shop provides space for scheduled inspections, routine maintenance, and operational level repair of aircraft engines for flightline and phase dock operations. Storage of spare engines, bearing and inspection shop, parts storage/tool crib, parts cleaning, propeller shop (if required), and office administration are also provided.

b. Additional space may be necessary to support activities such as CEMS/TEMS, spare engine storage, and covered storage for engine trailers.

**7-7. Basic Item 211-159, Aircraft Corrosion Control.** See 211-179.

**7-8. Basic Item 211-173, Large Aircraft Maintenance Dock; 211-175, Medium Aircraft Maintenance Dock; 211-177, Small Aircraft Maintenance Dock:** See 211-111, Maintenance Hangar. Large aircraft nose docks will be used for aircraft maintenance functions, i.e., fuel cell repair, corrosion control, etc.. Only one totally enclosed hangar per base is authorized.

**7-9. Basic Item 211-179, Aircraft Fuel System Maintenance and Corrosion Control Facility.** The facility provides the necessary area to perform maintenance on aircraft fuel systems and for corrosion control (211-159, Aircraft Corrosion Control). Separate fuel system maintenance and corrosion control spaces may be considered. Fuel system maintenance docks have a mechanical ventilation system, washdown drainage trenches, a vapor sensing and alarm system, and a fire extinguishing system. Space will be provided for a paint spray booth for aircraft parts. This facility will not be designed to paint large areas or sections of aircraft.

**7-10. Basic Item 214-425, Vehicle Maintenance Shop.** The facility contains space for vehicle maintenance, vehicle operations and administration (610-121), paint spray room and, normally, the refueling vehicle shop (214-467). Repair bays for EIS units will require a minimum 24-foot clearance in ceiling height.

**7-11. Basic Item 214-428, Vehicle Operations Parking Shed.** Covered, unheated storage space may be authorized and provided for certain selected essential vehicles.

**7-12. Basic Item 214-467, Refueling Vehicle Shop.** Space for this function is normally provided by adding one bay to the Vehicle Maintenance Shop, 214-425.

**7-13. Basic Item 215-552, Weapons and Release Systems Shop.** The facility provides space for performing maintenance on aircraft weapons and release systems and associated equipment. In addition to normal shop space the facility will provide a training space, office, bench stock/tool room, locker room, and weapons load storage space.

**7-14. Basic Item 216-642, Conventional Munitions Shop.** This facility is used to inspect, test, assemble, maintain and store missiles, munitions, and munitions trailers. The facility includes missile maintenance bays, 20mm processing and other inspection/processing bays, classroom, office, parts/tool storage, rest-

rooms, locker space, trailer maintenance bay, paint bay and covered storage. Facility must be sited to comply with Quantity-Distance separation criteria established in AFR 127-100.

**7-15. Basic Item 217-712, Avionics Shop.** The shop is used to perform maintenance on aircraft equipment and accessories such as airborne communications, cameras, bombing, and navigation and fire control systems. The facility includes shop space, classroom, office, parts/tool storage, restrooms, and locker room space. Electronic Counter-Measures (ECM) maintenance and storage may be added to this facility. See 217-713, ECM Pod/Storage. Additional scope may be authorized for special requirements unique to that mission.

**7-16. Basic Item 217-713, ECM Pod Shop and Storage Facility (Including LANA Pods):**

a. ECM Pod Shop/Storage Facility. The facility supports ECM activities of specific fighter and special operations units such as A-10, F-4, AC-130, and others. The facility contains maintenance space for ECM pods and radar warning receivers, storage space for pods, receivers and other needs, and administrative space. The function is normally added to 217-712, Avionics Shop.

b. LANA/LANTIRN Pod Maintenance Shop/Storage Facility. The facility supports Low Altitude Night Attack (LANA) pod requirements of specific fighter units such as A-7. The facility contains maintenance and storage for LANA pods and associated equipment. The function is normally added to 217-712 Avionics Shop.

**7-17. Basic Item 218-712, Aircraft Support Equipment Shop and Storage Facility.**

a. The facility supports inspection, maintenance, repair, and servicing of all authorized powered aircraft support equipment (SE). It contains maintenance bays, tool crib, storage, battery shop, administrative area, paved equipment parking, and wash and paint area.

b. At those bases where communication-electronics units and flying units are collocated, additional space may be authorized based on total number of pieces of SE.

**7-18. Basic Item 218-852, Survival Equipment Shop.** The facility is required to perform work on parachutes and flotation equipment (the latter includes survival items and accessories). At Air Rescue and Recovery Groups/Squadrons this facility may be referred to as a Para-rescue and Dinghy Shop.

**7-19. Basic Item 219-943, Base Engineer Pavements and Grounds Facility.** Space requirement is included in 219-944, Base Engineer Maintenance Shop.

**7-20. Basic Item 219-944, Base Engineer Maintenance Shop.** The facility provides shop and administrative space necessary to support all host base maintenance functions performed by the base civil engineer and training space for Services teams.

**7-21. Basic Item 219-947, Base Engineer Storage Shed (Unheated).** The facility is required to provide storage for certain items of equipment and supplies needed for installation operations and maintenance which do not require regular warehouse storage, yet must be protected from the weather.

Chapter 8

CATEGORY GROUP 41, LIQUID FUEL STORAGE

**8-1. Basic Item 411-134, Diesel Storage and 411-137, Mogas Storage.**  
See 123-335, Vehicle Fueling Station.

**8-2. Basic Item 411-135, Jet Fuel Storage** See 124-135, Jet Fuel Operating and

Storage. Normally, the Jet Fuel Bulk Storage tanks and operating storage tanks are one and the same at ANG installations. A stand alone bulk storage area must be justified on a case-by-case basis.

## Chapter 9

## CATEGORY GROUP 42, EXPLOSIVES STORAGE

**9-1. Basic Item 422-256, Rocket Checkout, Assembly and Storage Building.** This structure provides combined assembly shops and live ammunition storage. Scope for this facility is included in 216-642, Conventional Munitions Shop and/or 422-257, Segregated Magazine Storage.

**9-2. Basic Item 422-257, Segregated Magazine Storage.** This magazine is used to store 1.2, 1.3 and 1.4 explosives and munitions.

**9-3. Basic Item 422-258, Above Ground Magazine Storage.** This facility is

used to store general munitions and includes small arms ammunition, fuse lighters, distress signals, and 20mm/30mm ammunition. Above ground storage will be authorized on a case-by-case basis.

**9-4. Basic Item 422-264, Igloo Storage.** Igloos are used to store all types of explosives and are preferred for mass detonating explosives where moisture condensation is not a problem. They are earth/sod covered, and are either of a concrete or steel arch-type construction.

## Chapter 10

**CATEGORY GROUPS 44 AND 45  
STORAGE FACILITIES - COVERED, OPEN, AND SPECIAL PURPOSE****10-1. Basic Item 442-257, Base Hazardous Storage (Including Hydrazine Storage and Servicing Facility):**

a. Base Hazardous Storage. Provides for the storage and dispensing of paints, oil, dope, chemicals, and bottled gases as required at each host base.

b. Hydrazine Storage Facility. Provides space for storage of hydrazine fuel containers with no servicing requirement.

c. Hydrazine Storage and Servicing Facility. Provides space for servicing and storage of hydrazine fuel containers.

**10-2. Basic Item 442-258, Liquid Oxygen/Nitrogen Storage (LOX/LIN). A pad, cover, fencing and road access to provide protected storage for the authorized equipment storage tanks and appurtenances.**

**10-3. Basic Item 442-628, Base Supply and Equipment Shed.** Provide covered area for large bulky items not requiring enclosed/heated warehouse space. This shed is normally a three-sided facility.

**10-4. Basic Item 442-758, Base Supply and Equipment Warehouse.**

a. Base Supply and Equipment Warehouse functions include bulk and bin storage of

materials, receiving, shipping, packing, crating, equipment storage and issue, central weapons storage, general supply and base issue/supply point, personnel clothing, and equipment and supply customer training. Base supply administrative functions include management and systems, material management, and operations support.

b. Other functions in this facility include the contracting office, traffic management office (TMO), squadron commander and orderly room.

c. Storage space for mobility storage may be included in this facility or separate ones. Space will not be duplicated.

d. The total scope of the host base supply facility may be increased when the warehouse is required to support other units on base, or Geographically Separated Units (GSUs), that have a separate mission.

**10-5. Basic Item 452-252, Base Supply Open Storage.** This is a secure (fenced), uncovered storage area.

**10-6. Basic Item 452-255, Base Civil Engineer Open Storage.** This is an improved or paved area to store materials authorized for open storage. Exterior lighting and fencing may be installed as required.

## Chapter 11

## CATEGORY GROUP 61, ADMINISTRATIVE FACILITIES

**11-1. General.** Administrative space requirements normally include private offices (supervisory), conference/training space, open office areas (staff), administrative support (reproduction, work area, computer workstations, file areas, and publications/technical libraries), bathrooms, lockers, break areas, utility space, and receiving areas.

**11-2. Basic Item 610-121, Vehicle Operations Administration.** Space requirement is included in 214-425, Vehicle Maintenance Shop.

**11-3. Basic Item 610-122, Base Supply Administration.** Space requirements are included in 442-758, Base Supply and Equipment Warehouse.

**11-4. Basic Item 610-127, Base Civil Engineer Administration.** Space requirement is included in 219-944, Base Civil Engineering Maintenance Shop.

**11-5. Basic Item 610-128, Base Personnel Office.** Space requirement is included in 171-445, Reserve Forces Operational Training.

**11-6. Basic Item 610-129, Weapons System Maintenance Management (DCM Complex).** Provide offices for the Chief of Maintenance, classroom, maintenance control, plans, scheduling, documentation, material control, quality control, records and analysis and administration.

**11-7. Basic Item 610-142, Traffic Management Facility.** Space requirement is included in 442-758, Base Supply and Equipment Warehouse.

**11-8. Basic Item 610-243, Group Headquarters.** Space requirement is included in 171-445, Reserve Forces Operational Training.

**11-9. Basic Item 610-249, Wing Headquarters.** When authorized, the space requirement is added to 171-445, Reserve Forces Operational Training.

**11-10. Basic Item 610-287, Specified Headquarters (ANG HQ).** Space may be provided for ANG military personnel assigned to the ANG Headquarters based on the authorized military manning. Space may be provided at an ANG base or at a consolidated headquarters location but cannot be duplicated or exceed maximum total space authorization for this function.

**11-11. Basic Item 610-711, Data Processing Installation.** Space requirement is included in 131-111, Communications and Automated Data Processing Facility.

**11-12. Basic Item 610-911, Social Actions.** The Social Actions function includes space for a counseling room, group activities room, and staff and administrative offices. Sharing of an existing classroom is expected to fulfill the classroom requirement. Space is included in 171-445, Reserve Forces Operational and Training Facility.

**11-13. Basic Item 610-913, Disaster Preparedness.** This facility supports the base disaster preparedness function that operates under the Air Force War Mobilization Plan. Space for administrative area, classroom, storage, and toilet facilities is authorized.

## Chapter 12

### CATEGORY GROUP 72, TROOP HOUSING

#### **12-1. Basic Item 722-351, Dining Hall:**

a. Components of a dining facility are dining area, dishwashing room, office space, and kitchen (includes space for storage, preparing, cooking, and serving food). ANG dining facilities will be considered consolidated facilities serving both officer and enlisted personnel. Space requirements vary according to average authorized strengths of units.

b. Where active and/or reserve units are adjacent or collocated, facilities should be jointly used.

c. PRIME RIBS training and storage may be co-located with Civil Engineering.

**12-2. Basic Item 725-517, Troop Camp (Quarters).** This category is used for Combat Readiness Training Centers (CRTCs) and Professional Military Education Centers (PMECs). These facilities include sleeping rooms, lounges/day rooms, study areas, vending areas, laundries, and bathrooms.

**Chapter 13****CATEGORY GROUP 73, PERSONNEL SUPPORT FACILITIES****13-1. Basic Item 730-142, Fire Station.**

This facility includes apparatus bays, extinguisher maintenance, alarm room, chief's offices, tech services, day room, lockers, kitchen, and dining area. Bunk rooms will be provided where there is a twenty-four hour (full time) fire/crash rescue operation.

**13-2. Basic Item 730-835, Security Police Operations:**

a. The Base Security Police Operations (BSPO) facility provides space for a Security Police Flight to perform its training, to store its mobility bags/pallets, and to accommodate its control, and law enforcement and administrative functions. The facility should have room to accommodate:

- (1) Administrative office spaces for the commander and supervisors.
- (2) A control/battle staff area.
- (3) Administration area with room for Pass and ID, waiting area, Law Enforcement and administration support.

(4) Arms vault with an arms cleaning and maintenance area (CATM will use these areas also).

(5) Classroom, training/counseling rooms.

(6) Mobility storage with shelves for all mobility bags and room to build up pallets. Area must be accessible to the outside through an overhead door.

(7) Men's/Women's locker/bathrooms with full size lockers for all authorized personnel.

(8) Mechanical room, hallways, storage, and janitors closet.

(9) A covered area adjacent to the arms vault/arms cleaning/arms maintenance area for outside cleaning of weapons during inclement weather.

b. The facility should be located IAW the base master plan and have adequate parking space for assigned personnel, visitors, and security police vehicles.

## Chapter 14

### CATEGORY GROUPS 74 AND 75, MORALE, WELFARE, AND RECREATIONAL FACILITIES

**14-1. General Guidance.** The requirement for morale, welfare, and recreational (MWR) facilities varies according to the using Service. ANG installations rarely require them. Concerning project development:

a. All projects to acquire or develop MWR facilities using non-appropriated funds must be approved as exceptions to DoD criteria under guidance in NGR (AF) 86-1.

b. Guidance on facility assignment, construction, and alteration appears in AFR 86-12, 87-1/2/3, and NGR (AF) 86-1.

c. Troop labor shall not be used for maintenance, repair, minor construction or

major construction on nonappropriated funded projects.

d. NGB Policy. An exercise area and a running track is authorized at ANG installations when necessary to fulfill the requirements of training evaluation.

**14-2. Basic Item 750-177, Athletic Field Track.** A 400 meter (1/4 mile) running track and/or a running trail is authorized with appropriated funds for installations with a military population of 750 or over, including CRTCs.

**Chapter 15****CATEGORY GROUP 85, ROADS AND STREETS**

**15-1. Basic Item 852-261, Vehicle Operations Parking.** Use active force criteria. (See AFM 86-2.)

**15-2. Basic Item 852-262, Non-Organizational Vehicle Parking.** The number of parking spaces should not exceed 75 percent of the authorized personnel strength that would normally use the facility.

**15-3. Basic Item 852-269, Refueling Vehicle Parking.** Paved area allowance is as

required to support all the refueler vehicles authorized. In addition, a 100 square foot shed is normally provided adjacent to the parking area to provide storage for equipment and appurtenances for operator maintenance requirements. The parking area is normally located close to and considered part of the POL Storage/Operations complex.

**BY ORDER OF THE SECRETARY OF THE AIR FORCE**

**JOHN B. CONAWAY**  
Lieutenant General, USAF  
Chief, National Guard Bureau

**OFFICIAL**

**E. DARDEN BAINES**  
Chief  
Administrative Services

**SUMMARY OF CHANGES.** This document reflects the latest policies with regard to ANG Space Facility authorization to accomplish the various missions assigned to the ANG.

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE	CATEGORY CODE	TOTAL REQUIREMENT	PLANNING FACTORS																		
Apron	113-321		(Unit of Measure is SY. Includes 15% for taxiway access)																		
			<table border="1"> <tr> <td>PAA</td> <td>A-10/OA-10</td> <td>F/RF-4/16</td> <td>F-15</td> <td>MH-60G</td> </tr> <tr> <td>18</td> <td>31,100</td> <td>24,300</td> <td>32,300</td> <td>2,400 each</td> </tr> <tr> <td>24</td> <td>41,500</td> <td>32,300</td> <td>43,000</td> <td></td> </tr> </table>	PAA	A-10/OA-10	F/RF-4/16	F-15	MH-60G	18	31,100	24,300	32,300	2,400 each	24	41,500	32,300	43,000				
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			<table border="1"> <tr> <td>PAA</td> <td>XX-130</td> <td>C-141B</td> <td>C-5</td> <td>KC-135</td> <td>C-17</td> </tr> <tr> <td>8</td> <td>49,000</td> <td>73,000</td> <td>174,000</td> <td>88,000</td> <td>90,000</td> </tr> <tr> <td>Ea Add</td> <td>6,100</td> <td>9,125</td> <td>21,750</td> <td>7,800</td> <td>11,250</td> </tr> </table>	PAA	XX-130	C-141B	C-5	KC-135	C-17	8	49,000	73,000	174,000	88,000	90,000	Ea Add	6,100	9,125	21,750	7,800	11,250
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8	49,000	73,000	174,000	88,000	90,000																
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Aircraft Wash Rack	116-672		Included in 211-179.																		
Composite POL Facility	121-111	1650 SF	Deduct 300 SF if POL QC is performed by others. Deduct 130 SF if the LOX/LIN QC is performed by others.																		
Hydrant Fueling System	121-122	600 GPM	0.5 outlets per each parked strategic aircraft.																		
Vehicle Fueling Station	123-335		One commercial type dispensing pedestal/150 vehicles authorized/grade of fuel. Provide 5,000 gallon storage capacity for each type and grade of motor fuel, unless greater capacity is verified and approved by NGB.																		
Jet Fuel Operating and Storage Facility	124-135		<p>Combined operating and bulk storage not to exceed*:</p> <table border="1"> <tr> <th>Aircraft</th> <th>Quantity (BI)</th> </tr> <tr> <td>A/OA-10</td> <td>5,000</td> </tr> <tr> <td>F-15</td> <td>5,000</td> </tr> <tr> <td>A/F/RF-16 (24 PAA)</td> <td>**15,000</td> </tr> <tr> <td>XC-130 (8 PAA)</td> <td>**15,000</td> </tr> <tr> <td>KC-135 (10 PAA)</td> <td>**15,000</td> </tr> <tr> <td>C-141 and C-17 (8 PAA)</td> <td>**30,000</td> </tr> <tr> <td>C-5 and KC-10 (8 PAA)</td> <td></td> </tr> </table> <p>* Add'l storage authorized based on minimum delivery. Other PAA have a pro-rated storage requirement. ** Hydrant system will have 7,500 barrels of hydrant operating storage. Balance will be bulk storage.</p>	Aircraft	Quantity (BI)	A/OA-10	5,000	F-15	5,000	A/F/RF-16 (24 PAA)	**15,000	XC-130 (8 PAA)	**15,000	KC-135 (10 PAA)	**15,000	C-141 and C-17 (8 PAA)	**30,000	C-5 and KC-10 (8 PAA)			
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NOMENCLATURE		TOTAL REQUIREMENT	PLANNING FACTORS																
CATEGORY	CODE																		
Communication Facility	131-111	8,000 SF	-Mission Support Flight -Add 2400 for Comm Flight (COB)																
Aircraft Shelter (Alert)	141-181	5,300 SF	-A shelter/aircraft on active runway alert (Air Defense). -Add one shelter for detached alert in cold climates.																
Base Operations	141-453	2,400 SF	If a stand-alone facility, add 600 SF for restrooms and mechanical room. Function normally included in 141-753.																
Readiness Crew Facility	141-459	4,500 SF	-Air defense and tankers, single line of alert. -5,000 SF for two lines of alert.																
Base Photo Laboratory	141-743	2,100 SF	Includes CCTV, Graphics and Photo Laboratory.																
Recon Photo Laboratory	141-745	13,000 SF	Includes 4,500 SF for Training Squadron.																
Photo Processing and Interpretation Facility Support Building (PPIF)	141-747	4,500 SF	Pad as required with utilities.																
Composite Squadron Operations	141-753		<table border="0"> <tr> <td>Aircraft/Mission</td> <td>Auth Space (SF)</td> </tr> <tr> <td>A-10, OA-10 (18-24 PAA)</td> <td>17,100</td> </tr> <tr> <td>F-15, F-16 (18-24 PAA)</td> <td>15,100/17,100</td> </tr> <tr> <td>C-130 (8-12 PAA)</td> <td>18,300/22,000</td> </tr> <tr> <td>C-5, C-17, C-141B (8-12 PAA)</td> <td>24,700/30,000</td> </tr> <tr> <td>HC-130 &amp; MH-60G (4 &amp; 6 PAA)</td> <td>27,000*</td> </tr> <tr> <td>KC-135 (10 PAA)</td> <td>21,600</td> </tr> <tr> <td>KC-10 (10 PAA)</td> <td>24,700</td> </tr> </table>	Aircraft/Mission	Auth Space (SF)	A-10, OA-10 (18-24 PAA)	17,100	F-15, F-16 (18-24 PAA)	15,100/17,100	C-130 (8-12 PAA)	18,300/22,000	C-5, C-17, C-141B (8-12 PAA)	24,700/30,000	HC-130 & MH-60G (4 & 6 PAA)	27,000*	KC-135 (10 PAA)	21,600	KC-10 (10 PAA)	24,700
Aircraft/Mission	Auth Space (SF)																		
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Band Center	171-158		<table border="0"> <tr> <td>Auth Personnel</td> <td>Auth Space (SF)</td> </tr> <tr> <td>--&gt; 44</td> <td>4,000</td> </tr> <tr> <td>45-60</td> <td>4,500</td> </tr> <tr> <td>61-70</td> <td>5,000</td> </tr> <tr> <td>71 --&gt;</td> <td>5,500</td> </tr> </table>	Auth Personnel	Auth Space (SF)	--> 44	4,000	45-60	4,500	61-70	5,000	71 -->	5,500						
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\* Includes para-rescue operations

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE	CATEGORY CODE	TOTAL REQUIREMENT	PLANNING FACTORS
Flight Simulator Training Facility	171-212	Varies	If authorized by NGB, see Air Force Criteria
Reserve Forces General Training Support Facility	171-443		
		<u>Auth Strength</u>	<u>Auth Space (SF)</u>
		05-20	1,500
		21-30	3,220
		31-45	3,900
		46-55	4,200
		56-100	4,550
		101-175	6,000
		176 -->	Add'1 12 SF/person
Res Forces Opnl Trng	171-445	18,000 SF	Add 2,000 SF for Wing Headquarters under CC 610-249.
Reserve Forces Communications and Electronics Training Facility	171-447		
		<u>Auth Strength</u>	<u>Auth Space (SF)</u>
		025-075	7,400
		76-100	10,000
		101-150	12,900
		151-200	15,800
		201-250	18,700
NOTES: -Only for Administrative and Training requirements. -Authorization does not include Communication Center, Communication Vault, Medical Training, Dining Hall, Base Supply and Vehicle Maintenance and AGE.			
Res Forces Aeromed Evac	171-449	12,100 SF	
Reserve Forces Medical Trng and Administration	171-450	9,800 SF	-Includes 1,000 SF for Environmental Management office -Make maximum use of existing Active Duty facilities.
Aerial Port Training Fac	171-873		
		<u>Organization</u>	<u>Auth Space (SF)</u>
		Squadrons	14,200
		Flight	11,200
		Aerial Delivery Rqmt	3,000 (additive item for C-141 only))

## AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE		TOTAL REQUIREMENT		PLANNING FACTORS	
CATEGORY CODE	REQUIREMENT	171-875	5,000 SF		
Munition Load Crew Trng					
Small Arms Range System	179-475			<u>Firing Positions</u> 21 FP 28 FP	<u>Annual Training Requirement</u> 500-1,000 persons 1,000-1,500 persons
NOTE: Add 1,400 SF for a CATM building if range is off-base.					
Aircraft Range Facility	179-481	See Attachment 2 for Authorized Scope.			
Maintenance Hangar	211-111	<u>Aircraft/Mission</u>	<u>Cov Acft</u>	<u>Auth Space(SF)</u>	
		A-10, F-15, F-16 (18-24 PAA)	6	40,000	
		C-130 (8-12 PAA)	1	27,000	
		C-17/141 (8-12 PAA)	1	43,000	
		C-5 (8-12 PAA)	1	70,000	
		KC-135 (8-10 PAA)	1	28,000	
		KC-10 (8-10 PAA)	1	43,000	
		MH-60G (4-6 PAA)	2	8,500	
Aircraft General Purpose	211-152	<u>Aircraft/Mission</u>	<u>Auth Space (SF)</u>		
		Attack/Fighter	18,600		
		KC-10, XX-130, KC-135	21,600		
		C-5, C-17, C-141B	21,600		
Non Destructive Inspec	211-153	-Add 200 SF if separate from engine I/M (211-157). -C-5 and C-141B require 4,000 SF.			
Aircraft Organizational Maintenance Shop	211-154	<u>Aircraft/Mission</u>	<u>Auth Space (SF)</u>		
		A/OA-10, F-15, F-16 (18-24 PAA)	6,000 SF		
		XX-130 (8-12 PAA)	8,000		
		KC-10, KC-135 (10 PAA)	8,000		
		C-5, C-17, C-141B (8-12 PAA)	11,000		

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE	CATEGORY CODE	TOTAL REQUIREMENT	PLANNING FACTORS	
			Aircraft/Mission	Auth Space (SF)
Aircraft Engine Insp and Maintenance Shop	211-157		A/OA-10 F-15, A/F/RF-16 (18-24 PAA) KC-10, KC-135E (10 PAA) KC-135R (10 PAA) C-5, C-17 (12 PAA) XX-130 (8-12 PAA) C-141B (8-12 PAA)	12,000 SF 9,000 SF 3,000 SF 9,000 SF 15,000 SF 11,000 SF
NOTES: 1. Subtract 6,000 SF for regional maint done elsewhere. 2. Add 1,000 SF to Engine Shops for Covered Storage.				
Acft Corr Control	211-159		Included in 211-179.	
Aircraft Fuel Systems and Corrosion Control	211-179		Aircraft/Mission	Auth Space (SF)
			A/OA-10 F-15, A/F/RF-16 (18-24 PAA) XX-130 (8-12 PAA) KC-135 (10 PAA) KC-10, C-17, C-141B (8-12 PAA) C-5 (8-12 PAA)	17,000 SF (2 Bays) 15,000 SF 19,500 SF 35,000 SF 51,000 SF
NOTES: 1. Use shaped nose dock for large aircraft. 2. Add 4,000 SF concrete pad to store A/C Fuel Tanks. 3. Separate bays for Attack/Fighter aircraft. 4. Plastic media stripping booth not included, separate 1600 SF facility is authorized.				
Vehicle Maintenance Shop	214-425		Vehicle Equip	Auth Space (SF)/No Bays
			10-30 31-50 051-100 101-200 201-300 301-400 401-500 501-600 601-700	1,600/2 2,400/2 5,200/3 6,000/4 6,800/5 7,600/6 8,400/7 9,200/8 10,000/9
NOTES: 1. Do not include Refueler Vehicle equivalents. 2. Add 1,500 SF for 214-467, Refueling Vehicle Shop.				

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE	CATEGORY CODE	TOTAL REQUIREMENT	PLANNING FACTORS Auth Space (SF)																		
Vehicle Operations Parking Shed	214-428		<table border="0"> <tr> <td>Vehicles</td> <td></td> </tr> <tr> <td>05-20</td> <td>2,500</td> </tr> <tr> <td>21-50</td> <td>4,000</td> </tr> <tr> <td>51-150</td> <td>6,000</td> </tr> <tr> <td>151 --&gt;</td> <td>8,000</td> </tr> </table>	Vehicles		05-20	2,500	21-50	4,000	51-150	6,000	151 -->	8,000								
Vehicles																					
05-20	2,500																				
21-50	4,000																				
51-150	6,000																				
151 -->	8,000																				
<p>NOTE: -An enclosed facility authorized only in cold climates.</p>																					
Refueling Vehicle Shop	214-467	1,500 SF	Normally included with CC 214-425. Add 200 SF if its a stand-alone facility.																		
Weapons & Rel Sys Shop	215-552	11,200 SF	Attack/Fighter Aircraft only.																		
Conventional Munition Shop	216-642		<table border="0"> <tr> <td>Mission</td> <td>Auth Space (SF)</td> </tr> <tr> <td>Air Defense</td> <td>11,500</td> </tr> <tr> <td>Gen'l Purp Fighter</td> <td>12,100</td> </tr> <tr> <td>Tanker/Airlift</td> <td>650</td> </tr> </table> <p>NOTES: -See CC 422-2XX for munitions storage. -General Purpose Fighter missions also require 560 SY concrete pad for the RAMS.</p>	Mission	Auth Space (SF)	Air Defense	11,500	Gen'l Purp Fighter	12,100	Tanker/Airlift	650										
Mission	Auth Space (SF)																				
Air Defense	11,500																				
Gen'l Purp Fighter	12,100																				
Tanker/Airlift	650																				
Avionics Shop	217-712		<table border="0"> <tr> <td>Aircraft/Mission</td> <td>Auth Space (SF)</td> </tr> <tr> <td>KC-10 (10 PAA)</td> <td>5,400</td> </tr> <tr> <td>C-17 (12 PAA)</td> <td>5,400</td> </tr> <tr> <td>XX-130 E/H (8-12 PAA)</td> <td>6,400</td> </tr> <tr> <td>A/OA-10 (18-24 PAA)</td> <td>7,500</td> </tr> <tr> <td>C-141B (8-12 PAA)</td> <td>9,000</td> </tr> <tr> <td>F-4, RF-4 (18-24 PAA)</td> <td>10,300</td> </tr> <tr> <td>A-7, F-15, F/RF-16 (18-24 PAA)</td> <td>12,700</td> </tr> <tr> <td>C-5 (12 PAA)</td> <td>15,000</td> </tr> </table>	Aircraft/Mission	Auth Space (SF)	KC-10 (10 PAA)	5,400	C-17 (12 PAA)	5,400	XX-130 E/H (8-12 PAA)	6,400	A/OA-10 (18-24 PAA)	7,500	C-141B (8-12 PAA)	9,000	F-4, RF-4 (18-24 PAA)	10,300	A-7, F-15, F/RF-16 (18-24 PAA)	12,700	C-5 (12 PAA)	15,000
Aircraft/Mission	Auth Space (SF)																				
KC-10 (10 PAA)	5,400																				
C-17 (12 PAA)	5,400																				
XX-130 E/H (8-12 PAA)	6,400																				
A/OA-10 (18-24 PAA)	7,500																				
C-141B (8-12 PAA)	9,000																				
F-4, RF-4 (18-24 PAA)	10,300																				
A-7, F-15, F/RF-16 (18-24 PAA)	12,700																				
C-5 (12 PAA)	15,000																				
ECM/LANTIRN Pod Shop	217-713		<table border="0"> <tr> <td>Mission</td> <td>Auth Space (SF)</td> </tr> <tr> <td>ECM Pod Shop/Storage</td> <td>4,000</td> </tr> <tr> <td>Air Defense ECM Facility</td> <td>1,000</td> </tr> <tr> <td>LANTIRN</td> <td>2,500 *</td> </tr> <tr> <td>C-130H, HC-130 &amp; Pave Hawk</td> <td>2,600</td> </tr> <tr> <td>KC-135 (if ECM equipped)</td> <td>2,600</td> </tr> </table> <p>NOTE: * Add 1,500 SF if Mobile LANTIRN not provided.</p>	Mission	Auth Space (SF)	ECM Pod Shop/Storage	4,000	Air Defense ECM Facility	1,000	LANTIRN	2,500 *	C-130H, HC-130 & Pave Hawk	2,600	KC-135 (if ECM equipped)	2,600						
Mission	Auth Space (SF)																				
ECM Pod Shop/Storage	4,000																				
Air Defense ECM Facility	1,000																				
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C-130H, HC-130 & Pave Hawk	2,600																				
KC-135 (if ECM equipped)	2,600																				

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE	CATEGORY CODE	TOTAL REQUIREMENT	PLANNING FACTORS		
			Support Equipment Authorized Pieces	Shop Admin SF*	Covered Storage
Aircraft Support Equipment and Storage Shop (AGE)	218-712		--> 080 081-120 121-160 161-200	2,400 2,900 3,400 3,900	2,400 2,400 2,840 3,300
			* Denotes maximum enclosed area of Total Area.		
Survival Equip Shop	218-852		Aircraft/Mission A/OA-10, F-15 A/E/RF-16 C/EC-130 HC-130 (Drying tower included) C-5, KC-10, C-17, KC-135, C-141B		Auth Space (SF) 3,100 4,200 6,000 5,300
Base Civil Engineering Maintenance Shop	219-944	14,700 SF 15,800 SF	NOTES: -For a 100 Man-Team. -For a 150 Man-Team. -Includes Mobility Storage for Prime BEEF & RIBS. -Includes 850 SF for Service Offices. -Add 100 SF/S-Team member; 650 SF/LSTs; 450 SF/SARTS -Add 1,500 SF for dual units.		
Base Civil Engineering Maintenance Shed	219-947	4,000 SF	NOTES: 1. Space may be totally enclosed, but must be unheated. 2. Aircraft Range 1,000 SF shed; GSU unit 400 SF shed.		
Segregated Magazine Stg	422-257		Mission Air Defense Gen'l Purp Fighter Tanker/Airlift (No WRM) Tanker/Airlift (w/WRM)	Auth Space (SF) 2,000 2,200 * 600 **	
			NOTE: * Add 1,000 SF if restricted to Training Munition. ** See Category Code 422-264 for authorization.		
Igloo Storage	422-264		Mission Air Defense Gen'l Purp Fighter Tanker/Airlift (w/WRM)	Auth Space (SF) 8,600 3,600 1,800	

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE	CATEGORY CODE	TOTAL REQUIREMENT	PLANNING FACTORS
Base Hazardous Storage	442-257	2,000 SF	NOTES: -Includes Hazardous Waste and 150 SF for BCE Storage in flying unit only. GSU Non-Flying units with similar requirements will use 600 SF -Regional Hydrazine Servicing/Storage add a 1,000 gallon storage and 800 SF. Hydrazine Storage, add 200 SF.
Hyd Stor & Servicing (if req'd) Hydrazine Storage (if req'd)			
LOX/LIN Storage	442-258		Pad and cover as required.
Base Sup & Equip Shed	442-628	4,000 SF	For flying units only.
Base Supply and Equipment Warehouse	442-758		Mission A/OA-10, F-15 A/F/RF-16 C-130, KC-135, KC-10 C-17 C-5 Auth Space (SF) 30,000 22,000 37,000 49,000
Base Supply Open Storage	452-252	600 SY	NOTES: -Add 1000 SF for each GSU (3000 SF max). -Comm Mobility: 6 SF per person on mobility. -Comm Build-up Pallet Area: 250 SF per area (4 max). -Comm Storage: Must be calculated based on actual requirements. Do not include equipment stored outside or in shop areas.
Vehicle Ops and Admin	610-121	N/A	Included in CC 214-425
Base Supply Admin	610-122	N/A	Included in CC 442-758
Base Engineer Admin	610-127	N/A	Included in CC 219-944
Base Personnel Office	610-128	N/A	Included in CC 171-445
Weapons Systems	610-129		Type Aircraft C-5, KC-10, C-17, C/EC-130 A/OA-10, F-15 Auth Space (SF) 4,800
Maintenance Management			A/F/RF-16 KC-135, C-141B 6,000 7,400
Commercial Trans Fac	610-142	N/A	Included in CC 442-758
Group Headquarters	610-243	N/A	Included in CC 171-445

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

CATEGORY	TOTAL
Wing Headquarters	610-249 2,000 SF Added to CC 171-445.
Specified Headquarters (State ANG)	610-287 2700 thru 3900 SF Exact size is to be determined by the category defined in ANGP 26-4. No duplication authorized within state.
Data Processing	610-711 N/A Included in CC 131-111
Social Actions	610-911 N/A Included in CC 171-445
Disaster Preparedness	610-913 3,000 SF Add 500 SF for Dual Units.
Dining Hall	722-351

Auth Personnel	Auth Space (SF)
040-100	1,250
101-200	3,000
201-500	4,600
501-800	6,600
801-1,000	8,500
1,001-1,200	10,300
1,201-1,400	12,100
1,401-1,600	14,900

NOTES:

1. Add 900 SF for Prime RIBS training/storage.
2. Make maximum use of existing Active duty facilities

Troop Camp (Quarters)	725-517	Varies	Type of Training Field Trng Site	Net Space	Gross Space
			Officers	100 SF/pers	140 SF/pers
			E-7 thru E-9	100 SF/pers	130 SF/pers
			E-5 thru E-6	90 SF/pers	100 SF/pers
			E-1 thru E-4	70 SF/pers	95 SF/pers
			Education Centers	135 SF/pers	250 SF/pers

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

NOMENCLATURE	CATEGORY CODE	TOTAL REQUIREMENT	PLANNING FACTORS		
			Station Size	O&T/Admin	Bunkroom
Fire Station	730-142		24 Person 36 Person 48 Person	3,150 3,400 3,700	950 1,300 1,600
			Bay Apparatus area given below. NOTES: 1. Minimum bay height will be 16 feet. 2. Add corresponding columns for Authorized Space. 3. Size bays for Authorized Equipment as follows: * P2, P4, P18, P19, P23 * P10, P13, P20 * P15 * P8, P12, P22, P24, Wtr Dist		
Security Police Ops	730-835		Auth Personnel	Auth Space(SF)	
			05-20 21-30 31-45 46-55 56-100 101-175	2,600 3,100 4,600 5,600 6,300 8,200	
			NOTES: -Dual Units get additional space for Arms Vault, Mobility Storage and Lockerroom. -Add 200 SF for CATM office, if no range exists on base.		
Vehicle Ops Parking	852-261	Varies	As required.		
Non-Org Parking	852-262	Varies	Maximum Spaces: 75% Auth Pers/UTA (110 vehicles/acre)		
Refuel Vehicle Parking	852-269		Auth Veh	SY/Vehicle	
			4 5 6 7 8 9 10	400 375 355 345 335 330 320	

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

CATEGORY CODE	NOMENCLATURE	TOTAL REQUIREMENT	PLANNING FACTORS
	COMBAT READINESS TRAINING SITES		
121-111	POL Ops Facility	1650 SF	
131-111	Communication Center	1600 SF	
141-453	Base Operations	3000 SF	
141-743	Base Photo Lab	640 SF	
141-753	Squadron Operations	6800 SF	-Add 2400 SF for 2 Command Posts
171-443	Res Fcs Gen Trng	6000 SF	
171-445	Res Fcs Ops & Trng	22000 SF	
171-450	Res Fcs Medical Trng	3600 SF	-5,000 SF for assembly hall; 12,000 SF for visiting units (2); 5,000 SF for CRTC
211-152	Gen Purpose Shop	4000 SF	
211-153	NDI Lab	400 SF	
211-154	A/C Org Maintenance	2000 SF	
211-177	Aircraft Maint Dock	6000 SF	
211-177	Vehicle Mtn Shop	Varies	
215-552	Wpns Rel/Gun Maint	3000 SF	
217-712	Avionics Shop	3000 SF	
218-712	Support Equip Shop	Varies	
218-852	Surv Equip Shop & DP	900 SF	
219-944	BCE Maint Facility	7000 SF	
219-947	BE Storage Shed	4000 SF	
411-135	Jet Fuel Storage	10000 B1	
422-256	Rocket Stor/Ass Fac	6000 SF	
442-758	Supply Warehouse	25200 SF	
722-351	Dining Hall	9350 SF	
725-517	Troop Camp (VOQ)	150 PN	
725-517	Troop Camp (VAQ)	840 PN	
	ANG RED HORSE UNITS		
171-445	Res Forces O&T	11000 SF	
214-425	Veh Maint Shop	See CC	
214-428	Veh Ops Park Shed	See CC	
219-943	BCE Pvmnt & Gnds	4000 SF	
219-944	BCE Maint Shop	12350 SF	
219-947	BCE Storage Shed	4000 SF	
442-758	Base Supply	12800 SF	
610-913	Disaster Preparedness	3000 SF	
722-351	Dining Hall	See CC	

AIR NATIONAL GUARD FACILITY REQUIREMENTS PROGRAMMING GUIDE

CATEGORY CODE	NOMENCLATURE	TOTAL REQUIREMENT	PLANNING FACTORS
AIRCRAFT RANGE			
149-962	Control Tower	225 SF	One for each site.
149-967	Observation Tower	as req'd	
171-471	Range Control House	See below:	
214-425	Veh Maint Shop	see CC	
214-428	Veh Ops Park Shed	see CC	
219-947	BCE Storage Shed	see CC	
442-257	Base Hazard Storage	see CC	
442-258	Above Gnd Magzn Stor	see CC	

\*Auth Personnel      Auth Space (SF)

04 - 15	2,500
16 - 35	3,300
36 ---->	3,600