

Request for Proposal
W912ER-07-R-0011

Design/Construct

Counter Explosives School
ANA Commando Complex
Rish Khovoor, Afghanistan



US Army Corps of Engineers
Transatlantic Programs Center

TABLE OF CONTENTS
ANA CE SCHOOL at Camp Moorhead
Rish Khnoor, Afghanistan

<u>Section</u>	<u>Title</u>
01010	Scope of Work
01015	Technical Requirements Appendix A - Guide layout for Plans and Conceptual Maps
01060	Special Clauses
01312	Quality Control System (QCS)
01321	Project Schedule
01335	Submittal Procedures for Design/Build Projects Appendices
01415	Metric Measurements
01451	Contractor Quality Control
01525	Safety & Occupational Health Requirements

SECTION 01010

SCOPE OF WORK

1. GENERAL

Design, develop and build a fully functional, Counter Explosives School (CE School), with all related support facilities located within the ANA Commando Complex site near Kabul, Afghanistan. Complete the Civil, Site, Architectural, Structural, Mechanical, and Electrical work requirements as listed in this Scope of Work to create a fully functioning Afghanistan National Army/Afghanistan National Police CE School. Contract work will include, but will not be limited to the following: Education/training facility, including external school grounds, Headquarters Office, Billeting quarters, Range #1 Training and support facilities, Range # 2 Demolition Area, Road improvements in the CE School area, connectors to both ranges, and connection to Camp Morehead Roads and general site preparations, site improvements. The Contractor shall perform work that consists of topographic survey, master planning, any site demolition (still required), grading and compacted fill, design and construction of new buildings, solid waste transfer points, connection to new prime power plant and electrical distribution system, connection to new waste water treatment plant, and new sanitary sewer system, connection to existing water source (existing wells are in place). The Contractor shall perform a geotechnical investigation as defined in Section 01015. A site grading and drainage plan shall be prepared and approved prior to any construction. All utilities and utility connections shall be complete and operational prior to occupancy. All requirements set forth in the Scope of Work, but not included in the Technical Requirements, shall be considered as set forth in both, and vice versa. All work under this contract shall be completed in accordance with Table 1.1 (see below). This table provides completion durations after the Notice to Proceed (NTP). The work within this contract shall meet and be constructed in accordance with current U.S. design and building codes, safety and security standards. Design concept drawings are attached and a partial listing of references is included herein. Refer to map in Appendix A for approximate site location.

1.1 SITE SECURITY

The Contractor shall provide chain link fence around mobilization areas. Perimeter security for entire compound is currently under construction and is not part of this contract.

1.2 LOCATION

CE School Complex is located in the ANA Commando Complex in a valley between two mountains, near the village of Rish Khvoor, Afghanistan, on the outskirts of Kabul.

Approximate Grid Coordinates are: 34.526602⁰ N 70.348428⁰ E

01010-1

1

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

TABLE 1.1 CE SCHOOL FACILITY

CE SCHOOL FACILITY	COMPLETION TIME
2.1 Site Survey/Master Planning	60 days
2.2 Site Grading	365 days
2.3 Water Distribution System	365 days
2.4 Sewer Distribution System	365 days
2.5 Power Distribution System	365 days
2.6 CE School Road Network and Connector	365 days
2.7 Parking	365 days
2.8 HQ Office building	365 days
2.9 Classroom Buildings	365 days
2.10 Covered Pavilion	365 days
2.11 Student Living Quarters	365 days
2.12 Cadre Living Quarters	365 days
2.13 Range Number 1	365 days
2.14 Range Number 1 Road & Parking	365 days
2.15 Range Number 2	365 days
2.16 Range Number 2 Road & Parking	365 days
2.17 Solid Waste Storage	365 days

1.2 The master plan site drawing shall include layout of all items in RFP. The Contractor shall provide utility connections designed and sized for the future connection of any option items in this contract. The Contractor shall provide and connect to existing adjacent compound as required water line, sewer line, electrical conduit, and communications conduit.

1.3 Design Documents including Drawings, Design Analysis, and Specifications shall be completed to 100% for all buildings including any options.

1.4 Work shall be executed in accordance with the Technical Requirements in Section 01015, and all solicitation requirements and the attached schematic building layouts.

1.5 Government shall provide to the selected contractor design schematics in AUTO Cad and specifications for Designs from a previous Brigade that the Contractor will need to supplement per RFP, Site Adaptation, and Code Analysis during the design phase. These government-provided design schematics that are not at the 100% design-stage for CE School Facility; they were developed and used for construction of an ANA Brigades elsewhere in Afghanistan. Note: Most buildings in CE School Facility are brand new and have no complete drawings available. The Contractor will need to design, redraw and edit as required to meet the requirements of this RFP. For all

of the facilities, the Contractor shall prepare complete designs and specifications for all buildings and systems for review and approval by the Government. All designs and specifications created by the Contractor shall become the property of the Government and may be used in the future by the Government for construction of similar facilities without further compensation to the Contractor. The Contractor shall site-adapt the existing designs to assure that the designs reflect the requirements of this RFP, making all changes as required. Contractor shall provide Master Plan, Design Analysis, Specifications and Working Drawings for the entire CE School Complex including any options for the 35%, 65%, 99%, and 100%. In addition to printed full-sized copies, the Contractor shall provide electronic versions of all design documentation in AUTOCAD 2006 (version of later) to AED in Kabul and the Residence Office. Files shall be arranged on a CD with each facility, clearly identified as a separate subdirectory, with all files for that facility contained in that subdirectory. Each disk shall have an adhered printed label listing contents. Hand-written labels are unacceptable. See Section 01335 for Submittal requirements.

1.6 Liquidated Damages: It is critical that the contractor complete all work in the allotted time as customer usage is coinciding with completion. In addition, project personnel assigned to the management of the construction contract will continue to be utilized on this subject project through project conclusion. Therefore, failure by the contractor to meet the deadline will require the US Government to incur costs for continuing project and site management on the project beyond planned timelines. The US Government will then pass these additional costs to the contractor in the form of Liquidated Damages. The following is a summary of said costs:

	Hourly Rate	Hours	Total
GS-14 Area Engineer	\$177.20	1	\$177.20
GS-13 Resident Engineer	\$149.93	4	\$599.72
GS-12 Project Engineer	\$126.28	4	\$505.12
GS-11 Quality Assurance Rep	\$111.44	4	\$445.76

Total Liquidated Damages per day: \$ 1727.80

1.7 CQM Training Requirement: Before project design and construction begin, the Contractor's Quality Control Manager is required to have completed the U.S. Army Corps of Engineers CQM course, or equivalent. The Construction Trades Training Center (CTTC) in Jalalabad, Afghanistan provides a course that satisfies the requirement. Courses are offered at regular intervals. For enrollment and course information contact CTTC at the following:

Mhd. Haris e-mail: mharis@afghanreconstruction.org
 Telephone: 0700 08 0602

Pervaiz e-mail: adpzmuj@yahoo.com
 Telephone: 0700 61 3133

2. BASE BID ITEMS:

2.1 SITE SURVEY AND MASTER PLANNING

The approximate Site area is indicated in Appendix A. Survey shall indicate all existing trees. These trees will be incorporated into the Site Design to the extent possible. Any trees to be cut down will be justified and approved during the Design Charette. Master Plan shall indicate layout similar to plan attached, see attached map for grid coordinates in Appendix A. The Contractor shall perform a geotechnical investigation as defined in Section 01015; perform a site topographic survey; prepare a Master Plan for the entire CE School Facility including Ranges. Contractor shall provide a complete Landscaping and Site Drainage Plan with existing grades, proposed grades, and building finished floor elevations. The Contractor shall not locate any facilities in wadis, dry river beds or areas subject to flooding. The development of the master plan will include participation in a Planning Charette that will be conducted at the Afghanistan Engineer District (AED), Qalaa House in Kabul. The Charette shall be completed within 30 days of contract award. A 35% Concept Design and Master Plan review shall be conducted with the Contractor at the Qalaa House 30 days after completion of the Charrette. A required site plan for this project will be designed per this RFP.

2.2 SITE GRADING

Perform complete site grading and installation of all required drainage structures per the Drainage Plan that will be prepared as part of this scope of work. Existing buildings and ruins shall to be removed under a separate contract. Contractor under this contract is required to backfill and compact any and all holes left by the removal of existing buildings. No work shall commence until a complete Site Grading Plan is reviewed and signed off.

2.3 WATER DISTRIBUTION SYSTEM

Design and construct a water distribution system that connects to existing wells (at existing ANA Commando Complex) which shall include; pumps and service booster pumps, distribution system chlorination and water storage tank(s) sized for the entire CE School Master Plan of 250 occupants with one day of storage and one day of usage; and water distribution system to serve the entire installation CE School facility with a minimum of 40 psi pressures throughout. Provide steel tanks with non toxic Epoxy coating inside and primed and painted on the outside. Provide chain link fence and gates around entire water facility on CE School Facility; see fence Section 01015 paragraph 3.10.10 Chain Link Fence.

2.4 SEWER DISTRIBUTION SYSTEM

Design and construct a sewer collection system that connects to existing system. Provide all plumbing in CE School buildings, sewer piping, manholes, cleanouts, ejector pumps, as required to connect to existing system.

2.5 POWER DISTRIBUTION SYSTEM

01010-4

4

Design and construct a power distribution system that connects to existing Prime Power Plant Generators (at existing ANA Commando Complex) and site power distribution system for the entire CE School Facility including all buildings, site lighting, bunkers, and ranges.

2.6 CE SCHOOL ROAD NETWORK and CONNECTORS

Design and construct the road network and connecting road at the main entrance of the CE School Facility Parking Lot, to the existing ANA Commando Complex and roads within the compound. Provide a road network completely around compound with access roads and minimum parking area at each building for loading/unloading and maintenance vehicles. All roads shall be graded with a stone base with minimum width of roadway of 7 meters and the road network within the compound and shall have an asphalt surface; finished surface shall be 50 mm of asphalt with 50 mm wear course. Road construction shall include the installation of all required drainage structures. Provide a 1200 mm wide concrete sidewalk connector system between all buildings and parking lot. See Ranges for additional road and parking requirements. See Appendix A, Site Plan for location.

2.7 PARKING

Provide 1,500 m² parking lot with 50 parking spaces adjacent to HQ Office Building. All parking shall be graded with a stone base and shall have an asphalt surface; finished surface shall be 50 mm of asphalt with 50 mm wear course. Parking construction shall include the installation of all required drainage structures. See Appendix A, Site Plan for location. Exact configuration of parking area to be determined during Charette.

2.8 HEADQUARTERS OFFICE BUILDING

This facility will include three (3) single person offices for the Commandant, Vice Commandant, and US/CF Administrator (Executive Officer); three (3) single person offices for the Academic SGM; Operations SGM and a Senior NCO; five (5) offices to be shared by nineteen (19) academic instructors; and one (1) office to be shared by three (3) Advisors. HQ Building will also include a conference room, adequate for twelve (12) persons, with additional space for chairs along each wall. The building will have Diesel Heat w/Evaporative Cooling. Provide 52-inch ceiling fan each room except utility rooms. All floors in building shall be terrazzo, except utility-type rooms. Provide Toilet Facilities and janitor room with a mop sink, mop rack and shelves. See Appendix A for layout. Provide 3 flag poles at main entry.

2.9 EDUCATIONAL/TRAINING FACILITY

Education/Training Facility will include seven (7) classrooms, capable of holding thirty (30) students each and up to four (4) instructors per classroom simultaneously. Classrooms must be large enough to house adequate furniture and equipment, typically associated with an education/training classroom environment. Provide Storage cabinets at the rear of each

classroom with doors and hasp, and Chalkboards at the front of each Classroom. Facility will also include a student storage/locker area, enough for two hundred (200) students. Storage/locker areas shall be wooden shelves measuring approximately 16 x 16 inches. This break area should have a concrete hard-prepared surface and a rainproof overhang. This facility should also possess adequate, secure storage space to house all facility education/training materials/equipment. Design shall be 3 meter high CMU wall insulated building. Buildings shall have offices, break room, printing room, toilets, and janitor's room. The building will have Diesel Heat w/Evaporative Cooling. Provide 52-inch ceiling fans. All floors in building shall be terrazzo, except utility-type rooms. Provide a janitor room with a mop sink, mop rack and shelves. See Appendix A for layout.

2.9 COVERED PAVILION

The Contractor shall design and construct one Pavilion Structure which shall be Pre-Engineered Metal Building with sloped interior ceiling. The structure, upper eave/soffit and roof shall be a prefabricated metal building. Structure shall have an open space with a eave height 4,000 mm A.F.F. The upper portion of roof structure shall be screened to keep birds out. The Pavilion and storage shall have lights for night time operation. Provide heavy-duty aluminum bleachers (seating for 200 total) with 300 mm wide aluminum seats with non-skid surface, set bleachers in each quadrant of pavilion (seating for 50) on concrete pad with a concrete podium in front. See Appendix A for layout. Provide heavy-duty aluminum bleachers (seating for 200) with 10" wide aluminum seats with non-skid surface. All aluminum planks shall be furnished with smooth finish end caps that install easily with self-tapping screws. Framework understructure is heavy-duty galvanized steel with front and rear cross braces to stabilize frame. Understructure is robotic welded and hot dipped galvanized. Anchor entire assembly to concrete a foundation. See Appendix A for layout.

2.11 STUDENT LIVING QUARTERS

Building with a double loaded 2000 mm wide corridor built to the following space requirements. Provide housing for: (148) E1 - E6's @ 4 m² net per soldier; room shall be designed as 4 man rooms, shared toilets. Full height non-load bearing partitions shall be provided between the 4-man rooms , as shown on the drawing. Shared toilets shall be grouped in one area on the corridor and shall be constructed with a toilet/shower/sink/absolution ratio of 20:1 for all students. The building will have Diesel Heat w/Evaporative Cooling. Provide 52-inch ceiling fans. All floors in building shall be terrazzo, except utility-type rooms. Provide a janitor room with a mop sink, mop rack and shelves. See Appendix A for layout.

2.12 CADRE LIVING QUARTERS

Design and construct a Cadre Instructors Building with a double loaded 1500 mm wide corridor built to the following space requirements. Provide rooms for: (26) instructors @ 12 m² each single occupancy, occupancy, with shared toilets. Provide housing for: (20) E-8-E-9s/04-05 @ 12 m² single occupancy,

01010-6

6

all with shared toilets; Shared toilets shall be grouped in one area on the corridor and shall be constructed with a toilet/shower/sink/absolution ratio of 10:1, provide water closet mix of 50% eastern and 50% western. The building will have Diesel Heat w/Evaporative Cooling. Provide 52-inch ceiling fans. All floors in building shall be terrazzo, except utility-type rooms. Provide a janitor room with a mop sink, mop rack and shelves. See Appendix A for layout.

2.13 RANGE NUMBER 1

Range Number 1 should include adequate bleacher type seating .8 m² each occupant with a rain cover sufficient to seat 120 students. Range Number 1 should also include a reinforced magazine storage facility, capable of storing 2000 lbs of primary high explosives with an additional magazine to store blasting caps / initiating devices and adequate personnel safety bunkers specifically designed for range safety Range Number 1 should also have adequate personnel protection, consisting of Range Number 1 perimeter safety/security fence consistent with safety/security requirements typically associated with EOD/C-IED requirements. Provide electricity and lighting at all Bunkers, Bleachers, and Parking. Provide remote controlled camera on each personnel Bunker with viewing screen inside bunker. Provide Hesco Mil 4G Barriers at Barricade Wall. See Appendix A Drawings A-7, A-8, A-9, R-1, R-2, S-1, and S-2, for Bunker layouts and Range Schematic. Final location and layout will be developed at Design Charrette. For Reinforced Magazines (Bunkers) Use Army Standards Magazine STD 33-15-74.

2.14 RANGE NUMBER 1 ROAD & PARKING

Design and construct the road network and connecting road at the main entrance of Range Number 1 the existing ANA Commando Complex roads within the compound. See Site Plan for location; road to Range Number 1 approximately 1500 meters, and these roads shall be constructed with 300mm sub base course and surfaced with 100mm well graded, crushed aggregate. Base course shall be compacted to 95% proctor density and mechanically stabilized by compaction. Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. Provide Range Parking area 1500 m² for 50 vehicles, surfaced with crushed stone. Crushed stone shall also be provided around buildings and pathways. Contractor shall notify the Contracting Officer immediately if initial site survey determines that area hydrology requires major drainage structures or bridges. Also, the Contracting Officer shall be immediately notified if the required lengths of road or preexisting conditions are determined to be substantially or materially different than the above-described conditions/estimates. See Appendix A and Site Plan for layout.

2.15 RANGE NUMBER 2

Range Number 2 should include adequate bleacher type seating .8 m² each occupant with a rain cover sufficient to seat 120 students receiving CE Instruction. Range Number 2 should also include a magazine storage facility, capable of storing munitions and adequate safety bunkers specifically designed for range safety. Range Number 2 should also include adequate

safety bunkers for personnel specifically designed for range safety. . Range Number 2 Perimeter should also have a safety/security fence consistent with safety/security requirements typically associated with EOD/C-IED requirements. Provide electricity and lighting at all Bunkers, Bleachers, and Parking. Provide remote controlled camera on each personnel Bunker with viewing screen inside bunker. Location of parking area to be determined during Charette. See Appendix A Drawings A-7, A-8, A-9, R-1, R-2, S-1, and S-2, for Bunker layouts and Range Schematic. Final location and layout will be developed at Design Charrette. For Reinforced Magazines (Bunkers) Use Army Standards Magazine STD 33-15-74.

2.16 RANGE NUMBER 2 ROAD & PARKING

Design and construct the road network and connecting road at the main entrance of Range Number 1 the existing ANA Commando Complex roads within the compound. See Site Plan for location; road to Range Number 1 approximately 1500 meters in length, and these roads shall be constructed with 300mm sub base course and surfaced with 100mm well graded, crushed aggregate. Base course shall be compacted to 95% proctor density and mechanically stabilized by compaction. Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. Provide Range Parking area 1500 m² for 50 vehicles, surfaced with crushed stone. Crushed stone shall also be provided around buildings and pathways. Contractor shall notify the Contracting Officer immediately if initial site survey determines that area hydrology requires major drainage structures or bridges. Also, the Contracting Officer shall be immediately notified if the required lengths of road or preexisting conditions are determined to be substantially or materially different than the above-described conditions/estimates. Location parking area to be determined during Charette. See Appendix A and Site Plan for layout.

2.17 SOLID WASTE STORAGE

The Contractor shall design and construct Solid collection point suitable for solid waste disposal temporary storage area as required in RFP. See Appendix A for guide layout.

3. DESIGN GUIDE INFORMATION:

These design notes are intended as a part of the preparation of design documents for new facilities and supplement the design of those facilities that have been previously constructed at other garrisons in Afghanistan.

3.1 UNIQUE SITE REQUIREMENTS:

3.1.2 All buildings with water supply shall have a water meter and shut off valve installed in a locked cabinet or closet area inside the building.

3.1.3 All buildings shall have a sloped metal roof, with metal eaves, and soffits. See Section 01015 for roof specifications and warranty.

3.2 The following notes shall be incorporated into the Master Plan for all Buildings:

- a. Buildings shall be spaced far enough apart to minimize noise (minimum 15 meters between barracks). The spacing shall also be suitable for snow removal at entrances, where applicable, and allow for green space (trees and scrubs) for all sites.
- b. Heating and cooling for all habitable buildings, shall be by forced-air diesel-fired furnaces; and cooling by an integral evaporative-cooler. At least one Heat-Cool Unit for each separate structure, with multi-Units for larger buildings. Units shall be at least 80% efficient on heating cycle; and hot/cold air distributed by ducts, with a maximum air velocity of 10 m/s (2,000 fpm). Each Heat-Cool Unit shall be in the heating output range of 75 to 100 tkW (250 MBH to 340 MBH); and shall have an integral "day" diesel tank for 2 days of continuous firing
- c. All habitable buildings shall be thermally insulated to $R = 3.5 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 20) for walls; and $R = 5.5 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 30) for roofs. See building description for additional building requiring insulation.
- d. All Barracks and building lighting shall be designed and constructed to provide a uniform level of minimum lighting in accordance with Section 01015 throughout the buildings. Fluorescent lighting shall be installed throughout barracks buildings.
- e. The central toilet/shower facilities shall be installed in each barracks sized to accommodate occupant load of barracks See (.f) below for ratio and attached sketch as guide only, sizes will vary) with a central changing area, open lockers, private bathing/showers, ablution, and toilets. The central toilet/shower facilities shall be designed with toilets facing North/South away from Mecca, for cultural reasons. Do not provide urinals for cultural reasons. Provide one central toilet/shower facility at the center of barracks. With towel bars, hooks and industrial standard stainless steel benches.
- f. Provide the following Toilet/Shower/Sink Ratios for the facilities unless otherwise noted (U.O.N).

Sink ratio	1:20
Shower Ratio	1:20
Toilet Ratio	1:20
Ablution Area	1:20
- g. All toilets shall be eastern style with a wall-mounted faucet and spray hose.
- h. Ablution areas shall contain hot and cold water spigots with a flexible 1.5m spray hose mounted below the control valves with a back flow prevented fitting at the hose bib and hanger. Ablution areas shall be provided with low flow water devices.

i. All sinks for the Garrison central toilet/shower facilities 1.8m wide trough-type constructed poured in place concrete or filled concrete block with ceramic tile exterior and stainless steel lining capable of withstanding abuse. Maximum width is 1.8m. Individual troughs shall serve only three (3) individuals with 3 spigots with hot and cold water and two drains.

j. Reversible 3-speed motor ceiling fans (minimum 52-inch blades) shall be furnished and installed offices, barracks areas, one- and two-man bedrooms, apartments, dining rooms, supply and storage areas, and classrooms.

k. Clothes lines, 1 each, shall be installed behind each barracks approximately 5 meters in length with 4 lines across, spaced 41 cm apart and of sufficient strength to prevent sagging when all of the lines are loaded. Use metal "T" post with non-rust type clothes lines.

l. Showers shall contain a valve for hot and cold water mixing. There shall be a showerhead mounted high on the wall and an additional spigot with a flexible 1.5 m spray hose mounted below the control valves with a hanger. The showerhead and the spigot shall each have a valve so that flow can be diverted to each. Showers shall be provided with low flow water devices.

m. Provide at all Buildings : Walk-off grates shall be provided at all exterior doors with removable galvanized steel grates and dirt wells, size full door width by one (1) meter long. Provide a 150 mm wide steel boot scraper fixed in concrete to the side of each door for boot cleaning.

n. Install carbon monoxide (CO) monitors in large occupancy areas, sleeping areas and enclosed facilities. If all the windows and doors are closed and there is no provision for intake air, if there is a possibility of carbon monoxide built up in the rooms. These CO monitors/alarms shall be hard-wired for reliability and to prevent pilferage.

o. All toilet rooms shall be designed with toilet fixtures facing North/South away from Mecca, for cultural reasons. Do not provide urinals for cultural reasons.

p. Do not install hot or cold water piping in exterior walls. All rooms/buildings with piping or plumbing shall be heated to prevent pipes from freezing.

3.3 SITE

a. Install crushed #2 stone around all buildings 1,200 mm wide from building edge. Layout a system of paths between building and install 1,200 wide crushed stone paths to reduce erosion and provide dust control.

b. Barracks shall be located no closer than 15 meters to each other.

c. Install three 10 meter tapered rust resistant metal flagpoles with bases constructed or 600 mm reinforced concrete; imbed 2000 mm, with stainless steel pulleys top and bottom w/10 mm nylon line and 100 mm ball on top. Provide base hinge to tilt pole for maintenance.

d. Slope ground at building edges 5% away from building for 3000 mm.

3.3 Installation Communication Systems

Provide a CE School Facility wide communications system with all communications conduits and wiring terminating at the Communications Building at Commando Command. This facility will serve as the installation's center for telecommunications, switching, and automation networking (including internet service). Coordinate with Contractor for complete installation. See 01015, Section 10.

3.4 Foundations

All buildings and structures shall have reinforced concrete slab with reinforced concrete foundation below the frost line or 800 mm minimum.

PART 4 - PRODUCTS

4.1 DRAWINGS AND OTHER DATA TO BECOME PROPERTY OF THE GOVERNMENT

All designs, drawings, specifications, notes, and other works developed in the performance of this contract shall become the sole property of the Government and may be used on any other design without additional compensation to the Contractor. The Government shall be considered the "person for whom the work was prepared" for the purpose of authorship in a copyrightable work under 17 U.S.C. 201(b). With respect thereto, the Contractor agrees not to assert or authorize others to assert any rights or to establish any claim under the design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish all retained works on the request of the Contracting Officer. Unless otherwise provided in the contract, the Contractor shall have the right to retain copies of all works beyond such period.

PART 5 - EXECUTION

5.1 SCHEDULE

Review Section 00150 for Schedule requirements. The development of the master plan and conceptual plans will include participation in a 2 to 5-day Planning Charette meeting at the 10% to 15% design effort in Kabul to finalize design. The Charette shall consist of the Customer, the Contractor, the Design Team and U.S. Army Corps of Engineers personnel to finalize design. Completion of construction documents for 100%. After approval of a preliminary facility layout and landscape plan, the Contractor may commence Site Work. Any Options to be awarded shall be awarded no later than 180 calendar days after the Notice to Proceed (NTP). Contractor will prosecute the work diligently, and complete all options 180 days after option is awarded and ready for use. See Table 1.1 for completion dates for individual buildings and groups of buildings. The time stated for completion shall include final cleanup of the premises. The Contractor shall survey the site and verify the existing

conditions and report to the Contracting Officer any interface problems that could potentially impact this work. The Contractor shall be responsible for submittals and developing and performing all operational and acceptance testing. Contractor shall construct the facilities as a Design-Build construction contract and shall be in accordance with all codes, regulations, and requirements outlined in this Request for Proposal (RFP).

--End of Section --

SECTION 01015
TECHNICAL REQUIREMENTS

1. GENERAL

1.1 The Contractor's design and construction must comply with technical requirements contained herein. The Contractor shall provide design and construction using the best combination of cost, construction efficiency, system durability, ease of maintenance and environmental compatibility. The Contractor is responsible for master planning and site design; site development, construction, including UXO/Mine Removal (as required), debris removal, grading and storm water management; connect to water well, water line, connect to sanitary sewer, and connect to storm sewer construction; road construction; connect to electric system; security systems, communications systems connections and all facilities as described in this Request for Proposal (RFP).

1.2 These design and product requirements are minimum standards. The Contractor is encouraged to propose alternate design or products (equipment and material) that are more commonly used in the region; equipment and materials will be equally or more cost effective or allow for more timely completion, but furnish the same system durability, ease of maintenance and environmental compatibility. The Contractor will be required to submit information as requested by the Contracting Officer to make a comparison of the proposed alternate. All variations must be approved by the Contracting Officer. Life expectation for this facility is for twenty-five (25) years minimum. Material and methods used for this project must meet this design requirement. All requirements set forth in the RFP, but not included in the Scope of Work (SOW) shall be considered as set forth in both, and vice versa. Contractor shall provide all hardware, fixtures, etc. to make this a complete usable facility. Any time two or more statements in the RFP, building codes, or standards are in conflict, the most stringent shall apply.

This project consists of new construction of the infrastructure and buildings for an ANA CE School and Ranges as defined in Section 01010 SCOPE OF WORK and shall be executed in accordance with the following requirements.

1.3 ASBESTOS CONTAINING MATERIALS

Asbestos containing material (ACM) shall not be used in the design and construction of this project. If no other material is available which will perform the required function or where the use of other materials would be cost prohibitive, a waiver for the use of asbestos-containing materials must be obtained from the Contracting Officer.

1.4 SAFETY

1.4.1 UXO/MINE DISCOVERY DURING PROJECT CONSTRUCTION

It is the responsibility of the Contractor to be aware of the risk of encountering UXO and to take all actions necessary to assure a safe work area to perform the requirements of this contract. If, after the entire site has been cleared of UXO/mines per the International Mine Action Standards (IMAS)

and clearance is done to the anticipated foundation depth, the Contractor becomes aware of or encounters UXO or potential UXO during construction, the Contractor shall immediately stop work at the site of the encounter, move to a safe location, notify the COR, and mitigate any delays to scheduled or unscheduled contract work. The Contractor shall remove and dispose of UXOs per the International Mine Action Standards (IMAS). These standards can be found at <http://www.mineactionstandards.org>. The Contractor assumes the risk of any and all personal injury, property damage or other liability, arising out of and resulting from any Contractor action hereunder. In these cases, the Contractor shall be required to identify and dispose of the ordnance.

NOTE: For previous Demining information, the following points of contact for the UN Mine Action Center for Afghanistan are provided:

Reiko Kurihara, project manager, email reiko@unmaca.org
Cell phone: +93 070 284 686
Kerei Ruru, chief Operations Officer, Kereiruru@gmail.com
Cell phone: +93 (0) 79 330 992

1.4.2 ACTIVITY HAZARD ANALYSIS (AHA)

a. Activity Hazard Analysis shall be prepared in accordance with the Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1.

b. Hazard analyses will be prepared and briefed by personnel that are knowledgeable in UXO and explosives safety standards and requirements. These personnel should understand the specific operational requirements and hazard analysis methodologies. A hazard analysis will be performed for each activity to determine the significance of any potential explosive-related hazards. Explosive residues may be discovered or exposed during UXO operations in the form of powder or various granular and powder based pellets. These contaminants can enter the body through the skin or by ingestion if proper personal hygiene practices are not followed. Explosive fillers such as white phosphorus are dangerously reactive in air and acute exposure can result in serious injury to the skin, eyes, and mucous membranes. They are also a fire hazard.

Safety requirements (or alternatives) that will either eliminate the identified hazards, mitigate or control them to reduce the associated risks to an acceptable level will be developed. The adequacy of the operational and support procedures that will be implemented to eliminate, control, or abate identified hazards or risks will then be evaluated and a second risk assessment completed to verify that a satisfactory safety level has been achieved.

1.5 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor

01015-2

shall make no part of the time lost due to such stop orders the subject of claim for extension of time or for excess costs or damages.

1.6 WARRANTY

The Contractor shall repair and/or replace all defective materials or workmanship, except for roofs, at his own cost for a warranty period of one (1) year commencing upon the date of final acceptance of the entire project. See roof construction under Section 01015 3.9 Roof Construction for warranty.

1.7 TEMPORARY STRUCTURES

The Contractor shall erect suitable temporary fences, lighting, and necessary structures to safeguard the site, materials and plant against damage or theft and for the protection of the general public and shall adequately maintain the same throughout the course of the contract.

1.8 MAN-HOUR EXPOSURE REPORTING REQUIREMENTS

Prime Contractors are required to maintain records for both prime and subcontractor employees to include exposure work hours, a log of occupational injuries and illness and local/international economic data. The Prime Contractor shall submit the information on CEAED Form 385-1-1 to the COR by the 25th of each month. The COR shall submit the information to the Chief, Safety, and the AED Economist by the end of the month. The COR shall assure that the form is properly filled out and that the complete contract number or task order number are clearly indicated. Section III of the form is the Economic Analysis Report and it must contain data itemized by location if the contract has more than one work location. It is extremely important that the economic data be broken out by work location. The Contractor may develop their own spreadsheet for a contract with multiple work sites provided the spreadsheet includes the basic information detailed on the Economic Data Report. Accident exposure data does not need to be itemized by location and should be submitted as a total for the entire contract.

2. CIVIL

2.1 GENERAL OVERVIEW OF EXISTING AND PLANNED INFRASTRUCTURE

Assume survey mapping and topographical maps are not obtainable. If existing and will be used, the accuracy shall be verified. There are two existing wells adjacent to site which will provide water for 250 occupants. There is no water piping, pumping or distribution on site; no sanitary sewer collection system, lift stations or sewage treatment facility. Assume solid waste management and/or collection facilities are non-existent on site. For the project site, it is anticipated that the sole source of water will be the existing Ground Water Wells (GWW) to be located on the adjacent site. The estimated water demand is 41 gallons per day per soldier, with the estimated total strength of 250 occupants. Hence a new pumping and distribution infrastructure will include to convey water from two wells from adjacent site: A) Well pump(s), valves, flow meters, flow control devices, air and vacuum, B) Water transmission main to the proposed water distribution network planned to serve the CE School and support activities, C) Water Storage Tank

01015-3

(minimum 1 day's storage and one days use), and D) Service booster pumps plus jockey (if necessary based on engineering site investigation An entirely new sanitary sewer collection system shall be constructed to include: 1) Sewage Lift Station (if necessary based on engineering site investigation), 2) Complete sewage collection system, gravity sewer in service areas and force main as needed to move CO sewage to processing plant on adjacent site,3) Building service connections.

Design and construct the road network connecting the main road to the main entrance of the compound. All roads shall be graded and constructed with 300mm subbase course and surfaced with 100mm well graded, crushed aggregate. The minimum roadway width shall be 7 meters. The road network for CE School Facility shall be asphalt surfaced, with 100 mm of asphalt. Road construction shall include the installation of all required drainage structures. See Appendix A.

2.1.1 ROADS PARKING AND WALKWAYS

Approximately one (1) kilometer of asphalt roads is required within the compound area field verify exact amount. Approximately two (2) kilometers of gravel roads is required from the existing roads to ranges, provide roads to the Ranges these roads shall be constructed with 300mm sub base course and surfaced with 100mm well graded, crushed aggregate. Base course shall be compacted to 95% proctor density and mechanically stabilized by compaction. Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. Provide Base Parking per Section 01010, paragraph 4.5, surfaced with crushed stone per Section 01010 paragraph 4.3. Crushed stone shall also be provided around buildings and pathways at range areas. All pre-existing conditions are developed and undeveloped land with moderate slopes, without substantial vegetation and with natural drainage channels of moderate size and spacing that are dry most of the time. All roads shall be of wearing surface 7 meters wide, graded for proper drainage, provided with necessary drainage structures, drainage ditches and completed with prescribed surfaces in accordance with applicable sections of TM 5-822-2 and TM 5-822-5 standards. The compound road sections shall have compacted crushed aggregate base course with an asphalt topping and shall be provided with necessary drainage structures and completed with prescribed surfaces in accordance with applicable sections of TM 5-822-2 and TM 5-822-5 standards. Crushed stone shall also be provided around buildings and pathways at range areas. All walkways shall be 1200 mm wide concrete between buildings at CE School site. Contractor shall notify the Contracting Officer immediately if initial site survey determines that area hydrology requires major drainage structures or bridges. Also, the Contracting Officer shall be immediately notified if the required lengths of road or pre-existing conditions are determined to be substantially or materially different than the above-described conditions/estimates.

2.1.2 SITE GRADING PLAN

The Contractor shall design a site grading plan that provides positive drainage and minimizes the requirements for major structures in a cost effective manner. Also, the Contracting Officer shall be immediately notified if the required lengths of road or pre-existing conditions are determined to be substantially or materially different than the above-described

01015-4

conditions/estimates.

2.2 SURVEY AND MAPPING

General Work to be performed - Conduct topographic survey and mapping of the project site to include any existing and/or associated utilities, wet/dry creek beds, hydrological, geological, botanical or other physical conditions that could impact on design. Topographic survey data shall include horizontal and vertical (H&V) controls.

2.2.1 Survey Requirements

2.2.1.1 Horizontal and Vertical Control

The mapping shall be based on the base coordinate system. If the base system cannot be found, the surveyor shall use any established monuments. If monuments have been destroyed or do not exist, an assumed horizontal and vertical datum shall be established, using arbitrary coordinates of 10,000n and 10,000e and an elevation of 1,000 meters. The horizontal and vertical control established on site shall be a closed loop with third order accuracy and procedures.

2.2.1.2 Provide three (3) concrete survey monuments at the survey site.

2.2.1.3 All of the control points established at the site shall be plotted at the appropriate coordinate points and shall be identified by name or number, and adjusted elevations.

2.2.1.4 The location of the project site, as determined by the surveyor shall be submitted in writing to the Contracting Officer. The site location shall be identified by temporary markers, approved by the Contracting Officer before proceeding with the surveying work.

2.2.2 Topography Requirements

2.2.2.1 A sufficient quantity of horizontal and vertical control shall be established to provide a detailed topographic survey at 1:500 scale with (25) centimeter contour intervals. Intermediate elevations shall be provided as necessary to show breaks in grade and changes in terrain.

2.2.2.2 The contours shall accurately express the relief detail and topographic shapes. In addition, 90 percent of the elevations or profiles interpolated from the contours shall be correct to within one-half of the contour interval and spot elevations shall be correct within plus or minus 2 centimeters.

2.2.2.3 Spot elevations affecting design of facilities shall be provided. Specifically, break points or control points in grades of terrain such as tops of hills, bottoms of ditches and gullies, high bank elevations, and so forth.

2.2.2.4 All surface and sub-surface structures features within the area to be surveyed shall be shown and identified on the topographic maps. In addition, these features shall be located by sufficient distance ties and labeled on

the topographic sheets to permit accurate scaling and identification.

2.2.2.5 The location and sizes of potable, sanitary, electrical and mechanical utilities within the survey site shall be shown on the survey map. Sanitary manholes and appurtenances shall show top elevations and invert elevations.

2.3 WATER

2.3.1 General

The water for CE School shall be supplied from existing wells on adjacent site. Infrastructure design and construction shall be designed for a total population of 250 personnel. The Contractor shall install water distribution mains, branches, laterals, lines and service connections to include all pipe, valves, fittings and appurtenances. Exterior water line construction shall include service to all buildings as described in RFP. Also reference the Overall Site Map attached to this document. The required Average Daily Demand (ADD) approximation is ultimately 39,000 liters (or 10,250 gallons) of potable water, derived from approximately 155 liters per capita per day (lpcd) or 41 gallons per capita per day (gpcd). In the event potable or non-potable use water is required prior to completion of the water facilities infrastructure, the Contractor may be issued a Request for Proposal to provide non-potable (tank truck) and potable (bottled or other reliable source) consumption. Provide a minimum of one (1) freeze proof outside water hydrant (hose spigot) for each building.

2.3.2 Water Quality Sampling and Analysis

The Contractor shall perform water quality sampling and testing at the source. The Contractor shall utilize well-qualified and equipped testing capability in the project site area, if available. If professional testing services are not available in the area, the Contractor will submit an alternative practical testing source for approval. Raw water quality criteria for Water Quality and Criteria Standards, and shall address the following: PH, turbidity, conductivity, oxidation reduction potential, total dissolved solids, color, odor, total coliform/fecal coliform (bacteria) an indicator of the presence of E. coli. These baseline parameters are a partial list as presented in TM5-813-3/AFM 88-10.

2.3.3 Raw Water Disinfection

Contractor shall perform disinfection of the well water in accordance with AWWA A 100 or equivalent. Bacteriological samples shall be collected and examined in accordance with Standard Methods for the Examination of Water and Wastewater by a qualified lab as approved by the Contracting Officer.

2.3.4 Service Booster Pumps - (Direct Pressure System Pending Engineering Site Investigation) Contractor shall provide a booster pump station with end suction or split case double suction horizontal split case (frame mounted) centrifugal pumps arranged in parallel for pumping water storage into the

main distribution system. The pumps and controls shall be designed to supply and maintain acceptable system pressure throughout the distribution network given the full range of flow conditions (low flow to peak). For conditions of low demand and to prevent short cycling of primary pumps, provide a low demand jockey pump with capacity of one-third (1/3) of the Average Daily Demand (ADD). Each booster pump, two (2), shall be capable of delivering 2 times (2x) the average daily demand. Provide suitable expansion tank. The suction side of the service booster pumps shall have an eccentric reducer and gate valve installed. The discharge side shall have a gate valve, check valve (between the pump and the gate valve and concentric reducer, pressure gauge and air relief valve).

2.3 WATER DISTRIBUTION SYSTEM

Design and construct a water distribution system that connects to existing wells (at existing ANA Commando Complex) which shall include; pumps and service booster pumps, distribution system chlorination and water storage tank(s) sized for the entire CE School Master Plan of 250 occupants with one day of storage and one day of usage; and water distribution system to serve the entire installation CE School facility with a minimum of 40 psi pressures throughout. Provide steel tanks with non toxic Epoxy coating inside and primed and painted on the outside. Provide chain link fence and gates around entire water facility on CE School Facility; see fence Section 01015 paragraph 3.10.10 Chain Link Fence.

and service connections to include all pipe, valves, fittings and appurtenances. Exterior water line construction shall include service to all buildings as described in RFP. Also reference the Overall Site Map attached to this document. The required Average Daily Demand (ADD) approximation is ultimately 39,000 liters (or 10,250 gallons) of potable water, derived from approximately 155 liters per capita per day (lpcd) or 41 gallons per capita per day (gpcd). In the event potable or non-potable use water is

2.3.6 Water Storage Tank(s)

Contractor shall provide a circular steel ground storage reservoir (GST) to be located at ground level and supported on a concrete pad. Volume of the GST shall be a minimum storage per Master Plan of 250 occupants with one day of storage and one day of usage volume of a full day's demand of 78,000 liters (or 20,500 gallons) of potable water The Contractor shall verify storage volume requirements based on final design population. The storage facility shall be located above drainage areas and locations subject to flooding as approved by the Contracting Officer. The storage facility shall be located on the highest elevations of the site to promote gravity flow and reduce pumping requirements. Overflow and air vents shall be screened so that birds, rodents and debris cannot enter the reservoir.

2.3.7 Disinfection & Chlorination System

Use hypochlorite compounds for disinfection. A hypo-chlorinator shall be used to feed a sodium hypochlorite solution of 5-15% available chlorine into the system. Hypochlorite compound may be a liquid or solid form. The hypo chlorination system shall consist of a chemical solution tank for hypochlorite, diaphragm-type pump, power supply, water pump, pressure switch and storage tank (optional hydro-pneumatic/storage). The pump shall feed a hypochlorite solution in proportion to the water demand. The hypo-chlorinator shall have a pumping rate, liters per day (lpd) (gallons per day (gpd)) adequate to deliver 5 percent (%) available hypochlorite solution adjustable to the quantity of water being produced from the source. Dosage rate will

01015-7

vary somewhat depending on actual pump production rate and available residual chlorine in the system. Contractor shall determine the required dosage rate milligrams per liter (mg/l) to maintain the required chlorine residual (usually 0.2-0.4mg/l) in the distribution system. Chlorine solution tank shall be large enough to hold a three days' supply of hypochlorite solution. A fresh solution shall be prepared every two or three days because the solution may lose its strength over time and this will affect the actual chlorine feed rate. The hypochlorite shall be stored in a cool dry place. Sodium hypochlorite can lose from 2 to 4 percent of its available chlorine content per month at room temperature. Contractor shall verify required minimum residual chlorine in accordance with local requirements verified and approved by the Contracting Officer. The chlorination system shall have the capability for manually adjusting the dosage rate and be installed in such a manner that the system can be easily disconnected and bypassed in the event of health safety or routine maintenance and repair. Disinfection of water mains shall be in accordance with AWWA standard C651-86 and disinfection of storage facilities in accordance with AWWA standard C652-86.

2.3.8 Chlorine Building

Contractor shall furnish a CMU building size as per chlorine manufacturer's installation requirements. Provide heat as required to prevent equipment freezing. The Contractor shall provide manufacturers catalog information and shop drawings to the Contracting Officer for approval.

2.4 WATER DISTRIBUTION SYSTEM

2.4.1 General

The Contractor shall provide a water distribution system described as follows: Pipe diameters used in the network shall be 150mm and 100mm, as calculated, using ductile iron (DI) conforming to AWWA C151, installed in accordance with C 600 or polyvinyl chloride (PVC) as per ASTM D 1784 and 1785. All pipes and joints shall be capable of at least 1.03 Mpa (150 psi) and 1.38 (200psi) hydrostatic test pressure unless otherwise specified. Pipes should be adequate to carry the maximum quantity of water at acceptable velocities 0.9 to 1.5m/sec (3 to 5 ft/sec) at maximum flows not to exceed 2.8m/sec (9.2ft/sec) with working pressures of 240kPa (35psi) to 350kPa (50psi). Minimum pressure is 140kPa (20psi) to all points of the distribution system and maximum pressure of 690kPa (75psi). If high pressures (greater than 690kPa) cannot be avoided, pressure-reducing valves shall be used. Water service connections to buildings shall vary from 19mm, 25mm or 38mm to 75mm, as calculated, depending on the usage requirement. Pipe service connections from the distribution main to the building shall be either Polyvinyl Chloride (PVC) plastic Schedule 80 ASTM D 1785 or copper tubing conforming to ASTM B 88M, Type K, annealed. After choosing piping material type, use similar piping materials for all buildings for efficiency of future maintenance activities. The distribution network shall be laid out in a combination grid and looped pattern with dead ends not exceeding 30m. Dead end sections shall not be less than 150mm diameter and shall either have blow off valves or fire hydrants (flushing valves) installed for periodic flushing of the line. Any pipe with a fire hydrant on the line shall be at least 150mm in diameter. Water supply distribution shall connect to a building service at a point approximately 1.5m outside the building or structure to which the service is required. Adequate cover must be provided for frost protection. A minimum

01015-8

cover of 80cm is required to protect the water distribution system against freezing. Water lines less than 1.25 meters deep under road crossings shall have a reinforced concrete cover of at least 150 mm thickness around the pipe.

2.4.2 Pipe

The Contractor shall provide pipe of adequate strength, durability and be corrosion resistant with no adverse effect on water quality. The exterior surface of the pipe must be corrosion resistant. If the pipe is installed underground, pipe shall be encased with polyethylene in accordance with AWWA C105. Water distribution pipe material shall be PVC or Ductile Iron (DI). Ductile iron pipe shall conform to AWWA C104, et al. DI fittings shall be suitable for 1.03MPa (150psi) pressure unless otherwise specified. Fittings for mechanical joint pipe shall conform to AWWA C110. Fittings for use with push-on joint pipe shall conform to AWWA C110 and C111. Fittings and specials shall be cement mortar lined (standard thickness) in accordance with C104. Polyvinyl Chloride (PVC) pipe shall conform to ASTM D 1785. Plastic pipe coupling and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. PVC screw joint shall be in accordance with ASTM D 1785, et al, Schedules 40, 80 and 120. PVC pipe couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. Pipe less than 80mm, screw joint, shall conform to dimensional requirements of ASTM D schedule 80. Elastomeric gasket-joint, shall conform to dimensional requirements of ASTM D 1785 Schedule 40. All pipe and joints shall be capable of 1.03Mpa (150psi) working pressure and 1,38Mpa (200psi) hydrostatic test pressure.

2.4.3 Hydrostatic, Leakage and Disinfection Tests

The Contracting Officer will be notified not less than 48 hours in advance of any water piping test and will be given full access for monitoring testing procedures and results. Where any section of water line is provided with concrete thrust blocking for fittings or hydrants tests shall not be made until at least 5 days after installation of the concrete thrust blocking, unless otherwise approved.

2.4.3.1 Pressure Test

After the pipe is laid, the joints completed, and the trench partially backfilled leaving the joints exposed for examination, the newly laid piping or any valved section of piping shall, unless otherwise specified, be subjected for 1 hour to a hydrostatic pressure test of 1.03 MPa (150psi).

Each valve shall be opened and closed several times during the test. Exposed pipe, joints, fittings, hydrants and valves shall be carefully examined during the partially opened trench test. Joints showing visible leakage shall be replaced or remade as necessary. Cracked or defective pipe, joints, fittings, hydrants and valves discovered following this pressure test shall be removed and replaced and retested until the test results are satisfactory.

2.4.3.2 Leakage Test

Leakage test shall be conducted after the pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least

2 hours and during the test the water line shall be subjected to not less than 1.03 MPa (150psi). Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section, necessary to maintain pressure to within 34.5kPa (5psi) of the specified leakage test pressure after the pipe has been filled with water and the air expelled. Pipe installation will not be accepted if leakage exceeds the allowable leakage, which is determined by the following formula:

$$L = 0.0001351ND (P)^{0.5}$$

L = Allowable leakage in gallons per hour

N = Number of joints in the length of pipeline tested

D = Nominal diameter of the pipe in inches

P = Average test pressure during the leakage test, in psi gauge

Metric:

$$Q \text{ (lt/s)} = 8.952 \text{ E-7} * N * D \text{ (mm)} * (p \text{ (KPa)})^{0.5}$$

Should any test of pipe disclose leakage greater than that calculated by the above formula, the defective joints shall be located and repaired until the leakage is within the specified allowance, without additional cost to the government.

2.4.3.3 Bacteriological Disinfection

2.4.3.3.1 Disinfection Procedure

Before acceptance of potable water operation, each unit of completed waterline shall be disinfected as prescribed by AWWA C651. After pressure tests have been completed, the unit to be disinfected shall be thoroughly flushed with water until all entrained dirt and mud have been removed before introducing the chlorinating material. Flushing will be performed in a manner and sequence that will prevent recontamination of pipe that has previously been disinfected. The chlorinating material shall be either liquid chlorine, calcium hypochlorite, or sodium hypochlorite. The chlorinating material shall provide a dosage of not less than 50 ppm and shall be introduced into the water lines in an approved manner. Polyvinyl Chloride (PVC) pipelines shall be chlorinated using only the above-specified chlorinating material in solution. The agent shall not be introduced into the line in a dry solid state. The treated water shall be retained in the pipe long enough to destroy all non-spore forming bacteria. Except where a shorter period is approved, the retention time shall be at least 24 hours and shall produce not less than 25 ppm of free chlorine residual throughout the line at the end of the retention period. Valves on the lines being disinfected shall be opened and closed several times during the contact period. The line shall then be flushed with clean water until the residual chlorine is reduced to less than 1.0 ppm. During the flushing period, each fire hydrant on the line shall be opened and closed several times.

2.4.3.3.2 Sampling

For each building connected to the water system, personnel from the

01015-10

Contractor's commercial laboratory shall take at least 3 water samples from different points, approved by the Contracting Officer, in proper sterilized containers and perform a bacterial examination in accordance with approved methods. The commercial laboratory shall be verified to be qualified by the appropriate authority for examination of potable water.

2.4.3.3.3 Acceptance Requirements

The disinfection shall be repeated until tests indicate the absence of pollution for at least 2 full days. The unit will not be accepted until satisfactory bacteriological results have been obtained.

2.4.3.4 Time for Making Tests

Except for joint material setting or where concrete thrust blocks necessitate a 5-day delay, pipeline jointed with rubber gaskets, mechanical or push-on joints, or couplings may be subjected to hydrostatic pressure, inspected and tested for leakage at any time after partial completion of backfill.

2.4.3.5 Concurrent Tests

The Contractor may elect to conduct the hydrostatic tests using either or both of the following procedures. Regardless of the sequence of tests employed, the results of pressure tests, leakage tests, and disinfection shall be recorded for submission and approval. Replacement, repair or retesting required shall be accomplished by the Contractor at no additional cost to the Government. a. Pressure test and leakage test may be conducted concurrently; b. Hydrostatic tests and disinfection may be conducted concurrently, using water treated for disinfection to accomplish the hydrostatic tests. If water is lost when treated for disinfection and air is admitted to the unit being tested, or if any repair procedure results in contamination of the unit, disinfection shall be re-accomplished.

2.4.4 Valves

Valves (Gate valves with box) shall be placed at all pipe network tee and cross intersections and the number of valves shall be one less than the number of lines leading into and away from the intersection. For isolation purposes, valves shall be spaced not to exceed 300m. Gate valves shall be in accordance with AWWA C 500 and/or C509. Butterfly valves (rubber seated) shall be in accordance with C504 et al. The valves and valve boxes shall be constructed to allow a normal valve key to be readily used to open or close the valve. Provide traffic-rated valve boxes. Provide concrete pad, 1 meter square, for all valve boxes.

2.4.5 Vacuum and Air Release Valves

Air release valves are required to evacuate air from the main high points in the line when it is filled with water, and to allow the discharge of air accumulated under pressure. Vacuum relief valves are needed to permit air to enter a line when it is being emptied of water or subjected to vacuum. Contractor shall submit manufacturer's data for properly sized combination air and vacuum release valves and determine their locations on the distribution system subject to review and approval of the Contracting Officer.

01015-11

2.4.6 Blow-off valves

The Contractor shall provide 40-50mm blow-off valves at ends of dead end mains. Valves should be installed at low points in the mains where the flushing water can be readily discharged to natural or manmade drainage ditches, swales or other.

2.4.7 Thrust Blocking

Contractor shall provide concrete thrust blocking at any point where the layout of the system changes the direction of the flow, increases the velocity, or decreases or stops the flow. At these points, the pipes and fittings must be anchored and kept from moving or pulling apart by the use of thrust blocks installed against undisturbed earth.

2.5 SANITARY SEWER

2.5.1 General

There are no sanitary sewer collection facilities on CE School Site. The Contractor shall obtain topographic information or other maps that show vegetation, drainage channels and other land surface features such as underground utilities and related structures that may influence the design and layout of the collection system. If maps are not available, or do not provide satisfactory information or sufficient detail of the site, field surveys shall be performed. Sanitary sewers less than 1.25 meters under road crossings shall have reinforced concrete cover at least 150 mm thick around the pipe. Sewer system shall provide service for all new buildings. Sewage shall be piped new treatment plant on adjacent Site for all options, and future buildings defined in contract.

Exterior sanitary sewer line construction shall include service to all buildings as described in the Scope of Work Section 01010. Contractor shall design sanitary sewer collection system using approved field survey data and finished floor elevations. Depending upon the topography and building location, the most practical location of sanitary sewer lines is along one side of the street. In other cases, they may be located behind buildings midway between streets. Main collection sewers will follow the most feasible route to the point of discharge. The sewer collection system shall be designed to accommodate a total occupant load of (325) persons. All sewers shall be located outside of the roadways as much as practical, and minimize the number of roadway crossings. To the extent practical, a sewer from one building shall not be constructed under another building, or remain in service where a building is subsequently constructed over it. Construction required shall include appurtenant structures and building sewers to all buildings at CE School Site.

The Contractor shall use the following criteria where possible to provide a layout which is practical, economical and meets hydraulic requirements: 1) Follow slopes of natural topography, 2) Avoid routing sewers through areas which require extensive restoration or underground demolition, 3) Avoid areas of high groundwater and placement of sewer below the groundwater table, 4)

01015-12

Locate manholes at change in direction, size or slope of gravity sewers, 5) Use straight sections between manholes, curved alignment shall not be permitted, 6) Locate manholes at intersections of streets where possible, 7) Avoid placing manholes where the tops will be submerged or subject to surface water inflow, 8) Evaluate alternative sewer routes where applicable, and 9) Verify that final routing selected is the most cost effective alternative that meets service requirements. In the event that facilities to be provided under the contract must be occupied prior to completion of permanent wastewater infrastructure, the Contractor will be responsible for providing temporary portable shower and bathroom facilities.

2.5.2 Protection of Water supplies - The Contractor shall ensure that the sewer design meets the following criteria:

2.5.2.1 Sanitary sewers will be located no closer than 15m horizontally to water wells or reservoirs to be used for potable water supply.

2.5.2.2 Sanitary sewers will be no closer than 3m horizontally to potable water lines; where the bottom of the water pipe will be at least 305mm above the top of the sanitary sewer, and horizontal spacing shall be a minimum of 1.8m.

2.5.2.3 Sanitary sewers crossing above potable water lines shall be constructed of suitable pressure pipe or fully encased in concrete for a distance of 2.7m on each side of the crossing. Pressure pipe will be as required for force mains in accordance with building codes and shall have no joint closer than 0.9m horizontally to the crossing, unless the joint is encased in concrete.

2.5.3 Quantity of Wastewater

The Contractor shall verify the average daily flow considering both resident (full occupancy) and non-resident (8 hrs per day) population. The average daily flow will represent the total waste volume generated over a 24-hour period, and shall be based on a population of 325 persons and usage rate of 155 lt (41 gallons) per capita day (water usage) equaling 51,500 liters or 13,500 gallons) per day. The wastewater flow rate shall be calculated as 80% of average daily flow or 41,000 liters or 11,000 gallons per day. Design criteria guideline shall be based on an average influent wastewater characteristics as BOD of 400mg/l, SS of 400mg/l, BOD load of 750ppd, and SS load of 750ppd.

2.5.4 Gravity Sewer

Sanitary sewers shall be designed to flow at 90 to 95 percent full. Sanitary sewer velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps) or 2.0 feet per second (fps) at the ADD flow rate and a minimum velocity of 0.8 to 1.05 mps (2.5-3.5fps) at the peak diurnal flow rate. In no case shall the velocity drop below 0.3 mps, (1.0fps) to prevent settlement of organic solids suspended in the wastewater. Pipe slopes shall be sufficient to provide the required minimum velocities and depths of cover on the pipe. Unless otherwise indicated (see Building Connections and Service Lines), gravity sewer pipe shall be installed in straight and true

runs in between manholes with constant slope and direction. Adequate cover must be provided for frost protection. A minimum cover of 80cm will be required to protect the sewer against freezing.

2.5.5 Manholes

The Contractor shall provide standard depth manholes (MH), (depth may vary) an inside dimension of 1.2 meters (4 feet). Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover. Alternate pre-cast manhole option shall taper to a 75cm (30-inch) cast iron frame that provides a minimum clear opening of 600mm (24 inches). In every case, the manholes, frames and covers shall be traffic rated, H-20 load rating. All manholes shall be provided with a concrete bench with a flow line trough, smoothly formed to guide waste flow to the outlet pipe from the inlet pipe(s). The top surface of the bench shall be above the crown of all pipes within the manhole. All surfaces of the bench shall be sloped smoothly toward the trough to guide flow, even under peak flow conditions.

2.5.5.1 Manhole Design Requirements

Manholes are required at junctions of gravity sewers and at each change in pipe direction, size or slope, except as noted hereinafter for building connections.

2.5.5.2 Spacing

The distance between manholes must not exceed 120m (400 ft) in sewers of less than 460mm (18 inches) in diameter. For sewers 460mm (18 inches) and larger, and for outfalls from wastewater treatment facilities, a spacing of up to 180m (600 ft) is allowed provided the velocity is sufficient to prevent the sedimentation of solids.

2.5.5.3 Pipe connections

The crown of the outlet pipe from a manhole shall be on line with or below the crown of the inlet pipe.

2.5.6 Pipe

Pipe shall conform to the respective specifications and other requirements as follows: Provide Polyvinyl Vinyl Chloride (PVC) conforming to ASTM D 3034, Type PSM with a maximum SDR of 35, size 380mm (15inch) or less in diameter. PVC shall be certified as meeting the requirements of ASTM D 1784, cell Class 12454 B.

2.5.6.1 Fittings

Fittings shall be compatible with pipe supplied and shall have a strength not less than that of the pipe. Fittings shall conform to the respective specifications and requirements as follows: provide PVC fittings conforming to ASTM D 3034 for type PSM pipe.

2.5.6.2 Joints

Joints installation requirements shall comply with the manufacturers installation instructions. Flexible plastic pipe (PVC or high density polyethylene pipe) gasketed joints shall conform to ASTM D3212.

2.5.6.3 Branch Connections

Branch connections shall be made by use of regular fittings or solvent-cemented saddles as approved. Saddles for PVC pipe shall conform to Table 4 of ASTM D 3034.

2.5.6.4 Frames and Covers

Frames and covers shall be cast iron, or ductile iron, traffic rated in any case to an H-20 load rating. Cast iron frames and covers shall be traffic rated, circular with vent holes.

2.5.6.5 Steps for Manholes

Steps shall be cast iron, polyethylene coated, at least 15 mm (5/8 inch) thick, not less than 400mm (16 inches in width, spaced 300mm (12 inches)) on center.

2.5.6.6 The minimum depth of cover over the pipe crown shall be shall 0.8m.

2.5.7 Building Connections and Service Lines

Building connections and service lines will be planned to eliminate as many bends as practical and provide convenience in rodding. Bends greater than 45 degrees made with one fitting should be avoided; combinations of elbows such as 45-45 or 30-60 degrees should be used with a cleanout provided. Connections to other sewers will be made directly to the pipe with standard fittings rather than through manholes. However, a manhole must be used if the connection is more than 31m from the building cleanout. Cleanouts shall be provided outside of the building. Service connection lines will be a minimum of 100mm diameter and laid at a minimum 1% grade, but up to 2% as design parameters dictate. Service laterals shall be 150mm and sloped to maintain the minimum velocity as described in paragraph "Gravity Sewer."

2.5.8 Cleanouts

Cleanouts must be installed on all sewer-building connections to provide a means for inserting cleaning rods into the underground pipe. Install manufactured wye fittings. In lieu of a wye fitting, an inspection chamber may be installed. The inspection chamber shall be of the same construction as a manhole. Preferably the cleanout will be of the same diameter as the building sewer, and never be smaller than 100mm.

2.5.9 Field Quality Control

2.5.9.1 Field Tests and Inspections

2.5.9.1.1 The Contracting Officer will conduct field inspections and witness

01015-15

field tests specified in this section. The Contractor shall perform field tests and provide labor, equipment and incidentals required for testing.

2.5.9.1.2 Check each straight run of pipeline for gross deficiencies by holding a light in a manhole; it shall show practically a full circle of light through the pipeline when viewed from the adjoining end of the line. When pressure piping is used in a non-pressure line for non-pressure use, test this piping as specified for non-pressure pipe.

2.5.9.1.3 Test lines for leakage by either infiltration tests or exfiltration tests. Prior to testing for leakage, backfill trench up to at least lower half of the pipe. When necessary to prevent pipeline movement during testing, place additional backfill around pipe to prevent movement during testing, but leaving joints uncovered to permit inspection. When leakage or pressure drop exceeds the allowable amount specified, make satisfactory correction and retest pipeline section in the same manner. Correct visible leaks regardless of leakage test results.

2.5.9.1.3.1 Infiltration tests and ex-filtration tests: Perform these tests for sewer lines made of specified material, not only concrete, in accordance with ASTM C 969M, ASTM C 969. Make calculations in accordance with the Appendix to ASTM C 969M, ASTM 969.

2.5.9.1.3.2 Low-pressure air tests: Perform tests as follows: 1) Concrete pipe: Test in accordance with ASTM C 924M, ASTM C 924. Allowable pressure drop shall be given in ASTM C 924M ASTM C 924. Make calculations in accordance with the Appendix to ASTM C 924M, ASTM C 924; 2) Ductile-iron pipe: Test in accordance with the applicable requirements of ASTM C 924M, ASTM C 924. Allowable pressure drop shall be as given in ASTM C 924M, ASTM C 924. Make calculations in accordance with the Appendix to ASTM C 924M, ASTM C 924; 3) PVC Plastic pipe: Test in accordance with applicable requirements of UBPPA UNI-B-6. Allowable pressure drop shall be as given in UBPPA UNI-B-6. Make calculations in accordance with the Appendix to UBPPA UNI-B-6.

2.5.9.2 Deflection Testing

Deflection testing will not be required; however, field quality control shall ensure that all piping is installed in accordance with deflection requirements established by the manufacturer.

2.6 SOLID WASTE MANAGEMENT AND DISPOSAL

Provide and install collection points for solid waste until it is picked up and removed to the landfill/burn site.

2.6.1 At School Headquarters, Classrooms, and barracks construct three (3) collection points 1 for Headquarters, 1 for Classroom area, and 1 for Barracks area, suitable for solid waste temporary storage areas with a 2 meter high wall and metal roof, enclosure shall have two metal gates in a 2 meter opening. Storage area shall be 4 meters X 5 meters with reinforced concrete slab and reinforced CMU or stone walls and metal roof on metal trusses. Eve shall match typical buildings. The Contractor shall prepare design plans showing location of collection points. Indicate locations on

01015-16

site plan. Provide each collection next to hard surface road and 25 meters from inhabited buildings.

2.6.2 At Range 1 and Range 2 construct one (1) collection point at each range suitable for solid waste disposal temporary storage areas with a 2 meter high wall and metal roof on metal trusses. Eave shall match typical building profiles. Enclosure shall have two metal gates in a 2 meter opening. Storage area shall be 4 meters X 5 meters with reinforced concrete slab and reinforced CMU w/plaster or stone walls. The Contractor shall prepare design plans showing location of collection.

3. ARCHITECTURAL

3.1 GENERAL

3.1.1 The Scope of Work is stated in Section 01010. All materials approved shall become standardized material to be used throughout the facilities under contract. Different sub-contractors shall not use different materials or standards under the contract.

3.1.2 Intent of the project is to meet the requirements per the RFP, Codes and Standards, and if possible use locally procured materials and labor to the maximum extent possible.

3.1.3 The site is located on developed land where many old unreinforced masonry buildings were removed. Reference the site map for the project location.

3.1.4 The Contractor shall survey and produce detailed documentation of the site utilities, buildings, and systems for the entire compound. Contractor shall perform detailed site measurement as needed to verify available printed and electronic documentation. Drawings shall clearly distinguish existing conditions for work performed under this contract. Documentation work shall be performed on computer assisted design and drafting (CADD). New documentation shall be performed on AutoCAD version 2006, conforming to A/E/C Tri Services standards. Units shall be metric. Language for all documents shall be in American English.

3.2 DESIGN PRODUCTS

3.2.1 General

The following are contract deliverables which expound upon and finalize the Design parameters/requirements outlined within the contract documents. They shall be prepared in such a fashion that the Prime Contractor is responsible to the Government and not as an internal document between the Prime Contractor and its Subcontractors, Vendors, Suppliers, etc.

3.2.2 Design Analysis

The design analysis should be written in the English Language for review by the Government for all buildings and to have indexes, table of contents and each page numbered. Each building shall be listed as indicated in Section 01010. The design analysis is a written explanation of the project design which is expanded and revised (updated) as the design progresses. The design

01015-17

analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the final drawings and specifications. The design analysis contains the criteria for and the history of the project design, including criteria furnished by the Government, letters, codes, references, conference minutes, and pertinent research. Design calculations, computerized and manual, are included in the design analysis. Narrative descriptions of design solutions are also included. Written material may be illustrated by diagrams and sketches to convey design concepts. Catalog cuts and manufacturer's data for all equipment items required, shall be submitted. Copies of all previous design phase review comments and the actions assigned to them shall be included with each submission of the design analysis. Specific requirements for the design analysis, listed by submittal phase, are contained hereinafter. Provide Code Analysis for each building based on the following items and code sections.

3.2.3 Code Analysis

The following analysis information is required for all buildings submitted in this proposal. List: Seismic Design Category, Wind Speed, and Snow Load.

Analysis Items	Code
References - International Building Code (IBC) 2003	
1. Type of Construction	IBC Chapter 6
2. Occupancy Classification Table 302.3.2	IBC Chapter 3 and
3. Actual Allowable Area Table 503	IBC 503, 505-508 &
4. Actual Allowable Height	IBC 504 & Table 503
5. Occupant Load (per use) 1004.1.2	IBC 1004 & Table
6. Exits Required/Provided 1004.1.2	IBC 1004 & Table
	IBC 1014, 1018, and 1018.2
7. Required Opening Protection	IBC Table 602
8. Fire Resistive Construction	IBC Table 601

3.2.4 Design Calculations

When design calculations are voluminous, they shall be bound separately from the narrative part of the design analysis. The design calculations shall be presented in a clean and legible form incorporating a title page and index for each volume. A table of contents, which shall be an index of the indices, shall be furnished when there is more than one volume. The source of loading conditions, supplementary sketches, graphs, formulae, and references shall be

identified. Assumptions and conclusions shall be explained. Calculation sheets shall carry the names or initials of the computer and the checker and the dates of calculations and checking. No portion of the calculations shall be computed and checked by the same person. Either the designer or the checker shall be a licensed engineer.

3.2.5 Specifications

Specifications shall be prepared in accordance with the Construction Specifications Institute (CSI) format. The Design-Build Contractor prepared specifications shall include as a minimum, all applicable specifications sections referenced by the CSI. Where the CSI does not reference a specification section for specific work to be performed by this contract, the Design-Build Contractor shall be responsible for creating the required specification. All materials specified shall use CSI Standards and shall be listed in Section 1.1 References of each Specification Section. It shall be the Contractor's responsibility to show that equivalency requirements are met if the Standard is not per (CSI) format. Designer shall not edit out any references, standards, etc. relating to any materials or items used in the project.

Ambiguities, indefinite specification requirements (e.g., highest quality, workmanlike manner, as necessary, where appropriate, as directed etc.) and language open to interpretation is unacceptable.

3.2.6 Insulation: In all habitable buildings and where heating or cooling is required, provide the minimum insulation values as follows:

Walls R Value of $R = 3.5 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 20)

Roof R Value of $R = 5.5 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 30)

3.2.7 Colors

Designer of record shall provide one Color Board comprised of all finishes to be used on project and submit at 65% for approval. Upon approval two Color Boards shall be submitted for record. Color Boards shall be kept at job site for approval of materials used at jobsite. NOTE: Contractor shall coordinate the materials, colors and design to match adjacent Commando Compound.

3.3 DEMOLITION

3.3.1 Limited site clearing is required; the site is located on developed land where many old unreinforced masonry buildings were removed by previous contract. The majority of demolition work will be removing any hidden structures uncovered during excavating for new foundations. Reference the site map for the project location.

3.3.2 As all buildings to be constructed under this Contract are new, there is no interior demolition required.

3.4 EXCAVATION and BACKFILL

01015-19

3.4.1 Extensive Backfilling and compaction will be required in areas where previous buildings were removed under different contract. Care shall be taken when backfilling

In areas of existing trees.

3.4.2 Trench excavation shall be made for concrete footings. Trenches shall be a minimum of .8 meter deep or below the frost depth, whichever is greater. Trenches deeper than 1.5 meters shall have protective shoring to protect workers or have the sides of the trench laid back at a slope of 1.5:1.

3.4.3 Care shall be taken when backfilling of foundation trenches to avoid damage to walls.

3.4.4 Any excess dirt shall become the property of the Contractor and shall be removed from the site to a location approved by the Contracting Officer.

3.4.5 Care shall be taken when backfilling of foundation trenches to avoid damage to walls.

3.5 CONCRETE

3.5.1 Place 150 mm (6") of crushed stone capillary water barrier below areas to receive a concrete slab on properly compacted soil free of organic material.

3.5.2 A plastic 6 mil vapor barrier shall be placed over the capillary water barrier prior to placing of concrete slabs.

3.5.3 Concrete flooring in wet areas shall slope to the floor drain and not allow for water to puddle. Concrete slabs in all areas shall not be placed prior to inspection and approval of piping and sub-surface by the Contracting Officer.

3.5.4 Foundation trenches shall be level and free of loose material. Trenches shall be inspected and approved by the Contracting Officer prior to placing of any concrete foundations.

3.5.5 See paragraph 4 for structural characteristics of concrete and reinforcing steel for foundations and slabs.

3.6 MASONRY

3.6.1 Storage of masonry materials shall be in a dry place or materials shall be covered with a plastic protective layer. Cover open walls each day to keep them protected and dry.

3.6.2 Concrete masonry units (CMU) shall be 20cm x 40cm x 20cm high or 10cm x 40cm x 20cm high plastered on each side. They shall be installed in running bond level and plumb. Mortar joints shall be 9mm on all sides between CMU. Install only quality units. All materials of structural (bearing) masonry wall assemblies shall be rated at a minimum of 141 kg/cm² (2,000 psi) compressive strength. The surface shall be free of chips, cracks, or other imperfections that would detract from the overall appearance of the finished

01015-20

wall. Defective CMU or mortar shall be rejected. All building materials shall meet seismic building code and mortar mix shall be in accordance with paragraph 4, Structural. For force protection, all masonry shall be grouted, and reinforced to resist the design loads. All CMU walls shall be plastered interior/exterior and painted.

3.6.3 3-D Panel System: Contractor may substitute 3-D Panel System for reinforced CMU; this applies to all barracks type buildings, Communication building, DPW shop building, Detention Facility, Embedded Training Team Compound, Interpreter Facilities, and Fire Station. All 3-D buildings shall have a metal roof meeting the requirements of RFP. All 3-D walls & ceilings shall be plastered interior/exterior and painted.

3.7 METAL

3.7.1 Steel roof joists shall be placed according to the roof design and roof manufacturer specifications. Steel "Z" purlins shall be installed perpendicular to the steel beams. Use continuous metal roof sheets from ridge to eave to avoid constructing roof seams. In lieu of the continuous metal roof sheets, the Contractor can submit a plan for roofing seams; however, the plan must show details of how leaks will be avoided, and the Contracting Officer, before application, must approve the plan. Steel "hat channels" shall be installed on the bottom side of steel beams for the installation of gypsum board with screws. Provide all necessary design, metal framing for roof fascia, gable, and soffits.

3.7.2 See paragraph 4 for structural characteristics of steel joists.

3.7.3 Roof flashings and Fascia, see 3.9 Roof Construction.

3.8 PRE-ENGINEERED METAL BUILDING

All roof slopes in Pre-Engineered metal buildings and all buildings in Brigade, the roof slopes shall be 4 in 12.

Provide reinforced plastered CMU walls with the Pre-Engineered metal building built above CMU wall height. All supports shall be inbound of the interior face of the reinforced CMU wall.

Pre-engineered Metal Building shall conform to all requirements in Uniform Facility Guide Specification (UFGS) SECTION 13120 PREENGINEERED METAL BUILDINGS

Steel Framing: Steel framing shall conform to American Iron and Steel Institute (AISI), Cold Formed Steel Design Manual, American Institute of Steel Construction (AISC) ASD, Manual of Steel Construction, Allowable Stress Design, and TI 809-07, Design of Cold-Formed Load Bearing Steel Systems and Masonry Veneer/Steel Stud Walls. Cold-formed framing shall consist of steel studs, top and bottom tracks, runners, horizontal bridging, and other cold-formed members and other accessories. All members and components made of sheet steel shall be hot-dip galvanized in accordance with ASTM A 653/A 653M

01015-21

with a minimum coating thickness of G 60. This framing shall be used only in framing the exterior steel stud wall system. Design metal siding and flashing to overhang CMU wall or concrete 50 cm.

3.9 ROOF CONSTRUCTION

3.9.1 All roofing shall be standing seam metal roofing. Roofing system shall include all edge, ridge and penetration flashings necessary for a watertight installation. Provide continuous soffit and ridge vents meeting the venting requirements of the IBC Code. Roof slopes shall be continuous to the perimeter of the building, without interior valleys or depressions where ponds can form. Provide reinforcing at roof and nonskid walk surface at each HEAT/COOL UNIT if installed on roof for access, maintenance, and changing filters.

3.9.2 Sloped roofs shall be standing seam metal roofing. Roof slopes shall be 4 in 12 minimum. Roof Panels: Panels shall be 0.85-070 mm (22 - 24 gauge) standing seam metal. Roof deck assemblies shall be Class 90 as defined in UL 580. Length of sheet shall be sufficient to cover the entire length of any unbroken roof slope when such slope is 9.000 mm or less. When length of run exceeds 9, 000 mm and panel splices are provided contractor shall provide details in the drawing package indicating how splices are fabricated; each sheet in the run shall extend over three or more supports. Sheets longer than 9.000 mm may be furnished if approved by the Contracting Officer. Width of sheets shall provide not more than 450 mm of coverage in place. SSMRS with roofing panels greater than 300 mm in width shall have standing seams rolled during installation by an electrically driven seaming machine. Height of standing seams shall be not less than 60 mm. All sheets shall be cut in the shop to correspond to the roof slope and may have a horizontal joint at the eave line.

Steel Panels: Zinc-coated steel conforming to ASTM A 446, G 90 coating designation. Panels shall be 0.85-070 mm (22 - 24 gauge).

3.9.3 Performance Standards: The SSMRS shall be tested for wind uplift resistance in accordance with ASTM E 1592. The uplift resistance of the SSMRS shall be established as indicated in the "STANDARD TEST METHOD FOR STRUCTURAL PERFORMANCE OF SSMRS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE". The SSMRS design shall be adequate for uplift if the established allowable pressure from testing causes no failure as defined in the Corps of Engineers' STANDARD TEST METHOD FOR STRUCTURAL PERFORMANCE OF SSMRS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE. Testing to ultimate capacity is not required.

3.9.4 Accessories: Accessories shall be furnished with the Standing Seam Metal Roof System. Flashing, gutters, soffits, eaves, fascias, trim; metal closure strips, caps, and similar metal accessories shall be not less than the minimum thickness specified for roofing panels. Exposed metal accessories shall be finished to match the panels furnished. Molded closure strips shall be closed-cell or solid-cell synthetic rubber or neoprene, or polyvinyl chloride; premolded to match configuration of the covering and shall not absorb or retain water. Thermal spacer blocks and other thermal barriers at concealed clip fasteners shall be as recommended by the manufacturer.

Fasteners: Concealed fasteners for steel roof panels shall be zinc-coated steel, aluminum, corrosion resisting steel, or nylon capped steel, type and

01015-22

size specified below or as otherwise approved for the applicable requirements. Concealed fasteners for aluminum roof panels shall be aluminum or corrosion resisting steel. Fasteners for structural connections shall provide both tensile and shear strength of not less than 350 kilograms per fastener. Fasteners for accessories shall be the manufacturer's standard.

Exposed roof fasteners shall not be used.

Screws: Screws shall be as recommended by the manufacturer to meet the strength design requirements of the panels. Roof panels shall be detailed and fabricated in such a way that there are no screws penetrating building exterior skin.

Bolts: Bolts shall be not less than 6 mm diameter, shouldered or plain shank as required, with locking washers and nuts.

Structural Blind Fasteners: Blind screw-type expandable fasteners shall be not less than 6 mm diameter. Blind rivets shall be .28 mm minimum diameter.

3.9.5 Thermal resistance of insulation shall be not less than the R-30. R-values shall be determined at 75 degrees F in accordance with ASTM C 518. Insulation shall have a flame spread not in excess of 25 and a smoke developed rating not in excess of 50 when tested in accordance with ASTM E 84. Insulation shall be a standard product of a manufacturer, factory-marked or identified with manufacturer's name or trademark and R-value. Identification shall be on individual pieces or individual packages. Facing shall be white, either of reinforced foil with a vinyl finish or sheet vinyl except unreinforced foil with a natural finish may be used in concealed locations. Insulation shall have a facing providing a permeability of 0.02 perm or less when tested in accordance with ASTM E 96. Facing shall be of 2 mil thick white vinyl backed with 150 mm by 150 mm glass scrim and 0.7 mil thick metal foil laminate. Reinforced foil with a natural finish may be used for facing in concealed locations. Facings and finishes shall be factory applied.

Rigid or Semi-rigid Board Insulation: Rigid board insulation shall conform to ASTM C 612, Form A, Class 1. All foam plastic insulation shall have a thermal barrier per IBC. Insulation shall not be exposed; any covering required shall meet the life expectation for this facility.

Blanket Insulation: Blanket insulation shall conform to FS HH-ISS8, Form B, Type I, Class 6. Insulation shall not be exposed; any covering required shall meet the life expectation for this facility, and conform to applicable codes.

Insulation Retainers: Insulation retainers shall be type, size, and design necessary to adequately hold the insulation and to provide a neat appearance. Metallic retaining members shall be nonferrous or have a nonferrous coating. Nonmetallic retaining members, including adhesives used in conjunction with mechanical retainers or at insulation seams shall have a fire resistance classification not less than that permitted for the insulation.

Concealed Anchor Clips: Concealed anchor clips shall be as recommended by the manufacturer for the roofing system furnished. Clip bases shall have factory punched or drilled holes for attachment. Clips used with panel width greater

than 300 mm shall be made from multiple pieces with the allowance for the total thermal movement required to take place within the clip.

Sealant: Except as stated below, sealants shall be elastomeric type containing no oil or asphalt. Exposed sealant shall cure to a rubber like consistency. All sealants shall be the non-hardening type. Roof panel standing seam ribs shall have continuous sealant that is factory installed.

Gaskets and Insulating Compounds: Gaskets and insulating compounds shall be non-absorptive and suitable for insulating contact points of incompatible materials. Insulating compounds shall be non-running after drying.

Sub-purlins: Sub-purlins, when required by the system design, shall be formed from steel sheet as standard with the manufacturer. The uncoated thickness may be a minimum of 1.5 mm if bolts or structural blind fasteners are used for attachment of the concealed anchor clips to the sub purlins.

Vapor Retarder: Vapor retarder material shall be polyethylene sheeting conforming to the requirements of ASTM D 4397. A fully compatible tape shall be provided which has equal or better water vapor control characteristics than the vapor retarder material. A general-purpose tape, which has some resiliency and cushioning abilities, shall also be provided.

EPDM Rubber Boots: Flashing devices around pipe penetrations shall be flexible, one-piece devices molded from weather-resistant EPDM rubber. Rubber boot material shall be as recommended by the manufacturer. The boots shall have base rings made of stainless steel that conform to the contours of the roof panel to form a weather-tight seal.

Gutters and Downspouts: Provide eave-mounted gutters on all roof sections over doors and openings extend gutter 1,200 mm past door opening or walk surface whichever is greater. Provide downspouts for all gutter locations. Roof water shall be channeled away from building thru 0.85 MM (22 ga) downspouts with cast iron boots (at grade) and slope grade 2 %. Water from downspouts shall not drain onto or across walkways.

Provide roof coverings, roof gutters or roof water diverter's at all exterior door entry ways to keep rain water off of these walking surfaces.

Warranties: The SSSMR system shall be warranted as outlined below. Any emergency temporary repairs conducted by the owner shall not negate the warranties. Such warranties shall start upon final acceptance of the work or the date the Government takes possession, whichever is earlier.

Ventilation: A minimum of 50 mm of airspace shall be provided between the insulation and the roof sheathing. The net free ventilating area shall not be less than 1/300 of the area of the space ventilated, with 100 percent of the required ventilating area provided by ventilators located in the upper portion of the space.

3.9.6 Contractor's Weather Tightness Warranty: The SSSMR system shall be warranted by the Contractor on a no penal sum basis for a period of five years against material and workmanship deficiencies; system deterioration caused by exposure to the elements and/or inadequate resistance to specified service design loads, water leaks, and wind uplift damage. The SSSMR system

01015-24

covered under this warranty shall include the entire roofing system including, but not limited to, the standing seam metal roof panels, fasteners, connectors, roof securement components, and assemblies tested and approved in. In addition, the system shall consist of panel finishes, slip sheet, insulation, vapor retarder, all accessories, components, and trim and all connections with roof panels. This includes roof penetration items such as vents, curbs, and skylights; gutters and downspouts; soffits, eaves, ridge, hip, valley, rake, gable, wall, or other roof system flashings installed and any other components specified within the contract to provide a weather tight roof system; and items specified in other sections of the specifications that are part of the SSSMR system. All material and workmanship deficiencies, system deterioration caused by exposure to the elements and/or inadequate resistance to specified design loads, water leaks and wind uplift damage shall be repaired. This warranty shall warrant and cover the entire cost of repair or replacement, including all material, labor, and related markups. The Contractor shall supplement this warranty with written warranties from the installer and system manufacturer, which shall be submitted along with Contractor's warranty; however, the Contractor shall be ultimately responsible for this warranty. The Contractor's written warranty shall be as outlined in the Corps of Engineers Guide Specifications for WARRANTY FOR STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM, and shall start upon final acceptance of the facility. It shall be required that the Contractor provide a separate bond in an amount equal to the installed total roofing system cost in favor of the owner (Government) covering the Contractor's warranty responsibilities effective throughout the five-year Contractor's warranty period for the entire SSSMR system as outlined above.

Manufacturer's Material Warranties: Contractor shall furnish, in writing, the following manufacturer's material warranties which cover all SSSMR system components such as roof panels, anchor clips and fasteners, flashing, accessories, and trim, fabricated from coil material.

A manufacturer's 2-year material warranty guaranteeing that the aluminum, zinc-coated steel, aluminum-zinc alloy coated steel or aluminum-coated steel as specified herein will not rupture, structurally fail, fracture, deteriorate, or become perforated under normal design atmospheric conditions and service design loads. Liability under this warranty shall be limited exclusively to the cost of either repairing or replacing nonconforming, ruptured, perforated, or structurally failed coil material.

A manufacturer's 20-year exterior material finish warranty on the factory finish warranting that the finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of eight as determined in ASTM D 4214 test procedures; or change color in excess of five CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. Liability under this warranty is exclusively limited to refinishing with an air-drying version of the specified finish or replacing the defective coated material. Color of Roof shall be included in the Color Board Submittal provided by the Contractor.

A roofing system manufacturer's 20-year system weather tightness warranty.

3.9.7 Sheet Metalwork: Flashing shall be installed in conformance with the SMACNA Architectural Sheet Metal Manual.

01015-25

3.9.8 SIGNAGE

Exterior Signs: Exterior signage shall be provided so that a person entering the facility would be able to use them to find a given destination. The Contracting Officer shall approve signage. Exterior signs are to be provided as follows:

Identification Directory. Facility Directory shall consist of a permanent header panel with a map of facility indicating location of building or function on site. Each building or function shall be labeled in Pashto and Dari with a building Number. Directory shall be 2000 mm sq, constructed of a durable material mounted per Contracting Officer's direction. Provide one inside main entry and at DFAC N0. 1.

Service identification signs are used to identify toilet rooms and other like services. The standard pictograph symbols shall be used. Service name shall be labeled in Pashto and Dari. The Contracting Officer shall approve signage.

Building signs shall be readable from 175 meters and shall be labeled in Pashto and Dari with a building Number at top.

Signs: Provide signs that comply with the sign standards provided in TM 5-807-10; "Signage". Contractor shall provide drawings indicating Sign Placement Plan and details of signs.

3.10 WINDOWS AND DOORS

3.10.1 Provide horizontally sliding aluminum windows in all buildings to fit the masonry openings, with factory baked finish off-white to match doors. All windows shall be single 6 mm laminated glazing. Windows openings shall be provided with insect screening permanently fixed to the exterior frame. Provide a locking device on the interior of each window. Provide anchors on each side of the frame into the adjoining masonry, 3 on each side, 2 top and bottom. Provide weather stripping system for all exterior windows and doors.

3.10.2 Insulation Provide the minimum insulation values as follows:

Exterior Doors R Value of $R = 0.7 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 4)

Exterior Roll-up Doors R Value of $R = 2.0 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 11)

3.10.3 Interior Steel Doors: All Interior doors shall be 44 mm hollow metal 1.00 mm (20 gauge) steel. Hollow metal frames shall be 1.30 mm (18 gauge) steel comply with ASTM A-366 cold rolled 3-piece knock down or equal Steel doors, frames, and steel glazing frames shall be painted. Door lights on interior doors shall be sized in accordance with building codes and positioned at a height above finished floor to allow vision on both sides. All doors in corridors shall have 150 mm X 600 mm X 6 mm minimum tempered glass lights 150 mm from door edge at lock side. Steel doors, frames, and steel glazing frames shall be painted to match factory finish off-white window frames. Doors shall be 900 mm wide X 2100 mm high.

3.10.4 Exterior Steel Doors: All exterior doors shall be 44 mm hollow metal 1.30 mm (18 gauge) steel with rigid foam core insulation. Hollow metal frames shall be 1.30 mm (18 gauge) steel and comply with ASTM A-366 cold rolled 3-piece knock down or equal Steel doors, frames, and steel glazing frames shall be painted to match factory finish off-white window frames. Doors shall be 900 mm wide X 2100 mm high.

3.10.5 Toilet Compartment Door: Provide a durable non wood, water/rust proof door and frame in all Toilet Compartments that will not rust or delaminate for life of building. Install bottom of door and frame 150 mm off the above finish floor. Provide a standard toilet compartment latch. Provide robe pair hooks on all these doors.

3.10.6 Overhead Rollup Door: Provide all steel overhead roll-up doors at all locations per RFP. Roll-up doors shall be 1.00 mm (20 gauge) galvanized steel, Standard springs 25,000 cycles, Styles 1.60 mm (16 gauge) min, Weather-stripping bottom and jambs, All gears, hardware, etc shall be made of steel. Chain hoist operator, and heavy-duty hasp at each door with padlock keyed to Brigade master key system.

3.10.7 Caulk all joints between masonry/plaster and metal window and doorframes and metal sills and metal window frames to prevent the passage of wind and water. Material shall be a 100% silicone, white or clear, applied with a caulking gun, if painting is not required. Where caulk is to be painted, siliconized acrylic or siliconized acrylic latex shall be used. Surfaces must be clean, dry, and free of dirt. Caulking bead should be 6mm. Smooth to produce a concave filet between the adjoining 90-degree angle surfaces. Allow to cure 2-4 days before painting.

3.10.8 HARDWARE. All finish hardware in this project shall be consistent throughout and shall be a brushed stainless steel #4 or satin-chrome finish. Provide hardware schedule for approval by USACE Engineering.

Hinges: Exterior hinges shall have non-removable pins and be satin-chrome steel or stainless steel; Grade 1 anti-friction or ball bearing; and 3 each of 115 mm x 115 mm per leaf up to 900 mm wide door and 125 mm x 125 mm for doors 900 mm to 1.200 mm wide. Interior hinges shall be Grade 1 and anti-friction or ball bearing; and 3 each of 115 mm x 115 mm per leaf up to 900 mm wide door and 125 mm x 125 mm for doors 900 mm to 1200mm wide. Hinges for labeled fire doors must be either steel or stainless steel. Hinges shall conform to ANSI/BHMA A156.1 and A156.7. Locksets, Latchets, Exit Devices, and Push and Pull Plates: Exterior doors shall have mortise locks conforming to ANSI/BHMA A156.13 for metal doors. Emergency exit devices shall be Grade 1, flush mounted type. Interior doors shall have mortise locksets conforming to ANSI/BHMA A156.13, Series1000, Grade 1. All locks and latchsets shall be the product of the same manufacturer. Locksets, padlocks and latchsets shall be provided, as required, with lever handles on each side. Provide heavy duty hasp and locks at all fuel storage tanks.

Cylinders: Lock cylinders shall comply with BHMA A156.5. Lock cylinder shall have six pins. Cylinders shall have key removable type cores. All locksets, exit devices, and padlocks shall accept same interchangeable cores. Closers: Closers shall be provided on all exterior doors and fire-rated doors. Closers shall conform to ANSI/BHMA A156.4, Grade 1. Closers shall be surface-mounted, modern type, and with cover. Thresholds: All exterior doors (except

01015-27

Mech/Elect rooms) shall be provided with aluminum thresholds conforming to ANSI/BHMA A156.21. Doors at ceramic tile flooring shall be provided with marble thresholds and set marble threshold 13 mm above tile at all wet areas.

Kick Plates and Mop Plates: Metal Kick plates or mop plates shall be provided on all wood doors. Match metal finish with door hardware finish as specified in this section. Kick plates and mop plates shall comply with ANSI/BHMA A156.6, shall be 400 mm high by 50 mm less than the width of the door. Edges shall be beveled.

Door Stops: Doorstops shall be provided on all exterior and interior doors. Doorstops shall comply with ANSI/BHMA A156.16 and shall be satin chrome on bronze, Grade 1.

All hardware required for exiting, etc. shall be per Codes for exiting and shall comply with ANSI/BHMA and finishes shall match hardware specified above.

All submittals/shop drawings referring to keys and keying shall be submitted to AED Engineering for evaluation. A key cabinet shall be provided with a capacity of 50% greater than the number of key changes used for door locks. Location of Key cabinet shall as directed by Contracting Officer. Lock cylinder shall have not less than six (6) pins "Small Format Interchangeable Core (SFIC)" manufactured by Best Lock Company or equal. A grand master keying system shall be provided from the factory. Locks shall be keyed in sets or subsets based on building groups as indicated in Section 01010 and submitted to for evaluation to engineering. Keys shall be supplied as follows:

Locks: 3 change keys each lock
Master keyed sets: 3 keys each set
Grand Master keys: 10 total

3.10.9 CHAIN LINK FENCE

3, 10.9.1 Chain link shall be 2400 millimeters above finish grade and aligned at top of chain link with peak of concrete cap on stone wall. Provided with 'V' extension arms at top of posts with 3 strands of barbed wire at each side, top of concertina wire at 3000 mm minimum above finish grade (AFG). All chain link type fencing as shown in the drawings and RFP shall be: Fence fabric shall be galvanized chain link with galvanized framework, 9-gauge thick wire woven in 50x50 mm mesh and shall be twisted and barbed on the top selvage and knuckled on the bottom selvage. Provide details and elevations of fence indicating how fence will transition from level to slope and over ridges.

3.10.9.2 Clips and top rail will not be used. Fence fabric will be installed no higher than 50 mm from the ground. Supporting arms will be securely anchored with rivets to the line posts. Fences shall have a bottom rail bolted to double rail ends and double rail ends shall be securely fastened to the posts. Bolts shall be peened to prevent easy removal. Bottom rail shall be installed before chain link fabric. Posts will be limited to ASTM F 1083, (1993) Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded and PVC coated for Fence Structures Group IA or Group IC steel pipe only. The fence shall be

01015-28

provided with the cable system shown on the attached figures. Cable shall conform to ASTM A 475, 19.05 mm (3/4-inch), extra high strength, Class A zinc coating. Turnbuckles, for the cable, shall conform to ASTM F 1145, 31.8 mm x 610 mm (1-1/4 inch x 24 inches) Type I, galvanized. Clamps shall be of equal or greater strength than the shear strength of the cable. All cable accessories shall be galvanized. Placement of cables will be at 760 mm and 890 mm above finish grade, measured to the centerline of the cables. Place the cable between the fence fabric and the line posts with U-bolts as shown. Reduce the slack by anchoring and tightening the cable so that it will not move along or slide through the U-bolts. Cable connections shall be of equal or greater strength than the shear strength of the cable. Dead man spacing shall be as shown on drawings. The next dead man shall start two fence panels back, overlapping the previous cable run, to cover the gap of the last dead man and to eliminate the need for pipe guards at those locations.

Provide chain link fence and gates around entire water facility on CE School Facility; see fence Section 01015 paragraph 3.10.10 Chain Link Fence.

3.11 FINISHES

3.11.1 The exterior of all buildings shall be plaster over CMU or concrete. Install new plaster in 2 coats which shall have color integral with the finish. The first coat shall be a scratch coat approximately 1 cm thick. Allow 7 days to cure. The second coat shall be finish plaster, smooth finish, approximately 1 cm thick. Allow 7 days to cure before painting.

3.11.2 Interior walls shall be plaster applied in a similar manner as exterior plaster but paint with 2 coats of semi-gloss off-white with less than .06% lead by weight.

3.11.3 Ceilings of all buildings shall be plaster applied in 2 coats over metal lath, which is to be stapled to the steel supports. Paint ceiling with 2 coats of flat white, with less than .06% lead by weight. Gypsum board may be used in lieu of plaster but framing supports for Gypsum board shall be as follows: For ½" thick gypsum board structural fastener supports shall be not further apart than 40 cm. If gypsum board is thicker, follow guidelines in ASTM C 840 for supports and fastener frequency.

3.11.4 Ceilings of Dining Facility shall be painted with 2 coats of gloss white, with less than .06% lead by weight.

3.11.5 Paint all doors and frames with 2 coats of semi-gloss enamel, off white.

3.11.6 Floors shall be 300 mm x 300 mm terrazzo tile with thin set mortar. Joints shall be 2-3mm. Waterproof tan grout shall be applied to the full depth of the tile. Floors shall slope to floor drains. Color of tile shall be included in the Color Board Submittal provided by the Contractor.

3.11.7 Walls in wet areas shall be tiled with 150 mm x 150 mm glazed ceramic tile up to 2 meters above the floor to include interior of toilet stalls, showers and behind sinks. Joints shall be 2-3 mm. Waterproof gray grout shall be applied full depth of the tile. Grout shall cure for 72 hours and then be sealed with a commercial grout sealant in two coats. Color of tile

01015-29

shall be included in the Color Board Submittal provided by the Contractor.

3.11.8 The ablution drain areas shall be recessed below the floor level 200 mm and lined with ceramic tile. Ceramic tile shall extend up the wall past the water spigots to a height of 2 meters above the finished floor. Seats shall be formed concrete with terrazzo tile, finish to match the floor, 300 mm x 300 mm x 300 mm high-finished dimensions. Color of ceramic tile shall be selected by the Contracting Officer from samples provided by the Contractor. Spacing between tiles shall be similar to terrazzo tile.

3.11.9 All floors in utility rooms, storage rooms, warehouses, garages, and utility buildings shall be completely cleaned and the concrete sealed with a clear concrete sealer.

3.11.10 Marble window sills, 25 mm one piece marble window sills shall be installed on the exterior of all windows. The marble window sills shall have a overhang of 30 mm. Marble sills shall extend from side to side of the masonry opening in a single piece. Extend the marble windowsill a minimum of 10 cm under the bottom of the aluminum windows. Install masonry mortar as required for a smooth surface under the window sills. Sills shall slope a minimum of 6mm to the exterior and not allow water to puddle.

3.11.11. Chalk Boards: Provide porcelain on metal 4' X 8' Black Chalkboard on wall across entire wall at the front of each class of 7 classrooms. Chalkboards shall have aluminum frame with map rail and full length tray.

3.12 SPECIALTIES

3.12.1 Mirrors, .6 m x .9 m, 6 mm plate glass, shall be mounted above all lavatories. Mount bottom of mirrors 1.1 m above the finished floor.

3.12.2 Toilet paper holders, stainless steel, shall be installed in all Toilet stalls. Toilet paper holders, stainless steel, shall be installed approximately 20 cm above the floor.

3.12.3 Robe Hooks shall be provided and installed in all toilet and shower stalls.

3.12.4 Shower curtain rods, stainless steel, heavy duty, 18 gauge shall be mounted between the screens walls of each shower stall. Mount rod at 2 meters above the finished floor. Provide a shower curtain with support rings for each shower stall.

4. STRUCTURAL

4.1 GENERAL

Most of the facilities will be single-story construction. The single-story buildings will be constructed using CMU (concrete masonry units) load bearing walls with steel beams supporting the roofing system. Several new facilities will be constructed using pre-engineered metal building systems with metal roof deck and siding and with reinforced CMU exterior masonry walls. The ground floor slab shall be minimum 150 mm thick reinforced concrete. Slab shall be placed on clean vapor barrier over 150 mm thick capillary water barrier on compacted soil.

01015-30

4.2 DESIGN LOADS

The facilities shall be designed by using service gravity loads and considering basic combinations of appropriate service loads, wind and seismic.

Basic wind speed, using 3-second gust, of 66 Knots (122 Kph) with Exposure Category C and Importance Factor of 1.0.

4.2.4 Seismic Loads

The computations of seismic loads shall be based on International Building Code using Spectral Ordinates $S_s = 1.65g$ & $S_1 = 0.75g$.

4.3 CRACK CONTROL

The work shall include crack control measures to minimize cracks in slab-on-grade, concrete construction, such as crack control joints, expansion joints and isolation joints, as necessary. Expansion joints and control joints shall be determined and shown on the drawings.

4.4 NOT USED

4.5 DESIGN CRITERIA

The Contractor shall be familiar with codes/standards. the use of American codes/standards, etc., to include but not be limited to:

Minimum Design loads	ANSI/ASCE 7-1995.
Concrete	American Conc. Institute (ACI) 318-99
Structural Steel	AISC MANUAL, 9 th Edition
Masonry	Technical Manual, TM5-809-3 (working stress)
Seismic	IBC-2003, Seismic Design for Buildings.
Bunkers	ARMY STANDARDS MAGAZINE STD
33-15-74	
	ARMY: AR 385-64 / DA
PAM 385-64	

4.6 MATERIALS

The followings are few typical American Standards. The Contractor should use these standards to provide sound structural integrity. The Contractor shall follow American Concrete Institute Standards for design and installation of all concrete structures.

Concrete	280.0 kg./sq.cm cylinder strength @ 28 days.
Steel Reinforcing	4218.0 kg./sq.cm($F_y = 60.0$ ksi), yield strength.
Welded Wire Fabric	ASTM A185
Anchor Bolts	ASTM A307 using A36 steel.
Concrete Masonry Units	ASTM C90, Type I (normal wt, moisture Control).
	Mortar - ASTM C270, Type S (Ultimate compressive strength of 130.0 kg/sq. cm.)

01015-31

Proportion 1 part cement, 0-1/2 part lime,
and 4-1/2 parts aggregate)

Grout - ASTM C476 (Slump between 200 mm
to 250 and Compressive Strength 14 MPa
(2000 psi) at 28 days).

Joint Reinforcements: Standard 9 gauge
minimum Ladder Type

Structural Steel. ASTM A36: 2530.0 kg./sq.cm (Fy =
36,000psi)

Welding: AWS (American Welding Society)
D1.1-2002.

4.7 FOUNDATIONS

The foundations and stem walls shall be constructed by using reinforced concrete materials. The foundations shall be strip-footing type for continuous walls and spread type for individual column footings and shall be reinforced as required per design. Minimum strip footing width shall be 80 cm and minimum depth shall be 80 cm to meet frost requirement. The allowable bearing pressure shall be determined by the Contractor and be put in accordance with the Contractor's Geotechnical Investigation.

5. GEOTECHNICAL

5.1 Site Specific Information.

Site specific geotechnical information necessary to design and construct the foundations, pavements and other geotechnically related items contained in this project shall be the Contractor's responsibility. The Contractor shall determine all necessary geotechnical conditions by appropriate field and laboratory investigations and supporting calculations.

5.2 Geotechnical Report.

The Contractor shall produce a detailed geotechnical report containing field exploration and testing results, laboratory testing results, evaluations, recommendations, calculations and descriptive supporting text. Information in the report shall include, but not limited to: existing geotechnical (e.g. surface and subsurface) conditions, location of subsurface exploration logs, exploration point, foundations selected, bearing capacity, pavement design criteria (e.g. CBR values, K values), ground-water levels, and construction materials (e.g. concrete cement, asphalt, and aggregates). Two copies of the detailed geotechnical report shall be submitted to the Contracting Officer.

5.3 Geotechnical Qualifications.

A geotechnical engineer or geotechnical firm responsible to the Contractor shall develop all geotechnical engineering design parameters. The geotechnical engineer or geotechnical firm shall be qualified by: education in geotechnical engineering; professional registration; and a minimum of ten (10) years of experience in geotechnical engineering design.

5.4 Design Certification.

01015-32

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

The Contractor shall certify in writing that the design of the project has been developed consistent with the site-specific geotechnical conditions. The certification shall be stamped by the geotechnical engineer of the geotechnical firm and shall be submitted with the final design.

6. MECHANICAL

6.1 SCOPE OF WORK

6.1.1 General

The Contractor shall design, supply, fabricate and install new ventilation and heating systems and special mechanical systems in the facilities identified in Section 1010 Scope of Work and as described herein. Heating, Ventilation, and Air-Conditioning (HVAC) requirements for typical facilities are described hereinafter in paragraph 6.0 Mechanical. The contractor shall be responsible for complete design and construction of all HVAC and special mechanical systems required in the Generator Plant, Water Storage and other facility or structures required as part of this contract.

The work also includes the delivery to site, erection, setting to work, adjusting, testing and balancing, and handing over in full operating conditions all of the ventilation equipment and associated mechanical works. All mechanical/electrical controls accessible by the general public shall be lockable and tamper proof.

Contractor shall ensure that all mechanical equipment is sited outside of flood planes and not subject to damage from run-off, floods, debris, etc.

6.1.2 Sub-Contractors Qualifications

The ventilating and heating works shall be executed by a specialist sub-contractor experienced in the design and construction of these types of systems.

6.1.3 Standard Products

All materials and equipment shall be standard product of a manufacturer regularly engaged in the manufacture of the product and shall duplicate items that have been in satisfactory use for at least two (2) years prior to bid opening.

6.2 CODES, STANDARDS AND REGULATIONS

The design and installation of equipment, materials and works covered under the mechanical, heating, ventilation, and air-conditioning services shall conform to the following standards, codes and regulations as applicable except where otherwise indicated under particular clause. The publications to be taken into consideration shall be those of the most recent editions. Standards other than those mentioned-above may be accepted provided that the standards chosen are internationally recognized and meet the minimum requirements of the specified standards. The Contractor shall submit proof of equivalency to the Contracting Officer for approval.

IBC - International Building Code

01015-33

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

IMC - International Mechanical Code

NFPA - National Fire Protection Association Including the following:

NFPA 31 - Standard for the Installation of Oil Burning Equipment (see annex D for diesel-fuel adaptation)

NFPA 54 - National Fuel Gas Code

NFPA 58 - Liquefied Petroleum Gas Code

NFPA 86 - Standard for Ovens and Furnaces

NFPA 92A - Recommended Practice for Smoke-Control Systems.

NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations

NFPA 97 - Standard Glossary of Terms Relating to Chimneys, Vents, and Heat Producing Appliances

NFPA 204 - Standard for Smoke and Heat Venting

NFPA 211 - Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances

ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers Including the following: ASHRAE 62, ASHRAE 154

AABC - Associated Air Balance Council (National Standards for Total System Balance)

ARI - Air-Conditioning and Refrigeration Institute

ASME - American Society of Mechanical Engineers

ASTM - American Society for Testing and Materials

AWS - American Welding Society

SMACNA - Sheet Metal and Air Conditioning Contractors' National Association

ACGIH - American Conference of Governmental Industrial Hygienists

6.2.1 Heating & Cooling of all habitable areas (offices, barracks, DFAC, clinic, repair shops, training bldg. etc.) shall be by an integrated, diesel-fired furnace & evaporative cooler Unit, as shown in the SOW Sect. 4.2 c. The installed heat output shall be a minimum of 0.15 tkW/m² (0.20 for DFAC) of floor area. Evaporative Cooling shall be at a minimum rate of 20 m³/h (25 for DEFAC) outside air flow / m² floor area.

Contractor will install galvanized steel ducts for supply warm/cool air distribution to all areas of the building. Return air (for heating) will be thru the building and door louvers for closed off rooms. Maximum duct air velocity is 6.0 m/s (1180 fpm). See concept drawing "ANA HEAT-COOL DESIGN-02"

01015-34

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

dated 10 Dec 06.

Design Criteria: Insulated walls of $R = 3.5 \text{ m}^2\text{-}^\circ\text{C/watt}$, Roofs of $R = 5.5 \text{ m}^2\text{-}^\circ\text{C/watt}$: Average 3 m^2 floor / person: Winter heating 25% outside air, Summer cooling 100% outside air. Winter outside air ventilation is 15 $\text{m}^3/\text{h}/\text{person}$ (20 for defac) which is 5 $\text{m}^3/\text{h}/\text{m}^2$ floor (6.7 for defac) : Summer outside air ventilation (cooling) is 60 $\text{m}^3/\text{h}/\text{person}$ (80 for defac) which is 20 $\text{m}^3/\text{h}/\text{m}^2$ floor (27 for defac).
Conversion factors: $\text{Btu/h} = 3413 * \text{tkW}$. $\text{CFM} = 0.589 - \text{m}^3/\text{h}$. $R(\text{h-sf-}^\circ\text{F/Btu}) = 5.68 * R(\text{m}^2\text{-}^\circ\text{C/watt})$

6.2.2 Noise Levels

Noise levels generated by HVAC systems inside occupied spaces shall not exceed 35 NC.

6.2.3 NOT USED

6.2.4 Ventilation Standards

Mechanical/Electrical Rooms: Mechanical ventilation sufficient to limit space temperature and to remove heat given out by operating equipment.

Maintenance shops and similar spaces that use solvents and oils shall be provided with mechanical exhaust air systems. The systems shall consist of centrifugal fan, ductwork, exhaust grills, and interlock controls.

Toilet and Wash Area: Minimum exhaust ventilation shall be the larger of 35 $\text{m}^3/\text{h} / \text{m}^2$ floor or 125 $\text{m}^3/\text{h} / \text{toilet}$ (WC). At extreme cold in winter these values can be reduced for short periods to 10 $\text{m}^3/\text{h} / \text{m}^2$ or 40 $\text{m}^3/\text{h} / \text{toilet}$ (WC) to conserve heat.

6.2.5 Air Intakes

To reduce sand and dirt migration, outside air intakes shall be located as high as possible within architectural constraints. The intakes shall be sized so that free air velocities are below 2.5 m/s (500 fpm). For inhabited buildings, locate all air intakes at least 1.5 (center-line of intake) meters above the ground.

6.3 EQUIPMENT

6.3.1 Filtration

6.3.1.1 Outside Air Intakes. All outside air intakes shall be through weatherproof louvers with a bird screen. Wall intakes and roof hoods shall have 50 mm thick permanent washable metal mesh type filters as first stage for filtration of dust.

6.3.1.2 Medium efficiency (30 percent, as defined by ASHRAE 52 Dust Spot Efficiency Criteria) filters, the 50 mm (2-inch) thick disposable panel type, shall be the second stage of filtration.

6.3.1.3 High efficiency (80-85 percent, as defined by ASHRAE 52 Dust Spot Efficiency Criteria) filters, 300 mm (12-inch) deep cell type, shall be

01015-35

provided as the final stage of filtration in special maintenance and inspection operations, food preparation, health care facilities, electronic facilities and corrosion control facilities.

6.3.2 Ventilation and Exhaust Fans

All fans used for ventilation and pressurization shall be selected for required performance and for minimum noise level. Unit-mounted supply and exhaust fans shall be centrifugal forward curved, or airfoil fans with non-overloading characteristics of high efficiency and quiet running design. The fans shall be heavy-duty type with durable construction and proven performance in arid and dusty desert environment. Each exhaust fan shall be provided with gravity dampers and shall be complete with vibration isolators, external lubricators, accessories and controls necessary for specified sequence of operation.

6.3.3 Refrigeration System. Only used for listed buildings. All other buildings are cooled by evaporative-cooling modules, which are a part of the diesel fired heating system. Direct Expansion (DX) air-cooled condensing unit shall be located outdoors and mounted slab-on-grade or on the roof. Grade mounted equipment shall be protected from the wind-blown sand by a 1-meter high enclosure walls or by mounting condensing unit using 1-meter high elevated steel support platform. Each unit shall consist of weatherproof casing, compressor(s), condenser coil, condenser fans, motor and appurtenances. Compressor shall be of the hermetic or semi-hermetic reciprocating type. Refrigeration system shall be connected to the refrigeration circuit of the split system air-conditioning unit.

6.3.4 AIR CONDITIONING EQUIPMENT

Environmental (heat, cool, ventilation) control of the facilities shall be achieved by HVAC equipment as specified in the SOW ,4.2.

6.3.4.1 If specifically required, Unitary (ductless split) DX Air Conditioning Units

Ductless split units shall be unitary in design and factory manufactured and ready for installation. Provide two indoor units with a single condensing unit for each housing module. Evaporator unit shall consist of a DX evaporator cooling coil, blower, electric heater and washable filter, all mounted in a housing finished for exposed installation. Cooling coil condensate piping shall route to and discharge to the sanitary sewer system. The condensing unit will contain compressor, condenser coil, and all internal controls/fittings complete to include a weatherized housing constructed and mounted on a 300 mm high steel stand on roof on the upper module. Copper refrigerant suction and liquid piping shall be sized, insulated and installed in accordance to unit manufacture recommendations. Unit temperature control shall include wall-mounted adjustable thermostat, blower on-off-auto switch and heating-cooling change over control.

6.3.4.2 Packaged Terminal Air Conditioners

Packaged Terminal Air Conditioners, if specifically required, shall be self-contained thru-the-wall type unit consisting of a completely self-contained, electrically operated unit, equipped with a factory assembled refrigeration system. The units shall consist of compressor, condenser, evaporator fans,

01015-36

motors, evaporator, heating and condenser coils/sections and all necessary appurtenances. The unit shall be provided with a steel/metal sleeve which can be permanently installed within the wall opening. The chassis of the unit shall be easily removable from the shell from inside the conditioned space. Adequate condenser air shall enter louvered openings. Provision of fresh air shall discharge through movable louvers. These units shall be mounted high on the wall to prevent infiltration of ground dust and in locations so as not to impede flow and function of the module.

6.3.5 Heating & Cooling of all habitable buildings, unless noted otherwise.

Heating & Cooling shall be as indicated in the SOW, 4.2.c. This consists of diesel-fired heater; evaporative-cooler; blower, filter, damper module (AHU), all mounted in a single Unit, and using a common supply and return ducts. See concept drawing "ANA HEAT-COOL DESIGN-02, dated 10 Dec 06.

Oil-fired, Fuel-Oil fired, or Diesel-fired stoves shall be in compliance with NFPA 31, NFPA 86, NFPA 92A, and NFPA 204.

6.3.6 Ductwork

Air shall be distributed from Heat-Cool Unit (Dwg. "ANA HEAT-COOL DESIGN-02") to achieve proper airflow throughout the facility by means of air distribution ductwork. Air distribution system shall be comprised of ductwork, fittings, grilles, registers, and/or diffusers. Ductwork shall be constructed of galvanized steel or aluminum sheets and installed as per SMACNA "HVAC Duct Construction Standards (Metal and Flexible)." Flexible non-metallic duct may be used for final unit/diffuser connection in ceiling plenums. These flexible duct run-outs shall be limited to 3 meters in length. Duct insulation shall be provided for all supply ductwork and for return ductwork not located within the conditioned area i.e. outdoors.

6.3.7 Duct Insulation

In general, interior ducts shall be exposed to the rooms and will not be insulated. The heat lost or gained from the un-insulated ducts shall be considered as part of the heating or cooling of the conditioned space.

6.3.8 Diffusers, registers and grilles shall be factory fabricated of steel or aluminum and distribute the specified air quantity evenly over the space intended. The devices shall be round, half round, square, rectangular, linear, or with perforated face as determined by the design. Units will be mounted in ceilings, high sidewalls, or directly to ductwork and shall be sized for the airflow to be delivered with a maximum NC rating of 35. Pressure loss through the diffuser shall be considered in sizing the duct system and the system static pressure calculations.

6.3.9 Branch Take-offs

Air extractors or 45° entry corners shall be provided at all branch duct take-offs. Manual volume control dampers shall be included at the branch duct take-offs as shown and where required to facilitate air balancing.

6.3.10 Wall Penetrations

01015-37

Building wall penetrations shall be carefully made so as not to deteriorate the structural integrity of the wall system.

6.3.11 Control Wiring and Protection Devices

Control wiring and protection devices shall be the manufacturer's standard, pre-wired, and installed at the factory. Operation of the control system shall be manufacturer's standard configured for 220V/50Hz or 24V operation.

6.3.12 Thermostats

All thermostats shall be located near the return grilles and mounted 1.5 meters above the floor and shall be easily accessible. In lieu of a thermostat, a temperature sensor may be located in the room and connected to the control thermostat near the unit. Thermostats located inside occupied areas shall be provided with lockable covers.

6.3.13 Electric Motors

All HVAC motors shall be Totally Enclosed Fan Cooled (TEFC) type and rated for minimum 40 C ambient.

6.3.14 Outdoor Equipment

Screen walls or elevated platforms shall be provided for protection of outdoor HVAC equipment from wind-blown sand and debris.

6.4. HVAC SYSTEMS REQUIREMENTS

6.4.1 Power Plant, Wastewater Treatment Plant and Water Pump/Treatment Facility.

6.4.1.1 General

Air-conditioning HVAC shall be provided for personnel comfort where noted.

6.4.1.4 Special Mechanical Systems

6.4.1.4.1 Water Pump/Treatment Plant. Refer to Civil section for requirements and provide heating, cooling and ventilation as required for process control, safety and personnel comfort.

6.4.1.4.2 NOT USED

6.4.1.4.3 Exhaust Ventilation: Provide wall or roof mounted centrifugal exhaust fan(s) with explosion-proof construction with coated-metal ductwork suitable for corrosive fumes. Provide air intakes with washable louvers. Provide exhaust registers near ceiling and within 150 mm of the floor elevation.

6.4.1.4.4 Classrooms

Contractor shall design the electrical load for lighting, ceiling fans, and

01015-38

equipment. Heating and cooling shall be by Heat-Cool Units (diesel-heater and evaporative-cooler).

6.4.1.4.5 Headquarters Building

Provide HVAC in communications building. Toilet and all other areas: Provide 52-inch ceiling fans in offices and conference room(s). Provide exhaust ventilation in Toilets and generator room. Provide air intakes with washable filters and operable dampers for ventilation and exhaust make-up.

6.4.1.4.6 Heating Barracks, All Types

Provide Heat-Cool Unit (diesel-heater and evaporative-cooler) with interior air ducting to all rooms and open spaces. Install 52-inch ceiling fans for air circulation.

6.5 TESTING AND COMMISSIONING

6.5.1 General

After completing the work, but prior to building acceptance, the Contractor shall demonstrate that the ventilation systems are adjusted and operated correctly to fully satisfy the function for which these systems have been designed. The Contractor shall test, adjust, balance and regulate the system and its controls, as necessary, until the required designed conditions are met. The Contractor shall include tests for interlocks, safety cut-outs and other protective devices to demonstrate safe operation. A description of all equipment or systems to be tested and balanced, including the test procedures, must be submitted prior to the scheduled testing that will be witnessed by the Government. All such tests shall be carried out in the presence of the Contracting Officer or representative and fully-written records of the test data and final settings, shall be submitted to the Contracting Officer.

6.5.2 The following tests data shall be submitted in a tabulated form:

- a. Date and time of the test.
- b. Outdoor DB and WB temperature.
- c. Indoor Room Conditions: DB and WB temperatures and supply return and exhaust airflow.
- d. Air Handling Equipment: Air quantities shall be measured by an anemometer.

6.5.3 Following readings shall be recorded:

- a. Supply, return and outside air CMH (CFM) supplied by each air handling system.
- b. Total CMH (CFM) exhausted by each fan.

c. Motor speed, fan speed. (4) Input amperes and power input (KW) for each fan.

7. PLUMBING

7.1 SCOPE OF WORK.

7.1.1 General

The Contractor shall design and build domestic cold and hot water systems, waste, drain and vent systems, waste-oil collection and storage and fuel-oil storage and distribution systems required in the facilities identified in Section 1010 Scope of Work and as described herein. The Contractor shall be also responsible for complete design and construction of all domestic and special plumbing systems required for CE School and Range Facilities.

The work covered in this scope also includes the delivery to site, erection, setting to work, adjusting, testing and balancing and handing over in full operating condition all of the plumbing equipment and associated plumbing works.

Contractor shall ensure that all plumbing equipment is sited outside of flood planes and not subject to damage from run-off, floods, debris, etc. Pipe runs crossings of creeks, rivers, streams, etc shall be sufficiently protected from physical damage, water ingress, etc.

7.1.2 Sub-Contractors Qualifications

The plumbing systems shall be executed by a plumbing specialist subcontractor experienced in the design and construction of these types of systems.

7.1.3 Standard Products

All materials and equipment shall be a standard product of a manufacturer regularly engaged in the manufacture of the product and shall duplicate items that have been in satisfactory use for at least two (2) years prior to the bid opening.

7.2 CODES, STANDARDS AND REGULATIONS

The design and installation of equipment, materials and work covered under the plumbing services shall conform to the following standards, codes and regulations where applicable except where otherwise indicated under particular clause(s). The publications to be taken into consideration shall be those of the most recent editions.

IPC - International Plumbing Code

NFPA - National Fire Protection Association

01015-40

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers

ASME - American Society of Mechanical Engineers

ASTM - American Society for Testing and Materials

AWS - American Welding Society

7.3 PLUMBING SYSTEMS REQUIREMENTS

7.3.1 Water

Domestic cold and hot water shall be provided in the facilities to serve the water usage and plumbing fixtures provided for the facility. Water service to each facility shall enter the building in a mechanical, toilet, storage, or similar type space. All water piping shall be routed parallel to the building lines and concealed in all finished areas. Insulation shall be provided where required to control sweating of pipes or to provide protection from freezing. All pipe shall be installed below the frost line or 800 mm minimum.

7.3.2 Piping Materials

Domestic water shall be distributed by means of standard weight (schedule 40) galvanized steel pipe. Waste and vent piping can be made of either galvanized steel pipe (schedule 40), or Polyvinyl Vinyl Chloride (PVC) conforming to ASTM D 2665. Corrosion protection shall be provided if galvanized piping comes in contact with earth or masonry floors, walls or ceilings.

7.3.3 Plumbing Fixtures

The following typical plumbing fixtures shall be provided:

- a. Eastern Water Closet (P-1) with flush tank assembly. Enameled cast iron, recessed floor mounted. Provide a cold water spigot 300 mm above the finished floor on the right (from a perspective of standing inside of the cubicle and looking out) sidewall of the cubicle.
- b. Western Water Closet (P-1A) with flush tank assembly as specified by the designer. Vitreous china floor mounted, elongated bowl type. Provide at least one (1) western type water closet in Dining Facility, Power Plant, Corps Brigade, and Garrison HQ Buildings.
- c. Lavatories (P-3). Enameled cast iron, wall or counter mounted. Brass fittings provided for water supplies. To be used in American or Afghan/American mixed facilities only.
- d. Janitor's Sink (P-4). Floor mount janitor, enameled cast iron with copper alloy rim guard. Provide hot and cold water valves with manual mixing. Faucet handles shall be copper alloy.
- e. Shower (P-5). Showerhead and faucet handles shall be copper alloy.

01015-41

Provide for manual mixing with hot and cold water valves. In addition to a shower head, provide each shower stall with a threaded faucet approximately 1.2 m AFF with hot and cold-water controls, mixing valve and a diverter type valve so water can be directed to either the shower or to the lower faucet. Shower shall be provided with low flow shower head. Provide each lower faucet with a 1.5 m long flexible, reinforced vinyl hose with nozzle and hangar to hold the nozzle end off floor.

The adequacy of water supply piping design will be based on the following:

International Plumbing Code, 2003: Water Supply Fixture Units (wsfu)

Dwg. Sym.	Plumbing Fixture		Cold	Hot	Total
P-1	WC Eastern, Tank	5.0	-	5.0	
P-1A	WC Western, Tank	5.0	-	5.0	
P-3	Lavatory, Public	1.5	1.5	2.0	
P-4	Janitor's Sink		2.3	2.0	3.0
P-5	Shower, Public	3.0	3.0	4.0	

Water flow rates are calculated from curve-fitting formulas:

If $sfu > 2 < 250$ then $Q(m^3/h) = (sfu)^{0.56} * 0.76 + 0.5$

If $sfu > 251 < 5000$ then $Q(m^3/h) = (sfu)^{0.61} * 0.8 - 6.4$

If $sfu > 5001 < 10,000$ then $Q(m^3/h) = (sfu)^{0.56}$

Water flow velocity range is 0.5 to 2.4 m/s

Pipe I.D. Diameter (mm) = $(354 * Q(m^3/h) / V(m/s))^{0.5}$

f. Ablution Trench. See building floor plans for size and construction of trench and number of stations. Provide trench drain with brass grating and strainer. Provide each station with hot and cold water valves with manual mixing. Faucet handles shall be copper alloy.

g. Floor or Shower Drain (FD-A). Cast iron construction, and adjustable perforated or slotted chromium plated bronze, nickel-bronze, or nickel brass strainer consisting of a grate and threaded collar. Toilet room floor drains are similar except are provided with built-in, solid, hinged grate.

h. Room hose bibs and floor drains shall be provided as required. Provide clean-up spray nozzle with hose assembly in all eastern toilets, shower rooms, each ablution faucet.

i. Drinking Water Fountain: Non-refrigerated fountain with enamel cast iron or corrosion resistant bowl with brass fittings and faucets.

j. Provide detail of P-Traps to be provided. Traps shall meet the requirements of PC Section 10022.4 Each fixture shall have a liquid seal not less than 51 mm and not more than 102 mm.

01015-42

7.3.4 Hot Water

Hot water shall be provided for the facility to supply 49°C (120°F) hot water to fixtures and outlets requiring hot water. Hot water of a higher temperature shall be provided only where required for special use or process. Hot water piping shall be routed parallel to the building lines and concealed within finished rooms. All hot water piping shall be insulated. A hot water re-circulating pump shall be provided if hot water piping run exceeds 30 meters.

7.3.5 Hot Water Heaters

The hot water shall be generated by electric water heaters. The unit shall be typically located inside a mechanical room, storage room, toilet/janitor room or similar type of space. The unit shall be of the commercially available tank type having low or medium watt density electric heating elements. In cases where the pressure of the water coming into the tank will violate manufacturer recommendations, and pressure reducer shall be installed in the line before the water heater. Also, all water heaters shall be equipped with a blowoff valve that will empty into a nearby floor drain.

7.4 WASTE, DRAIN AND VENT SYSTEM

Floor drains shall be provided in each room that contains a water source. Floor drains shall be provided in the mechanical equipment and toilet rooms as required. Drains shall be located near urinals or toilet partitions in toilet rooms. In mechanical rooms, floor drains shall be provided to avoid running drain piping long distances above or over the floor. A trench drain shall be provided for the DFAC Kitchen. All waste and vent piping shall be provided in accordance with the latest edition of IPC. Drain outlet shall use p-trap system to trap sewer gases. P-trap drain should be a one-piece system without removable parts.

7.5 TESTING AND COMMISSIONING

The Contractor shall test all piping systems in accordance with IPC International Plumbing Code. The final test shall include a smoke test for drainage and vent system and pressure test for the domestic water piping. After completing the work, the Contractor shall demonstrate that all plumbing systems operate to fully satisfy the function for which these systems have been designed. The Contractor shall test, adjust, balance and regulate the system and its controls as necessary until the required designed conditions are met. The Contractor shall include tests for interlocks, safety cutouts and other protective devices to demonstrate safe operation. All such tests shall be carried out in the presence of the Contracting Officer and full written records of the test data and final settings shall be submitted to the Contracting Officer. After all tests are complete, the entire domestic hot and cold water distribution system shall be disinfected. The system shall not be accepted until satisfactory bacteriological results have been obtained.

8. FIRE PROTECTION

8.1 SCOPE OF WORK

01015-43

8.1.1 Fire protection for these buildings will be limited to Architectural features such as providing adequate means of egress. Provide rated exit corridors, doors, and hardware per IBC and all other requirements developed in the Design Analysis.

8.1.2 Exit doors shall be 90 cm wide providing a minimum clear opening of 82 cm. The egress path to each exit door shall be maintained clear and unobstructed. Exit signs shall be in the language most understood in the area.

8.1.3 Drawings: There are no separate Fire Protection Drawings. See Architectural drawings.

8.1.4 Sprinkler protection is not provided due to the extreme shortage of water in this region.

8.2 DESIGN CRITERIA

The requirements of the following codes shall be followed as for the installation of equipment, materials and works covered for Fire Protection.

IBC - International Building Code

NFPA - National Fire Protection Association

9. ELECTRICAL

9.1 SCOPE OF WORK

9.1.1 General. Contractor shall design and construct: (a) Primary Power Distribution System, (b) Interior Secondary Distribution System, (c) Lighting and power branch circuitry, (d) Premise telephone and network/data wiring, and (e) Interior Fire Detection and Alarm System. All of the systems shall be designed for the ultimate demand loads plus 20% spare capacity.

Contractor shall ensure that all electrical equipment is sited outside of flood planes and not subject to damage from run-off, floods, debris, etc. Electrical cable crossings of creeks, rivers, streams, etc shall be sufficiently protected from physical damage, water ingress, etc.

9.1.3 All equipment shall be tested, commissioned, and operational at time of turn-over to the Government. All final connections shall be made to provide a fully functional system. Contractor shall provide all necessary operating instructions, commissioning reports, spare parts, and related items at time of turn-over.

9.2 DESIGN CRITERIA

9.2.1 Applicable Standards

ANSI/IEEE Std 81-1983

ANSI/NETA ETT-2000

01015-44

ANSI/NETA MTS 7.2.2-2001

ANSI/TIA/EIA-568 Commercial Building Telecommunications Cabling Standard

ANSI/TIA/EIA-569 Commercial Building Standard for Telecommunication Pathways and Spaces

ANSI/TIA/EIA-942 Telecommunications Infrastructure Standard for Data Centers

ANSI/TIA/EIA-607: (1994) Commercial Building Grounding/Bonding Requirement Standard.

ETL 1110-3-412 Transformer Application Guide

ETL 1110-3-502, Telephone and Network Distribution System Design and Implementation Guide.

Factory Mutual (FM) Approval Guide-Fire Protection (2002).

IBC - International Building Code (2003)

IMC - International Mechanical Code

IPC - International Plumbing Code

IEEE C2 National Electrical Safety Code (NESC)

IEEE C57.12.22

IEEE C57.12.28 - IEEE Standard for Pad-Mounted Equipment—Enclosure Integrity

IEEE C57.12.34-2004 - Errata to IEEE Standard Requirements for Pad-Mounted, Compartmental-Type, Self-Cooled, Three-phase Distribution Transformers (2500 kVA and Smaller)- High-Voltage: 34 500 GrdY/19 920 Volts and Below; Low Voltage: 480 Volts and Below

IEEE C57.12.80-2002 - IEEE Standard Terminology for Power and Distribution Transformers

IEEE 48 IEEE Standard Test Procedures and Requirements for Alternating-Current Cable Terminations 2.5 kV Through 765 Kv

IEEE Std 62™-1995 (R2005)

IEEE Std 81-1983

IEEE Std 81.2-1991

IEEE 100

IEEE 241 - 1990

IEEE 242 - 2001

01015-45

IEEE standard 400-1991

IEEE standard 519-1992

IEEE standard 1100, Powering and Grounding Electronic Equipment (aka Emerald Book)

IESNA Lighting Handbook

International Electrical Testing Association Inc. (NETA) Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems

MIL-HDBK-1003/11 Diesel-Electric Generating Plants

MIL-HDBK-1004/21 Power Distribution Systems

MIL-HDBK-1012/3

NFPA 10, Portable Fire Extinguishers

NFPA 70, National Electrical Code

NFPA 72, National Fire Alarm Code, 2002 edition

NFPA 101, Life Safety Code, 2003 edition

NFPA 780, Lightning Protection

TI 800-01 Design Criteria

TM 5-684 Facilities Engineering - Electrical Exterior Facilities

TM 5-688 Foreign Voltages and Frequencies Guide

TM 5-803-14 Site Planning and Design

TM 5-811-1 Design: Electrical Power Supply and Distribution

TM 5-811-3 Electrical Design: Lightning and Static Electricity Protection

UFC 1-200-01, Design: General Building Requirements, 31 July 2002

UFC 1-300-09N, Design Procedures, 25 May 2005

UFC 3-501-03N Electrical Engineering Preliminary Considerations

UFC 3-520-01 Interior Electrical Systems, 10 June 2002

UFC 3-530-01AN Design: Interior and Exterior Lighting and Controls 19 Aug 2005

UFC 3-550-03FA Electrical Power Supply and Distribution

UFC 3-550-03N Power Distribution Systems

01015-46

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

UFC 3-560-10N, O&M: Safety of Electrical Transmission and Distribution Systems

UFC 3-600-01: Fire Protection Engineering for Facilities

Underwriters' Laboratories (UL) Fire Protection Equipment Directory (2002).

USCINCCENT OPORD 97-1

UL 467 Grounding and Bonding Equipment

MIL-HDBK-1004/21 Power Distribution Systems

9.2.2 Design shall be in metric units.

9.3 MATERIAL

9.3.1 General

Unless noted otherwise, all material used shall be in compliance with the requirements of UL standards. In the event that UL compliant materials are not available, Contractor may then select applicable British Standards (BS), IEC, CE, CSA, GS, or DIN listed material, but the Contractor must prove equivalence and must provide the Government with a full copy of the relevant specification(s). Material and equipment installed under this contract shall be for the appropriate application and installed in accordance with manufacturers recommendations.

Equipment enclosure types shall be in compliance with the National Electrical Manufacturer's Association (NEMA) or the International Electro-Technical Committee (IEC) standards.

Material and equipment installed under this contract shall be for the appropriate application. Materials and equipment shall be installed in accordance with recommendations of the manufacturer. Major components of equipment shall have the manufacturer's name, address, type or style, voltage and current rating, and catalog number on a non-corrosive and non-heat sensitive plate, securely attached to the equipment. All equipment delivered and placed in storage, prior to installation, shall be protected from the weather, humidity and temperature variation, dirt and dust, and any other contaminants. All equipment shall be in new condition, undamaged and unused.

9.3.2 Standard Product: All material and equipment shall be a standard product of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been in satisfactory use for at least two (2) years prior to bid opening.

9.3.3 Design Conditions: All equipment shall be rated and designed for 50 Degree Centigrade and elevation of 2,000 meters above sea level.

All medium voltage installations shall comply with the requirements of the National Electrical Safety Code (NESC, aka IEEE C2) and the National Electrical Code (NEC, aka NFPA 70), as well as appropriate UFCs and IEEE standards listed above.

01015-47

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

9.3.4 Restrictions: Aluminum conductors shall not be used. Aluminum windings shall NOT be used in transformers.

Any references to 120/208/220/277/480 volt, 60Hz systems in any code or standard shall be interpreted as 220/380 volt, 50Hz systems, unless otherwise modified or directed in this RFP. References in the National Electrical Code to 120 or 125 volt receptacles shall be taken to mean 220v receptacles.

Transformers shall be pad-mounted, dead front type, as defined by NESC. Distribution lines (distribution system) shall be underground.

9.4 DESIGN REQUIREMENTS

9.4.1 Power Plant

Connect to existing base power system. No new power plant or generators are required.

9.4.2 Site Primary & Secondary Power Distribution System

Primary (15kV 'Delta') and secondary power distribution shall be underground. Design and installation of primary and secondary power distribution systems shall be complete and in compliance with the requirements of the National Electrical Safety Code (ANSI/IEEE C2), UFC 3-550-03FA (also called Army TM 5-811-1), National Electrical Code (NFPA 70), and other electrical references listed in this RFP. Primary power distribution shall be complete, to include but not be limited to, fused cut-outs, arresters, terminals, cable guards, circuit breakers, transformers, and related items. All primary feeder taps shall be protected with fused cutouts. Long feeder runs shall be provided with sectionalizing devices, such as, in-line fuses, sectionalizer or recloser, as necessary. Minimum of 3 fuses, with appropriate rating, shall be provided as spares at each fused cut-out location.

Primary Distribution shall be installed in accordance with the NESC, UFC 3-550-03FA, and other applicable standards listed in this RFP.

9.4.2.1 Raceways

Exterior raceways (conduits) shall be installed at a slope towards a manhole or hand-hole to avoid collection of water in the raceway. Conduit shall be PVC, thin-wall for concrete encasement and hard-wall (Schedule 40) for direct burial. Direct buried conduit shall only be installed for street lighting circuits. Direct buried conduits shall be encased in concrete, when under paved areas or under road crossings. High voltage cables shall be installed in conduit no less than 100 mm (4 inch) in diameter. Secondary cable shall be installed in conduit no less than 50 mm (2 inch). Direct buried conduit shall be installed 800 mm (32 inch) below grade.

All underground conduits shall use long-sweeping elbows. All communications conduits shall use long-sweeping elbows.

01015-48

9.4.3 Transformer Stations: Transformer stations shall be strategically located close to the loads. Dedicated transformer stations shall be provided for large loads. Transformers shall be Primary 'Delta' and Secondary 'Wye' connected. Primary side load-break disconnecting means shall be provided with all transformers. All transformers shall be sized for known projected demand loads, plus (+) 20% spare capacity for future growth. Transformers shall be dead-front, loop-feed, pad-mounted, compartmental, and self-cooled type. Transformers shall come complete from manufacturer; use of third-party transformer housings or add-on transformer housings shall not be permitted. Transformers shall have no exposed live components.

Transformer selection, design, and installation shall be governed by NEC, NESC, ETL 1110-3-412, TM 5-684, UFC 4-510-01, UFC 3-550-03FA, UFC 3-550-03N, IEEE C57.12.28, ANSI/IEEE C57.12.22, IEEE C57.12.34, and C57.12.80.

9.4.5 Underground Conductors: All underground conductors shall meet the requirements of the codes and standards listed in this RFP, including but not limited to: NESC, NEC, UFC 3-550-03FA, and related.

9.4.6 Secondary Power Distribution System

Secondary Power shall be 380/220 volts, 3 phase, 4 wire, 50 Hz. Building secondary power distribution system shall include main distribution, lighting and power panels as required. All panel boards shall be circuit breaker 'bolt-on' type panels. In large buildings separate lighting and power panels shall be provided. It is recommended that minimum size circuit breaker be rated at 20 amperes. Circuit breakers shall be connected to bus bar(s) within the panel boards. Daisy chain (breaker-to-breaker) connection(s) shall not be acceptable. Indoor distribution panels and load centers shall be flush mounted in finished areas. All circuit breakers shall be labeled with an identification number corresponding to the panel schedule. A 3-pole circuit breaker shall be a single unit and not made up of 3 single pole circuit breakers connected with a wire or bridged to make a 3-pole breaker. All wiring shall be copper, minimum # 12 AWG (4mm sq), recessed in finished areas and surface mounted in metal conduits in unfinished areas. All panels shall be provided with a minimum of 20% spare capacity for future load growth. Power receptacles (outlets) shall be duplex, 240 volts, 50 HZ, German (DIN) Standard. All splicing and terminations of wires shall be performed in a junction or device boxes. Proper wire nuts/connectors shall be used for splicing wire. No twist-wire connections with electrical tape wrapped around it shall be acceptable. All electrical installation shall be in accordance with the requirements of NFPA 70 (National Electric Code). Main Distribution Panel shall be provided with an ammeter, voltmeter and kilowatt-hour meter. Selector switch shall be provided for reading all 3 phases. All service entrance cables and equipment, such as main distribution panels etc., to the facilities shall be sized for the ultimate facility loads, to include any heating loads (infrared heating), initial and future provided by others.

9.4.6.1 Receptacles

General purpose receptacles shall be duplex, grounding (earthed) type, "flush" or "semi-flush" wall mounted type, color ivory and installed 500 mm above finished floor (AFF). In office or similar areas receptacles shall be provided at every 1.8 meter intervals (or closer). In maintenance buildings, 3-duplex receptacles (minimum) shall be provided at each vehicle maintenance

01015-49

bay. In storage buildings, receptacles shall be provided in 5 meter intervals (or closer). In communications rooms, receptacles shall be provided at 1 meter intervals or closer. In areas not otherwise listed, receptacles shall be spaced every 3-meters or closer. CEE Type receptacles with plugs 2P+E (240v) or 3P+E (380v) and with appropriate rating, shall be provided for, but not be limited to, washers, dryers, kitchen equipment and any other type of large plug-able equipment. Receptacle shall be complete to include box, cover plate and necessary screws/connectors and of the type most commonly used in Afghanistan. Receptacles near sinks or lavatories shall be switch operated and Ground Fault Circuit Interrupter (GFCI), or Residual Current Disconnect (RCD) type, with the trip setting of 30 milliampere or less.

Sinks will have a receptacle above, with one dual receptacle serving two sinks that are side-by-side. Receptacles in wet/damp areas or within 1 meter (~3 feet) of sinks, lavatories, or wash-down areas shall be ground fault circuit interrupter (GFCI) type or Residual Current Disconnect (RCD) type, with the trip setting of 30 milliampere or less.

Total number of duplex receptacles shall be limited to six (6) per 16- or 20-ampere circuit breaker.

9.4.6.2 Lighting

Light Fixtures: Lighting fixtures shall be a standard manufacturer's product. Fluorescent light fixtures shall be power factor corrected and equipped with standard magnetic ballast(s). All light fixtures shall be capable of receiving standard lamps used locally. Light fixtures shall be mounted at 2.7 meters, minimum, AFF. Fixtures may be pendant or ceiling mounted, depending on the ceiling height. Lighting levels for the areas for which no design has been provided shall be calculated for the values given below. All fixtures shall be fully factory wired.

General Office Space/Computer Rooms	40 FC (400 Lux)
Conference Rooms	30 FC (300 Lux)
Dining Rooms	70 FC (700 Lux)
Laundry Rooms	30 FC (300 Lux)
Bedrooms	30 FC (300 Lux)
Kitchen	70 FC (700 Lux)
Lobbies	15 FC (150 Lux)
Lounges	15 FC (150 Lux)
Mechanical & Electrical Equipment Rooms	20 FC (200 Lux)
Stairways	20 FC (200 Lux)
Toilets	20 FC (200 Lux)

9.4.6.2.1 High Ceilings

Contractor may provide high bay High Pressure Sodium (HPS) vapor light fixtures in facilities with high ceilings, provided that the replacement lamps for the fixtures are available locally.

9.4.6.2.2 Light Switch

Light switch shall be single pole. Minimum of one light switch shall be provided in every room. Lighting in large rooms/areas may be controlled from multiple switches. Lighting contactors may be used to operate lighting in

01015-50

open or large bay areas. Rooms with multiple entrances shall have multi-way switches.

9.4.6.3 Dedicated Service

Contractor shall provide and install a dedicated 3-phase service for X-Ray machine in X-Ray Room of the Clinic. Service shall include a 3-pole, 40 ampere circuit breaker at 440V, 50 Hz, with a safety disconnect switch provided in the X-Ray Room. Final location of disconnect switch shall be coordinated with the Contracting Officer. Wiring shall be installed in conduit.

9.5 CONDUCTORS

All cable and wire conductors shall be copper. Conductor jacket or insulation shall be color coded to satisfy local utility requirements. Conductors shall be sized in accordance with this RFP and the listed codes and standards.

For interior wiring, the use of 75 or 90 degree C (minimum) terminals and insulated conductors is required. Use of 75 degree C conductors on circuits with protective device terminals rated for 60 degree C is inappropriate.

9.6 GROUNDING AND BONDING

In general, grounding and bonding shall comply with the requirements of NFPA 70 and NFPA 780. Underground connections shall be exothermal welded. All exposed non-current carrying metallic parts of electrical equipment in the electrical system shall be grounded. Insulated grounding conductor (separate from the electrical system neutral conductor) shall be installed in all feeder and branch circuit raceways. Grounding conductor shall be green-colored, unless the local authority requires a different color-coded conductor. Ground rods shall be copper-clad steel. Ground resistance shall not exceed 25 ohms when measured more than 48 hours after rainfall using the fall of potential method outlined in IEEE 81.

9.6.1 Lightning Protection

Provide per the NEC and NFPA 780, as well as other applicable standards listed in this document.

9.7 ENCLOSURES

Enclosures for exterior applications shall be NEMA Type 4X (IEC Classification IP56) or better and for dry interior locations NEMA Type 1 (IEC Classification IP10) or better. For wet indoor locations, NEMA type 3S (IEC Classification IP54) or better shall be used.

9.8 FIRE DETECTION & ALARM SYSTEM

Per directions from the Host Nation, no Fire Detection and Alarm System shall be provided in the facilities to be used by the Host Nation's personnel. However, Fire Alarm System shall be provided, as described below, in the facilities to be used by the U.S. Personnel. In U.S. Barracks Fire Detection and Alarm System shall consist of hard-wired, multi-station smoke detectors,

01015-51

with building wide annunciation. No Fire Alarm System shall be provided in the Dining Facility. In addition to building wide fire alarm annunciation, the system shall also be capable of automatically transmitting the alarm signal via telephone lines to the local Base Fire Department / Fire Station. System design shall be in accordance with the requirements of NFPA 72. Fire alarm system shall be complete and a standard product of one manufacturer.

9.9 TELEPHONE/COMPUTER NETWORK SYSTEM

Each Corps, Brigade, and Battalion HQ building office, room shall have telephone and computer data outlets. Telephone/data System shall include cross-connect boxes, duplex RJ-45 telephone outlets with a minimum of two 4 pair Category 5 Enhanced (CAT 5e) cable terminating at each outlet (jack) one for voice and one for data connectivity. The Contracting Officer Representative (COR) shall determine outlet locations for individual rooms. Telephone wiring shall be recessed in finished areas and surface mounted in metal conduits in unfinished areas. Two (2) appropriately sized empty conduits shall be provided from the cross connect box to the outside communication hand-hole. See paragraphs 10 thru 10.3.2 below for additional requirements for communications systems.

9.10 TELEVISION SYSTEM

Television System shall consist of television outlets and an empty metal conduit raceway system, to include necessary junction boxes and pull wire. The Contracting Officer shall determine outlet locations. Television monitors, coaxial cable any amplification devices shall be provided by others. One 2-inch (50 mm) conduit shall be provided from the television junction box to the outside communication hand-hole.

9.11 IDENTIFICATION NAMEPLATES

Major items of electrical equipment, such as the transformers, manholes, hand holes, panel boards and load centers, shall be provided with a permanently installed engraved identification nameplate.

9.12 SCHEDULES

All panel boards and load centers shall be provided with a panel schedule. Schedule shall be typed written in English and Afghan languages.

9.13 SINGLE LINE DIAGRAM

Complete single line diagram shall be provided in every transformer distribution panel and in the Main Distribution Panel in each building. Single line diagram shall show all panels serviced from the transformer distribution panel and the MDP respectively.

10 Installation Communication Systems

This facility will receive telephone and data service from Camp Morehead (Commando) Base Communications Building which is the installation's center for telecommunications, switching, and automation networking (including internet service).

01015-52

10.1 Not used.

10.2 Outside Plant Infrastructure

10.2.1 Conduit System

Provide underground conduit system, 4-6 inches schedule 40 no load and 80 load or 6- inch ASTM equivalent from the communications room to each building (with 25% growth expansion).

10.2.2 Maintenance and Hand Holes

The Contractor shall provide reinforced concrete maintenance-holes with communications and number marked on the steel cover.

Manhole/Hand Hole systems shall have no more than 100 meters between access points.

10.2.3 Not Used.

10.3 Inside Plant Infrastructure

10.3.1 Inside Plant (ISP) Cables

Terminate distant end of the copper cables on 110 blocks in each user building Telecommunications Room.

Terminate distant end of the fiber optic cables on SC type connectors in each user building Telecommunications Room.

Install CAT5e UTP or better and RJ-45 blocks (1 voice and 1 data) per 100 square feet in each user building utilizing U.S. standards (EIA/TIA 569)

10.3.2 Telecommunications Room (TR): (A.K.A.: Telephone Closet)

The telecommunications room is a space or area in a user's building that is designed to provide secure, suitable environment for the installation of cable, telecommunications equipment, and termination and cross-connect facilities. The telecommunications room is the point where the base backbone cabling interfaces to the buildings horizontal cabling (copper and fiber optic cables).

The telecommunications room is a floor serving distribution facility for horizontal cabling. A telecommunications room is required for each floor if the building has multiple floors and each should be vertically aligned over each other connected with a minimum of two 4" riser conduits.

The telecommunications room must be dedicated to the telecommunications function and related support facilities. Equipment not related to the support of telecommunications such as piping, duct work, and distribution of building power must not be located in, or pass through the telecommunications room.

The telecommunications room must be equipped with adequate electrical power which is normally 20A protected branch circuits for equipment, non-switched 3-wire alternating current duplex outlets for equipment, and separate

contingency outlets for test equipment/tools. All outlets must be non-switched (outlet power must not be controlled by a wall switch which may lead to inadvertent loss of service).

The telecommunications room must be locked with controlled access.

11. SPARE PARTS AND CONSUMABLES

The Contractor shall provide for all systems, based upon the spare parts list described in 1.32.2.2.j. of Section 01060, a supply of spare parts, equipment and consumables necessary to maintain operations throughout the performance period and conduct preventive maintenance and repair for a 6 month period beyond the contract performance period, to include those items required to perform testing and commissioning.

12. ATTACHMENTS

The following attachments form an integral part of the technical requirements:

Appendix A - ANA CE School/Ranges List of Facilities

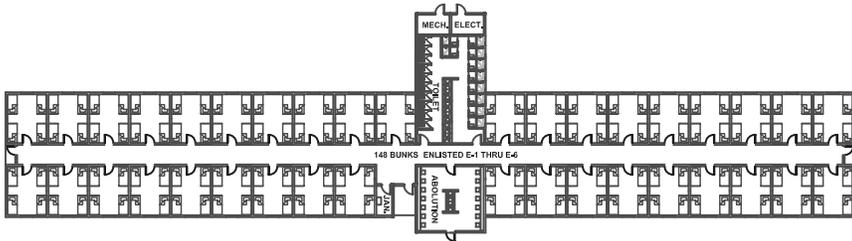
A-0	Site Layout
A-1	School Headquarters Plan
A-2	4 Classroom Floor Plan
A-3	3 Classroom Floor Plan
A-4	Covered Pavilion Plan
A-5	Enlisted Barracks E-1 - E- 6
A-6	Barracks Cadre, NCO, and Officers
A-7	Explosive Storage Bunker
A-8	Blasting Fuse Bunker
A-9	Personnel Bunker
L-1	Camp Morehead Location Map
L-2	Camp Morehead Site Layout
R-1	Range 1 Training and Proficiency Range
R-2	Range 2 Demolition Area
S-1	Typical Bunker Plan and Section Example
S-2	Typical Bunker Plan and Elevation Example
HC-1	Heat Cool Unit Schematic

-- End of Section --

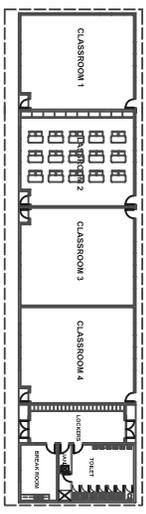
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Appendix A Drawings

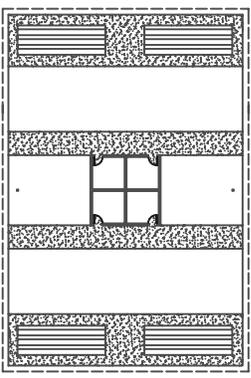
Plans are a guide; see Section 01010 and Section 01015 for further information



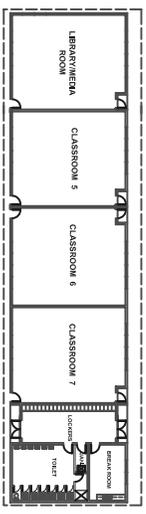
BARRACKS E-1 thru E-6



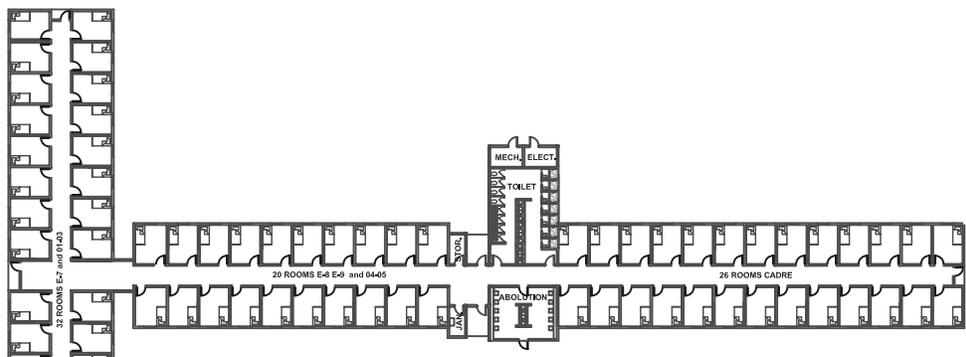
4 CLASSROOMS



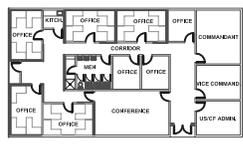
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3 CLASSROOMS

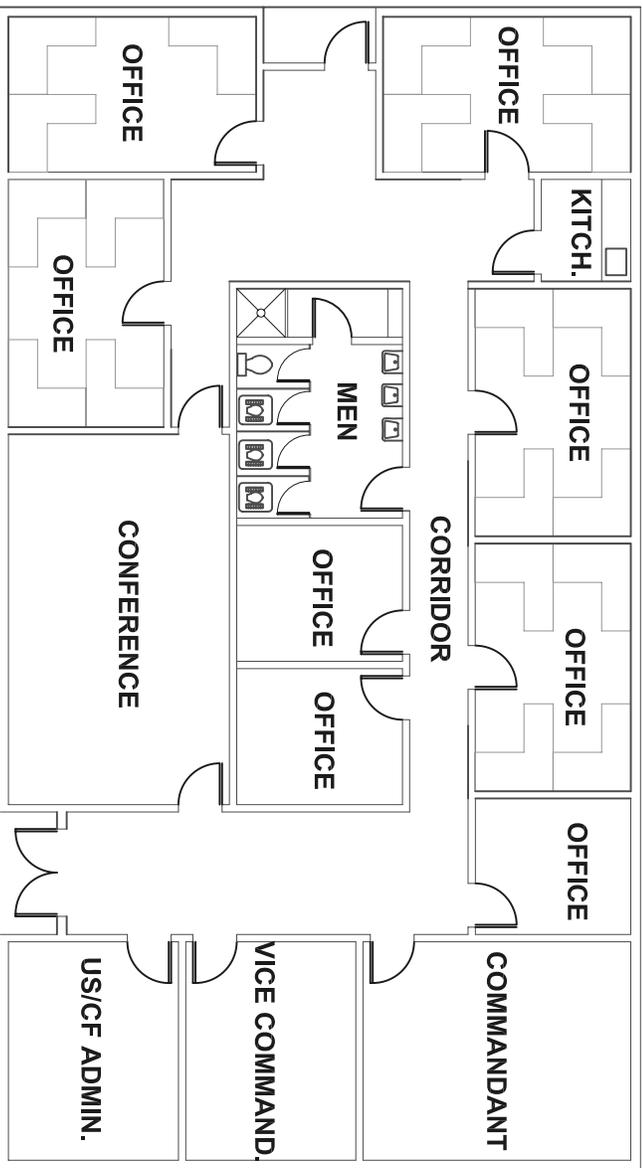


BARRACKS CADRE NCO and OFFICERS



HQ OFFICE



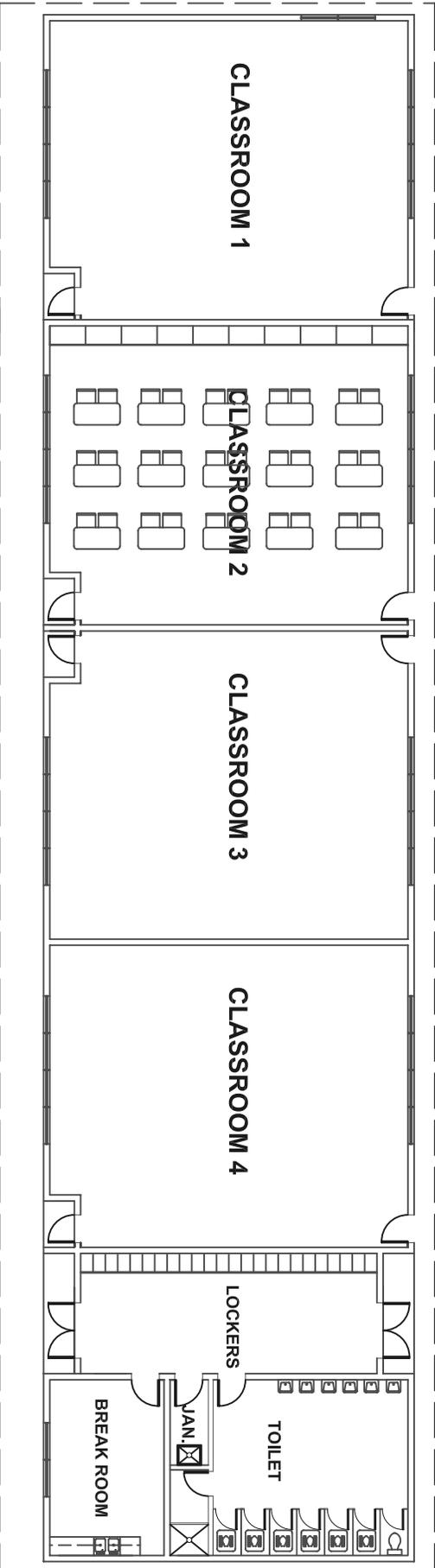


HEADQUARTERS OFFICE BUILDING

SHEET A-1

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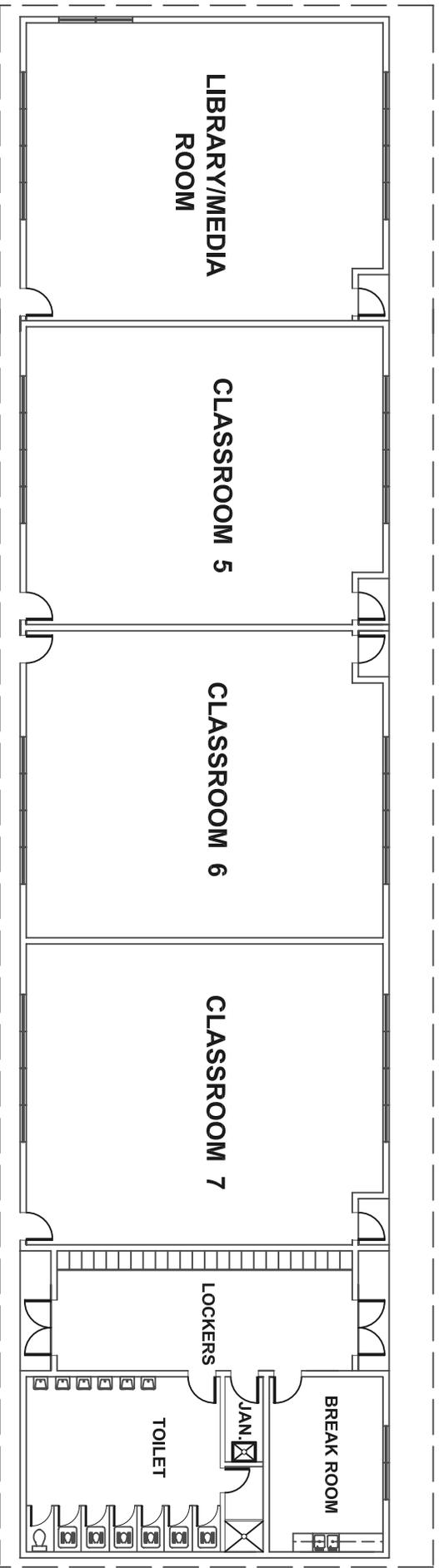




4 CLASSROOM SCHOOL BUILDING

SHEET A-2

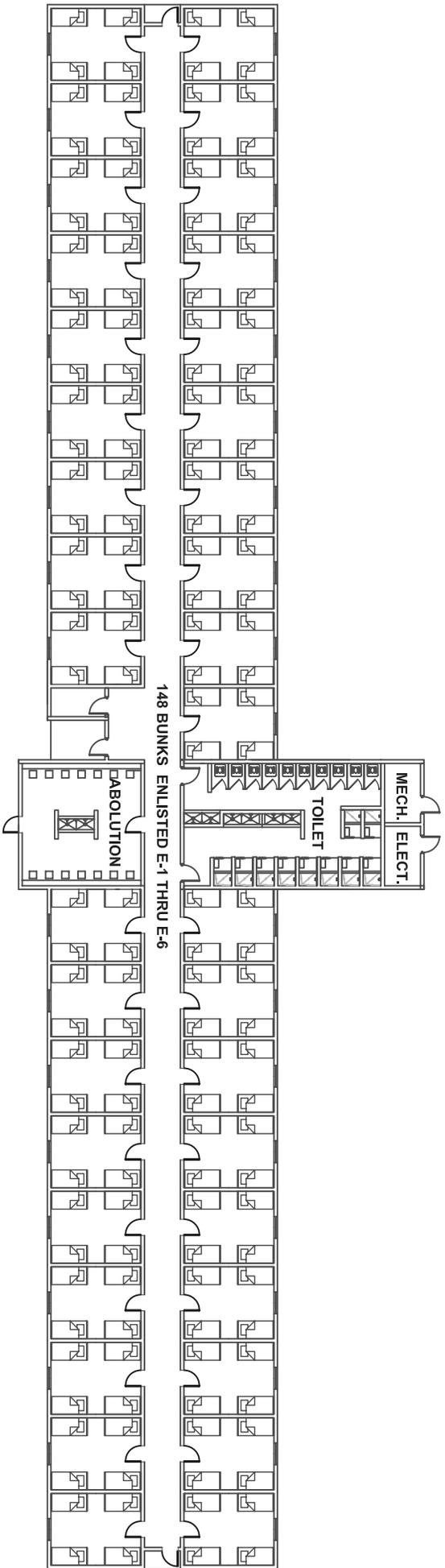




3 CLASSROOM SCHOOL BUILDING

SHEET A-3

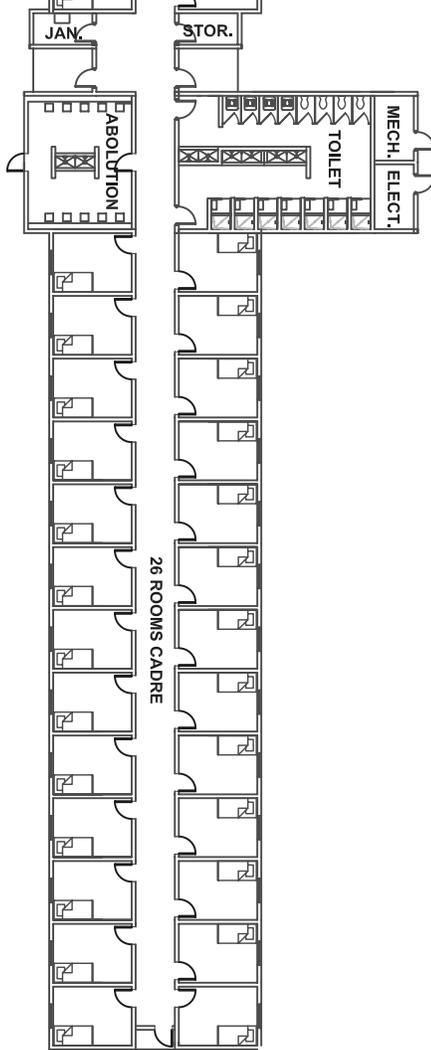
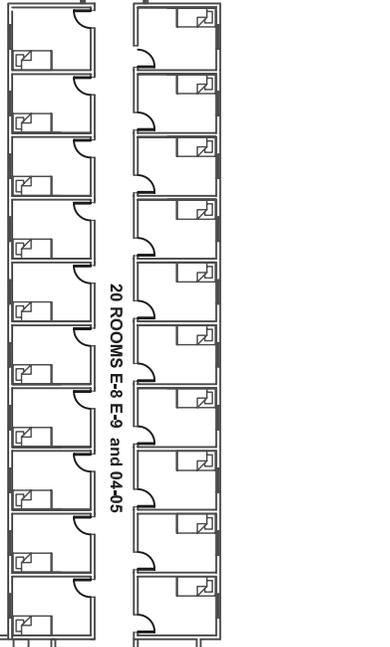




ENLISTED BARRACKS E-1 THRU E-6

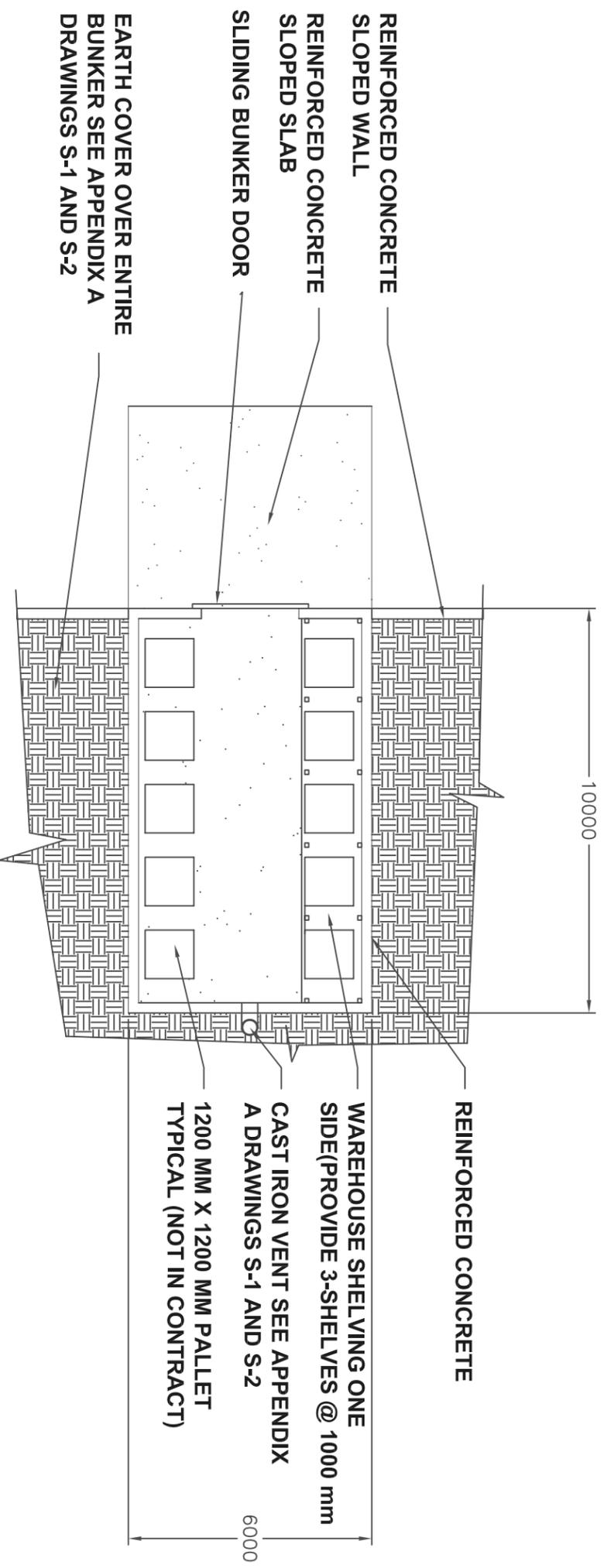
SHEET A-5





BARRACKS CADRE NCO and OFFICERS
SHEET A-6

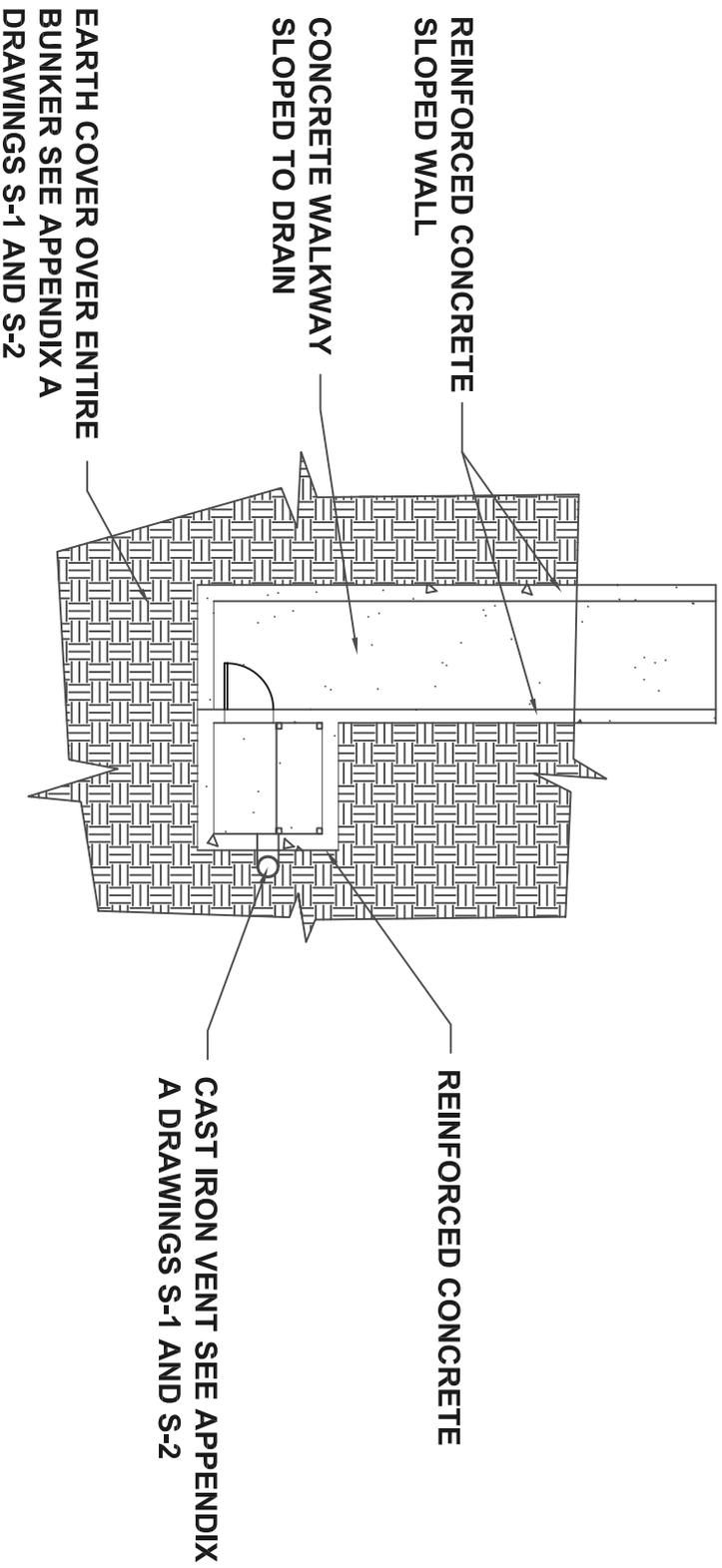




EXPLOSIVE STORAGE BUNKER

SHEET A-7

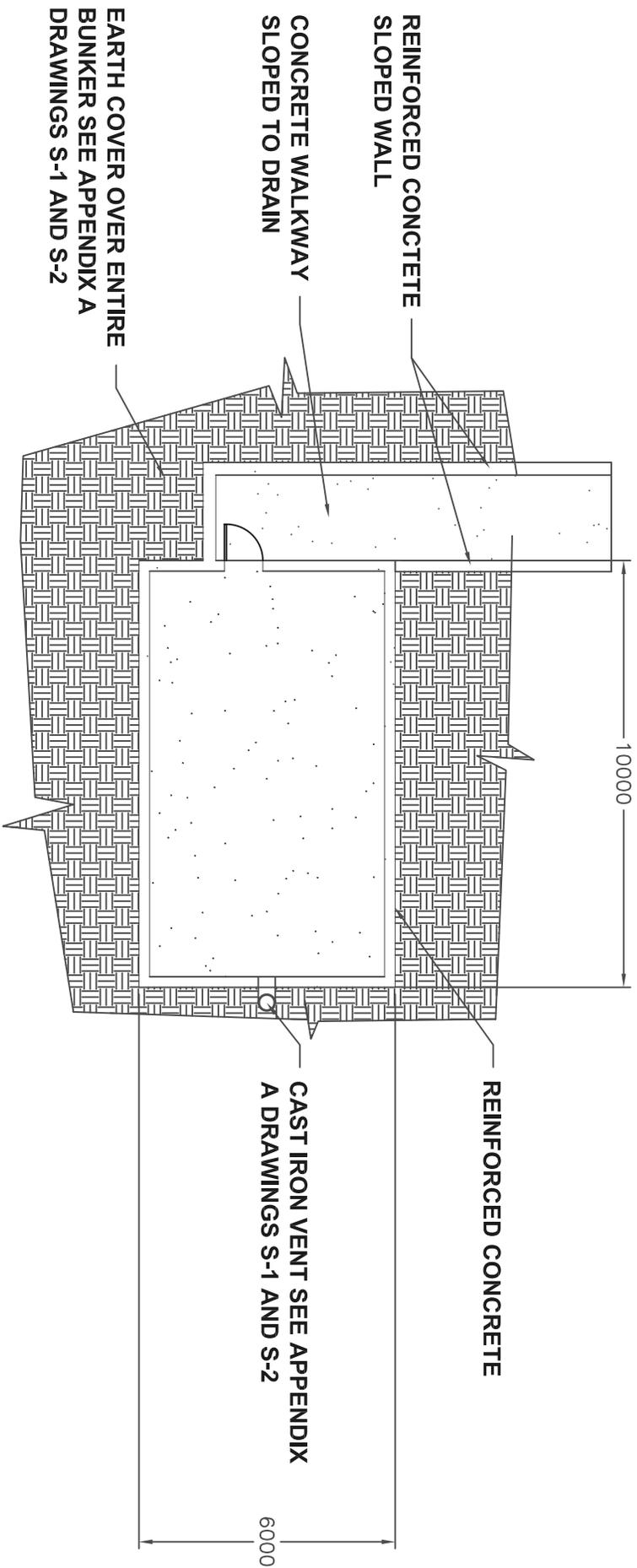




BLASTING FUSE BUNKER

SHEET A-8



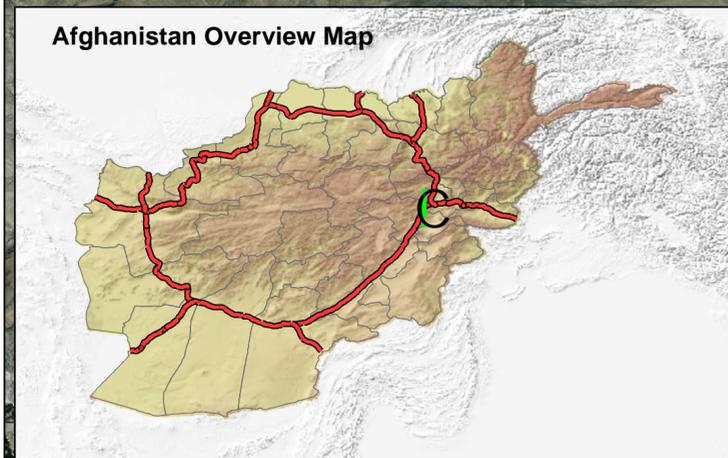
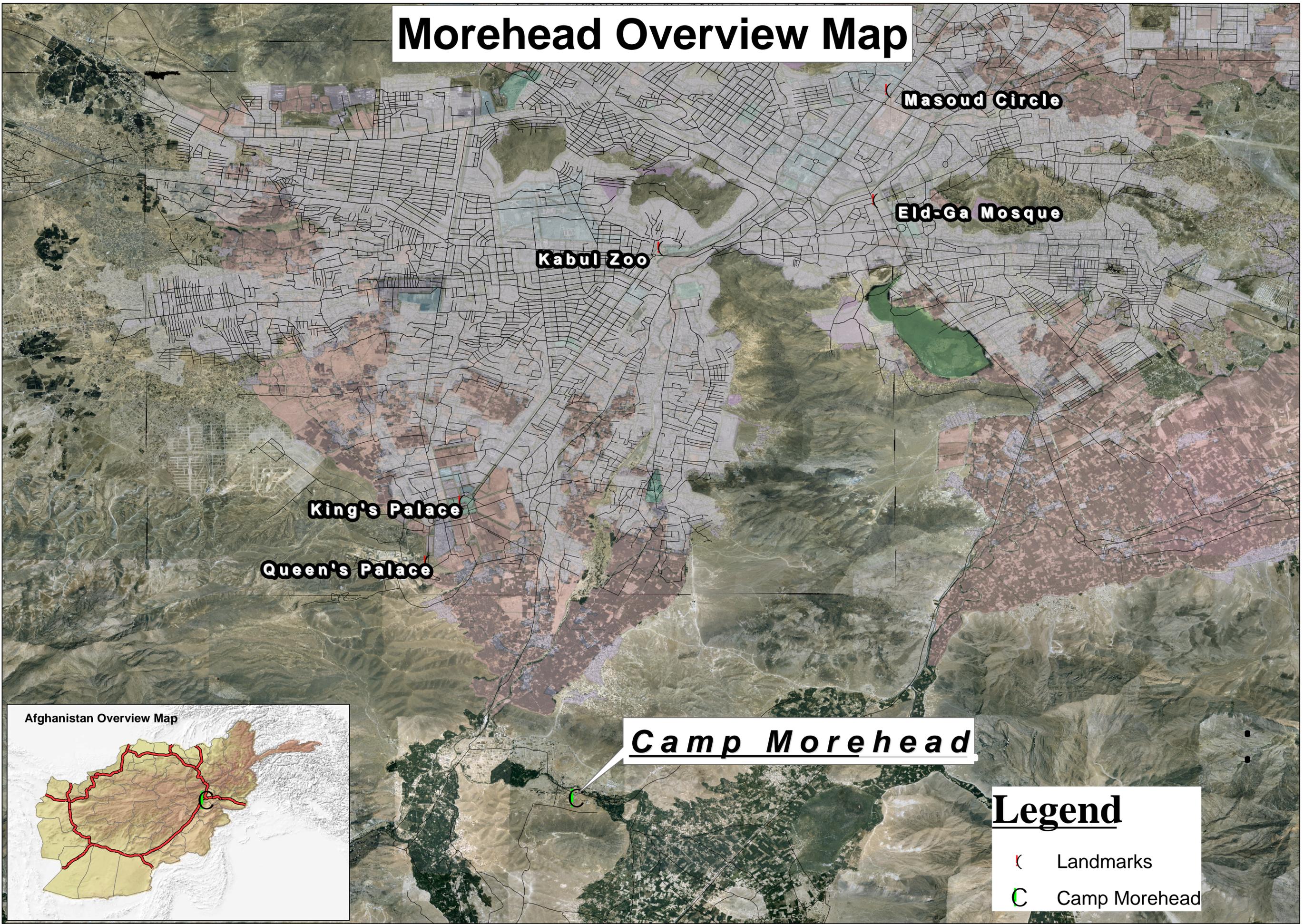


PERSONNEL BUNKER

SHEET A-9



Morehead Overview Map

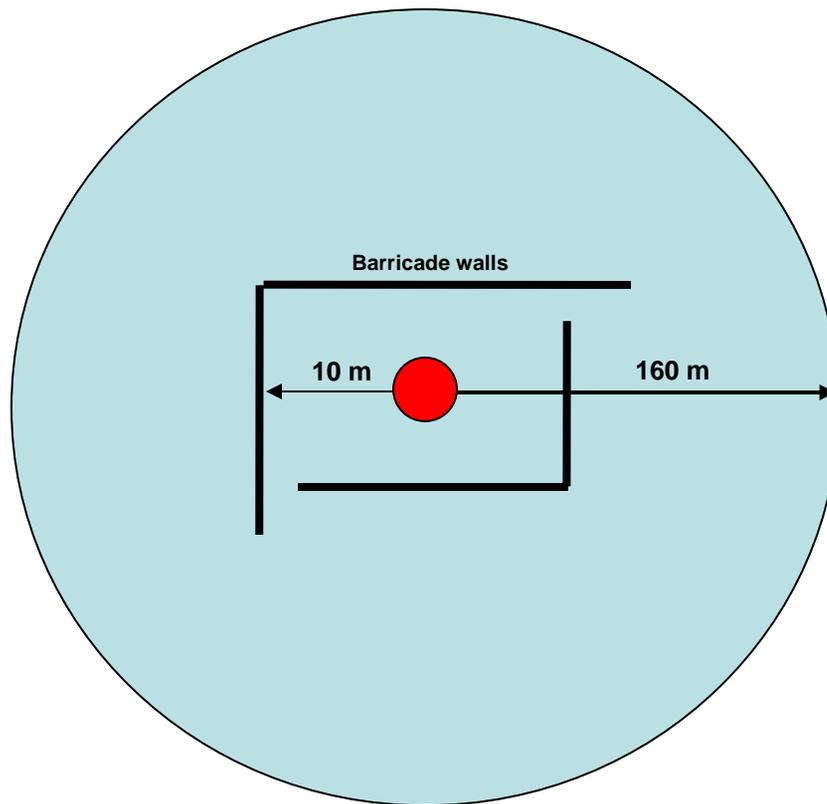


Camp Morehead

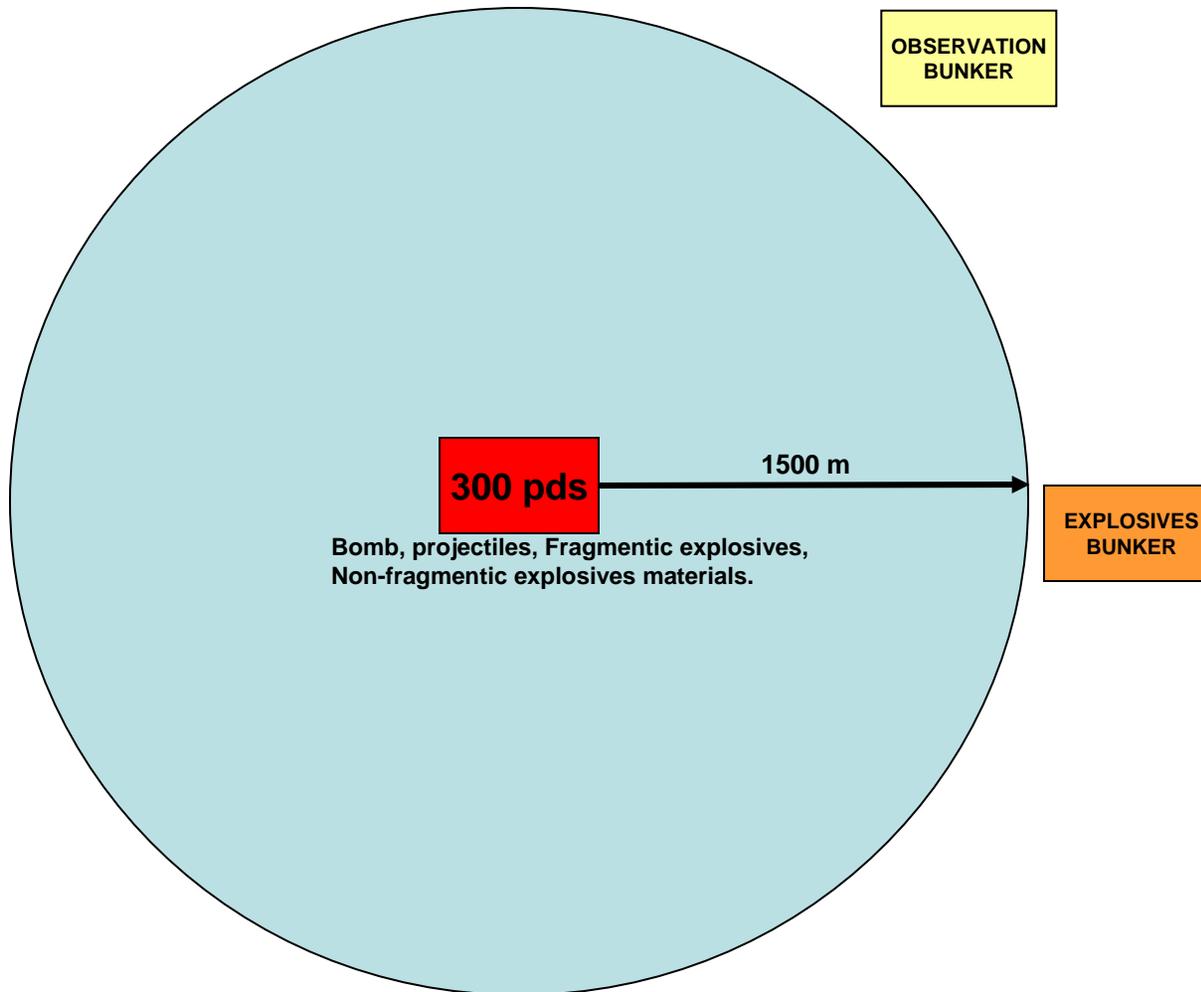
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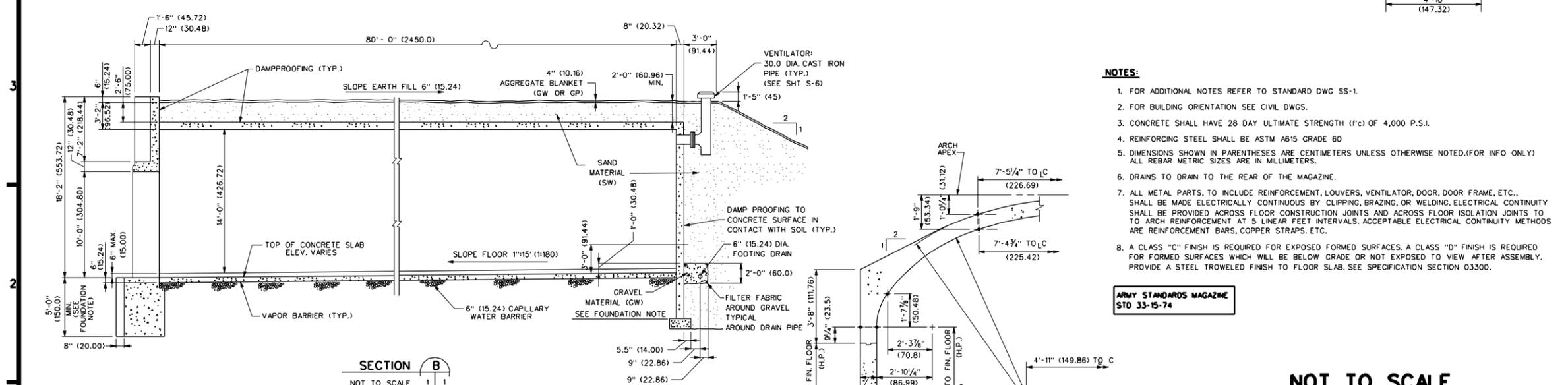
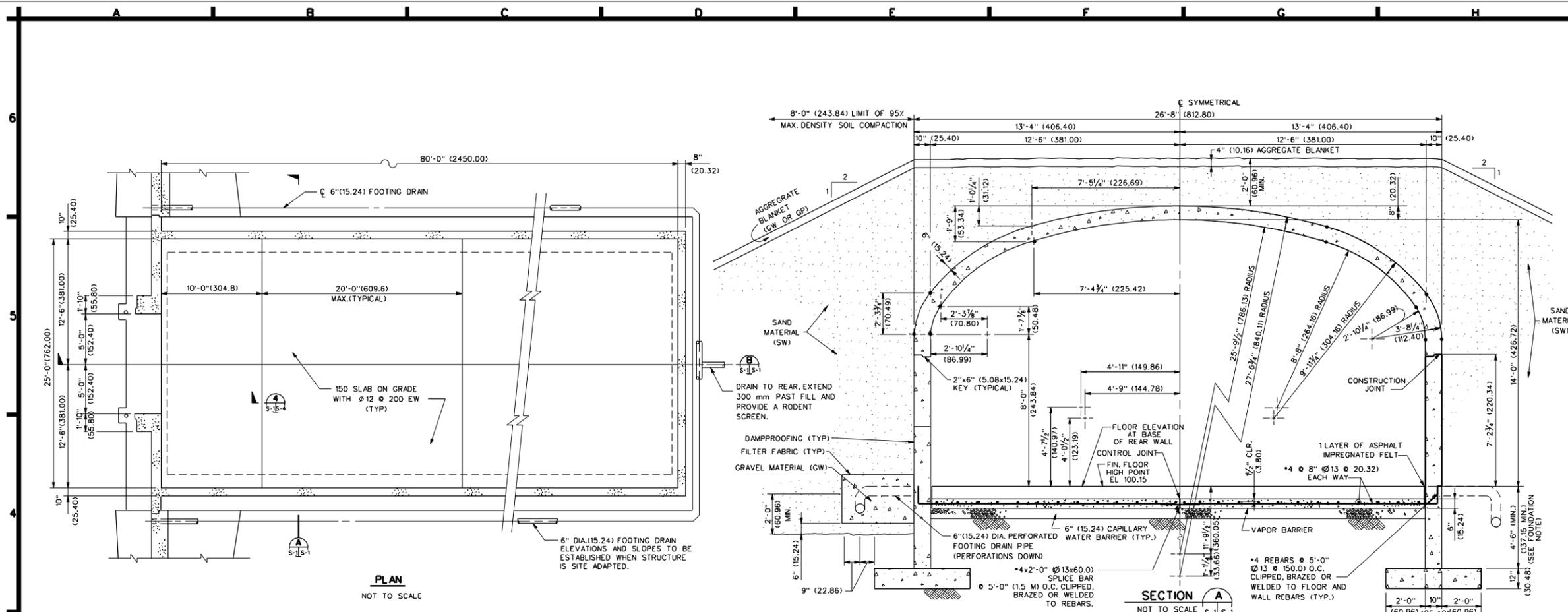
-  Landmarks
-  Camp Morehead

TRAINING AND PROFICIENCY RANGE



DEMOLITION AREA





NOTE APPLIES TO ALL FACILITIES WITHIN SCOPE OF PROJECT

FOUNDATION NOTE:
 FOUNDATION HAVE BEEN DESIGNED USING AN ALLOWABLE BEARING PRESSURE OF 1.2 KG/SQ. CM. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT THE ALLOWABLE BEARING PRESSURE OF 1.2 KG/SQ. CM IS ACCEPTABLE. IF THE CONTRACTOR DETERMINES THE ALLOWABLE BEARING PRESSURE IS LESS THAN THE 1.2 KG/SQ. CM, THE CONTRACTOR AT HIS EXPENSE SHALL DO WHATEVER IS NECESSARY TO IMPROVE THE SUBSURFACE CONDITION TO OBTAIN AN ALLOWABLE BEARING PRESSURE OF 1.2 KG/SQ. CM. ALL FOUNDATIONS SHALL BE PLACED A MINIMUM OF 1.5 METERS BELOW THE LOWEST EXISTING GROUND SURFACE WITHIN THE FOOTPRINT OF THE BUILDING

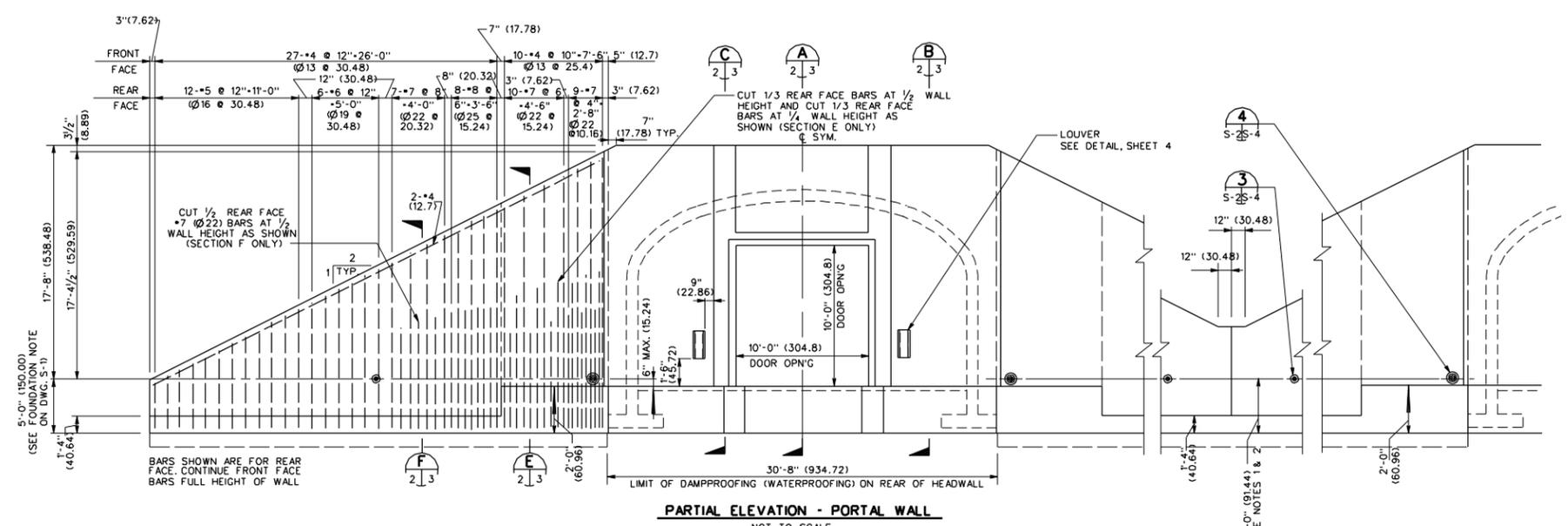
- NOTES:**
- FOR ADDITIONAL NOTES REFER TO STANDARD DWG SS-1.
 - FOR BUILDING ORIENTATION SEE CIVIL DWGS.
 - CONCRETE SHALL HAVE 28 DAY ULTIMATE STRENGTH (f'c) OF 4,000 P.S.I.
 - REINFORCING STEEL SHALL BE ASTM A615 GRADE 60
 - DIMENSIONS SHOWN IN PARENTHESES ARE CENTIMETERS UNLESS OTHERWISE NOTED.(FOR INFO ONLY) ALL REBAR METRIC SIZES ARE IN MILLIMETERS.
 - DRAINS TO DRAIN TO THE REAR OF THE MAGAZINE.
 - ALL METAL PARTS, TO INCLUDE REINFORCEMENT, LOUVERS, VENTILATOR, DOOR, DOOR FRAME, ETC., SHALL BE MADE ELECTRICALLY CONTINUOUS BY CLIPPING, BRAZING, OR WELDING. ELECTRICAL CONTINUITY SHALL BE PROVIDED ACROSS FLOOR CONSTRUCTION JOINTS AND ACROSS FLOOR ISOLATION JOINTS TO TO ARCH REINFORCEMENT AT 5 LINEAR FEET INTERVALS. ACCEPTABLE ELECTRICAL CONTINUITY METHODS ARE REINFORCEMENT BARS, COPPER STRAPS, ETC.
 - A CLASS "C" FINISH IS REQUIRED FOR EXPOSED FORMED SURFACES. A CLASS "D" FINISH IS REQUIRED FOR FORMED SURFACES WHICH WILL BE BELOW GRADE OR NOT EXPOSED TO VIEW AFTER ASSEMBLY. PROVIDE A STEEL TROWEL FINISH TO FLOOR SLAB. SEE SPECIFICATION SECTION 03300.

ARMY STANDARDS MAGAZINE
 STD 33-15-74

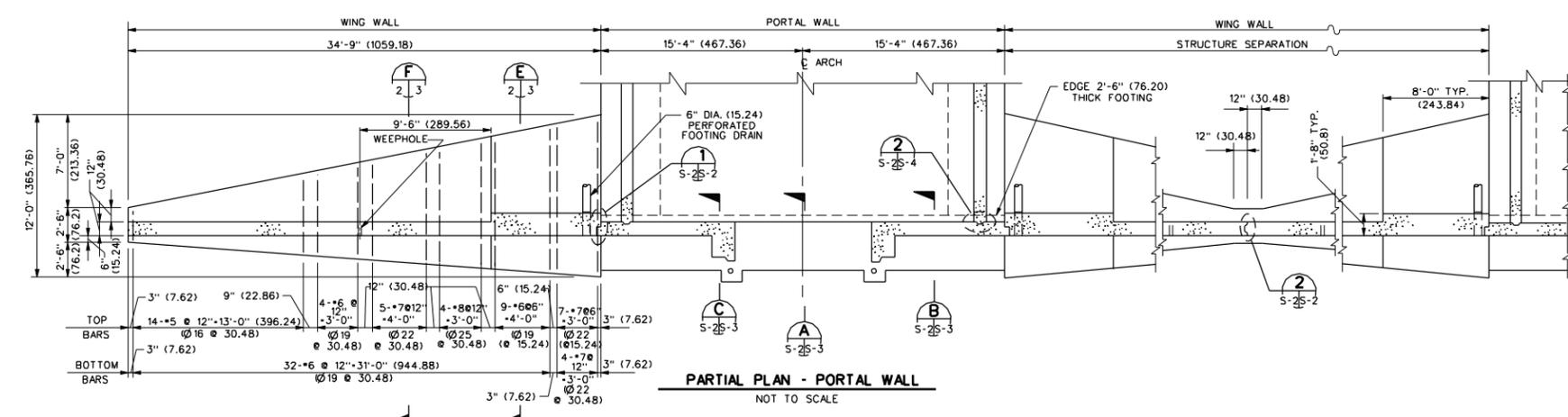
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DESIGNED BY: DATE: 12-01-03	SUBMITTED BY: PHILIP DNELO
ARMY	CHIEF, P.D.F. DEV.
DWN BY: ARMY	FILE NO: KUDITD A-580PN
CHK BY: KCO	DATE APPROVED: _____
DESCRIPTION: JOINT MUNITIONS STORAGE COMPLEX	DESCRIPTION: _____
DESCRIPTION: AHMED AL JABER AB, KUWAIT	DESCRIPTION: _____
DESCRIPTION: MUNITIONS STORAGE 1600 TYPE A	DESCRIPTION: _____
DESCRIPTION: FOUNDATION PLAN AND SECTIONS	DESCRIPTION: _____
SHEET REFERENCE NUMBER: S-1	DESCRIPTION: _____

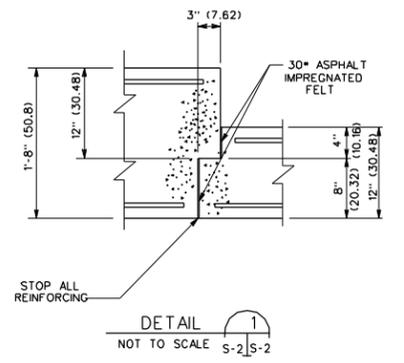
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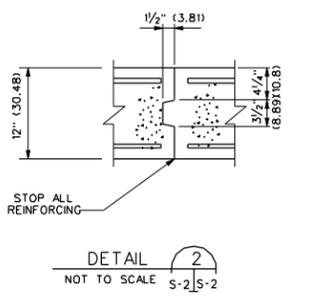
PARTIAL ELEVATION - PORTAL WALL
NOT TO SCALE



PARTIAL PLAN - PORTAL WALL
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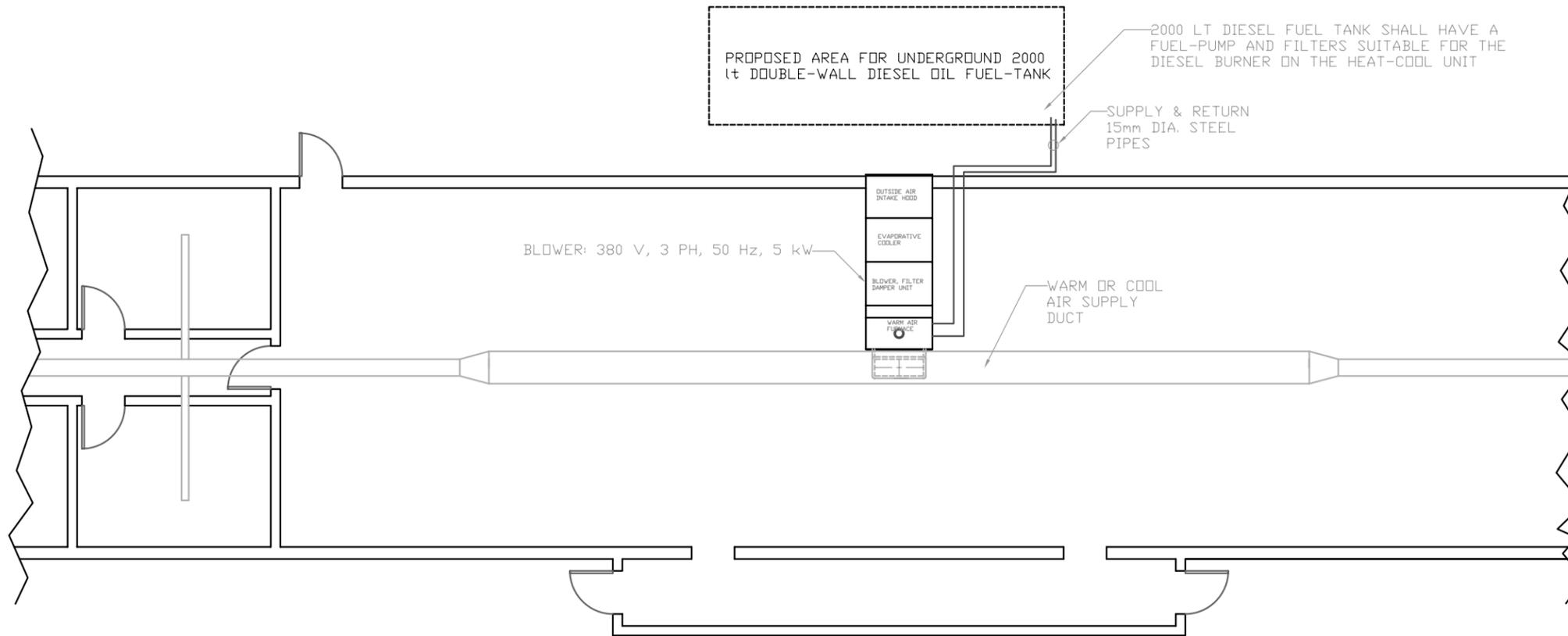
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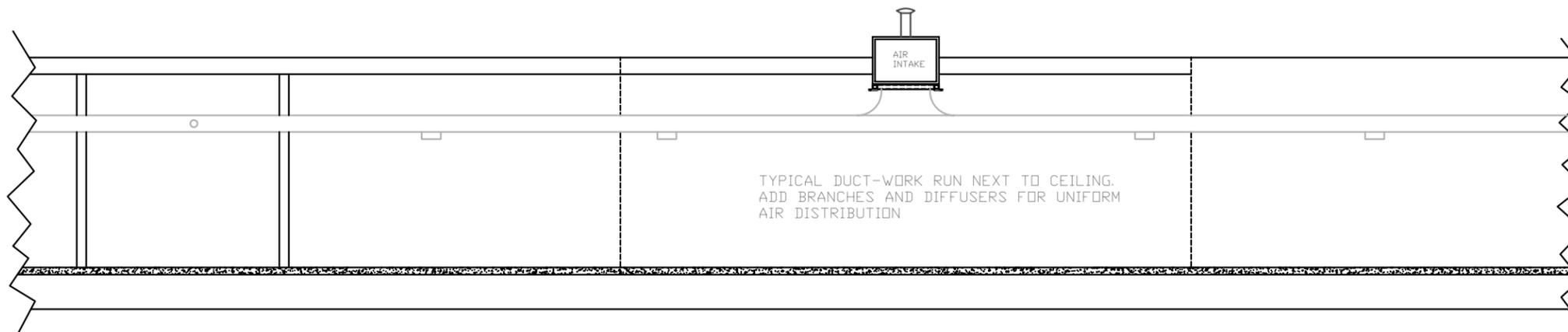
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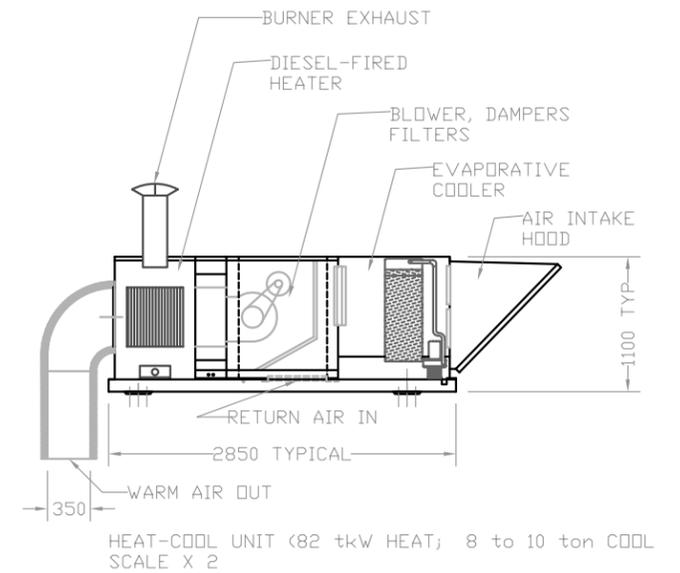
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TYPICAL BARRACKS, PLAN VIEW



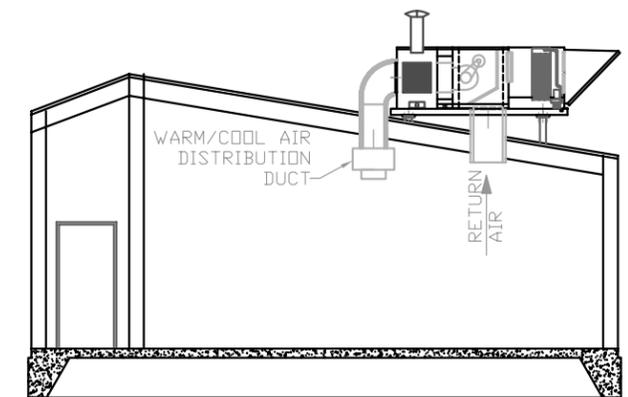
TYPICAL BARRACKS, ELEVATION (WINDOWS NOT SHOWN)



TYPICAL HEAT-COOL UNIT: TRANE MODEL 30-35 (OR EQUAL), 102 tkW INPUT MODIFIED WITH A DIESEL BURNER. BLOWER RANGE 2.5 TO 3.0 m³/s (9,000 TO 10,800 m³/h) HEATING, 25% OUTSIDE AIR; AND 3.0 TO 4.0 m³/s (10,800 TO 14,400 m³/h) EVAPORATIVE COOLING, 100% OUTSIDE AIR.

TYPICAL ROOF INSTALLATION AND SUPPLY AIR DUCTS, ROOF STRUCTURE MUST SAFELY SUPPORT TWO (2) TIMES THE ACTUAL WEIGHT OF THE HEAT-COOL UNIT.

TYPICAL BARRACKS HEAT-COOL ROOF INSTALLATION



THIS HEAT-COOL UNIT (DIESEL-FIRED, EVAPORATIVE-COOLED) WILL NOT BE INSTALLED WHERE OTHER TYPES OF HVAC EQUIPMENT HAS BEEN SPECIFIED, i.e. HEAT-PUMPS, CENTRAL REFRIGERATION A/C UNITS, OR SPLIT-PAC'S.

THE HEAT-COOL UNIT MOUNTING ARRANGEMENTS FOR OFFICES, MAINTENANCE GARAGES, WAREHOUSES SHALL BE DESIGNED FOR THOSE PURPOSES.

INSTALL A 2000 lt (2 m³) DOUBLE-WALL UNDERGROUND STEEL DIESEL OIL TANK WITH A 15 lt/h FUEL (220 V, 1 PH, 50 Hz) AT THE TANK; AND CONNECTED TO THE HEAT UNIT WITH 15mm DIAMETER SUPPLY & RETURN STEEL PIPE. THE U-G DIESEL FUEL TANK TO BE LOCATED AS NEAR TO EACH HEAT UNIT AS SAFETY ALLOWS.

SCHEMATIC FOR HEAT-COOL UNITS CONTRACTOR SHALL PROVIDE FINAL DESIGN, EQUIPMENT SIZING, STRUCTURAL SUPPORT, AND DRAWINGS AT 65% REVIEW. AS REQUIRED FOR EACH BUILDING.

SECTION 01060
SPECIAL CLAUSES

PART 1 GENERAL

1.1 PRECONSTRUCTION CONFERENCE

1.1.1 Schedule of Meeting

At the earliest practicable time, prior to commencement of the work, the Contractor and any Subcontractors whose presence is necessary or requested, shall meet in conference with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to the details of the administration and execution of this contract. This will include but not necessarily be limited to the Contractor's Quality Control (CQC) Program, the Contractor's Accident Prevention Program, submittals, correspondence, schedule, access to the work site, security requirements, interface requirements, temporary facilities and services, hazards and risks, working after normal hours or on weekends or holidays, assignment of inspectors, representations, special requirements, phasing and other aspects of this project that warrant clarification and understanding.

1.1.2 Meeting Minutes

It shall be the responsibility of the Contractor's CQC System Manager to prepare detailed minutes of the Preconstruction Conference meeting and submit same to the Contracting Officer for approval within three (3) work days. Any corrections deemed necessary by the Contracting Officer shall be incorporated and resubmitted within two (2) calendar days after receipt. Upon approval of the minutes by the Contracting Officer, the Contractor shall distribute the minutes to all parties present or concerned.

1.2 AREA USE PLAN

The Contractor shall submit to the Contracting Officer, within ten (10) calendar days after Notice to Proceed (NTP), an Area Use Plan designating intended use of all areas within the project boundaries. This plan shall include, but not necessarily be limited to the following: the proposed location and dimensions of any area to be fenced and used by the Contractor; construction plant, plans, building, installations/the number of trailers and facilities to be used; avenues of ingress/egress to the fenced areas and details of the fence installation; drawings showing temporary electrical installations; temporary water and sewage disposal installations; material storage areas; hazardous storage areas. Any areas which may have to be graveled shall also be identified. The plan shall also include a narrative description of the building structural system, the site utility system; and the office or administration facilities. The Contractor shall also indicate if the use of a supplemental or other staging area is desired. The Contractor shall not begin construction of the mobilization

01060-1

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

facilities prior to approval by the Contracting Officer of the Area Use Plan described herein.

1.3 CONTRACTOR'S MOBILIZATION AREAS

1.3.1 General

1.3.1.1 Facilities Within the Mobilization Site

All facilities within the Contractor's mobilization site shall be of substantial construction suitable for the local weather conditions. Housing, messing and sanitary facilities shall meet the requirements of Corps of Engineers Safety and Health Requirements Manual EM 385-1-1. The Contractor shall provide all utilities required to make the site self-sufficient.

1.3.1.2. Trash Disposal

The Contractor shall be responsible for collection and disposal of trash from the work areas and from the mobilization areas. All trash shall be disposed of off base in accordance with Host Nation requirements. Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Loose debris capable of being windblown, shall be immediately placed in sealed or covered containers to prevent it from being blown onto adjacent site. Any dirt or soil which is tracked onto paved or surfaced roadways shall be cleaned daily. Materials resulting from demolition activities, which are salvageable, shall be stored within the fenced area described above. Stored material not indoors, whether new or salvaged, shall be neatly stacked when stored.

1.3.2 CONTRACTOR'S MOBILIZATION AREA (ON-BASE)

The Contractor will be permitted to use the area designated by the Contracting Officer within the contract limits for operation of his construction equipment and plants, shops, warehouses, and offices. The Contractor may provide living accommodations for his work force on the site. The Contractor is responsible for obtaining any required additional mobilization area above that designated. On completion of the contract, all facilities shall be removed from the mobilization area by the Contractor and shall be disposed of in accordance with applicable Host Government Laws and Regulations. The site shall be cleared of construction debris and other materials and the area restored to its final grade.

1.3.2.1 Administrative Field Offices

The Contractor may provide and maintain administrative field office facilities within the mobilization area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

1.3.2.2 Storage Area

01060-2

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

The Contractor shall construct a temporary 1.8 meter high chain link fence around trailers and materials. The fence shall include plastic strip inserts, colored green or brown, so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless approved in writing by the Contracting Officer.

1.3.2.3 Plant Communication

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The devices shall be made available for use by Government personnel.

1.3.2.4 Appearance of Mobilization Site Facilities and/or Trailers

Mobilization Site Facilities and/or Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers or other transportable structures which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the construction site until such work or maintenance has been performed to the satisfaction of the Contracting Officer.

1.3.2.5 Maintenance of Storage Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse with construction equipment or other vehicles unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of soil onto paved or established roadways; gravel gradation shall be at the Contractor's discretion.

1.3.2.6 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own personnel, facilities and equipment.

1.3.2.7 Sanitation

Sanitary Facilities: The Contractor shall provide and maintain within the construction area minimum field-type sanitary facilities in accordance with the requirements of EM 385-1-1 Safety and Health Requirements Manual and approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.3.2.8 Telephone

The Contractor shall make arrangements to install and pay all costs for telephone facilities desired.

01060-3

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

1.3.2.9 Restoration of Storage Area

Upon completion of the project and after removal of mobilization facilities, trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the

Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse unpaved areas shall be removed and all such areas restored to their original conditions.

1.3.2.10 Protection and Maintenance of Traffic

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the Host Nation and/or base authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with Host Nation and/or base traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.3.2.11 Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control shall be in accordance with the Special Clause entitled DUST CONTROL. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by the Contracting Officer shall be removed.

1.3.2.12 Use of Existing Roads as Haul Routes

The Contractor shall be responsible for coordinating with the Host Nation Government and the base authorities for use of any existing roads as haul routes. Construction, and routing of new haul roads, and/or upgrading of existing roads to carry anticipated construction

01060-4

traffic shall be coordinated with the Host Nation and Base authorities and is the sole responsibility of the Contractor.

1.3.2.13 Employee Parking

Contractor employees shall park vehicles in an area approved by the Contracting Officer. Contractor employee parking shall not interfere with existing and established parking requirements of the military installation.

1.3.2.14 Temporary Project Safety Fencing and Barricades

The Contractor shall impose all measures necessary to limit public access to hazardous areas and to ensure the restriction of workers to the immediate area of the construction and mobilization site. The Contracting Officer may require in writing that the Contractor remove from the work any employee found to be in violation of this requirement.

1.3.2.15 Barricades

Barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night. Travel to and from the project site shall be restricted to a route approved by the Contracting Officer.

1.4 NOT USED

1.5 RESPONSIBILITY FOR PHYSICAL SECURITY

Prior to mobilization, the Contractor shall submit his proposed means of providing project security to prevent unauthorized access to equipment, facilities, materials and documents, and to safeguard them against sabotage, damage, and theft. The Contractor shall provide perimeter force protection security for the developing site. Security may include but is not limited to fence and private security guards. Perimeter security shall prevent unauthorized site access and provide safety protection to the Contractor work force and government personnel for the duration of the project. The Contractor is solely responsible for security however local police shall be coordinated with regarding security. The Contractor shall be responsible for physical security of all materials, supplies, and equipment of every description, including property which may be Government-furnished or owned, for all areas occupied jointly by the Contractor and the Government, as well as for all work performed.

1.6 NOT USED

1.7 DUST CONTROL

01060-5

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

The Contractor shall be required to control objectionable dust in the work areas, access roadways, and haul roads by means of controlled vehicle speeds or dust palliatives. Vehicles transporting sand, cement, gravel or other materials creating a dust problem shall be covered, as directed by the Contracting Officer, or in accordance with local Laws, codes, and regulations.

1.8 NOT USED

1.9 NOT USED

1.10 NOT USED

1.11 CONNECTIONS TO EXISTING UTILITIES

1.11.1 General

Any outage of any utility service shall be requested in writing at least fifteen (15) days in advance of the date requested for the commencement of the outage. The Contractor shall provide a request, detailing the type of outage needed (water, sewer, electrical, steam, etc.), the time needed to perform the work, the reason for the outage, and the known affected facilities. The Contracting Officer shall be contacted prior to the outage to confirm the time and date. If the Contractor fails to initiate work at the approved time, the Contracting Officer may cancel the approved outage and may direct the Contractor to resubmit a new request. No part of the time lost due to the Contractor's failure to properly schedule an outage shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

1.11.1.1 Performance of Work During Non-Standard Hours

To minimize outage impact to the mission of the Base, all outages shall be scheduled on weekends or from 2100 - 0530 hours on duty days. The period proposed for performance of the outage shall include sufficient contingencies to preclude impact to the peak working hours 0530 - 1800 hours during the work week.

1.11.1.2 Exterior Night Lighting

Exterior night lighting shall be provided in conformance with EM-385-1-1 entitled Safety and Health Requirements Manual.

1.11.2 Existing Underground Utilities

The Contractor shall exercise the utmost care in researching locations of existing utility lines by implementing control measures to eliminate, or reduce to a level acceptable to the Contracting Officer, the chance of damaging or destroying existing utilities.

1.11.2.1 Use of Underground Utility Detecting Device

01060-6

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Prior to any excavation, a metal and/or cable detecting device shall be used along the route of the excavation. All underground utilities discovered by this method will be flagged a minimum distance of one-half (1/2) meter on each side of the location.

1.11.2.2 Hand Excavation

Hand excavation methods and special supervisory care shall be used between any flagged markers, in areas of known or suspected hazards, and in areas known or suspected to have multiple and/or concentrated utility lines or connections.

1.11.3 Repair of Damaged Utilities

The Contractor shall be responsible to repair any utilities damaged by him. The method of repair and schedule for performance of the repair

shall be coordinated with, and subject to the approval of, the Contracting Officer. The repair work and any temporary work required to keep the system operational while repairs are being completed, shall be performed at no cost to the Government.

1.12 WATER (CONTRACTOR PROVIDED)

The Contractor shall provide and maintain water at his own expense for his use for construction and domestic consumption, and shall install and maintain necessary supply connections and piping for same, but only at such locations and in such manner as may be approved by the Contracting Officer. Before final acceptance of systems, or facilities, all temporary connections and piping installed by the Contractor shall be removed at his expense in a manner satisfactory to the Contracting Officer.

1.13 NOT USED

1.14 ELECTRICITY (CONTRACTOR PROVIDED)

Electrical service is not available for use under this contract; therefore all electric current required by the Contractor shall be the responsibility of the Contractor, furnished at his own expense. All temporary connections for electricity shall be subject to the approval of the Contracting Officer and shall comply with Corps of Engineers manual EM 385-1-1 entitled Safety and Health Requirements Manual. All temporary lines shall be furnished, installed, connected and maintained by the Contractor in a workmanlike manner satisfactory to the Contracting Officer. Before final acceptance of systems, or facilities, all temporary connections installed by the Contractor shall be removed at his expense in a manner satisfactory to the Contracting Officer.

1.15 NOT USED

1.16 USE OF EXPLOSIVES

The Contractor shall make necessary arrangements as may be required by

01060-7

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

applicable codes, rules, regulations and laws and shall be responsible for compliance therewith for all phases of blasting operations. When blasting is required for removal of rock or other material, the Contractor shall notify the Contracting Officer prior to application for any use of explosives and take all necessary precautions for the protection of individuals and property exposed to his operation.

1.16.1 Handling, Storage, and Use of Explosives

The handling, storage, and use of explosives shall be governed by the applicable provisions of the following: the "BLASTING" section of the Corps of Engineers Manual EM 385-1-1, entitled Safety and Health Requirements Manual, a copy of which may be obtained from the Contracting Officer's Representative at the jobsite, and Technical Section 02201 entitled BLASTING

1.16.2 Blasting Permits

The Government assumes no liability for changes that may be imposed by the Afghanistan Government.

1.17 NOT USED

1.18 WORK OUTSIDE REGULAR HOURS

If the Contractor desires to carry on work outside regular Base duty hours, or on holidays, he shall submit an application to the Contracting Officer. The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. At night, exterior lighting shall be provided in conformance with EM-385-1-1 entitled "Safety and health Requirements Manual".

1.19 SCHEDULING OF WORK IN EXISTING FACILITIES

As soon as practicable, but in any event not later than fifteen (15) calendar days after receipt of Notice to Proceed, the Contractor shall meet in conference with the Contracting Officer, or his duly authorized representatives, to discuss and develop mutual understanding relative to the scheduling of work in and access to the existing facilities where work has to be performed under this contract, so that the Contractor's proposed construction schedule is coordinated with the operating and security requirements of the installation.

1.20 Use of Afghan Workforce

Private sector Afghan subcontractors and workers (to include, but not limited to, laborers and skilled tradesmen) will be used to the extent that each is capable of performing required work and that locally-produced Afghan materials and equipment be used to the extent that each can satisfy contract requirements, including all technical or other specifications.

1.21 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

01060-8

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

1.21.1 General

This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the Contract Clause 52.249-10 entitled DEFAULT (FIXED-PRICE CONSTRUCTION) APR 1984. The listing below defines the anticipated monthly unusually severe weather for the contract period and is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the geographic location of the project. The schedule of anticipated unusually severe weather will constitute the baseline for determining monthly weather time evaluations. Upon award of this task order and continuing throughout the contract each month, actual unusually severe weather days will be recorded on a calendar day basis (including weekends and holidays) and compared to the monthly anticipated unusually severe weather in the schedule below. The term "actual unusually severe weather days" shall include days actually impacted by unusually severe weather. The Contractor's schedule must reflect the anticipated unusually severe weather days on all weather dependent activities.

MONTHLY ANTICIPATED UNUSUALLY SEVERE WEATHER CALENDAR DAYS

January	4 Days
February	2 Days
March	2 Days
April thru	
December	0 Days

1.21.2 Time Extensions

The number of actual unusually severe weather days shall be calculated chronologically from the first to the last day in each month. Unusually severe weather days must prevent work for fifty percent (50%) or more of the Contractor's workday and delay work critical to the timely completion of the project. If the number of actual unusually severe weather days exceeds the number of days anticipated in the paragraph above, the Contracting Officer will determine whether the Contractor is entitled to a time extension. The Contracting Officer will convert any qualifying delays to calendar days and issue a modification in accordance with the Contract Clause 52.249-10 entitled DEFAULT (FIXED-PRICE CONSTRUCTION) APR 1984.

1.22 SPECIAL FACILITIES AND SERVICES TO BE FURNISHED BY THE CONTRACTOR

The Contractor shall furnish the facilities and services listed in this clause for Corps of Engineers personnel and other persons as designated by the Contracting Officer at each project site location. All facilities, furnishings, materials, and equipment shall be new or like new when furnished at the site. The Contractor shall fully maintain and repair all facilities, furnishings, equipment, and vehicles listed

01060-9

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

below until task order completion (at that location). All facilities furnished and/or installed by the Contractor under this clause shall remain the property of the Contractor during the performance period of the contract and shall be turned over to the Afghan Government upon contract completion."

1.22.1 Field Office Facility

Contractor shall provide one (1) 40'x10' (or equivalent) office to be located at the jobsite. The office shall include: desks/chairs for 3 people; two 4 drawer file cabinets; a 5-person conference table with chairs; a microwave oven; air conditioning and heating; one bathroom; one 10CF or larger refrigerator; one drafting table; one copy machine; 3 laptop computers similar to a Dell Latitude D600, Pentium M745 or approved equal (minimum system requirements: 2.6 GHz, Pentium M745, 80 GB hard drive, 1024 MB memory), CD/DVD RW drive, and an USB mouse. All of the laptops shall be equipped with Microsoft Office Professional 2003 Edition; and one laser printer (with network interface card to allow receiving documents from the laptop computers. Two of the laptops shall have full AUTOCADD 2005 with all required licenses. The Contractor shall provide three compact digital cameras with a minimum of 4 megapixels resolution; 3- 4 G memory sticks, in addition to the ones supplied with the cameras; three cellular telephones with unlimited service through the local provider. Install curtains or

blinds for all windows. Contractor shall be responsible for daily cleaning and for removal of all waste from the toilet facilities. The field office facility shall become Property of the Contractor upon completion of the contract . All facilities within this section as described above shall be completed and ready for Government use not later than 60 days after award of the task order.

Insulation - In all buildings provide the minimum insulation values as follows: Walls R Value of $R = 3.5 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 20)
Floors and Roof R Value of $R = 5.5 \text{ m}^2\text{-}^\circ\text{C/watt}$ (R 30)

1.22.2 Services for the Field Office Facility

- a. Maintain all utility systems required to support site office facilities.
- b. Provide all bottled water required for site office facility, including potable drinking water and operate and maintain the water system. All water provided will be treated to the degree as directed and approved by the Contracting Officer.
- c. Provide operation and maintenance of building structure, all furnishings and equipment contained therein, including painting and incidental repairs.
- d. Provide landscaping and dust control in area adjacent of the office.

01060-10

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

- e. Provide vector control services, including insect and rodent control in the areas adjacent of office.
- f. Provide janitorial services in the office facility including cleaning of toilet and shower facility, furnishing of toilet tissue, soap and towels, emptying trash, vacuuming and dusting on a daily basis and all other cleaning of offices and bedrooms on a weekly basis, to the satisfaction of the Contracting Officer.
- g. Provide replacement parts such as locksets, washers, toilet floats, etc., that will be required for typical building repairs and maintenance.
- h. Provide replacement toner cartridges for laser printer in the field office. The Contractor shall maintain the printer, laptops, and provide paper for the printer as required.
- i. Provide personnel bunkers at the COE office for 8 people. Contractor shall propose bunker type, and upside down concrete U with protection each end and double sand bags with neoprene cover is acceptable. Bunker shall have bench seating.
- j. All buildings shall be Connex type steel structures with steel fold down covers on windows. Windows shall be 6 mm laminated glazing. Units shall have the following insulation R-30 @ Floor and Ceiling and R-19 in Walls.

1.23 STANDARDIZATION

Where two or more items of the same type or class of product, system or equipment furnished in this project are required, the units shall be products of the same manufacturer and shall be interchangeable when of the same size, capacity, internal parts, performance characteristics, finish, and rating. The only exception to this requirement is where the items are interchangeable due to conformance with industry standards (valves, fittings, etc.); they need not be by the same manufacturer. This requirement applies to all manufactured items in the project that normally require repair or replacement during the life of the equipment.

1.24 COMPLIANCE WITH HOST COUNTRY RULES AND CUSTOMS

The laws of Host Country may prohibit access to certain areas of the country that are under military control. The Contractor shall furnish the Contracting Officer the names of personnel, type, and amounts of equipment, dates and length of time required at the site, and the purpose of entering the host country. It is understood that areas to which rights of entry are provided by the Host Government are to be used only for work carried out under the contract and no destruction or damages shall be caused, except through normal usage, without concurrence of the Host Government.

01060-11

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

1.25 PREPARATION OF AS-BUILT DRAWINGS (BY CONTRACTOR)

1.25.1 General

Upon completion of each facility under this contract, the Contractor shall prepare and furnish as-built drawings to the Contracting Officer. The as-built drawings shall be a record of the construction as installed and completed by the Contractor. They shall include all the information shown on the contract set of drawings, and all deviations, modifications, or changes from those drawings, however minor, which were incorporated in the work, including all additional work not appearing on the contract drawings, and all changes which are made after any final inspection of the contract work. In the event the Contractor accomplished additional work which changes the as-built conditions of the facility after submission of the final as-built drawings, the Contractor shall furnish revised and/or additional drawings and drawing files as required depicting final as-built conditions. The requirements for these additional drawings shall be the same as for the as-built drawings specified in this paragraph.

1.25.2 Preliminary As-Built Drawings

The Contractor shall maintain a full-size set of contract drawings for depicting a daily record of as-built conditions. These drawings shall be maintained in a current, reproducible condition at all times during the entire contract period and shall be readily available for review by the Contracting Officer's Representative at all times. The as-built drawings shall be updated daily by the Contractor showing all changes from the contract plans which are made in the work, or additional information which might be uncovered in the course of construction.

This information shall be recorded on the prints accurately and neatly by means of details and notes. Changes and additional information marked on the contract plans should be made in red or green color for highlighting purposes. The drawings shall show the following information, but not be limited thereto:

- a. The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.
- b. The location and dimensions of any changes within the building or structure, and the accurate location and dimension of all underground utilities and facilities.
- c. Correct grade or alignment of roads, structures, or utilities if any changes were made from contract plans.
- d. Correct elevations if changes were made in site grading.
- e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or

01060-12

furnished by the Contractor including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

f. The topography and grades of all drainage installed or affected as part of the project construction.

g. All changes or modifications of the original design including those which result from the final inspection.

h. Where contract drawings or specifications allow options, only the option actually used in the construction shall be shown on the as-built drawings. The option not used shall be deleted.

i. In development of as-built drawings, the Contractor shall not substitute shop drawings for original contract drawings. All necessary information for as-built conditions shall be incorporated into contract drawings.

j. One (1) copy of the preliminary as-built marked prints shall be delivered to the Contracting Officer at the time of final inspection of each facility for review and approval. Changes and additional information marked on the contract plans should be made in red or green color for highlighting purposes. If upon review of the preliminary as-built drawings, errors or omissions are found, the drawings will be returned to the Contractor for corrections. The Contractor shall complete the corrections in red or green color, and return the as-built marked prints to the Contracting Officer within ten (10) calendar days.

1.25.3 Final As-Built Drawings

The Contractor shall update the digital contract drawing files to reflect the approved final as-built conditions and shall furnish those updated drawing files and plots of the final as-built drawings to the Contracting Officer.

a. Only personnel proficient in the use of Computer Assisted Design and Drafting (CADD) for the preparation of drawings shall be employed to modify the contract drawing files or prepare new drawing files.

b. Existing digital drawing files shall be updated to reflect as-built conditions. Independent drawing files containing only as-built information are not acceptable. The modifications shall be made by additions and deletions to the original drawing files, and where additional drawings are necessary, they shall be developed in individual digital files for each new drawing. All additions and corrections to the contract drawing files shall be

01060-13

clear and legible, and shall match the adjacent existing line work and text in type, size, weight, and style. New or revised information placed into the design files shall be placed on the levels and in the colors used for placement of the corresponding initial data. Similarly, the drawing size, title block, and general format of new drawings shall be consistent with the format established by the original drawings.

c. In the preparation of as-built drawings, the Contractor shall remove "Bubbles" used by the Government to highlight drawing changes made during design/construction. Triangles associated with those earlier drawing changes shall be left on the drawings and the Contractor shall not add triangles to designate modifications associated with representation of the as-built condition. The revision block identification of the drawing modifications shall be left intact and the date of completion and the words "REVISED AS-BUILT" shall be placed in the revision block above the latest existing notation. Each drawing shall have the words "DRAWING OF WORK AS-BUILT" in letters 4.5 mm (3/16") high placed below the drawing title portion of the drawing title block; between the border and the trim line.

d. The Contractor shall check all final as-built drawing files for accuracy, conformance to the initial drawing scheme and the above instructions. The Contracting Officer will review the drawings and drawing files for conformance to these standards.

e. The Contractor shall furnish the digital as-built drawing files in the format to the 2005 or latest version in common use of Autodesk, AUTOCADD. The Government will only accept the final product for full operation, without conversion or reformatting, in this format.

f. Digital drawing files shall be furnished to the Contracting Officer on CDROM or other media and format as approved by the Contracting Officer. A transmittal sheet containing the name of the files, the date of creation, the CD-ROM number, and a short description of the contents, shall accompany the CD-ROM. Provide an index in each disk cover of contents.

g. A sample drawing shall be furnished to the Contracting Officer before delivery of final as-built drawings as a test to demonstrate compliance with the above instructions and file format compatibility with the described CADD software.

h. One (1) complete set of the updated final Record Copy digital drawing files and one (1) paper plot or copy of the final Record drawings shall be delivered to the Contracting Officer within 30 calendar days of approval of the preliminary as-built drawings. If upon review of the final as-built drawings, errors or omissions are found, the drawings and drawing files will be returned to the Contractor for corrections. The Contractor shall complete the corrections and return both the digital files and the as-built prints to the Contracting Officer within

01060-14

ten (10) calendar days.

1.26 NOT USED

1.27 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in accordance with Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD PROJECT. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company involved and shall contain the name and address of the Contractor, the project name and location, description and the quantity of the items involved, and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material.

1.28 ACCIDENT PREVENTION

The Contractor shall comply with all applicable Host Country laws and with such additional measures as the Contracting Officer may find necessary in accordance with CONTRACT CLAUSE 52.236-13 entitled ACCIDENT PREVENTION (NOV 1991)-ALTERNATE 1 (APR 1984). Applicable provisions of the Corps of Engineers manual entitled Safety and Health Requirements Manual EM 385-1-1, will be applied to all work under this contract. The referenced manual may be obtained from the Contracting Officer's Representative at the jobsite or from the Transatlantic Programs Center at Winchester, Virginia.

1.28.1 Accident Prevention Program

Within fifteen (15) days after receipt of Notice to Proceed, and at least ten (10) days prior to the accident prevention pre-work conference, four (4) copies of the Accident Prevention Plan required by the CONTRACT CLAUSE 52.236-13 entitled ACCIDENT PREVENTION (NOV 1991)-ALTERNATE I shall be submitted for review by the Contracting Officer. The Contractor shall not commence physical work at the site until the Accident Prevention Plan (APP) has been reviewed and accepted by the

Contracting Officer or his authorized representative. The APP shall meet the requirements listed in Appendix "A" of EM385-1-1. The program shall include the following: TAC Form 61 " Accident Prevention Program Hazard Analysis (Activity Hazard Analysis)" fully completed and signed by an executive officer of the company in Block No. 13. The Activity Hazard Analysis is a method in which those hazards likely to cause a serious injury or fatality are analyzed for each phase of operations. Corrective action is planned in advance which will eliminate the hazards. An analysis is required for each new phase of work. On large or complex jobs, the first phase may be presented in detail with the submittal of the Accident Prevention Plan rather than presenting the complete analysis. If the plan is to be presented in phases, a proposed

01060-15

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

outline for future phases must be submitted as a part of the initial Accident Prevention Plan submittal. Accident Prevention Plans will be reviewed for timeliness and adequacy at least monthly with a signature sheet signed and dated documenting that these reviews took place. Provide a copy of company policy statement of Accident Prevention and any other guidance as required by EM 385-1-1, Appendix A.

1.28.2 Ground Fault Circuit Interrupter (GFCI) Requirement - Overseas Construction

The Corps of Engineers Health and Safety Manual, EM 385-1-1, section 11.C.05.a. states: "The GFCI device shall be calibrated to trip within the threshold values of 5 ma +/- 1 ma as specified in Underwriters Laboratory (UL) Standard 943." A variance from USACE has been granted allowing 10 ma, in lieu of 5 ma, for overseas activities that use 220 Volts(V)/50 hertz(hz) electrical power.

1.28.3 Temporary Power - Electrical Distribution Boxes

EM 385-1-1 section 11.A.01.a. states "All electrical wiring and equipment shall be a type listed by a nationally recognized testing laboratory for the specific application for which it is to be used." This includes temporary electrical distribution boxes. Locally manufactured electrical boxes will not be allowed. Only manufactured electrical distribution boxes that meet the European CE requirements, with 10 ma CE type GFCIs installed shall be allowed. Contractors shall:

- a. Make no modifications that might void any CE or manufacturer certification.
- b. Test the installed systems to demonstrate that they operate properly and provide the 10 ma earth leakage protection.
- c. Ensure GFCIs will have an integral push-to-test function. The testing shall be performed on a regular basis.
- d. Check that proper grounding is checked regularly and flexible cords, connectors, and sockets inspected before each use.

1.29 HAZARDOUS MATERIALS

Should the Contractor encounter asbestos or other hazardous materials, during the construction period of this contract, he shall immediately stop all work activities in the area where the hazardous material is discovered. The Contractor shall then notify the Contracting Officer; identify the area of danger; and not proceed with work in that area until given approval from the Contracting Officer to continue work activities. Hazardous material is considered to be asbestos, explosive devices, toxic waste, or material hazardous to health and safety. The Contractor shall secure the area from daily traffic until it is safe to resume normal activities.

01060-16

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

1.30 and 1.31 NOT USED

1.32 OPERATION AND MAINTENANCE (O&M) DATA FOR EQUIPMENT AND SYSTEMS

1.32.1 General

The requirements contained herein are in addition to all shop drawing submission requirements (e.g., SD-19) stated in other sections of the specification. The Contractor shall include provisions for obtaining the data required below in all purchase orders and sub-contract agreements issued under this contract. The Contractor shall obtain that data which is required to operate and maintain all items of equipment and all systems/subsystems under either normal or emergency operating conditions. See items listed under paragraph EQUIPMENT FOR WHICH O&M DATA MUST BE SUBMITTED for example.

1.32.2 O&M Data for Equipment

1.32.2.1 Equipment for Which O&M Data Must be Submitted

The Contractor shall provide all data necessary to operate and maintain all equipment purchased and/or installed under this contract. The data will consist of any O&M instructions not normally the common knowledge of a Journeyman Level Technician in the applicable trade. Provided below are examples of the general types of equipment for which the Contractor is required to submit O&M data. The examples provided are not definitive for this contract, but are provided to indicate the general types of equipment for which O&M data is required.

Control Devices Chillers
Lighting Fixtures Motor Generator Sets
Valves Cooling Towers
Motors Kitchen Equipment
Water Heaters Exhaust Fans
Compressors Plumbing Fixtures
Boilers Appliances (e.g. washing machines, food disposers, coffee urns, etc.)

1.32.2.2 Data to be Provided for Each Equipment Item

For each equipment item O&M data shall be submitted as described below. For identical pieces of equipment installed within any one system, only

one (1) file of O&M data for that equipment item will be required for maintenance purposes. Deviation from these requirements will require approval of the Contracting Officer. The data as a minimum will include for each equipment item, the following:

- a. Equipment O&M Data Sheet: Equipment O&M data sheet shall include the equipment name, manufacturer's name and address, model number, (including characteristics and any special remarks), and the serial number(s), tag number(s) or any user assigned identification number(s), and installed location(s) of

01060-17

the equipment. This sheet shall be the first page of each item of equipment O&M data package and shall contain a checklist covering paragraphs 1.32.2.2.b thru 1.32.2.2.j hereinafter.

b. Equipment Description: Equipment description shall include item name, model number, serial number, equipment price (FOB Manufacturer), electrical and/or mechanical characteristics, manufacturer's name and address, order number and all other data found on the equipment name plates. Include local/regional representative of manufacturer, name, address, telephone number, and telex number.

c. Component and Assembly Drawings/Master Parts List: Component and assembly drawings/master parts list shall contain exploded views and a master parts list clearly identifying all parts and subassemblies by manufacturer's part number. Master Part's list shall also include the price for each part (FOB Manufacturer) and effective date.

d. Control Diagrams and Sequences of Operations: Control diagrams and sequences of operations shall include operating instructions (including normal start-up, normal shut-down and emergency shut-down as applicable).

e. Performance Characteristics: Performance characteristics shall include performance curves for full range of operation, and data pertinent to characteristics of equipment provided.

f. Installation Instructions: Installation instructions shall include adjustment and alignment procedures, checkout procedures and test procedures.

g. Preventive Maintenance Procedures: Preventive maintenance procedures shall include inspection, cleaning, adjustment, service and lubrication instructions. A schedule shall be furnished for each piece of equipment listing manufacturer's recommended maintenance routine of specific tasks to be performed at specific intervals such as daily, weekly, monthly, quarterly, or based on the number of operating hours. Preventive maintenance schedules shall take into account operating conditions in Afghanistan.

h. Corrective Maintenance Procedures: Corrective maintenance procedures shall include instructions for troubleshooting, repair, overhaul and calibration.

i. Special Items: The Contractor shall prepare a list of special tools, test equipment, and safety precautions when specified in the Technical Provisions and special items that are normally provided by the manufacturer with the equipment. The list shall also include the current unit price and date for each item (FOB MANUFACTURER).

01060-18

j. Recommended Spare Parts List: List shall contain the manufacturer's recommendation for five (5) years, two (2) years, and one (1) year spare parts stock levels in Afghanistan. Current unit price and effective date, lead time, shelf life for each individual part, and total cost of all recommended parts shall be furnished.

1.32.2.3 Preparation of O&M Data for Each Equipment

At least two (2) sets of the final approved O&M Data shall be composed of original copies. No other form of printed and prepared data shall be acceptable unless approved in writing by the Contracting Officer. All data shall be prepared in the English language covering data described in paragraph EQUIPMENT FOR WHICH O&M DATA MUST BE SUBMITTED, and shall be furnished in the number of submittals (number of sets of volumes) specified in Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD PROJECT of the Technical Provisions. Each item of equipment shall be cross-referenced in the equipment O&M Data and Systems Manuals, to include installation location using the Contractor's system of identification as approved by the Contracting Officer. All data shall be presented on 8-1/2 x 11 inch sheets to the greatest possible extent. Foldouts will normally be limited to 11 x 17 inch sheets. For other sets of data, reproductions shall be clear, legible, re-reproducible, and not subject to fade. Extraneous information on inapplicable models or components shall be removed or suitably marked through. O&M data shall be contained in a volume consisting of multi-ring binders of good commercial quality. Each volume shall be identified by the equipment name as shown on the Equipment O&M Data Sheet, and sequentially numbered. Each volume shall include an index of items included in the binder and the index shall be the first sheet in the binder, and all remaining data shall be taped accordingly. Volume binders shall be packed (maximum) 2/3 full to allow easy access to contents.

1.32.2.4 O&M Data Submittal Procedure for Each Equipment Item

The initial submittal of O&M Data for each item of equipment shall include all data required in paragraph DATA TO BE PROVIDED FOR EACH EQUIPMENT ITEM above, and as required by the technical specifications. Each O&M Data Package shall be submitted in two (2) copies to the Contracting Officer for approval of format and content, not later than ninety (90) calendar days following equipment item selection approval. After approval the two (2) copies will be returned to the Contractor to maintain for incorporation into the final submittal of the full set of O&M Manuals. The Contractor shall allow a minimum period of forty-five (45) calendar days from receipt by the Government (exclusive of mailing time) for the Government review and approval/disapproval of O&M data.

1.32.2.5 Payment for Preparation and Submittal of O&M Data for Individual Equipment Items

01060-19

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

For payment purposes, preparation and submittal of required O&M data shall be considered as part of the price for the individual item of equipment.

1.32.3 O&M Data for Systems

The Contractor shall develop and provide the data beyond separate equipment items necessary to operate and maintain all civil, mechanical and electrical systems for each building, each central plant, and/or each distribution or collection system. A system is defined as a group of equipment items related in purpose and which share electrical power or communication circuits as in a fire alarm system or which share mechanical piping or ductwork as in an HVAC system. O&M data for systems shall be submitted as described below.

1.32.3.1 Preparation and Organization of Systems O&M Manuals

At least two (2) sets of the final approved systems O&M manuals shall be composed of original copies. For each location and for each system installed, the Contractor shall prepare and provide the required number of sets of separate complete system O&M Manuals, bound in loose leaf three ring binders. These manuals will provide the basic information and direction needed by journeymen operators to effectively operate each system and by journeymen maintenance technicians to perform Preventive Maintenance (PM) and Corrective Maintenance (CM) routines on systems components. The following identification shall be printed on the cover and spine of each binder, the words "OPERATING AND MAINTENANCE INSTRUCTIONS", plus name of the system, the location of the building(s). When two or more binders are required for the data, for an individual system, the binder shall be marked 1 of n, 2 of n, 3 of n, etc. (where n equals the total number of binders). Each manual shall have a complete index page(s), which shall be inserted after the title page of the first volume of that system. Title page shall include name of project and project number. Each binder shall have a complete index that lists all the information and data contained in the binder(s).

All systems O&M Manuals shall include the following:

- a. Each piece of equipment will have a divider and tab properly identified.
- b. Each section for each piece of equipment will have a divider and tab properly identified.
- c. Narrative description of principles of operation.
- d. Systems flow diagrams showing point-to-point connections, sequence of operation, control diagrams and identification of each system component.

01060-20

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

- e. Electrical single line and three (3) line diagrams in sufficient detail to define the system and operation of related parts.
- f. Final balancing reports for air, water and other systems as applicable. (These may be added to the manual after installation testing is completed and accepted.)
- g. Systems test reports and certification.
- h. Operating procedures including pre-start, start-up, and normal operation, emergency operation, normal and emergency shut-down.
- i. Schedules including valve schedules, circuit breakers schedules, equipment schedules, etc.
- j. List of special tools and test and calibration equipment.
- k. List of systems components cross referenced to the O&M equipment data volume number.
- l. System preventive maintenance procedures and schedules.
- m. System troubleshooting guides.
- n. System corrective maintenance procedures.
- o. Folded-up copy of the system's wall charts (Training instructions).

1.32.3.2 Submittal of Systems O&M Manuals

Submittal of Systems O&M Manuals for each system installed shall include all data required in paragraphs 1.32.2.2.a thru 1.32.2.2.j hereinbefore. Two (2) copies shall be submitted to the Contracting Officer for approval not later than 30 calendar days prior to the construction completion date. If disapproved, the two (2) copies will be returned to the Contractor for correction and re-submittal. Final submittals of all Systems O&M Manuals must include and be simultaneous with all O&M Data Manuals for equipment associated with that system, and must be in Pashto, English and Dari. Upon completion of systems check out and acceptance tests, the Contractor shall submit a supplemental submittal containing any addition, deletion or correction found appropriate due to these tests performed in the field or during training.

1.32.4 Framed Instructions for Systems

For each system, the Contractor shall provide framed instructions mounted on the wall of each mechanical and electrical equipment room, which contains a portion of the system. The size of the framed instructions will be governed by the content to be framed plus room for a minimum of two (2) inch border. The framed instructions shall include

drawings and typed narrative descriptions as required to provide the following information:

1.32.4.1 Drawings

Drawings containing flow, piping, instrumentation and control diagrams of mechanical systems and wiring and control schematics of electrical systems contained within or controlled from that equipment room.

1.32.4.2 Equipment and System Narrative

Narrative containing equipment and system normal pre-start, start-up, operating and shut-down procedures.

1.32.4.3 Emergency Shut-Down Narrative

Narrative of emergency shut-down instructions and safety precautions.

1.32.4.4 Preparation and Installation of Framed Instructions

All material prepared for use as framed instructions to meet the requirements of paragraph EQUIPMENT AND SYSTEM NARRATIVE above shall be prepared in the English language. All material prepared for use as framed instructions to meet the requirement of paragraph EMERGENCY SHUT-DOWN NARRATIVE above shall be prepared in Pashto, Dari and English. Drawings and narratives prepared for use as framed instructions shall be submitted to the Contracting Officer for approval prior to posting. Framed instructions shall be mounted using frames with glass or rigid plastic covers as approved by the Contracting Officer. All framed instructions must be posted before final acceptance testing of the equipment and systems.

1.32.5 Contractor Responsibility for Updating O&M Information

The Contractor shall be responsible for the accuracy of all information furnished in accordance with the above requirements. The Contractor shall be responsible for updating or supplementing all O&M data, including data which has been previously submitted, to reflect changes in the contract or to correct errors discovered by any other means. The O&M data for separate equipment items, the systems O&M Manuals, and the framed instructions prepared by the Contractor shall be utilized and verified during installation and testing of the equipment and/or systems and shall be updated and corrected as required. Errors found during systems testing and validation shall be corrected within fourteen (14) calendar days of completion of each test and validation. Drawings, pages of text, etc. of systems O&M Manuals shall be complete in final form. Marked-up drawings or pages are not acceptable.

1.33 thru 1.35 NOT USED

1.36 INSTRUCTIONS AND TRAINING FOR OPERATION AND MAINTENANCE

1.36.1 General

01060-22

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

The Contractor shall be responsible for the instruction and training of operating and maintenance personnel as specified below and in the Technical Provisions of the specifications. Unless otherwise indicated in the Technical Provisions, operating and maintenance instructions shall be given for a minimum period as follows:

Title	Duration of Training
Water System:	Provide 40 Hours Training.
Power System:	Provide 40 Hours Training.
Sewage System:	Provide 40 Hours Training.

1.36.2 Operation and Maintenance Training

The Contractor shall provide competent instructors for training of personnel designated by the Contracting Officer to operate mechanical and electrical building systems and equipment, perform the required preventive maintenance to minimize breakdown, and to perform necessary repairs when malfunction or breakdown of equipment occurs. Such training shall consist of classroom and on-the-equipment training for the periods specified, which shall be completed prior to acceptance of a system or equipment, as applicable. The instructor(s) shall have no other duties during the period of training. Classroom instruction shall not exceed fifty percent (50%) of the total training time, with the balance devoted to on-the-equipment demonstration and familiarization. Emphasis will be given to both electrical and mechanical features, in accordance with approved training plans. The Contractor shall be prepared to offer training in Pashto, Dari and English.

1.36.3 Arrangements

The training shall be for not less than the periods of time specified, five (5) days per week, and eight (8) hours per day, subject to review and approval by the Contracting Officer. Each individual training session shall be presented one time only, shall be video taped in a television system compatible with the local area, and be scheduled in a manner acceptable to the Contracting Officer. At the completion of training, the video tapes shall become the property of the Government. In addition to the Contractor's requirements to video tape each training section, the Government reserves the right to record, in any manner, the subject training material, or training sessions given by the Contractor, without additional cost to the Government. Recordings obtained will be used in future training by the Government. The operating and maintenance manual data, as specified to be furnished in these Special Clauses, shall be used as the base material for training.

1.36.4 Scheduling

The Contractor shall contact the Contracting Officer for the purpose of preliminary planning, scheduling, and coordination of training, to maximize effectiveness of the training program for available operating and maintenance personnel. The Contractor shall initiate and make arrangements for such contact within 30 calendar days after receipt of

01060-23

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

notification of award of contract; and shall include all significant times in scheduling and completing training in his PROJECT SCHEDULE. The Contractor shall provide a draft training outline sufficient in detail to provide a broad indication and the type of scope of training to be given. It shall include but not be limited to; (a) a list of subjects to be presented; (b) estimated amounts of classroom and on the-equipment instruction for each subject; (c) a list of minimum

qualifications for instructors; and (d) discussions concerning the types and amounts of visual aids, reference materials, tools and test equipment, mock-up and other training materials that will be employed during training.

1.36.5 Preliminary Plan

The Contractor shall submit seven (7) copies of an outline of his proposed training plan to the Contracting Officer for review and approval not later than 45 calendar days after Notice to Proceed. The plan will be reviewed and coordinated with the content of the O&M manuals.

1.36.6 Plan

The Contractor shall submit seven (7) copies of his proposed training plan to the Contracting Officer for approval not later than ninety (90) calendar days prior to start of any training. The plan shall include the following; (a) a weekly outline showing overall form and design of training presentation; (b) a day-by-day schedule showing time intervals, the major and subordinate subjects to be covered in each, the name of the instructor(s) and qualification summary of each, and identification of related handouts; (c) summary of the number of hours of classroom and on-the-equipment training; (d) a list of reference materials to be provided by the Contractor to the trainees; and (e) a list and description of the training materials to be used, such as text, visual aids, mock-up, tools, etc. The Contractor shall be responsible for furnishing all training materials except the following: The Government will provide space, chairs, and tables for classroom training, and three (3) sets of the O&M Manuals required by the Contractor per Section 01335 SUBMITTAL PROCEDURES of the specifications. Provision of these manuals is solely for reference purposes, and in no way relieves the Contractor from providing all instruction and materials necessary for training personnel designated by the Government. All costs for resubmission of training plans, training materials, etc., as requested by the Contracting Officer shall be borne by the Contractor. Re-submittals shall be made within twenty (20) days of notice from the Contracting Officer.

1.36.7 Attendance Roster/TAC Form 356

The Contractor shall develop an attendance roster or a similar documents indicating each students attendance, prior to the start of each class, subject and/or topic. This includes both "Hands-On" and classroom training. It is strongly recommended that each student

01060-24

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

trained be required to sign this document at the beginning of each class day for each and every class, subject and/or topic taught on that day. The Contractor's failure to have student attendance verified in writing may be cause for the Government to order the Contractor to repeat schooling where evidence of attendance can not be verified. No part of the time lost due to such repeat instruction shall be made the subject of claim for extension of time or for excess costs or damage by the Contractor. Within ten (10) working days after completion of Operation and Maintenance Training conducted in accordance with this clause and/or applicable Technical Provision section, the Contractor shall complete and submit TAC Form 356 "Operation and Maintenance Training Validation Certificate". The attendance roster shall be included as an attachment to TAC Form 356.

1.37 NOT USED

1.38 LOCALLY AVAILABLE SERVICE FOR EQUIPMENT

All equipment furnished under this contract, regardless of country of manufacture or purchase, must have in-country service availability. In the event that the Contractor proposed to provide equipment for which in-country service is not available, the Contractor must provide written justification for the Contracting Officer's approval. This justification shall be submitted for each product or material for which a waiver is sought concurrently with the submittal required by the Technical Provisions. Submission of group or "blanket" waivers is unacceptable.

1.39 NOT USED

1.40 CONTRACTOR FURNISHED EQUIPMENT LISTS

The Contractor shall furnish a list of all items, other than integral construction type items, furnished under the contract. Items such as furniture, drapes, rugs, vehicles, office machines, appliances, etc., shall fall under this category. The Contractor's list shall describe the item; give the unit price and total quantities of each. Model and serial numbers for equipment shall be provided when applicable. The Contractor shall keep an up-to-date register of all covered items and make this information available to the Contracting Officer or his representative at all times. Prior to acceptance, the Contractor shall submit the complete register to the Contracting Officer.

1.41 NOT USED

1.42 NOT USED

1.43 NOT USED

1.44 NOT USED

1.45 NOT USED

1.46 RESIDUAL CONSTRUCTION MATERIAL

01060-25

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

All Contractor purchased materials and equipment intended for incorporation into the completed facilities and which are later determined excess to the actual construction requirements, will become the property of the Government. The residual materials and equipment shall be tagged (giving the area where like type material and equipment were installed), and stored in an orderly manner in a designated area as directed and approved by the Contracting Officer.

1.47 thru 1.51 NOT USED

1.52 MILITARY BASE RULES AND REGULATIONS

The Contractor and his employees and subcontractors shall become familiar with and obey all Base rules and regulations including fire, traffic and security regulations. All personnel employed on the Base shall keep within the limits of the work (and avenues of ingress and egress), and shall not enter any Restricted Areas unless required to do so and prior clearance for such entry is obtained. The Contractor's equipment shall be conspicuously marked for identification.

1.53 IDENTIFICATION OF EMPLOYEE'S PERSONNEL AND VEHICULAR ACCESS TO THE PROJECT SITES

The Base Security maintains the ultimate authority for establishing, monitoring, and enforcing security requirements for the Base Security Office. All contractors, subcontractors, or vendor personnel and vehicles at any tier working at any location on the Base are subject to a thorough search upon entering, departing, or at any time deemed necessary by the Base Security Personnel. The Contractor shall be responsible for compliance with all the Base Security requirements. The Government reserves the right to deny access or to require the Contractor to remove any personnel or equipment deemed to be a threat to the security of the Base Security Office or the Base personnel. The Contractor shall work through the Contracting Officer to ensure that the Base Security Regulations are followed.

1.53.1 Employee Identification

The Contractor shall be responsible for furnishing to each employee and for requiring each employee engaged on the work, to display identification as approved and directed by the Contracting Officer. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

1.53.2 Identification of Contractor Vehicles

01060-26

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

The Contractor shall be responsible for requiring each vehicle engaged in the work to display permanent vehicular identification as approved and directed by the Contracting Officer. If acceptable to the Base Security Office and approved by the Contracting Officer, the Contractor may institute a system of non-permanent temporary identification for one-time delivery and transit vehicles. Each Contractor vehicle, machine, piece of equipment, or towed trailers, shall show the Contractor's name such that it is clearly visible on both front doors of the vehicle and both sides of a towed trailer. A valid license plate shall be displayed at all times. Contractor vehicles operated on Government property shall be maintained in a good state of repair, shall be insured, and shall be registered in accordance with Afghan Law.

1.53.3 Security Plan

The Contractor shall submit to the Contracting Officer, within fifteen (15) calendar days after Notice to Proceed, his proposed personnel and vehicular access plan. This plan shall cover all elements for issuance of the access passes, safeguarding of unissued passes, construction security operations, lost passes, temporary vehicle passes, and collection of passes for employee's and vehicles on 1)- temporary absence; 2)- termination or release; and 3)- termination or completion of contract. The plan shall address in detail the Contractor's proposed procedures, and organization necessary to produce and maintain effective security within the contract limits twenty four (24) hours a day seven (7) days a week.

1.54 and 1.55 NOT USED

1.56 ON-BASE PHOTOGRAPHY PROHIBITION

The Contractor shall not engage in any form of photography without prior written approval from the Contracting Officer.

1.57 PUBLIC RELEASE OF INFORMATION

1.57.1 Prohibition

There shall be no public release of information or photographs concerning any aspect of the materials or services relating to this bid, contract, purchase order, or other documents resulting there from without the prior written approval of the Contracting Officer.

1.57.2 Subcontract and Purchase Orders

The Contractor agrees to insert the substance of this clause in all purchase orders and subcontract agreements issued under this contract.

1.58 thru 1.65 NOT USED

1.66 ATTACHMENTS

01060-27

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

TAC FORM 356 - Operation and Maintenance Training Validation
Certificate

-- End of Section --

01060-28

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

C E R T I F I C A T E

OPERATION AND MAINTENANCE TRAINING VALIDATION

References: 1. Special Clause: Instructions and Training for Operations and Maintenance

2. Technical Provision(s) _____

Equipment for which training conducted: _____

Description of Training:

1. Number of Classroom Hours: _____

2. Number of Hands-on Equipment Hours: _____

3. Location of Training: _____

Training Instructors: _____

Trainees: _____

Contractor Certifying Official _____

Corps of Engineers Representative _____

User Acknowledgement _____

SECTION 01312
QUALITY CONTROL SYSTEM (QCS)

PART 1: GENERAL

1.1 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site: the Contractor can obtain the current address from the Government. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

Administration	Submittal Monitoring
Finances	Scheduling
Quality Control	Import/Export of Data

1.1.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.2 Other Factors

Particular attention is directed to specifications "SUBMITTAL PROCEDURES", "CONTRACTOR QUALITY CONTROL", "PROJECT SCHEDULE", and Contract Clause, "Payments", which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available. It shall be the

01312-1

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

responsibility of the contractor to maintain the QCS software and install updates as they become available.

1.3 SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS. No separate payment shall be made for updating or maintaining the necessary hardware configurations necessary to run QCS:

Hardware

IBM-compatible PC with 1000 MHz Pentium or higher processor
256+ MB RAM for workstation / 512+ MB RAM for server
1 GB hard drive disk space for sole use by the QCS system
Digital Video Disk (DVD)-Compact Disk (CD) Reader-Writer (RW/ROM)
Monitor with a resolution of AT LEAST 1024x768, 16bit colors
Mouse or other pointing device
Windows compatible printer. (Laser printer must have 4 MB+ of RAM)
Connection to the Internet, minimum 56k BPS

Software

MS Windows 2000 or higher
QAS-Word Processing software: MS Word 2000 or newer
Internet browser supporting HTML 4.0 or higher
Electronic mail (E-mail) MAPI compatible
Virus protection software regularly upgraded with all issued manufacturer's updates

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.4.2 Contractor Quality Control (CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class. The government will provide QCS training if requested by the contractor.

1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the

01312-2

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail or via CD-ROM. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. Data updates to the Government shall be submitted via either E-mail or electronic media with printed/file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer. The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and

01312-3

planned equipment inspection dates.

1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Daily CQC Report generated by QCS shall be the Contractor's official report. Data

from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by specification 01451 "CONTRACTOR QUALITY CONTROL".

01312-4

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.6.4 Submittal Management

The Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal

01312-5

register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Specification Section Project Schedule. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Requests for Information (RFI)

The Contractor shall use the two-way RFI system contained in QCS for tracking all RFI's generated during the contract. Hard copies of all RFI's shall be provided to the government, and will govern in the event of a discrepancy between electronic and printed mediums.

1.6.7 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government

01312-6

acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

- End of Section -

01312-7

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

SECTION 01321

PROJECT SCHEDULE

PART 1 GENERAL

1.1 SUBMITTALS

The following shall be submitted for Government approval in accordance with Section 01335 SUBMITTAL PROCEDURES: SD-07 Schedules Project Schedule. Horizontal Bar Chart and Periodic Payment Request Updates. Projected Earnings Curve and Periodic Payment Request Updates. Revisions to the Project Schedule and Projected Earnings Curve for Modifications Issued to this Contract shall be coordinated with the Contracting Officer.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall furnish a Project Schedule as described below. The scheduling of construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the project should also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule or scheduling personnel shall result in an inability of the Contracting Officer to evaluate Contractor progress for the purposes of payment. Failure of the Contractor to provide all information, as specified below, shall result in the disapproval of the entire Project Schedule submission and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. In the case where Project Schedule revisions have been directed by the Contracting Officer and those revisions have not been included in the Project Schedule, then the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until revisions to the Project Schedule have been made.

3.3 PROJECT SCHEDULE

3.3.1 Schedule of Construction

Within seven (7) calendar days after award of the task order, the Contractor shall prepare and submit a Construction Schedule to the Contracting Officer for approval. This schedule shall address each payment line item and/or sub-line item listed in the Proposal Schedule separately.

01321-1

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

3.3.2 Non-Compliance

Failure of the Contractor to comply with the requirements of the Contracting Officer shall be grounds for determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of this contract.

3.3.3 Horizontal Bar Chart

The required schedule shall utilize an automated scheduling program and shall be in the form of a horizontal bar chart. The line or sub-line item schedule of activities shall be listed down the left side of the page. A time scale shall run across the bottom of the page. Each work item shall be represented by a bar starting with the schedule start date and running continuously to the completion date.

3.3.4 Cost

Listed with each work item shall be a corresponding cost representing the total cost, such as material, labor, equipment, and overhead associated with that item. The total cost of the work items shall be equal to the Bid Price for that sub-line item of the Proposal Schedule.

3.3.5 Scheduled Project Completion

The schedule interval shall extend from Notice-To-Proceed to the contract completion date.

3.3.6 Projected Earning Curve

Submitted with the Construction Schedule shall be a Projected Earning Curve. The Projected Earning Curve is a plot of the Contractor's earnings on the vertical axis and the contract duration on the horizontal axis. The earnings figure shall relate to the complete value of the contract and need not reflect each facility separately.

3.3.7 Construction Schedule

The Construction Schedule shall be on one page with a maximum dimension of 90 cm by 120 cm. The Contractor shall submit the Projected Earnings Curve on the same page. The initial submittal shall include one (1) reproducible and four (4) copies, one (1) copy of which will be returned to the Contractor when approved.

3.3.8 Submission With Partial Payment Estimate

Each time the Contractor submits a payment request under this contract he shall also submit three (3) copies of the Bar Chart. The Bar Chart shall be annotated by indicating the percent complete for each activity

directly on the bar. The Projected Earnings Curve shall be annotated by plotting actual earnings versus time on the same graph. Those work items reflecting performance which is behind schedule by fifteen (15) calendar days or more shall be fully explained in detail giving the reason for delay and the Contractor's plan for timely completion within the schedule.

3.3.9 Modifications

The Construction Schedule and Projected Earning Curve shall be revised to reflect any and all modifications issued to this contract as they are issued. Format and numbers of copies as defined in paragraph CONSTRUCTION SCHEDULE shall be submitted for approval by the Contracting Officer.

3.4 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly on-site meeting or shall be conducted at other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor shall describe, on an activity-by-activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

3.4.1 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than four (4) working days after the monthly progress meeting.

3.4.2 Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost to Date, shall be subject to the approval of the Contracting Officer.

3.4.3 Earnings Report

A compilation of the Contractor's Total Earnings on the project from the Notice-to-Proceed until the most recent Monthly Progress Meeting. This report shall reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and the Contracting Officer at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining Contractor Payment. This report shall: sum all activities and provide a percent complete by individual activity and total project percent complete. The report shall contain, for each activity: activity identification, activity description, original budgeted amount, total quantity, quantity to date, percent complete (based on cost), and earnings to date.

01321-3

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

3.4.4 Cost Completion

The earnings for each activity started shall be reviewed. Payment shall be based on earnings for each in-progress or completed activity. Payment for individual activities shall not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

3.4.5 Network Analysis System

The Contractor may, as an option, submit to the Contracting Officer for approval, a time related network analysis in lieu of the previously specified bar chart.

-- End of Section --

01321-4

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

SECTION 01335

SUBMITTAL PROCEDURES FOR DESIGN-BUILD PROJECTS

PART 1 GENERAL

1.1 REFERENCE

The publication listed below forms a part of this specification to the extent referenced. The publication is referenced to in the text by basic designation only.

CONSTRUCTION SPECIFICATIONS INSTITUTE
Manual of Practice
Construction Specifications Institute
http://www.csinet.org/s_csi/index.asp
601 Madison Street
Alexandria, VA 22314-1791

AFGHANISTAN ENGINEER DISTRICT

AFGHANISTAN ENGINEER DISTRICT
<http://www.aed.usace.army.mil>
U.S. Army Corps of Engineers
Attn.: Qalaa House
APO AE 09356

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 DESIGN SUBMITTALS

Contractor Furnished design submittals are the various design documents which primarily consist of specifications, drawings and design analysis and calculations. The Design-Build Contractor shall not begin construction work until the Government has reviewed the Design-Build Contractor's final design and has cleared it for construction. Clearance for construction shall not be construed as meaning Government approval. Unless otherwise indicated, the risk for the design is the sole responsibility of the Design-Build Contractor.

1.2.2 CONSTRUCTION SUBMITTALS

1.2.3 Contractor Furnished Government Approved Construction Submittals

Government approved construction submittals are primarily related to plans (Contractor Quality Control, Accident Prevention, Resident Management System, Area Use, etc.) schedules (Project Schedule/Network Analysis), and certificates of compliance. They may also include proposed variations to approved design documents in accordance with the paragraph entitled "VARIATIONS".

1.2.4 For Information Only Construction Submittals (FIO)

All submittals not requiring Designer of Record or Government approval will be for information only.

1.3 SUBMITTAL CERTIFICATION

The Contractor Quality Control (CQC) organization shall be responsible for certifying that all submittals and deliverables have been reviewed in detail for completeness, are correct, and are in strict conformance with the contract drawings, specifications, and reference documents.

1.3.1 Effective Quality Control System

The Design-Build Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with Contract Clause 52.236-21 SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION - ALTERNATE I and specification section 01451 CONTRACTOR QUALITY CONTROL.

1.3.1.1 Organizational Responsibility

The quality control system shall cover all design, construction, subcontractor, manufacturer, vendor, and supplier operations at any tier, both onsite and offsite.

1.3.1.2 CQC System Manager Review and Approval

Prior to submittal, all items shall be checked and approved by the Design-Build Contractor's Quality Control (CQC) System Manager. If found to be in strict conformance with the contract requirement, each item shall be stamped, signed, and dated by the CQC System Manager. Copies of the CQC organizations review comments indicating action taken shall be included within each submittal.

1.3.1.3 Determination of Compliance

Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements by the Contracting Officer. The Contractor shall submit all required documentation with submittals. The U.S. Army Corps of Engineer (USACE) will not accept partial submittals.

1.3.2 Responsibility for Errors or Omissions

It is the sole responsibility of the Design-Build Contractor to ensure that submittals do or do not comply with the contract documents. Government review, clearance for construction, or approval by the Contracting Officer shall not relieve the Design-Build Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract.

1.3.2.1 Government Review

Government review, clearance for construction, or approval of post design construction submittals shall not be construed as a complete

check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory.

1.3.3 Substitutions

After design submittals have been reviewed and cleared for construction by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless justified as indicated in the paragraph entitled VARIATIONS.

1.3.4 Additional Submittals

The Contracting Officer may request additional submittals in conjunction with Contract Clause 52.236-5 MATERIAL AND WORKMANSHIP, In addition to those specified when deemed necessary to adequately describe the work.

1.3.5 Untimely and Unacceptable Submittals

If the Design-Build Contractor fails to submit submittals in a timely manner, or repetitively submits submittals that are incomplete or not in strict conformance with the contract documents, no part of the time lost due to such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor.

1.3.6 Stamps

Stamps shall be used by the Design-Build Contractor on all design and post design construction submittals to certify that the submittal meets contract requirements and shall be similar to the following:

Design-Build Contractor (Firm Name)
Contract Number
Contract Name

I certify that this submittal accurate, is in strict conformance with all contract requirements, has been thoroughly coordinated and cross checked against all other applicable disciplines to prevent the omission of vital information, that all conflicts have been resolved, and that repetition has been avoided and, it is complete and in sufficient detail to allow ready determination of compliance with contract requirements by the Contracting Officer.

Name of CQC System Manager: _____

Signature of CQC System Manager: _____

Date: _____

1.4 ENGLISH LANGUAGE

All specifications, drawings, design analysis, design calculations, shop drawings, catalog data, materials lists, and equipment schedules submitted shall be in the English language.

1.5 UNITS OF MEASUREMENT

Design documents shall be prepared in accordance with the guidance offered in SECTION 01415 METRIC MEASUREMENTS.

The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the 11th CGPM in 1960.

1.5.1 Drawings

1.5.1.1 All site layout data shall be dimensioned in meters or coordinates, as appropriate. All details and pipe sizes shall be dimensioned in millimeters.

1.5.1.2 All site plans shall be georeferenced using the WGS 1984 coordinate system, specifically the following: WGS 1984 UTM one 42 N. If the designer is not able to use the stated coordinate system, the coordinate system used shall be correlated to the stated coordinate system. A table shall be provided within the site drawing set cross referencing the WGS84 system to that utilized. This is required to allow AED to incorporate the plans into GIS for storage, map production, and possible geospatial analysis of the different work sites.

1.5.2 Design Calculations

Calculations shall be in SI units to meet the requirements of the design. Quantities on the contract drawings stated in SI units, shall also be stated in SI units in the design analysis to match the drawings.

1.5.3 Specifications

All equipment and products shall be specified according to U.S. standards and described by appropriate units as required herein.

1.6 WITHHOLDING OF PAYMENT FOR SUBMITTALS

1.6.1 Design Submittals

Payment for Design work will not be made in whole or in part until the Government has reviewed and cleared the design for construction.

1.6.2 Construction Submittals

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. In event under separate clause of the contract, the Design-Build Contractor is allowed partial or total invoice payment for materials shipped from the Continental United States (CONUS), and/or stored at the site, the Design-Build Contractor shall with his request for such payment, submit copies of approvals (ENG Form 4025) certifying that the materials that are being shipped and/or stored have been approved and are in full compliance with the contract technical specifications.

PART 2 PRODUCTS

2.1 GENERAL

The following are contract deliverables which expound upon and finalize the design parameters/requirements outlined within the contract documents. They shall be prepared in such a manner that the Prime Contractor is responsible to the Government and not as an internal document between the Prime Contractor and its Subcontractors, Vendors, Suppliers, etc.

2.2 DESIGN ANALYSIS

2.2.1 A design analysis, written in the English Language with SI units of measure shall be submitted for review by the Government. The design analysis is a written explanation of the project design which is expanded and revised (updated) as the design progresses. The design analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the final drawings and specifications. Provide sufficient information to permit manual checks of the results. The design analysis contains the criteria for and the history of the project design, including criteria furnished by the Government, letters, codes, references, conference minutes, and pertinent research. Design calculations, computerized and manual, are included in the design analysis. Narrative descriptions of design solutions are also included. Written material may be illustrated by diagrams and sketches to convey design concepts. Catalog cuts and manufacturer's data for all equipment, hardware, and items, shall be submitted. Copies of all previous design phase review comments and the actions assigned to them shall be included with each submission of the design analysis. Specific requirements for the design analysis, listed by submittal phase, are contained herein.

2.2.2 Architectural Code Analysis

Provide Code Analysis for each building based on the following items and code sections. The following analysis information is required for all buildings submitted in this proposal.

Analysis Items	Code References
1. Occupancy Classification	IBC Chapter 3 and Table 302.3.2
2. Type of Construction	IBC Chapter 6
3. Actual Allowable Area	IBC 503, 505-508 & Table 503
4. Actual Allowable Height	IBC 504 & Table 503
5 Occupant Load (per use)	IBC 1004 & Table 1004.1.2
6. Exits Required/Provided	IBC 1004 & Table 1004.1.2 IBC 1014, 1018, and 1018.2

- | | |
|--------------------------------|---------------|
| 7. Required Opening Protection | IBC Table 602 |
| 8. Fire Resistive Construction | IBC Table 601 |

2.3 DESIGN CALCULATIONS

When they are voluminous, the design calculations shall be bound separately from the narrative part of the design analysis. The design calculations shall be presented in a clean and legible form incorporating a title page and index for each volume. A table of contents, which shall be an index of the indices, shall be furnished when there is more than one volume. The source of loading conditions, supplementary sketches, graphs, formulae, and references shall be identified. Assumptions and conclusions shall be explained. Calculation sheets shall carry the names or initials of the computer and the checker and the dates of calculations and checking. No portion of the calculations shall be computed and checked by the same person.

2.3.1 Automatic Data Processing Systems (ADPS)

When ADPS are used to perform design calculations, the design analysis shall include descriptions of the computer programs used and copies of the ADPS input data and output summaries. When the computer output is large, it may be divided into volumes at logical division points.

2.3.1.1 Computer Printouts

Each set of computer printouts shall be preceded by an index and by a description of the computation performed. If several sets of computations are submitted, they shall be accompanied by a general table of contents in addition to the individual indices.

2.3.1.2 Preparation of the Description

Preparation of the description which must accompany each set of ADPS printouts shall include the following.

- a. Explain the design method, including assumptions, theories and formulae.
- b. Include applicable diagrams, adequately identified.
- c. State exactly the computation performed by the computer.
- d. Provide all necessary explanations of the computer printout format, symbols, and abbreviations.
- e. Use adequate and consistent notation.

2.4 SPECIFICATIONS

Specifications shall be prepared in accordance with the Construction Specifications Institute (CSI) format. The Design-Build Contractor prepared specifications shall include as a minimum, all applicable specification sections referenced by the CSI for each product supplied

and used for project. Where the CSI does not reference a specification section for specific work to be performed by this contract, the Design-Build Contractor shall be responsible for creating the required specification. Designer shall not edit out any references, standards, etc. relating to any materials or items used in the project.

Construction Specifications Institute
http://www.csinet.org/s_csi/index.asp
601 Madison Street
Alexandria, Virginia
22314-1791

2.4.1 Preparation of Proprietary Non-Generic Design Documents

During the course of design, the designer shall specify specific proprietary materials, equipment, systems, and patented processes by trade name, make, or catalog number. The subsequent use of construction submittals to supplant and/or supplement incomplete design effort is unacceptable. Design submittals containing non-proprietary and/or generic design criteria where proprietary items are available, will be returned for resubmission.

2.4.2 Use of Unified Facilities Guide Specifications (UFGS)

If UFGS are used, it is the sole responsibility of the Design-Build Contractor to prepare these specifications in strict conformance with the paragraph entitled PREPARATION OF PROPRIETARY NON-GENERIC DESIGN DOCUMENTS. UFGS containing non-proprietary and/or generic design criteria, where proprietary items are available, will be returned for resubmission. If the UFGS contains a "SUBMITTALS" paragraph, the Design-Build Contractor shall delete it and incorporate all required information directly into the design documents. Under no circumstances will the Design-Build Contractor be permitted to use submittals and shop drawings to finalize an incomplete design. UFGS (Uniform Federal Guide Specifications) are required for this project when U.S. products and systems are required or used. Designer shall not edit out any references, standards, etc. relating to any materials or items used in the project.

Current UFGS information may be obtained at the following location:
http://www.wbdg.org/ccb/browse_org.php?o=70.

Specifications for UFGS are in SpecsIntact format. SpecsIntact is government sponsored software used to edit specifications for government contracts. The software is available at the following link:
<http://specsintact.ksc.nasa.gov/index.asp>.

2.4.3 Quality Control and Testing

Specifications shall include required quality control and further indicate all testing to be conducted by the Design-Build Contractor, its subcontractors, vendors and/or suppliers.

2.4.4 Ambiguities and indefinite specifications

Ambiguities, indefinite specification requirements (e.g., highest quality, workmanlike manner, as necessary, where appropriate, as directed, etc.) and language open to interpretation is unacceptable.

2.4.5 Binding

All volumes of specifications shall be 8.5 inches X 11 inches, and firmly bound, covers shall be of a heavier bond than the drawing sheets. All specifications shall be bound in sets with Chicago Screws to fasten sheets together, the drilled holes on the bond edges of the sheets shall be on 100 mm centers maximum, and 40 mm maximum from edges.

2.4.5 Industry Standards

2.4.5.1 U.S. Industry Standards

The Specifications shall be based on internationally accepted U.S. industry Standards. Customarily accepted publications may be found in the UNIFIED MASTER REFERENCE LIST (UMRL) which may be located at the following URL:

<http://www.hnd.usace.army.mil/techinfo/UFGS/UFGSref.htm>.

To access the UMRL select the "Unified Facilities Guide Specifications" tab and scroll down to Unified Master Reference List (UMRL) (PDF version).

Examples of U.S. standards are: National Fire Protection Association (NFPA), International Building Code (IBC), American Concrete Institute (ACI), American Water Works Association (AWWA), ADAAG (ADA Accessibility Guidelines) for Buildings and Facilities, etc. Standards referenced shall be by specific issue; the revision letter, date or other specific identification shall be included.

This document lists publications referenced in the Unified Facilities Guide Specifications (UFGS) of the Corps of Engineers (USACE), the Naval Facilities Engineering Command (NAVFAC), the Air Force Civil Engineer Support Agency (AFCESA), and the guide specifications of the National Aeronautics and Space Administration (NASA). This document is maintained by the National Institute of Building Sciences (NIBS) based on information provided by the agencies involved and the standards producing organizations. The listing is current with information available to NIBS on the date of this publication.

Standards referenced in specifications and drawings prepared by the Design-Build Contractor shall be by specific issue; the revision letter, date or other specific identification shall be included.

2.4.5.2 Non U.S. Industry Standards

The Codes, Standards, and Regulations listed below shall be used in the construction of this project. The publications shall be the most recent editions. Standards specified shall be ASTM or equivalent DIN, BS, or EN. Standards other than those mentioned may be accepted provided they meet the minimum requirements and the Contractor shall

submit proof of equivalency to the Contracting Officer for approval. It shall be the Contractor's responsibility to show equivalency requirements are met if the Standard is not per specified format. Any time two or more Codes or standards conflict, the most stringent shall apply.

2.4.6 Incorporation of Government review comments

Subsequent to submission to the Government, the specifications shall be finalized by the incorporation of Government review comments.

2.5 DRAWINGS

Drawings, prepared in the English language with SI units of measure, are a part of each submittal. The working drawings shall be adequately labeled and cross-referenced for review. Complete, thoroughly checked and coordinated contract drawings shall be submitted. The contract drawings submitted for final review shall include the drawings previously submitted which have been revised and completed as necessary. The Design-Build Contractor shall have incorporated any design review comments generated by previous design review(s), have completed all of his constructability and coordination checks, and have the drawings in a Ready-to-Build condition. The drawings shall be complete at this time and contain all the details necessary to ensure a clear understanding of the work throughout construction.

2.5.1 Drawing Size

If the project is required to be in (SI) Metric units, all drawings shall be prepared in size "A1" sheets (594mm by 841mm). If project is required to be in English units, all drawings shall be modified Architectural D size (24 inches by 36 inches) sheets. Design submissions may be prepared in half size (11 inches by 17 inches) to save paper and for ease of review. All final contract drawing sets shall be prepared with full size sheets. Drawings shall be trimmed to size if necessary.

2.5.2 Computer Assisted Design and Drafting (CADD)

Computer Assisted Design and Drafting (CADD) is required for all work related to this contract. The CADD deliverables shall meet the requirements of the AEC CAD Standard Release 2.0. Emphasis is on drawings meeting sheet layout standards, level/layer naming standards and sheet naming conventions. CAD standards may be found at the following link:

<https://tsc.wes.army.mil/products/standards/aec/aecstdweb.asp>.

Transatlantic Programs Center Design Instructions Manual, Chapter 22 entitled COMPUTER ASSISTED DESIGN AND DRAFTING. The Contractor shall furnish the digital as-built drawing files in .DWG file format utilizing AutoDesk AutoCAD revision 2005 or later. Drawings shall not be prepared in another Cad format and converted into AutoCAD.

2.5.3 Plotter Prepared Original Drawings

Plotter prepared original drawings shall be prepared on 20 pound bond paper, unless otherwise approved and shall be plotted on the matte side. Raster plotters must provide a minimum resolution of 400 dpi

while vector plotters and shall provide a minimum resolution of 0.0010 inch with an accuracy of +0.1% of the move and a repeatability error of not more than 0.005 inch. Drawings produced from dot matrix plotters are not acceptable. Plots accompanied by the digital design file may be prepared on vellum; translucent bond is not acceptable. Line density shall be equivalent to that produced by black India ink; half-tones and gray scale plots are not acceptable unless otherwise approved. Manual changes to plotted originals are not acceptable.

2.5.4 Half-Size Reduction

Preparation of all work shall accommodate half-size reductions unless project is required to meet SI units or shall be instructed otherwise by the Contracting Officer.

2.5.5 Symbols and Abbreviations

Symbols and abbreviations shall be in accordance with AEC CAD Standard Release 2.0 or later or conform to the symbols used with a CADD program such AutoDesk AutoCAD release 2000 or greater.

2.5.6 Design Discipline Designation Format

Referencing AEC CAD Standard Release 2.0, the drawing package shall be divided into the following proposed divisions:

Use the following for AEC CAD Standard Release 2.0:

Discipline

Designation Discipline

C	Civil
S	Structural
A	Architectural
F	Fire Protection
P	Plumbing
M	Mechanical
E	Electrical

Each drawing for the particular facility shall be designated by the discipline designation and sheet number and shall be consecutive within each discipline. AEC CAD Standard, referenced herein, shall be adhered to, especially with regard to sheet naming, numbering and level/layer naming standards. Copies of level/layer naming standards are available at the following locations (in comma delimited format - .CSV) and may be imported into AutoCAD release 2000 or later:

Public FTP site:

<ftp://anonymous:anonymous@ftp.usace.army.mil/pub/aed/Standards/AEC Nat CAD Std/level libs/>

Share Point site:

<https://aedsharepoint.tac.usace.army.mil/C16/Drawings/Document%20Library/AEC CAD level templates.ZIP>

2.5.7 Grouping Drawings

A building or individual facility design shall, except for site development drawings, be grouped in the design drawing package so that a single building may be withdrawn by deleting or removing a consecutive block of sheets.

2.5.8 Title and Revision Block

Title and revision block shall match FIGURES 1 through 5 furnished in the paragraph entitled ATTACHMENTS.

2.5.9 Drawing Scales

The scales indicated on the following list shall, in general, be used for all drawings. The Contractor may, at his option, make exceptions to scales indicated, if approved in writing by the Contracting Officer.

Site, Grading and Utility Plans - 1:500, if in SI units

Key Plans as large as practical

Cross Sections/elevations (as large scale as possible to adequately show required detail) - 1:100, if in SI units

Details - 1:10 minimum, if in SI units

2.5.10 Binding

All volumes of drawing prints shall be firmly bound and shall have covers of heavier bond than the drawing sheets. All drawings shall be bound in sets with Chicago Screws to fasten sheets together, the drilled holes on the bond edges of the sheets shall be on 200 mm centers maximum, and 50 mm maximum from edges. Maximum thickness of each set of drawings shall be 40 mm.

2.5.11 Typical Sheets

Typical sheets of standard details uniformly used on all buildings are authorized and encouraged. Sheets of standard details may be prepared so that they can be reused if the design package must be divided into separate construction packages. Each typical detail drawing sheet may be limited to a particular design discipline. Standard detail sheets shall be organized by discipline as are the other drawing sheets. Details peculiar to one facility shall not be shown in the standard details but with the group of drawings for the facility to which it pertains.

2.5.12 Index Sheet(s)

The first sheet of each volume in a project shall be a cover sheet. In general, the second sheet shall be the first index. The third sheet shall be a legend with all symbols and abbreviations used in drawings listed. Multiple index sheets may be required, depending on the project size. All index sheets shall be included with each volume of drawings and shall be an index of all the individual drawings in all volumes. The index shall list sequentially the site development

drawings, each facility's drawings, and the standard details drawings (if any), and shall locate them by volume and file number. Each index sheet shall be signed and stamped by a principal of the Design-Build Contractor.

2.5.13 Drawing File Number

The File Number is unique to each drawing and is a combination of a project location code, project number, facility designator and the CADD file name. Unassigned numbers or skipped sheets shall be labeled as "Not Used" on the index sheets. Cover sheets are not numbered.

2.5.14 Specifications Placed on the Drawings

Details of standard products or items which are adequately covered by specifications shall not be included on the drawings.

2.5.15 Legends

For each submittal, legends of symbols and lists of abbreviations shall be placed on the drawings. They shall include all of the symbols and abbreviations used in the drawing set, but shall exclude any symbols and abbreviations not used. Since many symbols are limited to certain design disciplines, there is a definite advantage to the use of separate legends on the initial sheet of each design discipline or in the Standard Details package for each discipline. If legends have not been shown by discipline, a legend shall be placed on the third drawing.

2.5.16 Location Grid

To facilitate the location of project elements and the coordination of the various disciplines' drawings, all plans shall indicate a column line or planning grid, and all floor plans (except structural plans) shall show room numbers.

2.5.17 Composite and Key Plans

If the plan of a large building or structure must be placed on two or more sheets in order to maintain proper scale, the total plan shall be placed on one sheet at a smaller scale. Appropriate key plans and match lines shall appear on segmented drawings. Key plans shall be used not only to relate large scale plans to total floor plans but also to relate individual buildings to complexes of buildings. Key plans shall be drawn in a convenient location and shall indicate the relative location of the represented plan area by crosshatching.

2.5.18 Revisions

Drawing revisions shall be prepared only on the original CADD files. A revision area is required on all sheets.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Design Concept Coordination Meeting

In addition to regular meetings with the Government, the Contractor shall conduct formal status briefings on a bi-weekly basis, as a minimum, to provide a management overview of design development. Shortly after contract award, the Government may choose to conduct meetings with the Design-Build Contractor to refine proposal concept features. The purpose of the meeting is to assure attention to project requirements and to suggest ways of improving the design prior to tentative level submissions.

3.1.2 Government Design Changes

Government design changes which do not increase construction costs shall be made at no charge to the Government. The Contracting Officer may request design submittals in addition to those listed when deemed necessary to adequately describe the work covered in the contract documents. Submittals shall be made in the respective number of copies and to the respective addresses set forth in the paragraph entitled SUBMITTAL PROCEDURE. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

3.2 SUBMITTAL REGISTERS

3.2.1 Contractor-Furnished Design Documents Submittal Register (TAC Form 122-E)

3.2.1.1 General

The Contractor shall submit as part of his Project Schedule, information regarding the submittal and clearance for construction of Contractor furnished design documents. In addition, the Contractor shall provide a complete submittal register in the sample format (TAC Form 122-E - Contractor Furnished Design Documents Submittal Register) which is attached to this section. The Contractor shall, within fifteen (15) calendar days after approval of the Project Schedule, submit 3 copies of his finalized Contractor Furnished Design Document Submittal Register to the Contracting Officer for approval. The submittal register shall consist of a tabulation of all the Contractor's furnished design documents with the indicated dates integrated into the Design Progress Schedule. The Contractor shall post all actual dates of submittal actions (including clearance for construction) as they occur. Revisions shall be made at minimum on a monthly basis to keep the submittal register in agreement with the scheduled dates shown in the network mathematical analysis.

3.2.1.2 Additions or Revisions

Any additions or changes required to be made to the TAC Form 122-E as a result of the Contracting Officer's review shall be incorporated into the TAC Form 122-E by the Contractor and (3) copies shall be affected

within five (5) calendar days after receipt of the Contracting Officer's review comments.

3.2.1.3 Submission Requirements

A copy of the initial TAC Form 122-E and each monthly update prepared by the Contractor, shall be submitted to

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:

U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan

(2) U.S. Postal Service:

USACE - AED
ATTN: QALAA House
APO AE 09356

3.2.2 Construction Submittal Register (ENG Form 4288)

Attached to this section is ENG Form 4288 which the Contractor is responsible for developing for this contract. All construction submittals shall be shown on this register. The submittal register shall be the controlling document and will be used to control all construction submittals throughout the life of the contract. The Contractor shall maintain and update the register on a monthly basis for the Contracting Officer's approval.

3.3 TRANSMITTAL FORM (ENG Form 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both design and construction submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care will be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.4 PROGRESS SCHEDULE

The Contractor shall prepare and submit a design progress schedule to the Contracting Officer. The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The progress schedule shall show, as a percentage of the total design price, the various items included in the contract and the order in which the Contractor proposes to carry on the work, with dates on which he will start the features of the work and the contemplated dates for completing same. Significant milestones such as review submittals shall be annotated. The Contractor shall assign sufficient technical, supervisory and administrative personnel to insure the prosecution of

the work in accordance with the progress schedule. The Contractor shall correct the progress schedule at the end of each month and shall deliver Submittal section AED (3) copies to the Contracting Officer. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.5 SCHEDULING

3.5.1 Design Submittals

Note: all design submittal phases shall consist of Designs, Specifications, Design analysis, two (2) half-size sets of drawings bound with a CD-ROM electronic files of all the listed here in.

Adequate time a minimum of fifteen (15) calendar days exclusive of mailing time shall be allowed for review and clearance for construction. If the Contractor fails to submit design submittals in a timely manner, or repetitively submits design submittals that are not in strict conformance with the contract documents, no part of the time lost due to such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.5.2 Post Design Construction Submittals

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of fifteen (15) calendar days exclusive of mailing time) shall be allowed for review and approval. If the Contractor fails to submit post design construction submittals in a timely manner, or repetitively submits submittals that are not in strict conformance with the contract documents, no part of the time lost due to actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.5.3 Incorporation of Government Review Comments

The Contractor shall use DrChecks_{SM}, as the communication mechanism for the Government's review comments. The review will be for conformance with the technical requirements and parameters of the contract documents. The Contractor shall either incorporate each comment or, if the Contractor disagrees technically and does not intend to comply with the comment(s), the Contractor shall clearly outline, with ample justification, its reasons for its noncompliance within five (5) days after receipt of the comment(s) in DrChecks_{SM}. Additionally, the Contractor is cautioned in that if it is believed the action required by any comment exceeds the requirements of this contract, that he should take no action and notify the Contracting Officer in writing immediately. The DrChecks_{SM} review comments and the submittal material for each design review will become the basis for any ensuing design work. Copies of the DrChecks_{SM} design review comments with the action taken on each comment noted shall be bound in all succeeding volumes of the design analysis.

3.6 SUBMITTAL PROCEDURE

3.6.1 Design Submittals

3.6.1.1 Afghanistan Engineer District (AED)

Two (2) hard copies and one (1) soft copy of all design submittals shall be transmitted to the Government at the following address by means of ENG Form 4025:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan

(2) U.S. Postal Service:
USACE - AED
ATTN: QALAA House
APO AE 09356

One (1) set of designs and three (3) copies of all design submittals shall be transmitted to the Government at the following address by means of ENG Form 4025:

The drawings shall be submitted in full size and half-size formats unless otherwise noted.

For the Afghanistan Engineer District and/or field office, the Contractor shall submit (3) half size sets of drawings and a complete set of specification, design analysis and a soft copy on CD-ROM of all of the listed herein.

3.6.1.2 Resident/Area Engineer Office

Two (2) half size copies and one (1) full size additional copy of each design submittal shall be transmitted to the overseas field office administering the construction portion of the contract at the following address:

3.6.1.3 Deliverables "Cleared for Construction"

Once the Design Documents have been "Cleared for Construction" by the Contracting Officer, the Design-Build Contractor shall clearly identify each document by annotating it as "Cleared for Construction". One (1) complete hardcopy and CD set of all finalized design documents shall be submitted to the Government as follows:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan

(2) U.S. Postal Service:
USACE - AED
ATTN: QALAA House
APO AE 09356

Resident Area Engineer Office AED

Field office or site location of design project.

This is a Design-Build project and in accordance with Contract Clause 52.227-7022 GOVERNMENT RIGHTS (UNLIMITED), the Government has non-exclusive rights to use the design on other projects. Therefore, the As-Builts furnished to the Government must be in an editable format.

3.6.1.4 Editable CADD Format As-Builts

One (1) set of the Government approved As-Builts shall be submitted to the following address in an editable CADD format:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan

(2) U.S. Postal Service:
USACE - AED
ATTN: QALAA House
APO AE 09356

This requirement is in addition to all other submission requirements stated elsewhere in the contract.

3.6.1.5 Digital Transmission of Design Submittals

The Design-Build Contractor shall submit design deliverables addressed by this specification in digital format. The following procedure shall be followed:

a. USE OF FILE TRANSFER PROTOCOL (FTP) SERVER. The Design-Build contractor will download all design files on either its own File Transfer Protocol (FTP) Server, the Corps FTP Server or as otherwise directed. Afghanistan Engineer District (AED) prefers that the

contractor provide the soft copy of design submittals be burned to CD-ROM and submitted as such. Files shall be arranged on a CD with each facility clearly identified as a separate subdirectory, with all files for that facility contained in that subdirectory. Each disk shall have an adhered printed label listing contents. Hand writing is unacceptable. The procedure to be followed will be established at the Pre-Construction Conference and the appropriate log-in and password information will be exchanged between the Government and the Design-Build Contractor.

NOTE: AED accepts AutoCAD release 2005 or higher drawing file format as the standard.

b. TRANSLATED OR CONVERTED FILES DRAWING FILES. Digital drawing files shall be prepared as indicated in the paragraph entitled COMPUTER ASSISTED DESIGN AND DRAFTING (CADD). Under NO circumstances shall the Design-Build Contractor translate (or convert) the files from Bentley Microstation to AutoDesk AutoCAD.

c. NOTIFICATION. The Design-Build Contractor shall notify all recipients by email that the Design submittal has been downloaded to the designated FTP server or electronically provided on a CD and is ready for Government review. This email shall include a scanned copy of the ENG Form 4025 signed by the Design-Build Contractor's Contractor Quality Control (CQC) Organization. It shall also include an updated digital copy of TAC Form 122-E. The Government will use the digital submittal as an advance copy pending receipt of an official hardcopy version in accordance with the paragraph entitled SUBMITTAL PROCEDURE. Subsequent to a period of demonstrated successful performance, the Government may elect to eliminate the requirement to submit an official hardcopy version.

The TAC Form 122-E shall be prepared in a spread sheet software that readily allows the file to be saved as a *.CSV file that can subsequently be imported into the Corps of Engineers Resident Management System (RMS) software.

d. RETURN OF GOVERNMENT REVIEWED SUBMITTALS. Subsequent to the Government review, the Eng Form 4025 with comments (if applicable) will be returned to the Design-Build Contractor digitally by email. Hardcopies of these documents will subsequently be submitted to the Design-Build Contractor via the United States Postal Service (USPS). The Government may elect to stop sending hardcopies if it deems that digital transmission of design submittals is progressing satisfactorily.

e. SUPPLEMENTAL ACTIONS. All supplemental actions, resubmittals, and subsequently scheduled submissions shall be performed by the Design-Build Contractor as indicated within this paragraph.

AED: As-builts shall be prepared and submitted in .DWG format utilizing AutoDesk AutoCAD release 2000 or higher format.

3.6.2 Post Design Construction Submittals

Three (3) copies of all post design construction submittals shall be transmitted to the overseas district office administering the construction portion of the contract at the following address:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:

U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan

(2) U.S. Postal Service:

USACE - AED
ATTN: QALAA House
APO AE 09356

Submittal area of the AED engineering section

One (1) additional copy of each Post Design Construction submittal shall be transmitted to the Government at the following stateside address by means of ENG Form 4025:

Submittals of Operations and Maintenance (O&M) Manuals in sets of three (3) copies shall be as follows:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:

U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan

(2) U.S. Postal Service:

USACE - AED
ATTN: QALAA House
APO AE 09356

3.6.3 Submittal Numbering System

An instruction on the numbering system to be used for construction submittals follows:

3.6.3.1 Submittals

Shop drawings and materials are listed on the Submittal Register (ENG Form 4288) as follows:

a. List is prepared according to contract specifications and drawings, picking up all items involved in the project.

b. This list is divided into sections as indicated in the specifications for example:

Sec	01015	"Technical Requirements"
Sec.	02831	"Chain-Link Fence"
Sec.	02710	"Sub drainage System"
Sec	03300	"Concrete For Building Construction"
Sec.	04200	"Masonry"

3.6.3.2 Numbering procedures for transmittal on ENG FORM 4025

a. Each section may include a list of items. All these items will then be listed with a progressive number within the sections they belong to, for example:

Sec.	01015	will have	01015.00	(Basic number)
Item x	"	"	01015.01	
Item y	"	"	01015.02	
Item z	"	"	01015.03	

Sec.	02710	will have	02710.00	(Basic number)
Item x	"	"	02710.01	
Item y	"	"	02710.02	
Item z	"	"	02710.03	

Sec.	02600	will have	02600.00	(Basic number)
Item x	"	"	02600.01	
Item y	"	"	02600.02	

Sec.	03300	will have	03300.00	(Basic number)
Item x	"	"	03300.01	
Item y	"	"	03300.02	
etc.				

b. It is evident a transmittal will never show a Section number i.e., 02831.00, 03300.00, etc., since these are only the basic numbers of the system. Numbers on transmittals will be the item numbers, i.e., 01015.01, 02710.01, 02710.02, 02710.03, 03300.01, 03300.02, etc. All items, as listed on the Submittal Register, will be submitted via a separate transmittal form ENG FORM 4025 thus avoiding getting together more than one item (as listed) and more than one number. There are items, on the other hand, which may be submitted all together on the same transmittal form. This must be established before submission is made.

c. Sec. 10800 "Toilet Accessories" - this section will have basic number 10800.00 - all items relative to it will be listed one by one on separate lines. ONLY one transmittal number will then be given for all of these "10800.01" which will include i.e., robe hook, toilet paper holder, mirror, soap holder, cabinet for paper towels, etc. Each one of these items will be listed on the same Transmittal Number 10800.01 as item 1, item 2, item 3, etc.

For design reviews the standard Corps of Engineers method of review is through DrChecks_{SM}, through Projnet

<https://www.projnet.org/projnet/binKornHome/index.cfm>. All of AED design submittal reviews shall be done through DrChecks_{SM}.

3.6.3.3 Resubmittals

Should the Contractor be required to resubmit any transmittal, it will be accomplished by utilizing the same transmittal number followed by the number "-1" for the first resubmittal, "-2" for the second resubmittal, "-3" for the third resubmittal, etc. For example, a first resubmittal would be "SUBMITTAL PROCEDURES FOR DESIGN BUILD PROJECT" 01335.01-1, a second resubmittal 01335.01-2, etc. The purpose of this system is to avoid deviations from Submittal Register and, to avoid confusion arising from the use of more than one number on transmittal when more than one item is submitted on the same form. This system will also facilitate the use, wherever required, on machine printouts.

3.6.4 Variations

If design documents or construction submittals show variations from the contract parameters and/or requirements, the Contractor shall justify such variations in writing, at the time of submission. Additionally, the Contractor shall also annotate block "h" entitled "variation" of ENG FORM 4025. After design submittals have been reviewed and cleared for construction by the Contracting Officer, no resubmittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered unless accompanied by the following:

- a. Reason or purpose for proposed variation, substitution, or revision.
- b. How does quality of variation compare with quality of the specified item? This shall be in the form of a technical evaluation tabulating differences between the item(s) originally specified and what is proposed.
- c. Provide a cost comparison. This shall include an acquisition and life cycle cost comparison.
- d. For proprietary materials, products, systems, and patented processes a certification signed by an official authorized to certify in behalf of the manufacturing company that the proposed substitution meets or exceeds what was originally specified.
- e. For all other actions, a certification signed by a licensed professional engineer or architect certifying that the proposed variation or revision meets or exceeds what was originally specified.
- f. Advantage to the Government, if variation is approved, i.e. Operation and Maintenance considerations, better product, etc.
- g. Ramifications and impact, if not approved.

If the Government review detects any items not in compliance with contract requirements or items requiring further clarification, the Contractor will be so advised. Lack of notification by the Contracting Officer of any non-complying item does not relieve the Contractor of any contractual obligation.

3.6.5 Non-Compliance

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7 REVIEW OF CONTRACTOR PREPARED DESIGN DOCUMENTS

3.7.1 General

The work under contract will be subject to continuous review by representatives of the Contracting Officer. Additionally, joint design review conferences with representation by all organizations having a direct interest in the items under review may be held. The Design-Build Contractor shall furnish copies of all drawings and related documents to be reviewed at the review conference on or before the date indicated by the Government. Additional conferences pertaining to specific problems may be requested by the Design-Build Contractor or may be directed by the Contracting Officer as necessary to progress the work. The Design-Build Contractor shall prepare minutes of all conferences and shall furnish two copies to the Contracting Officer within seven (7) days after the conference.

Note: All design submittal reviews shall be reviewed and comments entered in DrChecksSM, located on the web at:

<https://www.projnet.org/projnet/binKornHome/index.cfm>

3.7.2 Independent Design Review

The Design-Build Contractor shall have someone other than the Designer or Design Team perform an independent review of all specifications, drawings, design analysis, calculations, and other required data prior to submission to the Government. Upon completion of this review, the Design-Build Contractor shall certify that each design submittal is complete, accurate, is in strict conformance with all contract requirements, that repetition has been avoided, that all conflicts have been resolved, and that the documents have thoroughly coordinated and cross checked against all the applicable disciplines to prevent the omission of vital information.

3.7.3 Contractor's Quality Control Organization Review

This review shall be for the purposes of eliminating errors, interferences, and inconsistencies, and of incorporating design criteria, review comments, specifications, and any additional information required. Design submittals submitted to the Contracting officer, without evidence of the Contractor's certified approval, will be returned for resubmission. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

Action Code on Eng Form 4025 the "G - Other (specify)" Code must be used. ENG Forms 4025 and 4026 will be annotated as follows:

- A - Cleared for Construction
- B - Cleared for Construction, except as noted in attached comments
- D - Cleared for Construction, except as noted in attached comments, resubmission required
- E - NOT Cleared for Construction, see attached comments, resubmission required
- FX - Receipt acknowledged, does not comply as noted with contract requirements.

NOTE: Cleared for construction does not relieve the Design-Build Contractor from the responsibility for any errors or omissions in the design, nor from responsibility for complying with the requirements of this contract.

3.7.4 Government Review

Within fourteen (14) days after the Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated in calendar dates. The Contractor shall update this schedule bi-weekly. After receipt, the Government will be allowed fifteen (15) days to review and comment on each 35%, and 65% design submittal and fifteen (15) days to review and comment on each 99% design and 100% submittal, except as noted below. For each design review submittal, comments from the various design sections and from other concerned agencies involved in the review process will be made in the on-line review management system DrChecks_{SM} (<https://www.projnet.org/projnet/binKornHome/index.cfm>). Contractor shall coordinate with the Contracting Officer and/or Representative(s) to register for DrChecks_{SM} use. Contractor shall be responsible for accessing DrChecks_{SM} on a daily basis during Government Review period for comments pertaining to package submitted. The review will be for conformance with the technical requirements of the solicitation and the Successful Offeror's (Contractor's) RFP proposal.

If a design submittal is deficient, it will be returned for correction and resubmission. The review time will begin when the corrected submittal is received.

See table of submittals and meetings at the end of this section.

The Contractor shall not begin construction work until the Government has reviewed the Contractor's design and has cleared it for construction. Clearance for construction does not mean Government approval. Government review shall not be construed as a complete check but will evaluate the general design approach and adherence to contract parameters. The Government Review is often limited in time and scope. Therefore, the Contractor shall not consider any review performed by the Government as an excuse for incomplete work. Upon completion of

the review, all comments will be forwarded to the Contractor. The Contracting Officer will indicate whether the design submittal has or has not been cleared for construction using the following action codes:

- A - Cleared for Construction

- B - Cleared for Construction, except as noted in attached comments

- D - Cleared for Construction, except as noted in attached comments, resubmission required

- E - NOT Cleared for Construction, see attached comments, resubmission required

FX - Receipt acknowledged, does not comply as noted with contract requirements.

These codes shall NOT be used by the Design-Build Contractor. Design-Build Contractor's Quality Control Organization will annotate Block "g" entitled "FOR CONTRACTOR USE CODE" of Eng Form 4025-R using the action codes listed on the reverse side of the form.

Design submittals Cleared for Construction by the Contracting Officer shall not relieve the Contractor from responsibility for any design errors or omissions and any liability associated with such errors, nor from responsibility for complying with the requirements of this contract.

3.7.4.1 Incorporation of Government Review Comments

If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after close of review period in order that the comment can be resolved. The Contractor shall furnish disposition of all comments in DrChecks_{SM} with the next scheduled submittal. The disposition shall identify action taken with citation of location within the relevant design document. Generalized statements of intention such as "will comply" or "will revise the specification" are not acceptable. The Contractor is cautioned that if he believes the action required by any comment exceeds the requirements of this contract, that he should flag the comment in DrChecks_{SM} as a scope change, and notify the COR in writing immediately. If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period may be extended 7 days. Submittals date revisions must be made in writing at least five (5) days prior to the submittal. During the design review process, comments will be made on the design submittals that will change the drawings and specifications. The Government will make no additional payments to the Contractor for the incorporation of comments. Review comments are considered part of the design-build process.

The Contractor will be furnished comments from the various design sections of the Corps of Engineers, Afghanistan Engineer District (AED) as well as from other concerned agencies involved in the review process. The review will be for conformance with the technical

requirements and parameters of the contract documents. The Contractor shall either incorporate each comment or, if the Contractor disagrees technically and does not intend to comply with the comment(s), the Contractor shall clearly outline, with ample justification, its reasons for its noncompliance within five (5) days after receipt of the comment(s). Additionally, the Contractor is cautioned in that if it believes the action required by any comment exceeds the requirements of this contract, that he should take no action and notify the Contracting Officer in writing immediately. The disposition of all comments shall be furnished in writing with the next scheduled submittal. The review comments and the submittal material for each design review will become the basis for any ensuing design work. Copies of the design review comments with the action taken on each comment noted, shall be bound in all succeeding volumes of the design analysis.

3.7.4.2 Conferences

As necessary, conferences will be conducted between the Design-Build Contractor and the Government to resolve review comments.

One review conference will be held for each design submittal as necessary. The review conference will be held at the Corps District Office in Kabul, Afghanistan. The Contractor shall bring the personnel that developed the design submittal to the review conference. These conferences when required will take place the week after the fifteen (15) day review periods, respectively.

3.7.4.3 Design Deficiencies

Design deficiencies noted by the Government shall be corrected prior to the start of design for subsequent features of work which may be affected by, or need to be built upon, the deficient design work.

3.7.5 Design Discrepancies

The Design-Build Contractor shall be responsible for the correction of incomplete design data, omissions, and design discrepancies which become apparent during construction. The Design-Build Contractor shall provide the Contracting Officer with a proposed recommendation for correcting a design error, within three (3) calendar days after notification by the Contracting Officer. The Contracting Officer will notify the Design-Build Contractor of any detected noncompliance with the foregoing requirements. The Design-Build Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Design-Build Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Design-Build Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor. Should extensions of design, fabrication plans and/or specific manufacturer's details be required as a result of a Government issued Change Order, the Government will make an equitable adjustment in accordance with Contract Clause 52.243-4 entitled CHANGES.

3.8 PHASED OR "FAST-TRACK" DESIGN

3.8.1 General

If approved by the Government, design and construction sequencing may be effected on an incremental basis as each approved phase or portion (e.g., demolition, geotechnical, site work, exterior utilities, foundations, substructure, superstructure, exterior closure, roofing, interior construction, mechanical, electrical, etc.) of the design is completed.

3.8.1.1 Design Phases

Complete or partial design phasing may or may not have been specified by the Government elsewhere in this contract. For construction sequencing or phasing that the Government has not specifically mandated, the Design-Build Contractor may submit a proposed phasing plan. Design phasing proposed by the Design-Build Contractor shall be submitted to the Government for approval in accordance with TAC Form 122-E CONTRACTOR FURNISHED DESIGN DOCUMENTS.

3.8.2 Sequence of Design-Construction (Fast-Track)

After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements and obtain Government review of each submission. The Contractor may begin construction on portions of the work for which the Government has reviewed the final design submission and has determined satisfactory for purposes of beginning construction. The Contracting Officer will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the Government, the initial submission failed to meet the minimum quality requirements as set forth in the contract.

3.8.3 Clearance for Limited Construction

If the Government allows the Contractor to proceed with limited construction based on pending minor revisions to the reviewed Final Design submission, no payment will be made for any in-place construction related to the pending revisions until they are completed, resubmitted and are satisfactory to the Government.

3.8.4 In-Place Construction Payment

No payment will be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

3.8.5 Commencement of Construction

Construction of work may begin after receipt of the clearance for construction (Notice to Proceed) for each design phase. Any work performed by the Contractor prior to receipt of the clearance for construction, shall be at the Contractor's own risk and expense. Work cleared for construction that does not conform to the design parameters

and/or requirements of this contract shall be corrected by the Contractor at no additional cost or time to the Government.

3.9 DESIGN STAGES

The Contractor shall schedule the number and composition of the design submittal phases. Design submittals are required at the Concept (35%), Preliminary (65%) and Final (99%) design stages and at the "Cleared for Construction" (100%) phase. The requirements of each design stage are listed hereinafter. The number and contents of the design submittals phases shall be reflected in TAC Form 122-E as well as in the Contractor's design progress schedule.

3.9.1 DESIGN SUBMITTAL (35%)

The review of this submittal is primarily to ensure that the Contractor has taken an inventory of existing conditions at the proposed site, has incorporated all requirements from the Design Charette, has established the most desirable functional relationships between the various project elements, has provided the technical solution to how the functional and technical requirements will be met, and to show Contractor compliance (or justify noncompliance) with the design parameters and/or requirements. Refer to requirements herein for specific submittal requirements.

The following documents shall be submitted:

- a. 35% Design Analysis. The Design Analysis shall be in outline form Listing Executive Summary, Building Types, complete Code Analysis, all codes and standards to be incorporated in design. It shall include all backup material previously submitted and revised as necessary; the Design Analysis shall contain all explanatory materials giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the documents.
- b. 35% Construction Specifications. A Draft Outline of all Specifications to be used in project.
- c. 35% Construction Drawings. The Contract Drawings submitted for 35% Review shall include Site Plan, Building Plans, Tentative Furniture Layout, and one each of Section thru each Building, and Exterior Elevations of the building. The Contractor is expected to have completed all of his coordination checks and have the drawings at a 35% design level.

3.9.2 PRELIMINARY (65%)

- a. Design Analysis shall be developed to a 65% design stage. The Design Analysis shall be near final form. It shall include all backup materials previously submitted and revised as necessary. Half of the design calculations shall be included. The Design Analysis shall contain all explanatory materials giving the design rationale for any design decisions which would not be obvious to an engineer.
- b. 65% Complete Construction Specifications. The Draft Specifications on all items of work submitted for 65% Review shall consist of marked-up proprietary specifications with 65% of the specifications edited.

c. 65% Complete Construction Drawings. The Contract Drawings submitted for Final Review shall include the drawings previously submitted which have been revised and completed as necessary. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall be finalized at this time including the incorporation of any design review comments generated by the Preliminary design review.

d. The Contractor shall incorporate the Government's 35% Design Review Comments with the Contractor's annotation to each comment.

e. The Contractor may at this time submit for approval the following drawings 1. thru 3. for approval to begin 3.8 PHASED OR "FAST-TRACK" DESIGN.

1. 100% drawings for site plan, grading, utilities, roads, and foundation
2. Geotechnical report
3. Site topographic survey

3.9.3 FINAL DESIGN REVIEW SUBMITTAL 99%

a. 99% Complete Construction Specifications. The Specifications on all items of work submitted for Final Review shall consist of a complete 99 % edited set of specifications.

b. 99% Complete Construction Drawings. The Contract Drawings submitted for Final Review shall include the drawings previously submitted which have been revised and completed as necessary. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall be finalized at this time including the incorporation of any design review comments generated by the Preliminary design review. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.

c. The Contractor shall incorporate Government's 35% and 65% Design Review Comments with the Contractor's annotation to each comment.

3.9.4 "Cleared for Construction" Design Review Submittal (100%)

After the FINAL DESIGN REVIEW SUBMITTAL review, the Contractor shall revise the Contract Documents by incorporating any comments generated during the FINAL DESIGN REVIEW SUBMITTAL and shall prepare final hard copy Construction Specifications. The Contractor shall submit the following documents for the design complete submittal:

- a. Complete Design Analysis
- b. Construction Specifications
- c. Construction Drawings

d. A soft copy (CD) of the design drawings, specifications, and design analysis shall be submitted at this stage and all other subsequent stages of the design process. Files shall be arranged on a CD with each facility clearly identified as a separate subdirectory, with all files for that facility contained in that subdirectory. Each disk shall have an adhered printed label listing contents. Handwriting is unacceptable.

e. The Contractor shall incorporate the Government's 99% Design Review Comments with the Contractor's annotation to each comment.

f. Once the design documents have been "Cleared for Construction" by the Contracting Officer, the Design-Build Contractor shall clearly identify each document by annotating it as "Cleared for Construction."

3.9.5 Partial Design Submittals

In the interest of expediting construction, the Contracting Officer may approve partial design submittals, procurement of materials and equipment, as well as issue the Notice To Proceed (NTP) for construction of those elements of the design which have been cleared for construction. Such partial notices to proceed shall be solely at the discretion of the Contracting Officer.

3.9.6 Design Submittals not in compliance with the contract documents

The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its design analysis, specifications, and drawings, and promptly furnish a corrected submittal in the form and number of copies as specified for the initial submittal. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice shall be given promptly to the Contracting Officer.

3.10 GENERAL DESIGN INSTRUCTIONS

3.10.1 Responsibility of the Design-Build Contractor

3.10.1.1 Professional Quality, Technical Accuracy, and Coordination

The Design-Build Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all design specifications, drawings, and other services furnished under this contract. Work must be organized in a manner that will assure thorough coordination between various details on drawings, between the various sections of the specifications, and between the drawings and specifications. The Design-Build Contractor shall thoroughly cross-check and coordinate all work until he is professionally satisfied that no conflicts exist, vital information has not been omitted, and that indefinite language open to interpretation has been resolved.

3.10.1.2 Deviating From the "Cleared-For-Construction" Design

(a.) The Contractor must obtain the approval of the Designer of Record (DOR) and the Government's concurrence for any Contractor proposed revision to the professionally stamped and sealed design reviewed and Cleared for Construction by the Government, before proceeding with the revision.

(b.) The Government reserves the right to non-concur with any revision to the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and cleared for construction design.

(c.) Any revision to the design, which deviates from the contract requirements (i.e., the RFP and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision.

(d.) Unless the Government initiates a change to the contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the contract requirements, which results in additional cost, shall strictly be at the Contractor's expense.

(e.) The Contractor shall track all approved revisions to the reviewed and cleared for construction design and shall incorporate them into the as-built design documentation. The Designer of Record shall document its professional concurrence on the As-Builts for any revisions by affixing its stamp and seal on the drawings and specifications.

3.10.1.3 Government Oversight

The extent and character of the work to be done by the Design-Build Contractor shall be subject to the general oversight, supervision, direction, control, and review by the Contracting Officer.

3.10.1.4 Unlimited Drawing Rights

The Government shall have unlimited rights in all drawings, designs, specifications, notes and all other works developed in the performance of this contract, including the right to use same on any other Government design or construction without additional compensation to the Design-Build Contractor. The Design-Build Contractor hereby grants to the Government a paid-up license throughout the world to all such works to which he may assert or establish any claim under design patent or copyright laws.

3.10.1.5 Conflicts

Any conflicts, ambiguities, questions or problems encountered by the Design-Build Contractor in following the criteria shall be immediately submitted in writing to the Contracting Officer with the Design-Build Contractor's recommendations. Prior to submission to the Government the Design-Build Contractor shall take appropriate measures to obtain

clarification of design criteria requirements, to acquire all pertinent design information, and to incorporate such information in the work being performed.

3.10.1.6 Design Specialists

Whenever a design specialist is required, the Design-Build Contractor shall submit for the approval by the Contracting Officer, the name of the designated specialist along with the individual's educational background, experience, and licenses or registrations held, before design work commences. The design specialists shall be registered architects, registered professional engineers, or recognized consultants with a background of at least five (5) years design experience in the appropriate specialty. Services of design specialists may be required for the following specialties:

- Landscape Design
- Medical Design
- Acoustical Design
- Security
- Telecommunications
- Geotechnical Design

3.10.2 Conduct of Work

In the performance of the contract the Design-Build Contractor shall:

3.10.2.1 Performance

Perform the work diligently and aggressively, and promptly advise the Contracting Officer of all significant developments.

3.10.2.2 Telephone Conversations

Prepare a summary, and promptly furnish a copy thereof to the Contracting Officer, of all telephone conversations relating to the design work under this contract.

3.10.2.3 Cooperation with Others

Cooperate fully with other firms, consultants and contractors performing work under the program to which this contract pertains, upon being advised by the Contracting Officer that such firms or individuals have a legitimate interest in the program, have need-to-know status, and proper security clearance where required.

3.10.2.4 Technical Criteria

All designs, drawings, and specifications shall be prepared in accordance with the contract documents and with the applicable publications referenced therein. As soon as possible, the Design-Build Contractor shall obtain copies of all publications applicable to this contract. Availability of publications (where to purchase) is contained in Specification Section 01420 entitled: SOURCES FOR REFERENCE PUBLICATIONS. Any deviations from the technical criteria contained in the contract documents or in the applicable publications, including the use of criteria obtained from the user or other sources,

must receive prior approval of the Contracting Officer. Where the technical criteria contained or referred to herein are not met, the Design-Build Contractor will be required to conform his design to the same at his own time and expense.

3.10.3 Design Priorities

The design of this project shall consider the remote location and harsh environment and the impact this will have on sources of technical supply, the cost of construction, the low level of maintenance, and the difficulty of obtaining replacement parts. Unless stated otherwise in this contract, the following design priorities shall be followed:

3.10.3.1 CONSTRUCTION LIFE-SPAN LEVEL

Permanent Construction. Buildings and facilities shall be designed and constructed to serve a life expectancy of more than 25 years, to be energy efficient, and to have finishes, materials, and systems that are low maintenance and low life-cycle cost.

3.10.3.2 Operability

Systems including but not necessarily limited to mechanical, electrical, communications, etc., must be simple to operate and easy to maintain.

3.10.3.3 Standardization

Use of standardized materials, products, equipment, and systems is necessary to minimize the requirements for replacement parts, storage facilities, and service requirements.

3.10.3.4 Overseas Work

Use of construction materials or techniques shall be utilized which are suitable for overseas work in harsh climates and environments.

3.10.4 Topographic Surveys, Easements, and Utilities

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for detailed topographic mapping, available easements, and utility information for the project.

3.10.4.1 Not Used

3.10.4.2 Topography Requirements

A sufficient quantity of horizontal and vertical control shall be established to provide a detailed topographic survey at 1:500 scale with one quarter meter contour intervals minimum. Intermediate elevations shall be provided as necessary to show breaks in grade and changes in terrain.

The contours shall accurately express the relief detail and topographic shapes. In addition, 90 percent of the elevations or profiles interpolated from the contours shall be correct to within one-half of

the contour interval and spot elevations shall be correct within plus or minus 20 millimeters.

Spot elevations affecting design of facilities shall be provided. Specifically, break points or control points in grades of terrain such as tops of hills, bottoms of ditches and gullies, high bank elevations, etc.

All surface and sub-surface structures features within the area to be surveyed shall be shown and identified on the topographic maps. In addition, these features shall be located by sufficient distance ties and labeled on the topographic sheets to permit accurate scaling and identification.

The location and sizes of potable, sanitary, electrical and mechanical utilities within the survey site shall be shown on the survey map. Sanitary manholes and appurtenances shall show top elevations and invert elevations.

3.10.5 Geotechnical Investigation

Design-Build Contractor will be responsible for Geotechnical investigation, including subsurface explorations, sampling, field and laboratory testing.

3.10.6 Cathodic Protection and Earth Resistance

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for determining whether cathodic protection on buried structures and underground utility systems are needed for special electrical grounding and counterpoise systems, and for gathering the field data necessary for design.

3.10.7 Not Used

3.10.8 Occupational Safety and Health Act

The facilities, systems, and equipment designed under this contract shall comply with the Occupational Safety and Health Act (OSHA), Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926. Any problems in incorporating these standards due to conflicts with other technical criteria shall be submitted to the Contracting Officer for resolution.

3.10.9 Asbestos Containing Materials

Asbestos containing material (ACM) will not be used in the design of new structures or systems. In the event no other material is available which will perform the required function or where the use of other materials would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from CETAC.

3.10.9.1 Not Used

3.10.9.2 Not Used

3.11 VALUE METHODOLOGY/VALUE ENGINEERING

The Design-Build Contractor during the course of his design shall be alert for and shall identify those high-cost low-value items or areas which he considers may be accomplished in different ways that will increase the value of the project at the same or less cost. Potential value engineering study items shall be reported to the Value Engineer through the Contracting Officer.

3.11.1 Performance Oriented Value Engineering Change Proposal (VECP)

In reference to Contract Clause 52.248-3, "Value Engineering - Construction", the Government may refuse to entertain a "Value Engineering Change Proposal" (VECP) for those "performance oriented" aspects of the Contract Documents which were addressed in the Design-Build Contractor's accepted contract proposal and which were evaluated in competition with other Proposers for award of this contract. For purposes of this clause, the term "performance oriented" refers to those aspects of the design criteria or other contract requirements which allow the Proposer or the Design-Build Contractor certain latitude, choice of and flexibility to propose in its accepted contract offer a choice of design, technical approach, design solution, construction or other approach to fulfill the contract requirements. Such requirements generally tend to be expressed in terms of functions to be performed, performance required or essential physical characteristics, without dictating a specific process or specific design solution for achieving the desired result.

3.11.2 Prescriptive Oriented Value Engineering Change Proposal (VECP)

The Government may consider a VECP for those "prescriptive" aspects of the Solicitation documents, not addressed in the Design-Build Contractor's accepted contract proposal or addressed but evaluated only for minimum conformance with the Solicitation requirements. For purposes of this clause, the term "prescriptive" refers to those aspects of the design criteria or other Solicitation requirements wherein the Government expressed the design solution or other requirements in terms of specific materials, approaches, systems and/or processes to be used. Prescriptive aspects typically allow the Proposers little or no freedom in the choice of design approach, materials, fabrication techniques, methods of installation or other approach to fulfill the contract requirements.

3.12 SUBMITTAL OF CONTRACTOR FURNISHED DESIGN DOCUMENTS

The requirements of this paragraph pertain to the submittal of design documents, specifications, design calculations, surveys, testing reports and other documents prepared by the Design-Build Contractor to meet the design requirements of this project.

3.12.1 Geo-technical

3.12.1.1 Design Analysis

The Design-Build Contractor shall submit in the design analysis catalog cuts, manufacturer's data for the following:

3.12.1.2 Specifications

Specifications for all civil utilities shall include:

3.12.1.3 Design Drawings

3 ea. Half-Size Design drawings shall be submitted for the following:

Afghanistan Engineer District (AED)

3.12.1.4 Manufacturer's recommendations, instructions, and certifications

Shall be submitted for the following:

Afghanistan Engineer District (AED)

3.12.1.5 Samples

Samples shall be submitted for the following:

Afghanistan Engineer District (AED)

3.12.1.6 Schedules

Schedules shall be submitted for the following:

Afghanistan Engineer District (AED)

3.12.1.7 Reports

Reports shall be submitted for the following:

Afghanistan Engineer District (AED)

3.12.1.8 Records

Records shall be submitted for the following:

Afghanistan Engineer District (AED)

Engineering Studies. Occasionally, in addition to the items previously mentioned, engineering studies that relate to specific problems or surveys may be required. The necessary instructions regarding the preparation of such reports must be added by the Specification Writer as appropriate.

3.12.2 Civil, Site Planning and Layout

3.12.3 Wastewater and Solid Waste Systems

3.12.4 Architectural/Interior Design

3.12.5 Structural

3.12.6 Force Protection Design Procedures for the Protection of
United States Forces

- 3.12.7 Fire Protection and Life Safety
- 3.12.8 Heating, Ventilating, and Air Conditioning
- 3.12.9 Plumbing
- 3.12.10 Special Mechanical Systems and Equipment
- 3.12.11 Electrical
- 3.12.12 Power Generation
- 3.12.13 Power Transmission and Distribution
- 3.12.14 Communications
- 3.12.15 Corrosion Prevention and Control
- 3.13 SUBMITTAL OF CONTRACTOR FURNISHED DESIGN DRAWINGS
 - 3.13.1 Geo-technical
 - 3.13.2 Civil, Site Planning and Layout
 - 3.13.3 Wastewater and Waste Systems
 - 3.13.4 Architectural/Interior Design
 - 3.13.5 Structural
 - 3.13.6 Force Protection Design Procedures for the Protection of United States Forces
 - 3.13.7 Fire Protection and Life Safety
 - 3.13.8 Heating, Ventilating, and Air Conditioning
 - 3.13.9 Plumbing
 - 3.13.10 Special Mechanical Systems and Equipment
 - 3.13.11 Electrical
 - 3.13.12 Power Generation
 - 3.13.13 Power Transmission and Distribution
 - 3.13.14 Communications
 - 3.13.15 Accident Prevention and Safety
- 3.14 GOVERNMENT APPROVED CONSTRUCTION SUBMITTALS (Required During Construction)
 - 3.14.1 General

01335-36

Since this contract requires that the drawings and specifications specify specific proprietary materials, equipment, systems, and patented processes by trade name, make, or catalog number, it is anticipated that construction shop drawings will primarily be limited to testing, construction plans (e.g., Contractor Quality Control, Accident Prevention, Resident Management System, Area Use, etc.), schedules (Project Schedule/Network Analysis), certificates of compliance, reports, records/statements and variations.

3.14.1.1 Variations

After design submittals have been reviewed and cleared for construction by the Contracting Officer, no submittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered by the Government unless submitted in accordance with the paragraph entitled VARIATIONS.

3.14.1.2 Additional Shop Drawings and Submittals

In accordance with the paragraph entitled DESIGN DISCREPANCIES, the Government may request the Design-Build Contractor to provide additional shop drawing and submittal type data subsequent to completion of the design.

3.14.2 Incomplete Design

The Design-Build Contractor shall not use construction submittals as a means to supplant and/or supplement an incomplete design effort.

3.14.3 Government Approval of Construction Submittals

The approval of construction submittals by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of design construction, materials, detailing and other information are satisfactory. Approval will not relieve the Design-Build Contractor of the responsibility for any error which may exist, as it is the sole responsibility of the Design-Build Contractor to certify that each submittal has been reviewed in detail and is in strict conformance with all the contract documents and design criteria referenced therein.

Virtually, all design-related construction submittals can and must be incorporated directly into the design specifications and drawings prepared by the Design-Build Contractor. Since the Design-Build Contractor has sole responsibility for the design, procurement, and construction, impediments do not exist which would impair his ability to specifically identify what is being furnished to the Government prior to the start of construction. Generic/non-proprietary specifications are indicative of an incomplete design effort and as such must be rejected as unacceptable

3.14.4 Submittals

Submittals (other than shop drawings) shall be limited to items such as Plans (e.g., Quality Control Plan, Accident Prevention Plan, Area Use Plan etc.), Certificates of Compliance, Installation Instructions,

Manufacturer's Catalog Data, Descriptive Literature/Illustrations, Factory and Field Test Reports, Performance and Operational Test Data Reports, Records, Operation and Maintenance Manuals, and required variations.

3.14.5 Government Review

Upon completion of review of construction submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Two (2) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Design-Build Contractor.

3.15 FOR INFORMATION ONLY SUBMITTALS

These submittals shall be checked, stamped, signed and dated by the Design-Build Contractor's Quality Control Engineer, certifying that such submittal complies with the contract requirements. All Contractor submittals shall be subject to review by the Government at any time during the course of the contract. Any Contractor submittal found to contain errors or omissions shall be resubmitted as one requiring "approval". No adjustment for time or money will be allowed for corrections required as a result of noncompliance with plans or specifications. Normally, submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. These submittals will be used for information purposes. The Government reserves the right to require the Design-Build Contractor to resubmit any item found not to comply with the contract. This does not relieve the Design-Build Contractor from the obligation to furnish material conforming to the plans and specifications and will not prevent the Contracting Officer from requiring removal and replacement if nonconforming material is incorporated in the work.

3.16 ATTACHMENTS

The following attachments form an integral part of this specification:

ENG FORM 4025 - Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificate of Compliance (2 pages)

TAC FORM 122-E - Contractor Furnished Design Documents Submittal Register

ENG FORM 4288 - Submittal Register

Figure 1 - index sheet logo; AED title block per AEC CADD standards

Figure 2 - continuation sheet logo; AED title block per AEC CADD standards

Figure 3 - A-E logo/designed by/submitted by AED title block per AEC CADD standards

Figure 4 - revision block; AED title block per AEC CADD standards

Figure 5 - Finished Format Size per AEC CADD standards

Figure 6 - Scope of Work to Develop Work Plan

-- End of Section --

01335-39

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE <i>(Read instructions on the reverse side prior to initiating this form)</i>	DATE	TRANSMITTAL NO.
---	------	-----------------

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: <input type="checkbox"/> THIS IS A NEW TRANSMITTAL <input type="checkbox"/> THIS IS A RESUBMITTAL OF TRANSMITTAL _____
-----	-------	--------------	---

SPECIFICATION SEC. NO. <i>(Cover only one section with each transmittal)</i>	PROJECT TITLE AND LOCATION	CHECK ONE: THIS TRANSMITTAL IS FOR <input type="checkbox"/> FIO <input type="checkbox"/> GOV'T. APPROVAL
--	----------------------------	---

ITEM NO.	DESCRIPTION OF ITEM SUBMITTED <i>(Type size, model number/etc.)</i>	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. <i>(See instruction no. 8)</i>	NO. OF COPIES	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE	VARIATION <i>(See instruction No. 6)</i>	FOR CE USE CODE
				SPEC. PARA. NO.	DRAWING SHEET NO.			
a.	b.	c.	d.	e.	f.	g.	h.	i.

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated. <div style="text-align: right; border-top: 1px solid black; width: 100%;"> NAME AND SIGNATURE OF CONTRACTOR </div>
---------	--

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED <i>(List by Item No.)</i>	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE
---	--	------

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. Separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal, letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

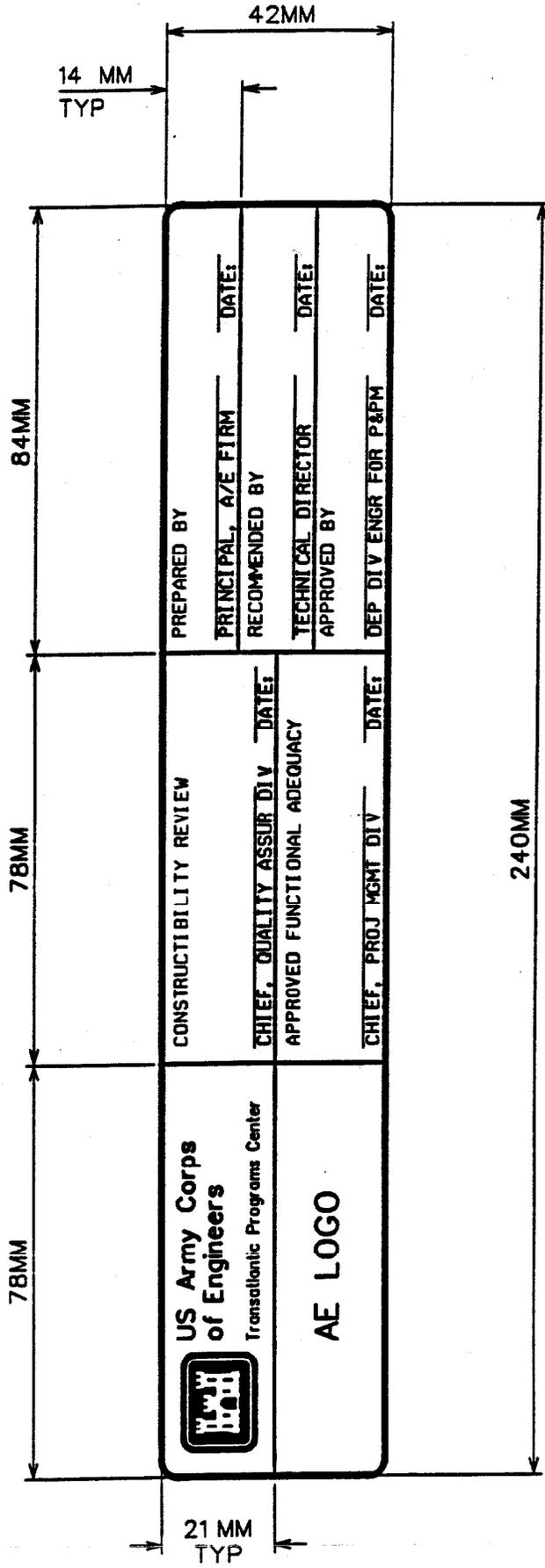
- | | |
|---|---|
| A -- Approved as submitted. | E -- Disapproved (See attached). |
| B -- Approved, except as noted on drawings. | F -- Receipt acknowledged. |
| C -- Approved, except as noted on drawings.
Refer to attached sheet resubmission required. | FX -- Receipt acknowledged, does not comply
as noted with contract requirements. |
| D -- Will be returned by separate correspondence. | G -- Other (<i>Specify</i>) |

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

Contractor - Furnished Design Documents Submittal Register		Contract Title & Location:			
		Contractor:		Contract m.:	
Submittal Identification N ^o .	NAS Activity Code	Description of Document (s)	Contractor Submittal Date	Government Action	
				Receipt Date	Construction Clearance Date

INDEX SHEET LOGO/SIGNATURE BLOCK (A-E)



21 MM
TYP

14 MM
TYP

42MM

84MM

78MM

78MM

240MM

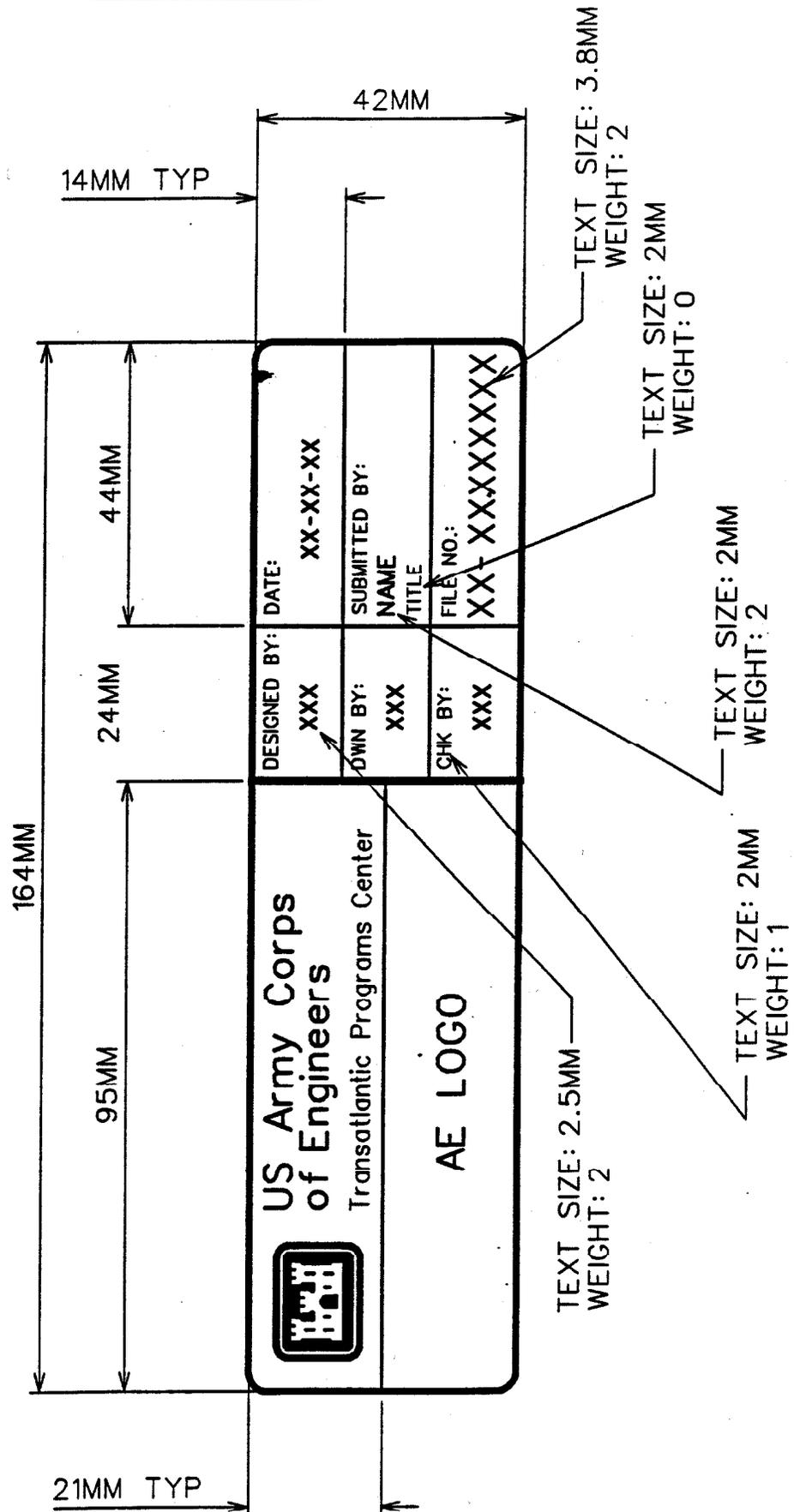
PREPARED BY _____ DATE: _____
 PRINCIPAL, A/E FIRM
 RECOMMENDED BY _____ DATE: _____
 TECHNICAL DIRECTOR
 APPROVED BY _____ DATE: _____
 DEP DIV ENGR FOR P&PM _____ DATE: _____

CONSTRUCTIBILITY REVIEW
 CHIEF, QUALITY ASSUR DIV _____ DATE: _____
 APPROVED FUNCTIONAL ADEQUACY
 CHIEF, PROJ MGMT DIV _____ DATE: _____


US Army Corps
of Engineers
 Transatlantic Programs Center

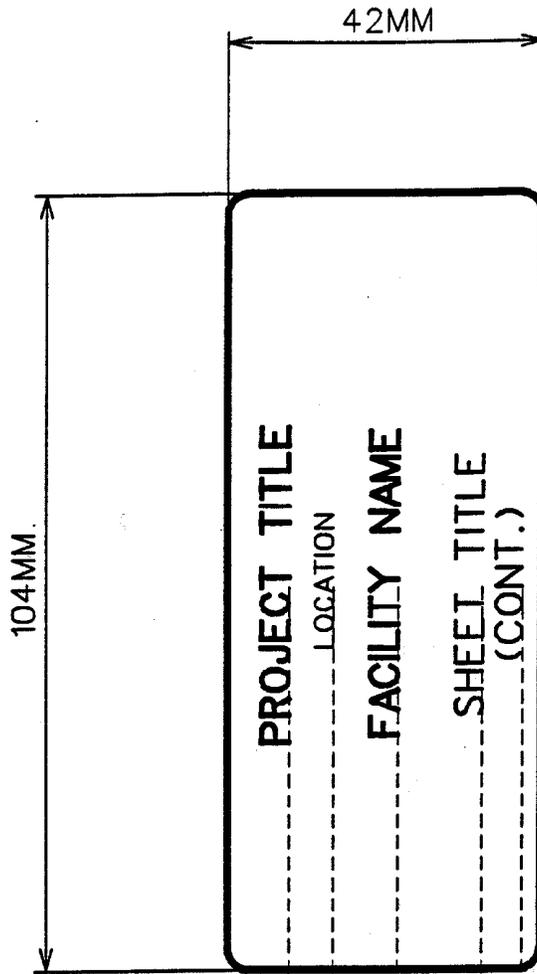
AE LOGO

CONTINUATION SHEET LOGO/SIGNATURE BLOCK (A-E)

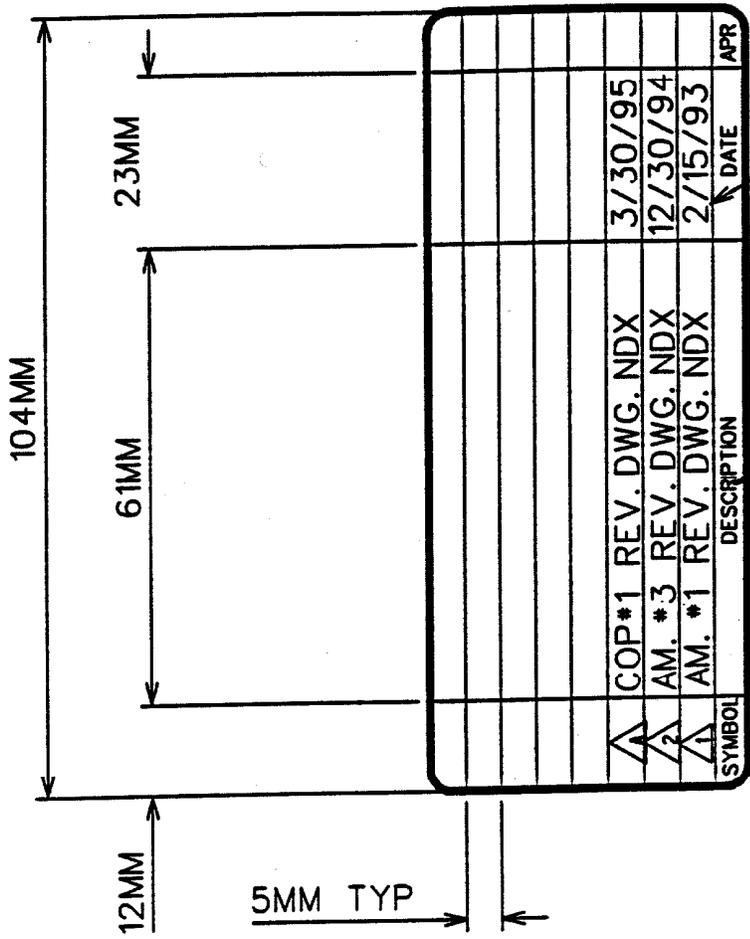


TITLE BLOCK FOR CONTINUATION SHEETS

TEXT SIZE	WEIGHT
36MM	4
25MM	1
36MM	4
36MM	2
36MM	2



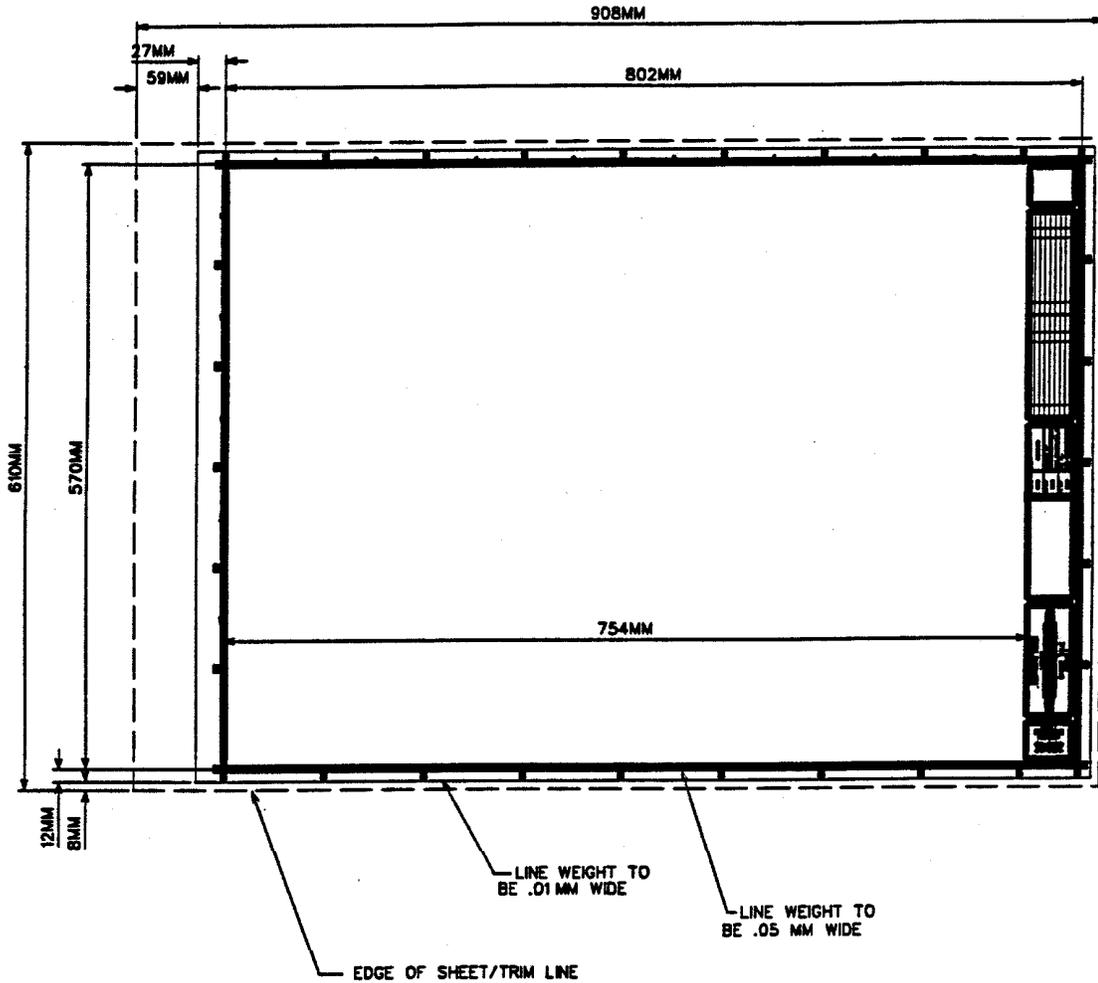
REVISION BLOCK



TEXT SIZE:
3MM
WEIGHT: 1

TEXT SIZE:
1.75MM
WEIGHT: 1

FINISHED FORMAT SIZE



NOTES:

1. SEE FIGURES 6 THRU 9 FOR TITLE BLOCK DEFINITIONS.

FIGURE 6

TRANSATLANTIC PROGRAMS CENTER
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
(CEAED)

SCOPE OF WORK TO DEVELOP WORK PLAN

FOR

DESIGN/CONSTRUCT ANA BRIGADE
AFGHANISTAN

PROJECT NAME: DESIGN/CONSTRUCT ANA BRIGADE

1. **LOCATION:** Afghanistan

2. **PROJECT NUMBER:** Not applicable

3. **POC for Design:** TBD **PHONE:** Fax:

E-MAIL:

POC for Construction: TBD **PHONE:**

E-MAIL:

PROJECT Manager : Gary Headley

PHONE: 540-665-3466

E-MAIL: gary.headley@tac01.usace.army.mil

4. **DESIGN EFFORT** (Related to preparation of plans and specs):

4.1 The Design-Build Contractor shall review the provided preliminary drawings and layout of the area with requirements of Army Corps of Engineer publications, ADA, NFPA, API and other listed requirements and documents in the attachments of this scope. Design-Build Contractor shall verify measurements and information on all drawings provided by the Government. The Design-Build Contractor shall provide a design based on compliance with these standards. The design shall contain the site layout based on, but not limited to the following:

4.1.1 A demolition plan.

4.1.2 The design shall provide for a complete set of plans and drawings to construct the Brigade footprint.

4.1.3 The work plan shall contain the site layout.

4.1.4 All buildings to be constructed will be shown on the plan.

4.1.5 All electrical and mechanical work will be shown on plans.

4.1.6 All major construction, including site work, shall be shown.

4.1.7 tabulate all major life safety requirements to be incorporated into the project. Include these requirements on separate life safety plan.

4.2 The Design-Build Contractor is responsible for field verifying all drawings during the design phase.

4.3 The Design-Build Contractor will provide full design specifications for material and equipment.

4.5 The Design-Build Contractor shall provide a construction sequence of work that is in accordance with the required completion dates for the buildings included in the footprint.

4.6 Plan-In-Hand Inspection held at 99% Submittal Review Phase: Make a "Plan-in-Hand" field inspection during the final design review phase to determine that the project plans and specifications reflect true site conditions and

the needed requirements for construction. Any corrections needed to the project plans or specifications shall be incorporated in the Certified Final Submittal. Notify the Corps of Engineers field office at Kandahar, Afghanistan when the inspection will be made.

4.7 The Design-Build Contractor is responsible for preparing "Meeting Minutes for all design review meetings." The final version of the minutes will be provided to attendees within 5 days of the meeting and recorded in the design analysis.

5 **Quality Control Plan (QCP):** The Design-Build Contractor will submit a draft QCP for the design portion of the project within 14 calendar days after Notice To Proceed. The completed QCP that contains as a minimum the following features:

- Purpose
- Identification and discussion of all organizational and technical interfaces.
- Design/Study Team to include assignment of all areas of responsibility.
- Identification Designer of Record and team members responsible for checking the design
- Plans, specifications, and calculations shall be signed by designer and checker
- Project Schedule showing key milestones and review periods.
- Identification of the methods to be used for management of review comments
- QC procedures for assuring end product native CADD Files are acceptable for use by the customer.

The contractor is responsible for the product development, internal Quality Control, and technical review for all products provided under this contract. The QCP may be developed while work commences on other portions of the contract. However, the plan must be submitted and approved in final form within 30 days after award of the task order.ust

6 ANALYSES AND OTHER SUBMITTALS

6.1 Design Analyses: Prepare a Design Analysis for each discipline. This shall include all meeting minutes, structural, mechanical, and electrical calculations for the project.

6.2 Designer Instructions to Field: Put in writing any aspect of the design intent, the drawings and specifications or the construction which may require special awareness or attention by U.S. Government field personnel during supervision and inspection of construction. If none, a negative response is required.

6.3 Design Support During Project Construction: (Compensation for this effort is to be included in the price proposal.)

"Extension of Design" Shop Drawing Review: Review for approval all shop drawings that are "extensions of design" by the contractor. Such shop drawing extensions of design, for which the Design/Build Contractor must remain the Engineer of Record, shall include structural details, reinforcing details, and supports or hangers for mechanical and electrical equipment.

6.4 Responding to Review Comments: The Government will review submittals and make comments. Notify the Project Engineer immediately of any comments that are not understood or are disputed. Respond to all comments verbally at any review meetings, and then in writing in the next submittal. Include all comments and annotations in the design analysis. Provide a certification signed by the project principal, certifying that all pertinent review comments have been incorporated into the Certified Final documents.

7.0 DRAWINGS :

7.1 Drawings; Prepare in accordance with specification section 01335. Drawings in English with Metric units of measure are required for each submittal.

7.2 AUTOCAD Files: AUTOCAD designs shall be developed to provide complete project information that will enable the end users to utilize AUTOCAD to its fullest. To accommodate this, it is required that the following will be done:

7.2.1 The software used to be used shall be Autocad 2000 version.

8.0 SPECIFICATIONS:

8.1 Prepare technical specifications as needed. Specifications shall be prepared in accordance with the Construction Specifications Institute (CSI) format. The Design-Build Contractor prepared specifications shall include as a minimum, all applicable specifications referenced by the CSI. Where the CSI does not reference a specification section for specific work to be performed by this contract, the Design-Build Contractor shall be responsible for creating the required specification.

8.2 During the course of design, the designer, shall specify specific proprietary materials, equipment, systems, and patented processes by trade name, make, or catalog number. The subsequent use of construction submittals to supplant and/or supplement incomplete design effort is unacceptable. Design submittals containing non-proprietary and/or generic design criteria where proprietary items are available, will be returned for resubmission.

8.3 If the Corps of Engineers Unified Facility Guide Specifications (UFGS) are used, it is the sole responsibility of the Design-Build Contractor to prepare these specifications in strict conformance with the paragraph regarding preparation of proprietary non-generic design documents. UFGS containing non-proprietary and/or generic design criteria where proprietary items are available, will be returned for resubmission. If the UFGS contains a "SUBMITTALS" paragraph, the Design-Build Contractor shall delete it and incorporate all required information directly into the design documents. Under no circumstances will the Design-Build Contractor be permitted to use submittals and shop drawings to finalize an incomplete design. UFGS are available for direct download via the internet <http://www.hnd.usace.army.mil/techinfo/cegs/cegstoc.htm>.

9. ATTACHMENTS:

- | | |
|---------------|---|
| Attachment #1 | General Design Guidance and Criteria |
| Attachment #2 | Submittal Matrix – 35% Work Plan Submittal |
| Attachment #3 | Submittal Matrix - 99% Work Plan Submittal |
| Attachment #4 | Submittal Matrix - Certified 100% Submittal |
| Attachment #5 | Address List |

Attachment #1:

General Design Guidance and Criteria

Design and construction of this project shall adhere to the following:

ER 1110-2-1200 Plans and Specifications

ARMS User Manual "A/E Response Package".

Index of Corps of Engineers Unified Facility Guide Specs (UFGS), current listing.

Fire Protection for Facilities, UFC 3-600-01, 17 April 2003

International Building Code, 2000

NFPA 101, Life Safety Code, 2003

NFPA 70, National Electric Code, latest edition.

OCE Std. Dwg. Booklet No. 40-06-04, Lighting Fixtures.

TM 402-02, Masonry structural design for buildings.

TI 800-03, Technical Requirements for Design Build, July 98.

Systems Operation and Maintenance Documentation, ER 25-345-1, dated 31 January 1991.

EM 1110-1-1807, Corps CADD Standards Manual, with diskettes.

PAM 420-11, Project Definition and Work Classification.

TI 800-03 Technical Requirements for Design-Build located at url:

<http://www.hnd.usace.army.mil/techinfo/ti/800-03.pdf>

Design-Build Instructions (DBI) for Military Construction at url:

<http://www.hnd.usace.army.mil/techinfo/misc/dbi.pdf>

Applicable references listed in specification section 01420 SOURCES FOR REFERENCE PUBLICATIONS

Attachment #2
 Submittal Matrix – 35% Work Plan Submittal

Addressee	(1)	(2)	(3)	(4)	(5)
Afghanistan Engineer District*	3	3	3	2	
Resident (Field) Office	2	2	2	2	
Transatlantic Program Center	0	1	1	1	1
Total Copies	5	6	6	5	1

35% Work Plan Items

I

- (1) Drawing prints, full size
 - (2) Design Analysis
 - (3) Specifications
 - (4) Drawing prints, half size
 - (5) CD containing electronic version of drawings, specifications and design analysis
- * Add 2 CDs for electronic submittals to the Afghanistan Engineer Office, Kabul

Attachment #3

Submittal Matrix – 99% Work Plan Submittal

Addressee	(1)	(2)	(3)	(4)	(5)
Afghanistan Engineer District*	3	3	3	2	
Resident (Field) Office	2	2	2	2	
Transatlantic Programs Center	0	1	1	1	1
Total Copies	5	6	6	5	1

99% Work Plan Items

I

- (1) Drawing prints, full size
 - (2) Design Analysis, updated from 35%
 - (3) Specifications, updated from 35%, including submittal register
 - (4) Drawing prints, half size
 - (5) CD containing electronic version of drawings, specifications and design analysis
- *Add 2 CDs for electronic submittals to the Afghanistan Engineer Office, Kabul

Attachment #4:
100%(Certified) Final Design

Addressee	(1)	(2)	(3)	(4)	(5)	(6)
Afghanistan Engineer District*	3	3	3	3	3	
Resident (Field) Office	2	2	2	2	2	
Transatlantic Programs Center	0	0	1	1	1	1
Total Copies	5	5	6	6	6	1

100% Submittal Items

- (1) Set of prints and specs on disk.
 - (2) Full size drawing prints
 - (3) 1/2 size drawings prints
 - (4) Specifications, updated from 99%, including submittal register
 - (5) Design Analyses Book, updated from 99%.
Narrative design analyses and calculations
 - (6) CD containing electronic version of drawings, specifications and design analysis
- *Add 2 CDs for electronic submittals to the Afghanistan Engineer Office, Kabul

Attachment #5:

Address List

Office Symbol/Phone

Address

CETAC
(CETAC-EC-TT)
540-665-3980

U.S. Army Corps of Engineers
Transatlantic Programs Center
Attn: H. Spaulding
201 Prince Frederick Drive
Winchester, VA 22602 (for DHL, FEDEX or UPS)

Afghanistan Area Office
540-665-3475

U.S. Army Corps of Engineers
Afghanistan Engineer District
TAC-House, Chara-E-Shirpar
Next to the former UNAMA Compound A
Kabul, Afghanistan

Resident (Field) Office

Address to be Provided after Award

SECTION 01415
METRIC MEASUREMENTS

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E 621 (1994; R 1999e1) Use of Metric (SI) Units in Building Design and Construction (Committee E-6 Supplement to E380)

ASTM SI 10 (2002) American National Standard for Use of the International System of Units (SI): The Modern Metric System

1.2 GENERAL

This project includes metric units of measurements. The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the 11th CGPM in 1960. A number of circumstances require that both metric SI units and English inch-pound (I-P) units be included in a section of the specifications. When both metric and I-P measurements are included, the section may contain measurements for products that are manufactured to I-P dimensions and then expressed in mathematically converted metric value (soft metric) or, it may contain measurements for products that are manufactured to an industry recognized rounded metric (hard metric) dimensions but are allowed to be substituted by I-P products to comply with the law. Dual measurements are also included to indicate industry and/or Government standards, test values or other controlling factors, such as the code requirements where I-P values are needed for clarity or to trace back to the referenced standards, test values or codes.

1.3 USE OF MEASUREMENTS IN SPECIFICATIONS

Measurements in the specifications shall be either in SI or I-P units as indicated, except for soft metric measurements or as otherwise authorized. When only SI or I-P measurements are specified for a product, the product shall be procured in the specified units (SI or I-P) unless otherwise authorized by the Contracting Officer. The Contractor shall be responsible for all associated labor and materials when authorized to substitute one system of units for another and for the final assembly and performance of the specified work and/or products.

01415-1

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

1.3.1 Hard Metric

A hard metric measurement is indicated by an SI value with no expressed correlation to an I-P value. Hard metric measurements are often used for field data such as distance from one point to another or distance above the floor. Products are considered to be hard metric when they are manufactured to metric dimensions or have an industry recognized metric designation.

1.3.2 Soft Metric

a. A soft metric measurement is indicated by an SI value which is a mathematical conversion of the I-P value shown in parentheses (e.g. 38.1 mm (1-1/2 inches)). Soft metric measurements are used for measurements pertaining to products, test values, and other situations where the I-P units are the standard for manufacture, verification, or other controlling factor. The I-P value shall govern while the metric measurement is provided for information.

b. A soft metric measurement is also indicated for products that are manufactured in industry designated metric dimensions but are required by law to allow substitute I-P products. These measurements are indicated by a manufacturing hard metric product dimension followed by the substitute I-P equivalent value in parentheses (e.g., 190 x 190 x 390 mm (7-5/8 x 7-5/8 x 15-5/8 inches)).

1.3.3 Neutral

A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

1.4 COORDINATION

Discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the drawings shall be brought to the attention of the Contracting Officer for resolution.

1.5 RELATIONSHIP TO SUBMITTALS

Submittals for Government approval or for information only shall cover the SI or I-P products actually being furnished for the project. The Contractor shall submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise instructed or approved. The Contractor shall use ASTM SI 10 and ASTM E 621 as the basis for establishing metric measurements required to be used in submittals.

- End of Section -

01415-2

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

SECTION 01451
CONTRACTOR QUALITY CONTROL

PART 1: GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-1-12 (1993) Quality Management

EM 385-1-1 Safety and Health Requirements Manual

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTIONS

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clauses and this specification section. The quality control system shall consist of plans, procedures, and organized as required to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction-related activities at the site.

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than five (5) days after receipt of Notice-to-Proceed (NTP) the proposed Contractor

Quality Control (CQC) Plan. The plan shall identify personnel, procedures, control, instructions, records, and forms to be used.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both on-site and off-site, including work by subcontractors, fabricators, suppliers and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, off-site fabricators, suppliers, consultants, and purchasing agents. These procedures shall be in accordance with Specification 01335 SUBMITTAL PROCEDURES.
- e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring testing, feature of work to be tested, test frequency, and person responsible for each test.
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.
- h. Reporting procedures, including proposed reporting formats.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has

01451-2

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) Plan:

(1) The Contractor shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents shall be technically reviewed by competent, independent reviewers identified in the DQC Plan. The same element that produced the DQC Plan shall not perform the independent technical review (ITR). The Contractor shall correct errors and deficiencies in the design documents prior to submitting them to the Government.

(2) The Contractor shall include the design schedule in the master project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This should be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. The schedule shall include review and correction periods associated with each item. This should be a forward planning as well as a project monitoring tool. The schedule reflects calendar days and not dates for each activity. If the schedule is changed, the Contractor shall submit a revised schedule reflecting the change within seven (7) calendar days. The Contractor shall include in the DQC Plan, the discipline-specific checklists to be used during the design and quality control of each submittal. These completed checklists shall be submitted at each design phase as part of the project documentation. Example checklists can be found in ER 1110-1-12.

(3) The DQC Plan shall be implemented by a Design Quality Control Manager who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated. This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. The Contractor shall notify the Contracting Officer, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

The Contracting Officer will notify the Contractor in writing of the acceptance of the DQC Plan. After acceptance, any changes proposed by the Contractor are subject to the acceptance of the Contracting Officer.

01451-3

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in the CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

Notification of Changes. After acceptance of the QC Plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven (7) calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Pre-construction Conference, before start of construction, and prior to acceptance by the Government of the Quality Control Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of five (5) calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures, which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to

01451-4

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify an individual within his organization at the site of the work who shall be responsible for overall management of the CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a graduate

construction manager, with experience on construction projects similar in type to this contract or a construction person with a minimum of ten (10) years in related work. The CQC System Manager shall be on the site at all times during construction and shall be employed by the Contractor. The CQC System Manager shall be assigned no other duties. An alternate for the CQC System Manager will be identified in the plan to serve in the event of the CQC System Manager's absence. The requirements for the alternate will be the same as for the designated CQC System Manager.

3.4.3 Not Used.

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements, the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors". This Class may be taken at The Construction Trades Training Center (CTTC) in Jalalabad City has agreed to take this on. For a nominal fee a contractor will be able to send his QC to this class which will qualify for the requirement in the QC specification of our future contracts. The individual will be given a certificate for the class as proof of passing. See Appendix B for particulars.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in the STR titled SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

01451-5

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase.

This phase shall be performed prior to beginning work on each definable feature of work, after all required documents and materials are approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards, in the English language unless specifically approved otherwise by the Contracting Officer, applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. A check to assure that provisions have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to verify that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. Reviews of the appropriate activity hazard analysis to ensure safety requirements are met.
- h. Discussion of procedures for constructing the work including repetitive deficiencies, construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the Contracting Officer has accepted the portion of the plan for the work to be performed.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 24 hours in advance of beginning any of the required action of the preparatory phase. This

01451-6

phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily QC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase.

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of preliminary work to ensure that it is in compliance with the contract requirements. Review minutes of the preparatory meeting.
- b. Verification of full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with sample panels as appropriate.
- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 24 hours in advance of the beginning of the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily QC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase.

Daily checks shall be performed to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted, and all noted deficiencies corrected, prior to the start of additional features of work that may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

01451-7

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Additional preparatory and initial phases may be required by the Contracting Officer on the same definable features of work if the quality of on-going work is unacceptable; if there are changes in the applicable QC staff or in the on-site production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product that conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Costs incidental to the transportation of samples or materials shall be borne by the Contractor.

Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as a part of the CQC Plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the Quality Control report for the date taken. Specification paragraph/item reference, location where tests were taken, and the sequential control number identifying the test will be given. Actual test reports may be submitted later, if approved by the Contracting Officer, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly to the Contracting Officer. Failure to submit timely test reports, as stated, may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

01451-8

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC System Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from the Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least fourteen (14) days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

01451-9

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

- a. Contractor/subcontractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Offsite surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one (1) copy of these records in report form shall be furnished to the Government daily within forty-eight (48) hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one (1) report shall be prepared and submitted for every seven (7) days of no work and on the last day of a no-work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

In accordance with Specification 01312 QUALITY CONTROL SYSTEM, the Contractor shall use the forms produced by and printed from the Quality Control System.

01451-10

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Samples of any forms required to meet the requirements of this section which are not produced by that system shall be included in the Contractor's Quality Control Plan.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

01451-11

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

SPECIFICATION SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

PART 1 GENERAL

For Contractor safety on projects associated with this program, compliance with EM 385-1-1 safety requirements will be the long-term goal reached by growing a safety culture. This compliance will, by necessity, be achieved through a phased-in process. In the Commander's letter at the preface of the EM 385-1-1, he acknowledges that in OCONUS locations, strict compliance with the manual may not be possible - and through the hazard analysis process, safety measures can be developed to attain the same degree of safety.

This specification consists of two parts:

- 1) Sections 1.1 through 3.12.1, which are the standard safety specifications for work in Europe District and;
- 2) Appendix A, Phasing approach for safety in emerging countries where there is little or no national safety standards.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- | | |
|----------------------------|---|
| ANSI A10.32 | Personal Fall Protection - Safety Requirements for Construction and Demolition Operations |
| ANSI Z359.1 (1992; R 1999) | Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components |
| ANSI/ASSE A10.34 (2001) | Protection of the Public on or Adjacent to Construction Sites |
| ASME B30.3 (1996) | Construction Tower Cranes |

ASME INTERNATIONAL (ASME)

- | | |
|--------------------|------------------------------|
| ASME B30.22 (2000) | Articulating Boom Cranes |
| ASME B30.5 (2004) | Mobile and Locomotive Cranes |

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

- | | |
|----------------|--|
| NFPA 10(2002) | Portable Fire Extinguishers |
| NFPA 241(2000) | Safeguarding Construction, Alteration, and Demolition Operations |

01525-1

NFPA 51B(2003)	Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70(2005)	National Electrical Code
NFPA 70E (2004)	Electrical Safety in the Workplace
U.S. ARMY CORPS OF ENGINEERS (USACE)	
EM 385-1-1(2003) Safety	Safety and Health Requirements
U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)	
29 CFR 1910	Occupational Safety and Health Standards (OSHA)
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.500	Fall Protection

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SR SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G, ACC

Activity Hazard Analysis (AHA); G, ACC

Crane Critical Lift Plan; G, ACC

Proof of qualification for Crane Operators; G, ACC

SD-06 Test Reports

Reports: Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports

Monthly Exposure Reports

Crane Reports

01525-2

Regulatory Citations and Violations

SD-07 Certificates

Confined Space Entry Permit

Contractor Safety Self-Evaluation Checklist; G, ACC

Submit one (1) copy of each permit/certificate attached to each Daily Quality Control Report.

1.3 DEFINITIONS

a. Competent Person for Fall Protection. A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.

b. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

c. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered personnel.

d. Qualified Person for Fall Protection. A person with a recognized degree or professional certificate, extensive knowledge, training and experience in the field of fall protection who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.

e. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

- (1) Death, regardless of the time between the injury and death, or the length of the illness;
- (2) Days away from work (any time lost after day of injury/illness onset);
- (3) Restricted work;
- (4) Transfer to another job;
- (5) Medical treatment beyond first aid;
- (6) Loss of consciousness; or
- (7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

f. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

1.4 DRUG PREVENTION PROGRAM

01525-3

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employee uses illegal drugs or consumes alcohol during work hours. Ensure there are no employee(s) under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine, or saliva specimens and test the injured and involved employees for the influence of drugs and alcohol. A copy of the test shall be made available to the Contracting Officer upon request.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and in particular, the requirements of the European Union Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person can only be the SSHO on this project if approved by the Contracting Officer. Any project exceeding 1 Million US dollars in value shall have a full time SSHO. The SSHO shall meet the following requirements: A minimum of 5 years safety work on similar projects; 30-hour OSHA construction safety class or European Union equivalent within the last 5 years; an average of at least 24 hours of formal safety training each year for the past 5 years. Competent person training as needed.

1.6.1.2 Competent Person for Confined Space Entry

Provide a competent person meeting the requirements of EM 385-1-1 who is assigned in writing by the Government Designated Authority (GDA) to assess confined spaces and who possesses demonstrated knowledge, skill and ability to:

- a. Identify the structure, location, and designation of confined and permit-required confined spaces where work is done;
- b. Calibrate and use testing equipment including but not limited to, oxygen indicators, combustible gas indicators, carbon monoxide indicators, and carbon dioxide indicators, and to interpret accurately the test results of that equipment;
- c. Perform all required tests and inspections specified in Section 06.I of EM 385-1-1;

01525-4

- d. Assess hazardous conditions including atmospheric hazards in confined space and adjacent spaces and specify the necessary protection and precautions to be taken;
- e. Determine ventilation requirements for confined space entries and operations;
- f. Assess hazards associated with hot work in confined and adjacent space and determine fire watch requirements; and,
- g. Maintain records required.

1.6.1.3 Crane Operators

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G. In addition, crane operators shall be designated as qualified by a source that qualifies crane operators (i.e., union, a government agency, or an organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily quality control report.
- b. Conduct mishap investigations and complete required reports. Maintain an accident/injury log such as the OSHA Form 300 or host nation equivalent, and Daily Production reports for prime and sub-contractors.
- c. Maintain applicable safety reference material on the job site.
- d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- e. Implement and enforce accepted APPS and AHAs.
- f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.
- g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

01525-5

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design-Build Contracts.

1.6.3.2 Safety Meetings

Safety meetings shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily quality control report.

1.7 TRAINING

1.7.1 New Employee Indoctrination

New employees (prime and sub-contractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

1.7.2 Periodic Training

Provide Safety and Health Training in accordance with USACE EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for all onsite employees.

1.7.3 Training on Activity Hazard Analysis (AHA)

Prior to beginning a new phase, training will be provided to all affected personnel and procedures.

1.8 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP in both English and in the host nation language. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum

01525-6

Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSO and quality control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment.

Copies of the accepted plan will be maintained at the Contracting Officer's office and at the job site.

The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.8.1 EM 385-1-1 Contents

In addition to the requirements outlined in Appendix A of USACE EM 385-1-1, the following is required:

- a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be. The duties of each position shall be specified.
- b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of

01525-7

chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

- c. Confined Space Entry Plan. Develop a confined space entry plan in accordance with USACE EM 385-1-1, Section 06.I, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

- d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:
 - (1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of EM 385-1-1, Section 22.F.
 - (2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.

- e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised every six months for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and maintained at the job site for the duration of the project. The Fall Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1, and shall be written in both English and the host nation language. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily

01525-8

inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the Contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.10 DISPLAY OF SAFETY INFORMATION

Within one (1) calendar day after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project. Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. The Government has no responsibility to provide emergency medical treatment. Military medical clinics may provide emergency treatment for serious injuries; the Contractor is responsible for coordination with the local military medical clinic prior to mobilization.

1.13 REPORTS

1.13.1 Accident Reports

For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within five (5) calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

1.13.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four (4) hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000. Information shall include Contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

01525-9

1.13.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.13.4 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

1.14 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Installation. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) six kilogram ABC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in fire fighting techniques and remain on-site for a minimum of 120 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone numbers. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION/DEPARTMENT IMMEDIATELY.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

Before initiation of work at the job site, an accident prevention plan, written by the Contractor for the specific work and hazards of the contract and implementing in detail the pertinent requirements of EM 385-1-1, will be reviewed and found acceptable by designated Government personnel. Specific requirements for development of the accident prevention plan are found in sections 01.A and Appendix A of EM 385-1-1.

Before beginning each activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform the work, activity hazard analysis (AHA) shall be prepared by the Contractor performing the work activity. See paragraph 01.A.09 of EM 385-1-1.

The Contractor shall require subcontractors to submit their plan of operations showing methods they propose to use in accomplishing major phases of work.

01525-10

The Contractor shall be prepared to discuss the plans in conferences convened by the Contracting Officer prior to starting work on each major phase of operation. Plans shall include all pertinent information such as layout of haul roads, access roads, storage areas, electrical distribution lines, methods of providing minimum exposure to overhead loads, and methods of access to work areas. The plan for accomplishing the initial work phase shall be submitted within 15 calendar days after award of the contract. Plans for subsequent major phases of work shall be submitted not later than 15 calendar days prior to initiation of work on each major phase.

All areas where construction, demolition, alteration, building, or similarly related activities take place, all workers shall have the following minimum personal protective clothing and equipment:

1. Short sleeve shirt.
2. Long trousers.
3. Steel-toed safety boots.
4. Hard hat.

3.1.1 Falling Object Protection

All areas must be barricaded to safeguard employees. When working overhead, barricade the area below to prevent entry by unauthorized employees. Construction warning tape and signs shall be posted so they are clearly visible from all possible access points. When employees are working overhead all tools and equipment shall be secured so that they will not fall. When using guardrail as falling object protection, all openings shall be small enough to prevent passage of potential falling objects.

3.1.2 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of ten (10) working days for processing of the request for use of a hazardous material. Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose Government or Contractor employees to any unsafe or unhealthful conditions. Adequate protective measures must be taken to prevent Government or Contractor employees from being exposed to any hazardous condition that could result from the work or storage. The Prime Contractor shall keep a complete inventory of hazardous materials brought onto the work-site. Approval by the Contracting Officer of protective measures and storage area is required prior to the start of the work.

3.1.3 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.4 Unforeseen Hazardous Material

01525-11

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within fourteen (14) calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.2.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.A.16.

3.2.2 Fall Protection Equipment and Systems

The Contractor shall enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Employees shall be protected from fall hazards as specified in EM 385-1-1, section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.H. and 05.I. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with USACE EM 385-1-1 and host nation requirements, whichever is more stringent.

3.2.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1 or European Union equivalent. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance

01525-12

when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.2.3 Fall Protection for Roofing Work

Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

- (1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized.
- (2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

3.2.4 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI Z359.1 or European Union equivalent. Existing horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.2.5 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of two (2).

3.2.6 Guardrails and Safety Nets

Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 or Host Nation requirements, whichever is more stringent.

3.2.7 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the Contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the Contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the

Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.3 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four (4) times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material is prohibited. The first tie-in shall be at the height equal to four (4) times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.4 EQUIPMENT

3.4.1 Material Handling Equipment

- a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.
- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.
- c. Operators of forklifts or power industrial trucks shall be trained/licensed in accordance with Host Nation requirements.

3.4.2 Weight Handling Equipment

- a. Cranes and derricks shall be equipped as specified in EM-385-1-1 section 16.
- b. The Contractor shall notify the Contracting Officer fifteen (15) days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.
- c. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person. All testing shall be performed in accordance with the manufacturer's recommended procedures.

01525-14

- d. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.
- e. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11.
- f. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves to the satisfaction of the Contracting Officer that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.
- g. Portable fire extinguishers shall be inspected, maintained, and recharged.
- h. All employees shall be kept clear of loads about to be lifted and of suspended loads.
- i. The Contractor shall use cribbing when performing lifts on outriggers.
- j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
- k. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.
- l. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.
- m. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.
- n. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).
- o. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations the Contractor shall set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

3.5 EXCAVATIONS

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect, and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

3.5.1 Utility Locations

01525-15

Prior to any excavation, all underground utilities in the work area must be positively identified by the contractor utilizing a) a private utility locating service in addition to any station locating service, and/or b) a metal and/or cable-detecting device along the route of the excavation. All underground utilities discovered will be flagged a distance of one-half (1/2) meter on each side of the location, and any markings made during the utility investigation must be maintained throughout the contract.

Damage occurring to existing utilities, when the above procedures are not followed, will be repaired at the Contractor's expense.

3.5.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.61 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility, the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

3.5.3 Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

3.5.4 Trenching Machinery

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

3.6 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the Contractor from meeting this requirement.

3.7 ELECTRICAL

3.7.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-

energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.7.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70 or European Union equivalent.

3.8 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 06.I of USACE EM 385-1-1. Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures). All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Ensure the use of rescue and retrieval devices in confined spaces greater than 1.5 m (5 feet) in depth. Conform to Sections 06.I.08, 06.I.09 and 06.I.10 of USACE EM 385-1-1.

d. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

e. Include training information for employees who will be involved as entrants and attendants for the work. Conform to Section 06.I.07 of USACE EM 385-1-1.

01525-17

f. Daily Entry Permit. Post the permit in a conspicuous place close to the confined space entrance.

3.9 CRYSTALLINE SILICA

Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica, shall comply with USACE EM 385-1-1, Appendix C. The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

3.10 DEMOLITION

3.101.1 Demolition Plan

The Contractor shall submit a written demolition plan for all demolition work to be carried on the site. In addition, the demolition plan shall be signed by a Professional Registered Engineer and meet the requirements of the Corps of Engineers Safety and Health Manual, EM 385-1-1, section 23. The demolition plan shall be submitted to the COR at least 1 week before the beginning of the work, including structural calculations for the demolition, if necessary. The demolition work shall not begin before the Contractor has received a written approval from the COR.

3.12.1 Protection of Personnel

During the demolition work, the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workers remove debris or perform other work in the immediate area.

3.10.1 Protection of Structures

Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the COR. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

Interior concrete or masonry walls shall be demolished from the top down unless a Registered Engineer can demonstrate that an alternate method poses no additional safety hazards

3.11 HOUSEKEEPING

3.11.1 Clean-Up

The Contractor shall be responsible for cleaning up. The Contractor shall require his personnel to keep the immediate work site clean of all dirt and debris resulting

01525-18

from work under this contract. Accumulated dirt and debris shall be hauled off and disposed of in accordance with local law and at least once a week by the Contractor. Additionally, all debris in work areas shall be cleaned up daily or more frequently if necessary. Construction debris may be temporarily located in an approved location; however garbage accumulation must be removed each day.

Stairwells used by the Contractor during execution of work shall be cleaned daily. Cloths, mops, and brushes containing combustible materials shall be disposed of or stored outside of the buildings in tight covered metal containers. Paints and thinners shall not be poured into inlets of the interior or exterior sewage system. Paint, stains, and other residues on adjacent surfaces or fixtures caused by the Contractor shall be carefully removed and cleaned to original finish. Upon completion of the work, the Contractor shall remove all construction equipment, materials and debris resulting from the work. The entire work site and the area used by Contractor personnel shall be left clean.

ATTACHMENT

STR 015250 - SAFETY AND OCCUPATIONAL HEALTH PHASING PLAN

- End of Section -

A. PURPOSE AND RESPONSIBILITIES:

1. The purpose of this SOH Phasing Plan is to establish controls and procedures to reduce the safety and occupational health risks on associated projects to an acceptable level. This SOH Phasing Plan is not intended to address all program SOH requirements, but provides general emphasis to certain procedures and requirements addressed in: EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Requirements Manual

2. For Contractor safety on projects associated with this program, compliance with EM 385-1-1 safety requirements will be the long-term goal reached by growing a safety culture. This compliance will, by necessity, be achieved through a phased-in process. In the Commander's letter at the preface of the EM 385-1-1, he acknowledges that in OCONUS locations, strict compliance with the manual may not be possible - and through the hazard analysis process, safety measures can be developed to attain the same degree of safety.

a. The exact timeline and methods of compliance, based generally on the Phase plan below will be determined by in-theater Project Delivery Team (PDT) partners responsible for safety, to include USACE Field Engineering/Construction/ Safety personnel, Prime Contractors and Local Subcontractors. The Prime Contractor, in partnership with the USACE and subcontractors, will develop a Safety and occupational Health Plan (SOHP) consisting of a specific Accident Prevention Plan (APP) and Activity Hazard Analysis for each project.

b. Each project SOHP will evolve as a living document, starting by dividing into phases to provide a goal with a timeline. Focus for the project safety program areas will be based on the following time-based phases.

01525-19

CE School, ANA Commando Complex
Rish Khvoor, Afghanistan

Phase I: "Saving Lives". Establish achievable compliance methods and basic worker safety education to eliminate or reduce to an acceptable level the life-threatening conditions associated with high hazard construction activities.

- The initial high-hazard focus areas shall include:
 - Excavations
 - Fall Hazards
 - Electrical Work
 - Mobile Construction Equipment
 - Machinery
 - Confined Spaces
- Develop a basic worker safety and health practices manual/guide and associated mandatory training for each Focus area listed above. These will be in English and local language, based on local conditions and practices and targeted at high-hazard activities.
- On all contract sites, the basic life-support will include First Aid Kits, and emergency communication.
- Contractor Accident Prevention Plans, Activity Hazard Analyses, and other safety-related systems under development with assistance by PDT

Phase II: "Building A Safety Culture" (Approximately one year, beginning at end of Phase I) Advanced safety education of local contractors and LN work force. Full contractor compliance with USACE safety standards related to high-hazard situations, increased application of standards on all work.

- Workforce education and training to include all applicable requirements of EM 385-1-1 and International Safety Standards
- All required Personal Protective Equipment (PPE) available and used by workers in applicable work practices, as outlined in the EM 385-1-1.
- Contractor Accident Prevention Plans, Activity Hazard Analyses, and other safety-related systems refined to meet standard USACE expectations with assistance by PDT
- Standard Contractor Safety administrative responsibilities required, i.e.: Accident reporting, man-hour tracking, training documentation, First Aid personnel certification, fire protection, etc.

Phase III, "Full Performance" (beginning at end of Phase II) in compliance with EM 385-1-1 and other applicable laws, regulations, design codes and standards. Where standard compliance is not possible, local methods may be used in accordance with implementing letter of EM 385-1-1 or through formal waiver process.

3. The PDT shall employ the "Plan, Do, Check, Act" process for implementing this SOHP as a living document. Each PDT member is responsible for planning for safety and health management within their area of responsibility, implementing agreed-on mitigation, checking to assure that the SOHP is being implemented and acting to adjust plans and implementation with a goal of continuous improvement. This plan will be reviewed and revised as needed at the initiation of each Phase listed above.

4. The PDT members shall cooperate in developing a listing of potential hazards associated with each project.

B. GOALS AND OBJECTIVES:

1. Goals. The safety and health goals of all projects are:
 - a. Be accident free
 - b. Detect and address safety and health problems early in the life of each project

01525-20

- c. Do not accept unnecessary risk
 - d. Every team member, to include Contractors shall contribute to the safety and health of their fellow team members and assure that the product is free of inherent hazards to the user.
 - e. Educate the workforce and promote Safety as a new way of doing business, show how the project and the employee benefit from Safety.
2. Objectives. The safety and health objectives of this program are:
- a. Managers, supervisors, and workers shall be held accountable, based on the current Phase, for safety and health.
 - b. Safety and health expectations shall be communicated with the work force in their native language through the use of banners, flyers, and periodic safety meetings
 - c. The work force shall have the safety and health training needed to perform the work at hand, based on the Phase.
 - d. Injury and property damage shall be avoided through early detection and management of hazards

Phase I Interim Safety and Occupational Health Work Practices for USACE Contractor Projects

Phase I Safety Program

1. Contractors shall strive to maintain full compliance with the USACE Safety Requirements Manual, EM 385-1-1. This may not be easily achieved during this Phase, due to a number of factors. The focus for safety and health efforts during this Phase is Saving Lives - the prevention of deaths, permanently disabling injuries, and major property loss. The goal during this period is to provide the equipment and methods needed to save lives and to train the workforce in working safely and using the correct personal Protective Equipment (PPE).
2. In order to assist in achieving this goal immediately, the following interim standards shall be used (as a minimum acceptable standard) when full compliance with the EM 385-1-1 is not possible. Contractors shall provide these standards in to their workforce in the local language and shall provide training as needed to ensure worker awareness.

Basic Safety and Health Standards for Construction

- A. USACE and the Contractors must form a team to assure safety on every job site and prevent serious accidents. All unsafe conditions must be reported and the hazard reduced before work may proceed.
- B. Personal Protective Equipment (PPE) may not always be available to every worker during this Phase. Where the equipment required by the USACE Safety Manual, EM 385-1-1, cannot be provided in a timely manner, the Contractor shall develop methods that will provide a similar degree of safety (as accepted by USACE) and not expose the workers to serious risk. The mandatory minimum standards for all PPE are:
 - Footwear: Closed-toe durable shoes or boots shall be worn by all workers on the project site. No sandals or sports shoes will be allowed, at no time will workers be allowed on the project site with bare feet. Safety footwear (steel-toe or other protection) should be worn by workers using steel rollers, tampers, jack hammers or carrying heavy objects (metal, concrete, stone)

01525-21

- Head Protection: When they are available, hard hats should be worn by all construction workers when they are at the project. Hard Hats must be worn in overhead hazard areas including material hoisting/ lifting operations, areas below scaffolds and other elevated work, in excavations, and low ceiling areas that have sharp or hazardous projections. If they are not available, then workers must be kept away from these and other overhead hazard areas.
- Respirators: Workers exposed to toxic chemicals, vapors, gases and dusts must wear proper respiratory protection. Such exposure is expected in asbestos removal/ repair work, working with paints and solvents in rooms or enclosed spaces, and fuel production facilities. The employer must train the workers in the uses of the respirator and how to properly wear it. The minimum acceptable respirator is a negative pressure filter or cartridge half-face respirator that is correctly equipped for the hazard. Contractors shall consult and follow the ACGIH guidance for length of allowable exposure to the contaminant and workers shall not exceed the recommended time for exposure. Dust Masks will be worn when the work is producing visible dust.
- Eye Protection: Workers shall wear protective glasses, goggles, or visors when exposed to eye hazards. These hazards include concrete dust, stone and concrete chips from hammering, sandblasting, and power tool cutting or milling. Workers performing welding and cutting with torches or arc-welding equipment shall wear the proper shaded lenses in face shields and/or goggles.
- Hearing Protection: Protective ear plugs shall be worn when workers are exposed to potentially damaging noise including jack hammers, flight line operations, power saws and grinders, and combustion engines without mufflers.
- Gloves: All workers shall have protective gloves appropriate to the task.
- Clothing: Workers shall wear clothing that protects their skin from damage - shirts and long pants at a minimum. Workers exposed to welding operations, chemicals, abrasive blasting, wet concrete, asbestos, and other hazardous contaminants will wear appropriate clothing for the hazard. Workers using power tools or operating equipment shall not wear very loose or flowing clothing that may get caught in the equipment.

C. Work Methods for Highly Hazardous Work: The following types of work and hazards are recognized as the leading cause of serious injuries and deaths in construction work. Each type of work has specific PPE and safety equipment that is required to do the work and also specific procedures that must be followed every time the work is done. These interim measures are the minimum acceptable precautions. For each project, an Activity Hazard Analysis (AHA) shall be completed and, when possible, compliance with more restrictive methods of the EM 385-1-1 shall be achieved.

Workers shall be trained on the following safety precautions, the nature of the hazards involved, and any additional work methods used before performing each type of work

- Excavations
 - o The Site Safety and Health Officer will be contacted for inspection of the work prior to digging. The SSHO will assist in any safety equipment or techniques that are required to avoid injury. They will also provide

01525-22

a safety check on the location to assure there are no underground hazards at the site.

- All excavations or unsafe areas will be marked with barricades or warning tape. These warnings must be maintained and visible until the area is restored to a safe condition.
 - When workers will enter trenches, the walls shall be sloped according to the type of soil or shoring, trench boxes, or other structures will be used to protect workers from collapsing walls
 - Soil removed from trenches will not be placed at the edge of the trench - it must be placed back at least 1 meter from the edge.
 - Vehicles and construction equipment must not be parked closer than 2 meters from the edge of an excavation.
 - Excavation walls shall be inspected regularly during each day to check for cracks, bulges, large stones, sandy areas, and failure of the wall. If these conditions are found, nobody may enter the excavation and the damaged area must be dug out or braced.
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- Fall Hazards
 - When working above 2 meters from the ground or another level, all workers shall be protected from falling. The SSHO will inspect prior to beginning work to be sure the work methods are safe. Inspection will include work on ladders, scaffolds, and other elevated work areas.
 - Protection systems shall be sturdy railings, walls, or other structures
 - If there are no structures to protect workers, body belts or harnesses shall be used along with lanyards.
 - Body belts should be mainly be used only to prevent a worker from falling over an edge or off a structure.
 - Body belts and harnesses can both be used as fall protection (stopping a falling worker). The lanyard shall be rope strong enough to withstand the shock of stopping the worker's weight, and they shall be as short as possible, to limit the shock force. Lanyards shall never allow a worker to fall more than 2 meters. It is recommended that lanyards without shock absorber devices be no longer than 1 meter.

 - Electrical Work
 - All circuits, wires, and electrical devices shall be tested with a volt meter and found to be de-energized before workers touch the energized parts
 - Controls, switches, and other means for energizing the circuit or equipment shall be tagged "do not operate"
 - Workers shall not work closer to energized systems than the distances listed in the USACE manual.
 - Temporary electrical systems shall be grounded and tested for good ground resistance before use.
 - Power tools shall be protected from water and damage, and their cords must be insulated. Cords must be factory installed or equivalent replacements, including safety grip plug and cord boot.
 - Extension cords will be in safe, good working order.

 - Mobile Construction Equipment
 - If equipment, particularly cranes, are damaged the repairs shall be done by a competent repair person and verified by the SSHO prior to being brought back into service.

01525-23

- Nobody may ride outside the cab of construction equipment. Specifically, no riders may ever be in loader buckets, bulldozer blades, on forklift forks, or suspended by a crane.
 - When workers are nearby, construction equipment must have reverse signal alarms or shall use a spotter standing away from the equipment. The spotter must be visible by the driver and positioned to see the area behind the equipment.
 - Construction equipment must work a safe distance from electrical systems, based on the voltage.
 - Cranes must be used according to the manufacturer. If no manufacturer data is available, a load chart shall be developed by a qualified engineer.
 - Workers should stay out of the radius of the crane boom during a lift.
 - Lifting ropes shall be inspected daily for breaks and failure of hardware and fittings.
 - Nobody shall ever ride the hook or load of a crane.
- Machinery
 - Rotating shafts, wheels, blades, and other hazardous parts shall have guards to prevent workers from being injured.
 - Fuel-powered machinery must not be operated indoors or near enclosed areas without using powered ventilation to prevent toxic CO build-up.
 - Metal housings of electrically powered equipment must be grounded
- Confined Spaces
 - The SSHO will pre-approve any work in a confined space, such as in a tank, sewer, manhole or any other enclosed area. The SSHO will inspect the work and assist with any safety equipment or techniques that are required.
 - All permit-required confined spaces (PRCS) on a project shall have signs prohibiting entry.
 - Entrants, supervisors, and attendants for PRCS shall be properly trained.
 - When available, oxygen/flammable/toxic gas meters shall be used for all PRCS. This equipment must be used to evaluate the air in all spaces known or suspected to have contained flammable or toxic chemicals or contain sewage, rotting vegetation or other organic matter.
 - For spaces not meeting the above criteria, mechanical ventilation fans shall be used to clear the air in the space when meters are not available. Based on the air flow of the fan, it shall exhaust the total volume of the space a minimum of seven times prior to entry.
 - All entrants shall wear a harness, body belt, or other device attached to a rope sufficient to retrieve the worker in an emergency.
 - Permits should be used during PRCS entry. If not possible, then some visible means, such as flags or tags outside the entrance, shall be used so supervisors can see when workers are in the space.
- Gas Cylinders
 - Pressurized gas cylinders, such as Oxygen and Acetylene tanks will be stored in a holding stand/ cart to prevent them from falling over. Cylinders will not be placed free on the ground or standing free. If the bottle is not in use the valve will be removed.

D. Child Labor. Minors under the age of 18 may not perform any of the above hazardous work. Additionally, these minors can not perform any hazardous work such as operating dangerous power tools (circular saws, jack hammers, lathes,

01525-24

etc), driving vehicles, be exterior assistants for vehicle operators or operating mobile construction equipment, explosives work, work at heights over 2 meters without standard railings, electrical work, entering excavations, and work with toxic substances.

-- End of Section --

01525-25

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