ANSF Standards

31 Oct 13

AFGHAN NATIONAL SECURITY FORCES
CONSTRUCTION STANDARDS

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 REFERENCES

a. USCENTCOM Memorandum For Record, *Assignment of NATO Training Mission/Combined Security Transition Command – Afghanistan (NTM-A/CSTC-A) Senior Engineer as the "Authority Having Jurisdiction (AHJ)*", (27 Aug 2013).

b. NTM-A DCOM-Programs Memorandum, *Standard of Separation Between Afghanistan Security Forces Training Facilities and Operational Units*, 28 June 2011.

c. International Code Council, Inc., *2012 International Building Code.*

1.2 PURPOSE

a. This publication provides guidance, responsibilities, and procedures for Afghan National *Se*curity Forces (ANSF) construction in the Afghan Area of Responsibility (AOR). It establishes consistent standards for the Afghan National Police (ANP) and Afghan National Army (ANA) regarding infrastructure development, including Temporary Tactical Infrastructure (TTI).

b. The 2012 International Building Code (IBC) - Reference (c) is to be used as the governing code for all ASFF projects where appropriate. Deviation from the requirements specified in the IBC is authorized if approved by the AHJ.

c. The intent of these standards is twofold. First, it delineates specific exceptions to the governing code that have been deemed appropriate by the AHJ. Second, it provides a consistent set of criteria for projects that can be constructed quickly, are less difficult to maintain, and generate lower lifecycle costs. In setting these standards, the following factors have been considered:

   1) Capabilities of local contractors.

   2) Availability of materials in the local market.

   3) Appropriate technical requirements for operation and maintenance.

   4) Appropriate cultural considerations.

   5) Minimizing construction and sustainment costs.

d. Though these standards provide a consistent baseline for ASFF projects, they are not intended to remain static. The operational environment in the Afghan AOR is continually shifting, as are the personnel responsible for developing, maintaining and implementing these standards. In this environment, the learning curve is continually progressing, and these standards must be adapted and improved through the documentation of lessons-learned. A prime example of this adaptation and improvement is the use of arch steel structures, commonly referred to as arch-spans or K-spans. Earlier versions of the ANSF Construction Standards had allowed the use of K-spans for a variety of uses. Data gathered in recent years has highlighted numerous technical and logistical issues related to K-spans, and this revision of the standards states that the use of K-spans shall be avoided.

   1) These standards shall be reviewed and updated annually. Reviews and updates may be made more frequently if deemed necessary.

1.3 APPLICABILITY

a. This guidance supersedes all previously issued CSTC-A construction standards.

b. The provisions of this memorandum apply to all construction undertaken by Combined Forces, and the DOD Contract Construction Agencies (CCA) operating within the geographic area assigned to DIRECTOR, CJ ENG. DIRECTOR, CJ ENG will establish minimum standards of construction for ANSF Facilities through this document. Construction Standards outlined in this document are descriptive, not prescriptive in nature.

CHAPTER 2
ORGANIZATION

2.1 GENERAL

a. DIRECTOR, CJ ENG is the CSTC-A Engineer. CJ ENG's mission is to ensure that all available engineer resources are employed in accordance with CSTC-A priority requirements.

2.2 AUTHORITY HAVING JURISDICTION (AHJ)

a. Per Reference (a), the Senior Engineer (O-6) for CSTC-A is designated as the "Authority Having Jurisdiction (AHJ)" for construction standards on projects constructed for the Afghanistan National Security Forces (ANSF) using Afghan Security Forces Funding (ASFF).

b. This Senior Engineer is referred to in this document as DIRECTOR, CJ ENG.

2.3 PROCEDURES AND RESPONSIBILITIES

a. DIRECTOR, CJ ENG is responsible for establishing theater construction standards as well as for establishing theater construction and construction management policy for ANSF projects within the AOR. In support of these responsibilities, the DIRECTOR will manage the CJ ENG program to ensure necessary deliberate planning and training is conducted.

2.4 CODE COMPLIANCE

a. The Afghanistan National Security Forces (ANSF) construction program, funded with Afghan Security Forces Funding (ASFF), is a unique program with standards tailored to meet sustainability requirements in Afghanistan.

b. Codes applicable to United States Title X construction for use by U.S. forces in the CENTCOM area of responsibility do not apply to projects constructed for the ANSF. However, codes must be specified for ANSF project design and construction, with only specific exceptions as delineated in published CSTC-A standards. This document serves to delineate those CSTC-A standards.

2.5 WAIVERS

a. As the "Authority Having Jurisdiction", DIRECTOR, CJ ENG may waive requirements of the various building codes, after appropriate technical review, within the context and scope of the types of waivers described below[1].

1) Relief: Relief is a select section or portion of the Code considered not to be applicable.

2) Variance: A variance is a partial exception to a specific standard in the Code for a single application or event.

3) Deviation: A deviation is using a different method, standard, or acceptable practice than what is outlined in the Code.

4) Interim Measure: An interim measure is a waiver with a defined expiration date.

[1] Waivers are subject to the limitations delineated in Reference (a).

b. Exceptions to non-technical standards not specifically defined within this document will be approved by other entities, such as the ASFF Requirements and Resources Validation Board (AR2VB).

CHAPTER 3

GENERAL TERMS

3.1 ANSF BASING

a. ANSF Basing includes projects constructed for the Afghanistan National Security Forces (ANSF) using Afghan Security Forces Funding (ASFF). These forces are comprised of Afghan National Police (ANP) and Afghan National Army (ANA) units.

3.2 LARGE FACILITY

a. In general, a “large facility”, as referred to in this document, is one that has been constructed to accommodate a Brigade size element. This would normally be 5,000 to 6,000 personnel, but could range from 1,000 to 10,000.

3.3 MEDIUM FACILITY

a. In general, a “medium facility”, as referred to in this document, is one that has been constructed to accommodate a Kandak (Battalion) size element. This would normally range from 400 to 500 personnel, but could range from 200 to 1,000.

3.4 SMALL FACILITY

a. In general, a “small facility”, as referred to in this document, is one that has been constructed to accommodate a Company size element. This would normally range from 40 to 100 personnel, but could range from 30 to 200.

3.5 SMALL FACILITY SUSTAINABLE DESIGN PROGRAM

a. The purpose of the Small Facility Sustainable Design Program (SFSD) program is to provide simpler “Afghan” style facilities that can be sustained by the ANSF, and to minimize long term operations and maintenance requirements. Small facilities are commonly found in remote areas where O&M support is difficult to provide, and the facility must be self-sufficient. Implementation of a more sustainable design will significantly reduce the overall life-cycle costs of the facility. Additional cost savings may be realized if orders for long lead-time materials are reduced or canceled.

b. Projects in-design, and even those that are in construction but are less than 50% complete, are prime candidates for this program. Projects in construction that are greater than 50% complete may also implement the changes, on a case-by-case basis. The program may be used in metropolitan areas as conditions warrant.

c. The SFSD program has four primary objectives:

   1) Save on life-cycle costs. Capital costs or savings are not the primary factor.

   2) Initiate the program in time for the Spring 2014 construction season; implementation should be complete by the end of 2014.

   3) Focus on de-scoping complex systems, such as electric, water and sewer. Other modifications should be evaluated carefully to balance their necessity against the time required to accomplish it.

   4) Focus on remote sites where the facilities will likely be self-sufficient.

d. Enclosure 1 describes the SFSD program in detail.

CHAPTER 4

ANSF CONSTRUCTION STANDARDS

4.1 DIVISION 1 – GENERAL REQUIREMENTS

a. Standard Designs: Facilities will be constructed using standard designs. These designs will be maintained by the U.S. Army Corps of Engineers (USACE) and updated with lessons learned during construction or as requirements change.

b. Applicability of Design: In order to increase standardization and simplify maintenance, standard designs will be used even if the building is not an exact match for the requirement, e.g., the same Kandak headquarters building shall be used for infantry, combat service, and combat service support Kandaks, and shall be used in combination with an enlisted barracks design to form a brigade headquarters.

c. Non-Standard Design: If a non-standard design must be used, it should approximate one of the standard designs in form and concept.

d. Building Systems: The preferred building system for permanent facilities shall be reinforced concrete beams and columns with reinforced concrete masonry unit (CMU) exterior walls and non-structural reinforced CMU interior infill walls. This method of construction is familiar to local contractors and their workforce, and uses indigenous materials. It also allows maximum flexibility in the design of interior partition walls and exterior door / window layouts.

   1) One-story structures are preferred over multi-story structures in order to minimize risk of damage or collapse due to seismic events, enemy attack etc.

   2) Roofs shall preferably have metal trusses and a metal deck; large spans requiring pre-engineered trusses shall be avoided. Essential life-safety requirements for buildings having reinforced CMU walls, such as seismic roof bracings and connections, shall be incorporated.

   3) Flat concrete roofs, if used, should have sloped metal or wood over-framing.

   4) For structures requiring high ceilings, such as warehouses, vehicle maintenance facilities, and canopies used for entry control points and fuel-generators sites, pre-engineered metal buildings may be used. Structural and architectural requirements will dictate their selection for use. If required, the use of pre-engineered metal buildings entirely shop-welded at a single location is strongly recommended, until such time that market research indicates that there are sufficient numbers of proper welding equipment, qualified welders and inspectors in Afghanistan.

   Refer to DIVISION 5 – METALS for direction on steel arch span buildings.

   Refer to DIVISION 7 – THERMAL AND MOISTURE PROTECTION for direction on building insulation.

e. Unit Integrity: ANSF unit integrity shall be maintained to the greatest extent practical. Most facilities will include barracks, administrative, motor pool, latrines, and arms storage.

   1) Facilities shared among multiple units on a garrison include, but are not limited to, power generation and distribution systems, water storage and distribution

systems, waste water conveyance and treatment systems, DFACs, gymnasium and physical fitness facilities, classrooms, fuel points, and PX facilities.

f. Barracks (Enlisted, Officer and Flag Officer):

1) Enlisted soldiers shall be provided open-bay barracks. Soldiers shall be provided with no less than 3 square meters (SM) and no more than 5 SM of net space each.

a) Several NCO and SNCO rooms shall be included in the soldiers' barracks in order to maintain unit integrity. NCOs and SNCOs will be housed in quadruple occupancy rooms of 14 SM.

2) Officers will be housed in a separate building from enlisted, NCOs and SNCOs, and will utilize double occupancy rooms of 14 SM each.

3) Flag officer quarters shall be single occupancy suites of 28 SM with private sleeping quarters and latrines.

See DIVISION 15 – MECHANICAL for climate control (heating and cooling) requirements.

g. Latrines: Common latrines shall be provided in each officer barracks. Enlisted soldier and NCO/SNCO latrines shall be provided in a separate building. Latrines should be centrally located for the tenants' convenience.

1) Latrines should be provided on the first floor of multistory buildings, and will be provided with exhaust fans and electric heaters. All toilets shall be eastern style and oriented per cultural requirements. Latrines shall be designed to accommodate the following ratios:

b) Male latrines: Showers - 1:20; Toilets - 1:35; Ablution - 1:20; Sinks - 1:20; Laundry deep sinks - 1:40.

c) Female latrines: Showers - 1:15; Toilets - 1:15; Ablution - 1:20; Sinks - 1:20; Laundry deep sinks - 1:40.

h. Offices: Command (O-6 and above) offices shall be no greater than 40 SM, to include space for office furniture, conference capabilities and informal seating (couches, chairs and coffee type table). See DIVISION 12 – FURNISHINGS for room layout design and furnishing requirements.

1) Executive Officer (XO) and Command Sergeant Major (CSM) offices shall be sized at 14 SM. All other officer offices should be shared, and sized at no larger than 6 SM per person.

2) Administrative offices should be configured as "Open" offices, and sized at no larger than 4 SM per person.

See DIVISION 13 - SPECIAL CONSTRUCTION for Information Technology (IT), to include communications and internet, requirements.

i. Dining Facilities (DFAC) shall be designed to accommodate three seating rotations per meal. The seating area should be sized with a gross area of 2 SM/person. All seating areas shall be heated with electric unit heaters and/or wood burning heating units.

1) Sinks for hand washing (1 sink per 40 seats) shall be placed near the DFAC entrance.

j. Kitchens shall have separate food preparation and food cooking areas. Kitchens shall be external to the DFAC, and be equipped with wood-burning cooking stoves. Covered walkways shall lead from food preparation areas to the exterior kitchen(s). A 6m x 6m canopy shall be provided for wood storage.

1) The top of the wood stove cooking surface should be 60 cm or less from the floor. Movable metal steps may be used, if necessary. The distance from the center of the cooking stove to the front edge of the stove should be no more than 40 cm to provide an ergonomic and safe design. Provide standard exterior wood burning stove design and specifications in addition to DFAC plans and specifications.

2) The incorporation of propane cooking stoves must be approved by the DIRECTOR, CJ ENG in writing, and will only be considered on a case-by-case basis. If approved, propane shall be provided by a manifold system of 50-kg bottles (not large bulk tanks) secured in a fenced in area. Heaters are not required in cooking areas.

3) Dedicated walk-in freezer(s) and refrigerator(s) are not required. Experience has shown that the majority of Afghan basic foods require minimal or no freezer / refrigeration space. If it is determined that freezer / refrigeration space is required, the use of exterior, stand-alone “reefer” units shall be used.

4) Food preparation areas shall have a dedicated dry storage unit or units. Sinks shall be sized to accommodate large pots, and shall be supported directly from the floor. Floors shall have generous trench drains with metal grill covers and grease traps. Kitchens shall be equipped with exhaust fans and a straight chimney.

5) Medium and Large facilities (Kandak and above) may, if deemed necessary, have interior liquid fuel (propane) stoves equipped with exhaust hoods as well as a separate, exterior wood burning cooking stove(s). The operation and maintenance of kitchen exhaust hoods has been shown to be problematic in Afghanistan, and the installation of stoves requiring exhaust hoods is not encouraged.

k. Vehicle Maintenance Garages: Vehicle maintenance garages shall be sized at no greater than 500 SM per Kandak-sized unit. Each garage shall contain two vehicle bays; each bay shall be capable of holding a combination of two HMMWVs and small trucks. Each bay will include one vehicle pit; the width of the vehicle pit shall be sized to accommodate the smallest wheelbase of the vehicle types to be serviced.

1) Basic storage and Administrative office space shall be incorporated into the garage structure.

2) Overhead cranes shall not be installed. If deemed necessary, the incorporation of an overhead or gantry crane must be approved by the AHJ in writing, and will only be considered on a case-by-case basis.

3) Roll-up doors, equipped with chain falls, will be used to provide vehicle access; no electric motors shall be used. Barn-doors may be substituted as an alternative.

l. Warehouses: Warehouse space shall be sized at no greater than 900 SM per Kandak-sized unit, and shall contain subdivisions divided by chain link fence. A single, small Administrative office shall be incorporated into the warehouse structure.

1) At least one roll-up door, equipped with chain falls, will be used to provide vehicle access; no electric motors shall be used. Barn-doors may be substituted as an alternative.

m. Motor Pool: A secured, gravel surfaced motor pool capable of storing all Tashkil authorized vehicles shall be constructed at the rate of one per Kandak-sized unit. The motor pool shall be enclosed with chain link security fencing having a single vehicle ingress/egress point to facilitate inventory control.

n. Separation of Training Facilities and Operational Units: Training commands and operational units are to be physically separated by sufficient distance so as to preserve good order and discipline of forces. See Reference (b) for more information.

o. Renewable Energy Alternatives: Large-scale renewable energy plans have historically proven to be unsustainable in Afghanistan. However, smaller applications for back-up emergency power, such as for tactical radios, may be worthwhile. All renewable energy solutions must be justified with a thorough cost/benefit analysis comparing it to the standard power source for that location. The incorporation of renewable energy alternatives must be approved by the AHJ in writing, and will only be considered on a case-by-case basis.

1) Facilities shall make maximum use of passive energy conservation features, arranging spaces and functions to maximize sunlight, shading, ventilation, passive solar heat gain, etc. where appropriate and feasible.

p. Temporary Standards: Temporary facilities, including Temporary Tactical Infrastructure (TTI) constructed with ASFF, shall comply with all ANSF Construction Standards except as further restricted within this paragraph. Additional criteria include:

1) Enlisted Billeting: Six soldiers per 20-ft ISO container. Three SM per person for Sea-Huts/B-huts and tents.

2) Officer Billeting: Three officers per 20-ft ISO container. Six SM per officer for Sea-Huts/B-huts and tents.

3) Male Latrines: Toilets shall be provided at a 1:35 ratio. Showers shall be provided at a 1:20 ratio.

4) Female Latrines: Toilets and showers shall both be provided at a 1:15 ratio.

5) Administrative and Storage: Administrative space allowance is based on the total end strength of each unit. Janitorial storage is authorized for each center, sized at no greater than 2.3 SM for each 1,858 SM, or portion thereof, of building net area.

6) IT Spaces: The minimum space allowance for an IT closet is 13 SM.

7) Classrooms: Space is authorized based on the end strength of each unit, sized at no greater than 7 SM for each increment of 50 members, or portion thereof.

8) Force protection: Dirt-filled barriers (i.e. Hesco barriers) shall be used for the perimeter wall unless the perimeter wall is a part of a permanent site perimeter wall. Identify ECPs and temp guard towers.

q. Training: Contractors providing mechanical or electrical systems, e.g. HVAC systems, wastewater treatment systems, generators, power distribution systems, plumbing fixtures and valves etc. must provide O&M training for a typical crew of four individuals. The training shall focus on teaching normal operating parameters, recognizing / identifying abnormal conditions, and appropriate measures, ranging from minor adjustments / repairs, to calls for technical assistance to the performance of safety shutdowns. The training period of performance shall be no less than the time period required for the commissioning of the system.

1) Routine scheduled daily, weekly, monthly, and annual testing, operation and maintenance (e.g. “level 10 maintenance”) requirements of the system, per the system manufacturer’s recommendations.

2) Training shall be designed to teach trainees having as little as a fifth-grade education, and no prior knowledge of the system.

3) Contractor shall provide one set of all the required tools and safety equipment to properly operate, test, adjust, and maintain the system at the operator level.

4) Contractor shall provide at least one hard copy of the Operations and Maintenance manual, and one hard copy of the parts manual in the native language of the operators and maintenance personnel.

r. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.2 DIVISION 2 - SITE CONSTRUCTION

a. Sites will be designed to be as compact as possible to minimize utility infrastructure and force protection requirements.

b. Installations will be constructed with a 45-m stand-off between perimeter walls and occupied facilities. Occupied facilities will be separated from other facilities by 10m when applicable. Anti-vehicle trenches will be built when space allows.

c. Elevated concrete guard towers and grenade screens shall be spaced along the perimeter wall at an interval not to exceed 250-m. Catwalks shall be installed around guard towers.

1) See DIVISION 16 – ELECTRICAL for electrical requirements.

d. All garrisons shall have a main Entry Control Point (ECP) with inspection and rejection lanes, and a basic secondary ECP. The main ECP will include a guard shack. Each ECP will include a fully closeable gate (sliding or swing) that approximates the height of the perimeter wall and a simple mechanism that can be raised and lowered (drop arm) quickly between vehicles.

e. Sidewalks. The nominal allowance for concrete sidewalks is 84 SM per increment of 100 personnel. The actual allowance will be as required to provide access from

pedestrian travel paths to building entrances. Walking paths will be constructed of gravel, and will not count against the allowance for concrete sidewalks.

f. Main circulation roads on a garrison will be paved with asphalt at a width no greater than 4 meters per lane, with no shoulder.

g. Storm drainage will be provided to accommodate a 20-year storm. Storm pipes shall have a minimum diameter of 450-mm (18-in).

h. Landscaping will not be provided except as required for erosion control.

i. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.3 DIVISION 3 - CONCRETE

a. Perimeter Walls: Garrisons shall have a perimeter wall 3m high with reinforced concrete core, topped with single strand concertina wire.

1) See DIVISION 4 – MASONRY for additional requirements.

b. Foundations shall be reinforced concrete slab on grade with spread footers.

c. Collapsible soils have been found in areas of Afghanistan, particularly in the Northern provinces. Construction of mat foundations, piles or other deep foundations shall be avoided except when considered necessary based on documented geotechnical conditions. Construction of such foundations must be approved by the AHJ in writing, and will only be considered on a case-by-case basis.

1) Mat foundations are the preferred foundation upgrade due to the lack of local equipment and expertise needed to install piles and other deep foundations.

d. Applicability: The requirements of this section shall be applied to:

1) Large facilities.

2) Medium Facilities.

3) Small Facilities, as modified in accordance with Enclosure 1.

4.4 DIVISION 4 - MASONRY

a. Brick as a building material shall not be used in Afghanistan due to the prevalence of substandard quality bricks having low strength and a lack of durability.

b. Garrisons shall have a masonry perimeter wall 3 meters high. Stone is the preferred building material in Afghanistan. The wall shall be topped with single strand concertina wire.

1) All masonry perimeter walls shall be constructed with a reinforced concrete core; the core is required for blast protection as well as to minimize wall deterioration and subsequent maintenance.

c. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.5 DIVISION 5 - METALS

a. Construction of arch steel structures, commonly referred to as arch-spans or K-spans, shall be avoided due to their recent history of construction difficulties, costs and complicated building systems. Local contractors do not have the experience to construct these efficiently, nor do they have easy access to the machinery required to build them. As a result, these buildings are often not cost-effective compared to concrete / masonry construction. The use of arch steel structures must be approved by the DIRECTOR, CJ ENG in writing, and will only be considered on a case-by-case basis.

b. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.6 DIVISION 6 - WOOD AND PLASTICS

a. Wood framing shall not be used as the basic structural system for permanent facilities.

b. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.7 DIVISION 7 - THERMAL AND MOISTURE PROTECTION

a. The preferred insulation system for buildings shall be approved External Foam Insulation Systems (EFIS), where appropriate. These systems shall be installed per the manufacturer’s recommendations, and shall be clad with an approved exterior covering that is compatible with the approved insulation system.

1) The proper installation of EFIS requires a well trained labor, and qualified QA/QC personnel providing oversight.

b. All insulation shall be approved material capable of meeting the project’s specified R-values.

c. If steel arch span buildings have been approved for use by the DIRECTOR, CJ ENG, the steel walls shall be coated with an approved, complete insulation system that includes both fire-retardant closed cell polyurethane foam insulation and a thermal / ignition barrier. All components of the insulation system must be compatible with each other, and must be applied / installed as recommended by the manufacturer of each component.

1) The integral steel / foam walls shall be left exposed to view.

d. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.8 DIVISION 8 - DOORS AND WINDOWS

a. All exterior doors shall be metal with metal frames.

b. All windows shall be operable and shall have metal frames. Windows shall be configured such that when opened, the area of the opening perpendicular to the frame is maximized (i.e. panes slide to the side vs. swinging outward).

c. Door and window screens shall be provided only at DFACs, Troop Medical Clinics (TMC) and hospitals.

d. See DIVISION 1 – GENERAL REQUIREMENTS for training requirements related to mechanical items, weatherizing etc.

e. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.9 DIVISION 9 - FINISHES

a. The preferred construction material for interior walls is CMU. Interior walls do not need to meet fire boundary code requirements and shall not be constructed using drywall, gypsum, or other cellulous products. Reinforced CMU block walls may also be used in special circumstances such as kitchen dividing walls, armories, etc.

b. Wet areas, such as kitchens, bathrooms, maintenance bays, ablution areas medical facilities etc. shall utilize non-porous flooring materials and sealed CMU walls and sealed ceilings. <u>Drywall, gypsum, or other cellulous products shall not be used.</u>

c. Drop (suspended) ceilings shall only be used in administrative buildings and medical facilities. All other rooms shall be open up to the height of the structure itself.

d. Floors shall be constructed of finished concrete. Concrete floors in wet areas shall be sealed to prevent water and moisture damage.

e. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.10 DIVISION 10 – SPECIALTIES

a. All plumbing pipes shall be surface mounted with schedule 40 PVC piping all the way to faucets or utilities. If the plumbing is not placed in the occupied portion of the building, it shall be made accessible in a utilities chase. Piping from the fixture on out should be galvanized pipe. Use commercial grade ball valves. Ball valves are commonly available in the local market, are far more durable than faucets, and can easily be replaced.

b. Shower piping should be made out of 13-cm (1/2-in) ID schedule 40 PVC pipe. Pipe shall be secured every 80-cm (minimum) using galvanized steel clips attached directly to the wall.

   1) In lieu of a shower faucet, 1/4 turn ball valves shall be used, one for hot and one for cold. The valves shall be fastened to the wall on the inlet and outlet ends with galvanized steel clips. Shower heads tend to quickly clog with scale, particularly in areas where the water contains high levels of total dissolved solids (TDS). Thus, the shower riser shall terminate as an open-ended pipe with no shower head.

   2) Shower doors shall not be used; curtains shall be used in shower stalls/rooms.

c. Toilets shall be eastern style and be positioned in a culturally correct orientation. Toilet tanks shall be mounted securely to the wall with the tank being 180-cm or greater above the floor to avoid being bumped. The piping conveying the water from the tank to the bowl shall run down along, and be directly fastened to, the wall using galvanized steel clips every 60-cm to accommodate a person leaning against it while using the fixture.

d. P-traps shall be used in toilets and sinks. Sink P-traps shall not be installed under the floor or in any inaccessible space. P-traps shall be schedule 40 PVC pipe; flex tubing shall not be used.

   1) All joints after the P-trap outlet shall be air tight. Slip joints that can be disengaged without the use of tools shall not be used.

e. Sinks shall be trough type, supported directly from the floor, and capable of supporting a person's weight (roughly 180 lbs). Tiled concrete troughs are preferred; pedestal sinks shall not be used.

   1) The area beneath the sink shall be left open, or an access panel shall be provided for access to traps and sanitary piping beneath the drains(s).

   2) Hand washing stations shall utilize quarter turn ball valves instead of faucets. Straight ball valves should be fastened to the wall on the inlet and outlet ends using galvanized steel clips or hangers. 90-degree valves shall be installed tight to the wall.

   3) Position valves to be accessible to the user.

f. Isolation valves shall be installed for each branch piping run serving a group of toilets, sinks, or laundry deep sinks. Gooseneck faucets shall not be installed in any location.

g. Water supply pipes shall be installed a minimum of 1 meter below finished grade to help alleviate freezing. If the geographic location dictates, the pipes shall be buried deeper.

1) In facilities not containing 24 hour per day heating adequate to prevent freezing, pipe systems shall be designed to:

a) Prevent freezing.

b) Be easily “winterized”, or be completely drained without the use of external equipment, i.e. install pipes pitched to drain to manual drains located at all low points.

2) Heat tracing shall only be provided as a last resort, and only where electricity is continuously available. The use of heat tracing must be approved by the AHJ in writing, and will only be considered on a case-by-case basis.

h. See DIVISION 1 – GENERAL REQUIREMENTS for training requirements.

i. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.11 DIVISION 11 – EQUIPMENT

a. The construction contract shall supply one A-B-C 6 kg fire extinguisher for every 100 SM, or a portion thereof, of floor space in each building.

b. See DIVISION 1 – GENERAL REQUIREMENTS for training requirements.

a. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.12 DIVISION 12 – FURNISHINGS

a. Room layouts (i.e. interior design) shall be performed by the ANSF unit, at their cost.

b. All furnishings, e.g. chairs, tables, desks, beds, lockers, shelving, and other properties (i.e. properties not installed) are to be provided by the ANSF unit via the MoD or MoI Form 14 process.

c. In extremis, the RCs can provide furnishings via the Regional Contracting Command blanket purchase agreements or open purchase.

d. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.13 DIVISION 13 - SPECIAL CONSTRUCTION

c. Fire suppression systems shall not be installed in ANSF facilities.

1) Smoke detectors will be provided in all billeting and office spaces. No fire alarm control panels or central notification system shall be used except in medical facilities.

2) Fire / smoke alarms in facilities (other than Medical Clinics) shall be 220V mains powered and have a battery backup.

3) Medical Clinics shall have 220V mains powered radio-interlinked smoke detectors and heat alarms with a battery backup.

d. Clothes lines shall be provided for drying clothes. Washers and dryers shall not be provided.

e. Information Technology (IT), to include communications and internet, shall be procured through the CJ6 – Communications department. CJ6 maintains IT standards for ANSF and has an SOP that indicates when in the design and construction process they must be consulted to provide for IT design, procurement, and installation.

1) Communication metal conduit (telephone and network), with pull strings, from point of origin back to a central building communications closet shall be provided in administrative buildings and medical facilities. For these facilities, a minimum of one telephone and one network outlet shall be provided per room.

f. See DIVISION 1 – GENERAL REQUIREMENTS for training requirements.

g. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.14 DIVISION 14 - CONVEYING SYSTEMS

a. Elevators, escalators, conveyer belts, dumb waiters, and other conveying systems shall not be provided in ANSF projects.

b. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

4.15 DIVISION 15 – MECHANICAL

a. Climate control will be achieved through the use of ceiling fans, electric heaters, and wood burning heating units. Wood burning heating units shall be used in open bays as a means of providing heat.

1) Wood burning heating units shall be provided and installed by the end user. Buildings shall be designed and constructed to accommodate the future installation of these units.

2) Electric heaters are to be provided in spaces where wood burning units are impractical (as determined by the requirement owner and/or applicable codes) such as latrines and POL facilities.

b. Air conditioning is prohibited except as authorized below:

1) General Officer living quarters, Army brigade and corps offices, provincial and higher police headquarters, ANCOP brigade command offices, communication rooms, medical treatment and inpatient rooms, and classrooms shall be heated and cooled (A/C) with ductless heat pumps (split-pack units). Training buildings and gyms do not qualify as “classrooms”.

c. Ventilation: Latrines / showers and kitchens shall be ventilated at a rate (in air changes per hour, or ACH) adequate to mitigate the humidity and other environmental factors that contribute to mold/mildew growth or other unsatisfactory conditions.

1) Fans available through local purchase shall be installed to vent through the wall. Properly sized vent holes for air inlet shall be covered with locally available screen to keep insects out.

2) If steel arch span buildings have been approved for use by the DIRECTOR, CJ ENG, all arch-span facilities without drop (suspended) ceilings shall be provided with industrial-sized ventilation at the ends of the building capable of providing a minimum of five (5) air exchanges per hour for the volume of the facility.

3) For arch-span facilities with false ceilings, attic ventilation shall be provided capable of a minimum of 10 air exchanges per hour for the volume of the attic.

4) See DIVISION 9 – FINISHES for requirements related to wet areas. No drywall, gypsum, or other cellulous products shall be used.

5) See DIVISION 16 – ELECTRICAL for electrical requirements.

d. Sewage treatment: Sewage conveyance and treatment capacity shall be 80% of calculated water use (see below).

1) For garrisons of less than 250 people a leach field is the preferred sewage treatment system. For garrisons above 1,000 people, a lagoon sewage treatment system shall be used. For garrisons of between 250 and 1,000 people, soil conditions and the amount of available space will be evaluated to determine the best system.

2) Package sewage treatment plants shall only be used when space restrictions make them the only viable solution. The use of package sewage treatment plants must be approved by the AHJ in writing, and will only be considered on a case-by-case basis.

3) All installations of sewage treatment plants shall include the provision of all required sampling tools, laboratory testing equipment and supplies, and ancillary items required to make the system complete and useable immediately upon commissioning. O&M training for ANSF personnel shall also be included.

4) Due to the tendency of local operators to not replenish stock and/or to properly regulate dosages of disinfection agents, particularly chlorine and chlorine compounds, provisions for the disinfection of treated sewage shall not be included.

e. Reclaimed water: A reclaimed water storage lagoon should be included with all lagoon wastewater treatment systems. The lagoon shall store approximately 25% of the daily treated wastewater volume.

1) The lagoon will allow for water distribution and irrigation via non-potable water trucks (provided by others) or by lagoon overflows to surface channels to allow for gravity fed irrigation (preferred). Any spigots and drains associated with the system shall be marked in Dari and English, "Septic Water - for Irrigation Only. Do Not Drink".

2) Reclaimed water storage lagoons should also be considered for use in collecting gray water and captured storm water runoff.

f. Fuel shall be stored in above ground, self-venting tanks with secondary containment dikes or walls having a capacity of 110% of the largest tank volume. Containment dikes or walls shall have a low-point drain controlled with a 2-in brass ball valve. Access to the fuel tank(s) should be made available through a walkway over the containment.

1) Fuel systems shall be gravity-fed to the maximum extent practical. If fuel pumps are required, they should be of the hand-cranked type.

2) Fuel storage of over 10,000 liters should be provided, when practical, with overhead cover (canopies) to protect from direct sunlight. Provide dirt-filled barriers (i.e. Hesco barriers), berms, T-walls and/or overhead cover to protect from direct fire, as required for force protection. The overhead cover must have a minimum 30cm opening over the containment wall and/or protective barrier.

g. Water supply: Typically, water shall be supplied by on-site wells. If a public water supply source is available, the facility should use that as an alternate supply. Sufficient well capacity should be installed to provide one (1) day of supply in 20 hours of pumping.

1) Sites being screened for a new facility should have a test well drilled on site prior to allowing further construction. If the test well proves insufficient in yield or water quality, an alternative site should be considered. Drilling a test well is unnecessary if the site already has an operational well.

a) Potential water supplies shall be evaluated for TDS levels.

b) Within Afghanistan, water wells producing water containing less than 1,500 parts per million (ppm) total dissolved solids (TDS) are considered potable.

c) Sites having brackish water (1,500 to 4,000 ppm TDS) should utilize that water for construction, sanitation and for alleviating the need for bottled water. If brackish water is to be used, schedule 80 PVC piping and non-metal fixtures should be used. Brackish water should not be used in the DFAC.

d) Sites having saline water (>4,000 ppm TDS) shall be considered “not productive”. If a more suitable aquifer cannot be found, an offsite water source shall be used. The only acceptable use for saline water would be to facilitate waste disposal through PVC pipes and fixtures, though any pumps used would quickly denature and become unusable.

e) The use of, and construction on, sites having no nearby potable water supply must be approved by the AHJ in writing, and will only be considered on a case-by-case basis. Approved sites having no nearby potable water supply shall include a water transfer pump (or pumps) to pump water from supply trucks into storage tanks.

2) Sites located on uplands with shallow bedrock are particularly susceptible to poor well yield. It should be assumed that these sites will require a supplemental, off-site water source, particularly for larger populations.

3) Avoid impacting water resources claimed by neighboring sites, i.e. over-utilizing a shallow aquifer. In over-utilization is a concern, based on an analysis done by a qualified hydrogeologist, drilling efforts should be directed to a deeper, underlying aquifer – which typically provide better water quality and are less susceptible to contamination.

4) A 1-in diameter PVC sounding tube[2] should be installed in newly constructed wells so that water-levels may be measured at any time without risk of tangling the sounder down-hole. Water-level monitoring enables the users to determine when a well is losing efficiency and can prevent excessive drawdown and the overheating of expensive pumps.

5) Hand pumps shall be installed within permanent water wells so that water can be obtained if/when electricity is not available. Ensure the diameter of the well casing is large enough to accommodate both. The maximum head that may be pumped by hand is approximately 75-m.

6) Water storage shall be provided using (preferably) steel or lined concrete tanks to maintain water quality. However, locally available plastic tanks with float inlet valves may be used.

7) Water storage tanks should be located on the roofs of the buildings requiring the water, and shall be fed / filled using a designated water transfer pump should no elevated water storage tower exist to feed the tanks. Roof construction shall be designed to support the additional weight of the water storage.

8) Total water storage volume shall be capable of holding 72-hours worth of water based on a consumption rate of 155 liters per person per day. Future growth of the site's population should be considered when designing storage volume.

9) The minimum storage volume of an individual tank shall be adequate to feed all the supplied fixtures for one hour.

10) Structures supporting elevated water storage tanks shall be made of steel.

h. See DIVISION 1 – GENERAL REQUIREMENTS for training requirements.

i. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

[2] Sounding tubes are small pipes that lead from the bottom of an enclosed space (such as a well) upward to a location accessible to personnel. A sounding line- a rope with a weight on the end- can then be lowered into the enclosed space through the sounding tube in order to measure the water level in the space.

4.16 DIVISION 16 - ELECTRICAL

a. 50Hz systems shall be designed to BS7671 (latest Edition). In the event of conflicting requirements, the requirements in this document and the code requirements listed herein will apply, in that order of precedence. Designers shall notify the AHJ in writing of the issue and the proposed resolution.

b. Facilities shall be provided with 380/220V or 400/230V 50Hz power. Commercial / grid power shall be considered if the service in the area is reliable and cost effective.

1) If commercial / grid power is not available, generators shall be provided. All generators and ancillary equipment shall have service providers and replacement parts available locally. The level of technology incorporated in the power plant shall be kept to a minimum, such as manual switching and distribution and analog controlled generators that may be synchronized manually using a synchronization light.

2) The generator configuration to be used should be tied to the size of the facility:

a) Large facilities should use multiple generator, synchronized system e.g “prime power”.

b) Medium facilities should use mini-grids and unsynchronized generators that are supplied with fuel from a central fuel storage system. Main feeder breakers will be manual and should have two sources of power, primary and alternate from different generators. There is no requirement to parallel generators or provide automatic start up as emergency power.

a) Small facilities should be configured as directed in Enclosure 1.

c. Electrical service: Electrical components shall be certified by a recognized international testing / certification agency. All parties must perform due diligence to ensure properly certified, quality components are provided and installed. Experienced QA/QC inspectors will be required on-site during construction.

1) Acceptable agencies include:

a) UL: Underwriters Laboratories Inc.

b) CSA: Canadian Standards Association

c) ETL: Originally ETL Testing Labs, now Intertek Testing Services.

d) CE: Conformance European

e) UKAS: United Kingdom Accreditation Service

f) IEC: International Electrotechnical Commission

g) ENEC: European Norms Electrical Certification

h) TUV: TUVRheinland of North America, Inc.

2) Interior electrical service shall be installed using elevated cable trays with surface mounted conduit. If the conduit is not placed in the occupied portion of the building, it must be accessible in a utilities chase.

3) Interior electrical service shall be provided with one simplex outlet per wall and at least one simplex outlet per 3m of wall. Electrical outlets should not be installed in wet areas.

a) The “Schuko” receptacle is commonly installed in Afghanistan.

b) The Afghanistan standard is the Schuko 16A, 250V, Type CEE 4/7, Type F. It is an EU1-16 receptacle or plug.

c) Western influences have promoted the use of grounding receptacles; prior to this, ungrounded receptacles dominated the market. Enclosure 2 shows a Catalog cut sheet for a 16A receptacle, but other amperages are available.

d. Grounding: Install copper grounding rod(s) at all facilities. The electrical system shall be properly grounded.

e. Lighting: AII interior lights shall use light bulbs commercially available in the local market. Fixtures shall be simple, and use the standard screw-in bulb design. Fluorescent compact bulbs shall be provided by the contractor to reduce loading on the generators.

1) The use of long tube fluorescent bulbs and fixtures is discouraged due to maintenance issues and the availability of replacement bulbs and parts.

f. Electrical distribution: Systems shall be constructed underground using UPVC conduit or via direct burial cable where appropriate. Distribution systems shall be designed simply, with a minimum of switching and only the most basic loop and redundancy.

1) The electrical switching and distribution system shall be manually operated. The use of automatic transfer switches and/or synchronization equipment must be approved by the AHJ in writing, and will only be considered on a case-by-case basis.

2) If a commercial electrical service is available, or anticipated to be available in the near future (within five years), switching shall be included to allow the future connection to commercial power.

g. Electrical generation: A design factor (peak load) of 0.75KW / person shall be used to determine electrical load, if electric heat is being provided at the site. At training and other sites not provided with electric heat, the design factor shall be 0.5KW / person.

1) Generation capacity shall be provided at 100% of the expected peak load.

2) Generators should be provided at a size of approximately half the anticipated load with N+1 redundancy, e.g. for an infantry Kandak of 800 soldiers, the peak load would be 600KW. This would be provided by three 300KW generators.

3) At sites where the expected peak load is less than or equal to 500 KW the power should be provided by one (1) properly sized generator with another generator of the same size connected to the electrical service with a manual transfer switch to allow manual switching. If low demand periods are anticipated the second generator may be sized for the smaller load, or at one-half the peak demand load.

4) The maximum generator size shall be 1MW unless it can be shown to be cost effective to use larger generators. The use generators larger than 1MW must be approved by the AHJ in writing, and will only be considered on a case-by-case basis.

5) At Small and Medium sites (designed for less than 2,000 personnel) that are not connected to commercial / grid power, a load bank shall be provided to prevent wet-stacking of generators during low-demand periods.

6) Emergency back-up generators shall only be provided for connection to medical emergency rooms, refrigerated storage, wastewater treatment plants, and Tactical Operation Centers. Back-up generators shall be sized for not more than the vital loads.

7) Generators shall be surrounded by a security fence and shall be covered with, at a minimum, a canopy to reduce operating temperatures.

See DIVISION 15 – MECHANICAL for fuel system requirements.

h. See DIVISION 1 – GENERAL REQUIREMENTS for training requirements.

i. If steel arch span buildings have been approved for use by the DIRECTOR, CJ ENG, the electric service switch controlling ventilation shall be elevated 60 cm (24”) above all lighting switches, and be permanently marked, “For Attic Exhaust Fan. Turn Off Only For Maintenance.”

j. Applicability: The requirements of this section shall be applied to:

1) Large facilities: In their entirety.

2) Medium Facilities: In their entirety.

3) Small Facilities: Modified in accordance with Enclosure 1.

Enclosure 1

AFGHAN NATIONAL SECURITY FORCES
SMALL FACILITY SUSTAINABLE DESIGN PROGRAM

TABLE OF CONTENTS

1. DIVISION 1 – GENERAL REQUIREMENTS

The Afghan National Security Forces Construction Standards shall be modified and applied to Small Facilities as described below.

1.1 Building Systems: Four-door canopies and their supporting structures should be deleted. For a one story building, a projected sloping roof eave will be satisfactory.

Rigid roof insulation (150mm R-30) should be reduced. Since an insulated wall enclosure is provided, roof insulation will not work alone.

Splash blocks should be deleted. Gravel may be uses instead.

Recessed floor mats at concrete stoops should be deleted.

1.2 Barracks (Enlisted, Officer and Flag Officer): Refer to:

DIVISION 15 – MECHANICAL for water and wastewater requirements.

DIVISION 16 – ELECTRICAL for electrical requirements.

1.3 Latrines: Provide an external latrine building in lieu of the standard requirements. Latrine should have 4 toilet stalls and a trough sink with drain.

The preferred toilet type shall be the gravity drain (hole over a tank) design.

If the toilet is a gravity drain design, the sink requires a drain but does not require a water supply. If the toilet is a flushing toilet, the sink should have a water supply and faucet.

An external water supply faucet is to be constructed outside the latrine regardless of toilet design.

See DIVISION 8 - DOORS AND WINDOWS for ventilation requirements.

See DIVISION 15 – MECHANICAL for water and wastewater requirements.

1.4 Offices: Refer to:

DIVISION 15 – MECHANICAL for water and wastewater requirements.

DIVISION 16 – ELECTRICAL for electrical requirements.

1.5 Dining Facilities (DFAC): Refer to:

DIVISION 15 – MECHANICAL for water and wastewater requirements.

DIVISION 16 – ELECTRICAL for electrical requirements.

1.6 Other:

1.6.1 Kitchens: No changes.

1.6.2 Vehicle Maintenance Garages: No changes.

1.6.3 Warehouses: No changes.

1.6.4 Motor Pool: No changes.

1.6.5 Separation of Training Facilities and Operational Units: No changes.

1.6.6 Renewable Energy Alternatives: No changes.

1.6.7 Temporary Standards: No changes.

2. DIVISION 2 - SITE CONSTRUCTION

The Afghan National Security Forces Construction Standards shall be modified and applied to Small Facilities as described below.

2.1 Sidewalks: Gravel is preferred for use in constructing sidewalks.

See DIVISION 16 – ELECTRICAL for electrical requirements.

3. DIVISION 3 - CONCRETE

No changes.

4. DIVISION 4 - MASONRY

No changes.

5. DIVISION 5 - METALS

No changes.

6. DIVISION 6 - WOOD AND PLASTICS

No changes.

7. DIVISION 7 - THERMAL AND MOISTURE PROTECTION

No changes.

8. DIVISION 8 - DOORS AND WINDOWS

The Afghan National Security Forces Construction Standards shall be modified and applied to Small Facilities as described below.

8.1 Doors: Automatic door-closers should be deleted.

8.2 Light and Ventilation: If possible, resize or add windows for light and ventilation in Latrine Standard Designs LO1 (Small) and LO3 (Large) through the exterior CMU walls. They could not be added through concrete shear walls.

Any additional openings through CMU walls in Latrine Standard Design LO2 (Medium) would have to be structurally evaluated before implementing.

If possible, resize or add windows for light and ventilation in other Standard Designs through the exterior CMU walls.

9. DIVISION 9 - FINISHES

No changes.

10. DIVISION 10 – SPECIALTIES

The Afghan National Security Forces Construction Standards shall be modified and applied to Small Facilities as described below.

10.1 Water Piping: All water pipes that are not critical should be de-scoped from the design or contract. For example, in the standard design of the Multi-Purpose

Bldg AD 26 (UP DHQ Bldg), all water lines should be de-scoped except those to the sink in the DFAC.

For projects that are already in construction, no redesign should be done. Piping that has been partially installed should be cut and capped in place at the main. Installed piping downstream of where the main has been capped does not need to be removed. It can be abandoned in place.

Water piping that has a “T” or branch connection on the main line should still be provided. If pipes are installed to the point of termination, the water supply line should be stubbed out and capped for the ANSF to finish at a later date.

Water piping from a well pump to elevated water storage tanks is required.

Rooms that would originally have been a latrine / shower / bathroom shall be retained for use as storage or for future use as a latrine / shower / bathroom.

An approximately 25mm water line shall be installed to a location outside the latrine building. Should be installed below the frost line or be insulated to reduce the chance of freezing.

Detention cells shall be “dry” facilities.

10.2 Sewage / Drain Piping: All sewage and drain pipes that are not critical should be de-scoped from the design or contract. For example, in the standard design of the Multi-Purpose Bldg AD 26 (UP DHQ Bldg), all sewage and drain lines should be de-scoped except those from the sink in the DFAC.

For projects that are already in construction, no redesign should be done. If pipes have been installed to the point of termination, they should be stubbed out and capped in place for ANSF units to complete at a later date.

Rooms that would originally have been a latrine / shower / bathroom shall be retained for use as storage or for future use as a latrine / shower / bathroom.

10.3 Latrines: External latrine buildings shall have 4 toilet stalls and a trough sink with drain. The preferred toilet type shall be the gravity drain (hole over a septic tank) design.

If the toilet is a gravity drain design, the sink requires a drain but does not require a water supply. If the toilet is a flushing toilet, the sink should have a water supply and faucet.

An external water supply faucet shall be constructed outside the latrine regardless of toilet design.

10.4 Pumps: A water well hand-pump shall be provided, unless the static water level is greater than 75 meters.

11. DIVISION 11 – EQUIPMENT

No changes.

12. DIVISION 12 – FURNISHINGS

No changes.

13. DIVISION 13 - SPECIAL CONSTRUCTION

The Afghan National Security Forces Construction Standards shall be modified and applied to Small Facilities as described below.

4.13.1 Information Technology (IT): IT systems, to include communications and internet, shall not be dependent upon generator power.

14. DIVISION 14 - CONVEYING SYSTEMS

No changes.

15. DIVISION 15 – MECHANICAL

The Afghan National Security Forces Construction Standards shall be modified and applied to Small Facilities as described below.

15.1 Ventilation: No ceiling fans should be installed in offices, multi-purpose buildings or barracks buildings.

15.2 Sewage Treatment and Conveyance: Sewage treatment and conveyance capacity for SFSD facilities should be 2,000 L/day. See Water supply below. Sewage and wastewater should only be generated from the DFAC sink and the latrine.

If the external latrine buildings include flushing toilets, sewage drain piping will be required. If the external latrine buildings include a gravity drain toilet, then no sewage drain piping will be required.

A cesspool type sewage holding / treatment design (a pit with concrete lined walls) is the preferred method of treating sewage and wastewater. A septic tank with leach field design may be used. Cesspools and septic tanks shall be at least 45 meters down gradient from water wells.

15.3 Water supply: Water shall be supplied by on-site wells. These wells need not provide greater than 2,000 L/day. The design pumping rate may need to be adjusted, or smaller submersible pumps may be needed in order to maintain the water column.

Assume water consumption rate of 30 liters per person per day. Facilities having 60 or more personnel shall have a water storage system sized to accommodate the population of the site.

If a facility has poor local water quality or insufficient water well capacity, water shall be trucked in. The size of the water storage tank will be the size of the tank truck (one truck, one fill).

For sites having less than 60 personnel, water storage capacity shall be met using a 500 gallon water tank mounted on the roof of the DFAC.

15.4 Other:

15.4.1 Climate control: No changes.

15.4.2 Reclaimed water: No changes.

15.4.3 Fuel: No changes.

16. DIVISION 16 - ELECTRICAL

The Afghan National Security Forces Construction Standards shall be modified and applied to Small Facilities as described below.

16.1 Lighting: Multi-purpose, office and barracks buildings shall not have lights. Detention cells shall not have lights. Guard shacks and guard towers shall not have lights, including searchlights.

16.2 Electrical Distribution: Provide power from the generator through applicable switchgear / main distribution panel at the power plant and provide a power cable to main distribution panels in the Multi-purpose, office and barracks buildings.

From the main distribution panels in the Multi-purpose, office and barracks buildings, install four single or double outlets, one each from four breakers, in the same room. One outlet shall be placed on each wall. This is the only electrical work to be done in each building.

Cable sizes shall be as sized in the original design; do not decrease sizes.

All breakers should be provided as in the original design for the Main panel, including spare breakers. However, circuit breaker sizes may need to be adjusted.

Electrical power shall be provided to the well house. It shall be the only other building to get power.

Guard shacks and guard towers are not to have power and electrical components should be de-scoped.

16.3 Electrical Generation: It is not necessary to adhere to the ANSF construction standard of 1kW per person.

Provide 64kVA generators for sites having 50 personnel or more, and 20kVA generators for sites with less than 50 personnel. Experience in Afghanistan has indicated that a 20kVA generator will provide more than enough power, especially for smaller sites. It is not necessary to custom size generators, or to provide spare generation capacity.

For sites provided with 64kVA generators, provide a load bank to absorb any excess load.

No backup generators are required. The ANSF will rely on local utilities if available.

16.4 Other:

16.4.1 Electrical service: No changes.

16.4.2 Grounding: No changes.

16.4.3 Training: No changes.

Enclosure 2

"Schuko" Receptacle

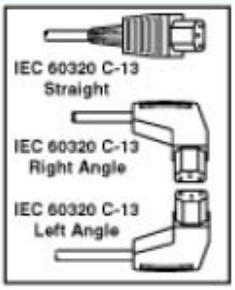
EUROPEAN "SCHUKO" CORD SETS & POWER CORDS

16 Ampere 250 Volt, 2 Pole 3 Wire Grounding ..... EU1-16P — **16 A / 250 V**

2.5 Ampere 250 Volt, 2 Pole 2 Wire..... Europlug — **2.5 A / 250 V**

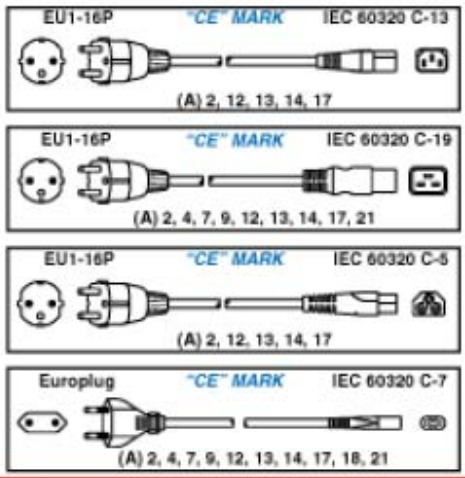
General Specification Data

Conductor Color Code:	Brown, Blue, Green/Yellow (3 wire); Brown, Blue (2 wire)
Plug Standards:	CEE 7-7, CEE 7/16 (Non-Polarized)
Conductor Size / Rating:	0.75 mm² @ 6 Ampere, 1.0 mm² @ 10 Ampere, 1.5 mm² @ 16 Ampere
Jacket O.D. (Approx.):	6.4 mm = 3 x 0.75 mm², 7.2 mm = 3 x 1.0 mm², 8.3 mm = 3 x 1.5 mm²
Material:	PVC, Jacket Color Black, Temperature 70°C.
Connector Standards:	IEC 60320 (320) C-13, C-19, C-5, C-7, C-15
Cordage Standards:	H05VV-F3G, H03VV-F3, H03VV-H2, H05VV-H2, H05VV-F2, CENELEC HD-21 (HAR)
Cord Set Length:	2.5 meters/8'-2", 1.8 meters/6'



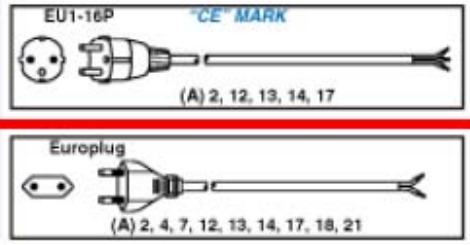
Power Cord - Detachable Cord Sets

Catalog #	Rating	Description	Length	Approvals
81131	10 A 250 V	Straight C-13 connector	2.5 m	22 and (A)
81131-LA	10 A 250 V	Left angle C-13 connector	2.5 m	22 and (A)
81131-RA	10 A 250 V	Right angle C-13 connector	2.5 m	22 and (A)
		Cordage - H05VV-F3G 1.0 mm²		
80101	16 A 250 V	Straight C-19 connector	2.5 m	22 and (A)
80101-LA	16 A 250 V	Left angle C-19 connector	2.5 m	22 and (A)
80101-RA	16 A 250 V	Right angle C-19 connector	2.5 m	22 and (A)
		Cordage - H05VV-F3G 1.5 mm²		
81950	2.5 A 250 V	Straight C-5 connector	1.8 m	22 and (A)
		Cordage - H03VV-F3 0.75 mm²		
81900	2.5 A 250 V	Straight C-7 connector	1.8 m	22 and (A)
		Cordage - H03VV-H2 0.75 mm²		



Power Supply Cords

Catalog #	Rating	Description	Conductors	Length	Approvals
81010	6 A 250 V	Straight plug	0.75 mm²	2.5 m	22 and (A)
81040 [1]	10 A 250 V	Straight plug	1.0 mm²	2.5 m	22 and (A)
81070	16 A 250 V	Straight plug	1.5 mm²	2.5 m	22 and (A)
		Cordage - H05VV-F3G			
90400	2.5 A 250 V	6.4 mm diameter cord		1.8 m	22 and (A)
		Cordage - H05VV-F2 0.75 mm²			
90200	2.5 A 250 V	3.4 x 5.6 oval cord		1.8 m	22 and (A)
		Cordage - H03VV-H2F2 0.75 mm²			



(1) Catalog #90100 non-grounding, 2 wire type available

- Black standard color. White and gray available.
- Various terminals, custom stripping, hanked cords available.
- Custom lengths and shielded cords available.
- IEC 60320 C-15 120°C type connector available on some models.

Approvals: 1.ASTA 2.CEBEC 3.CSA 4.DEMKO 5.PSE 6.DFT 7.FI 8.GS 9.IMQ 10.JET 11.JIS 12.KEMA 13.NEMKO 14.OVE 15.SAA 16.SABS 17.SEMKO 18.SEV 19.SII 20.UL, C-UL 21.UTE 22.VDE 23.ISO 24.CCC 25.IRAM 26.BSI

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