APPENDIX A-1

SPECIFICATIONS

INDEX

APPENDIX A -1 TECHNICAL SPECIFICATIONS

DIVISION 01 GENERAL REQUIREMENTS

Section	Title
01010	Scope of Work
01015	Technical Requirements
01040	Security
01060	Special Requirements
01060a	Project Sign
01060b	Custom Forms
01312	Quality Control System
01321	Network Analysis Schedule
01321a	Appendix to 01321
01335	Submittal Procedures for Design/Build Projects
01335a	Attachments AED
01355	Environmental Protection
01415	Metric Measurements
01451	Contractor Quality Control (with design)
01525	Safety and Occupational Health Requirements
01525a	Attachment to Section 01525
01770	Closeout Procedures
01780a	Closeout Submittals
01781	Operation and Maintenance Data

SECTION 01010

SCOPE OF WORK

1. GENERAL

The project consists of the design and construction of a new wastewater treatment plant for Camp Shaheen in Mazar E Sharif in Afghanistan. Refer to appendices for approximate site location. The project is defined as the design, material, labor, and equipment to construct buildings, facilities, utilities and other infrastructure for the new plant; modify sewer collection system to re-route wastewater flow from the existing plant to the new plant; and restore existing plant site. The work within this contract shall meet and be constructed in accordance with current U.S. design and International Building Codes (IBC), Life Safety Code (NFPA-101), Force Protection and security standards. A partial listing of references is included herein:

IBC, International Building Codes, latest edition

NFPA 101, Life Safety Code

UFC 4-010-01, DoD Minimum Anti-Terrorism Standards for Buildings.

The contractor may be required to coordinate the efforts required under this contract with at least one other contractor at the site. Such coordination requirements will be required as part of this contract. The coordination effort may be significant and may include such tasks as the exchange of information with other contractors such as design data, drawings, calculations, and technical information. Additionally it may be necessary for the contractor to conduct meetings, hold teleconferences, and prepare the submittal of additional information to the Contracting Officer (KO) that demonstrates the coordination and integration of new work with existing and future work of other contractors. All coordination shall be in agreement with the KO and approved prior to the commencement of any work.

The Contractor shall identify all occupants of existing buildings within the construction boundary and hold a meeting with them to discuss, at a minimum, the scope of the project, access to the existing buildings during construction, impacts to utilities, site security and construction safety precautions. During this meeting, the Contractor will solicit comments and concerns about the project.

The Contractor shall provide meeting minutes to the Contracting Officer’s Representative within seven (7) days after the meeting. Meeting minutes shall include, at a minimum, name, position title and phone number of those in attendance; and a record of issues that were discussed and proposed solutions to the issues.

It is the responsibility of the contractor to have visited the site prior to submitting its proposal for the project and to have gained a good understanding of the project and its requirements, including grading and drainage details necessary to appropriately submit its proposal and construct the project.

1.1 ENGLISH LANGUAGE REQUIREMENT

All information shall be presented in English. The Contractor shall have a minimum of one English-speaking representative to communicate with the COR at all times when work is in progress.

1.2 SUBMITTALS

Submittals and a Submittal Register are required as specified in Section 01335 SUBMITTAL PROCEDURES of the Contract.

1.3 SECURITY

Security is critical to construction in Afghanistan, especially on roads and remote areas away from Coalition Force bases. The risk/threat level for the area surrounding this project site is Low relative to the chance of attack, improvised explosive devices (IEDs), kidnapping, theft, and vandalism. The Contractor must have an appropriate amount of security/protection to match the threat in the project area and along the supply routes. A detailed security plan in accordance with Section 01040 SECURITY shall be approved by the Government before construction notice to proceed.

1.4 CQM TRAINING REQUIREMENT

See Section 01451 paragraph CQM TRAINING REQUIREMENT for Contractor’s Quality Control Manager training requirements..

The contractor’s quality control plan, as defined in USACE Guide Specification 01451 (or 01 45 04.00 10), entitled “Contractor Quality Control”, must include “The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.” For the QC Manager, qualifications must include a certificate demonstrating completion of an approved CQM course.

1.5 ELECTRICAL WORKER QUALIFICATIONS

All electrical work shall be performed by Journeymen Electricians and supervised by one Lead Electrician. Apprentice Electricians are allowed to assist the Journeymen, but the ratio of Journeymen to Apprentices shall not exceed 1:3.

Lead Electrician

- Proof of Completion of an Electrical Safety Course AND
- Proof of Completion of an Electrical Code Class (NEC or BS7671) AND
- Graduate of an Approved Trade School AND
- 4000 hours of verifiable commercial/industrial electrical experience

Journeyman Electrician

- Proof of Completion of an Electrical Safety Course AND
- Proof of Completion of an Electrical Code Class (NEC or BS7671) AND
- Graduate of an Approved Trade School AND
- 2000 hours of verifiable commercial/industrial electrical experience

Apprentice Electrician

- Proof of Completion of an Electrical Safety Course AND

- Proof of Completion of an Electrical Code Class (NEC or BS7671)

The Lead electrician must be on site at all times during electrical installations and be capable of installing as well as directing the installation of all electrical work in compliance with the governing Code.

1.6 CONSTRUCTION PROJECT SIGN

The contactor shall fabricate and display at least one sign to identify the project site as an Islamic Republic of Afghanistan sponsored project. The sign shall meet or exceed the requirements provided in Section 01060 SPECIAL REQUIREMENTS. Exact placement of the sign at the project site shall be coordinated with the COR.

2. LOCATION

The site is located in Mazar E Sharif in Balkh Province, Afghanistan as shown on attached drawings.

Corner 1	36.647222 N	67.007500 E
Corner 2	36.647222 N	67.012500 E
Corner 3	36.640000 N	67.009444 E
Corner 4	36.641111 N	67.015000 E

3. UNEXPLODED ORDNANCE (UXO)

3.1 UXO REMOVAL AND CLEARANCE

The contractor is not responsible for the clearance or removal of mines and unexploded ordnance (UXO) from the site prior to the commencement of construction. The site has been cleared to a minimum depth of 1 meter and the certificate of clearance is available for review. No construction activities are to be conducted without review of the written clearance certification for the site. If sub-surface construction activities will be performed on this site the clearance certification must state that the clearance depth was conducted to a minimum 1 meter in depth. ***If the contract parameters for sub-surface construction exceed the minimum 1 meter clearance depth the contractor WILL be responsible for clearance to these depths.*** The contractor may only provide clearance/removal services via UN Mine Action Center for Afghanistan (UNMACA) accredited entities and Clearance/removal may only be undertaken in accordance with International Mine Action Standards (IMAS), Afghanistan Mine Action Standards (AMAS), and applicable U.S. Army Corps of Engineer (USACE) Ordnance & Explosives (OE) safety standards.

NOTE 1: For previous UXO/mine information, and a copy of the clearance certification the following points of contact from the UN Mine Action Center of Afghanistan are provided:

Mohammad Sediq, Chief of Operations,
Email: sediq@unmaca.org
Cell: +93 070 295207

Hansie Heymans, Chief Information Officer,
Email: hansie@unmaca.org
Cell: +93 070 294286

UXO Safety/ Demining COR, USACE
tan.uxo.demining.safety@usace.army.mil, Roshan: 079-778-6848 Comm: 540-667-2127

NOTE 2: ***For construction in excess of 1 meter in depth on areas previously cleared.*** The contractor will provide a standard UXO/Demining safety work plan to the US Army Corps of Engineers UXO / Demining COR for review prior to commencement of all UXO clearance / demining activities on the project sites. Once the UXO/ Demining clearance has concluded, the contractor shall provide the US Army Corps of Engineers UXO / Demining COR a clearance certificate for review and approval before any construction activities are to commence.

NOTE 3: The contractor should be aware that many areas demined by NGOs and other groups may have only been cleared to a depth of 13 cm for humanitarian purposes. If construction will take place, a minimum of 1 meter in depth is mandatory.

It is the responsibility of the Contractor to be aware of the risk of encountering UXO/mines and to take all actions necessary to assure a safe work area to perform the requirements of this contract. The Contractor assumes the risk of any and all personal injury, property damage or other liability arising out of or resulting from any Contractor action taken hereunder. The Contractor and its subcontractors may not handle, work with, move, transport, render safe, or disarm any UXO/mine, unless they have appropriate accreditations from the MAC.

If a UXO/mine is encountered during project construction, the Contractor shall immediately stop work in the affected area, mark the area of the UXO/Mine and immediately notify the Contracting Officer, COR or the Government Construction Representative. UXO/Mine disposal will not be the responsibility of the Contractor unless the area exceeds the 1 meter clearance depth of the original clearance certificate.

4. SUMMARY OF WORK

4.1 CONTRACTOR REQUIREMENTS

The contractor shall design and construct the facilities as a design-build contract and shall be in accordance with the requirements stated in Section 01015: TECHNICAL REQUIREMENTS. Refer to attachment following this section for more specifics for required spaces. The design and construction work shall include but not be limited to that described herein.

4.1.1 STANDARD DESIGNS - DRAWINGS AND SPECIFICATIONS

Contractor shall construct all features of Contract work (architectural, structural, civil, mechanical, plumbing, electrical, etc.) in complete accordance with Contract plans and specifications furnished by AED. Contractor shall submit complete Design Analysis, Plans and Specifications for all Design Submittal stages required by the Contract. If the site investigation and Geotechnical Report indicate foundation design as shown in the Contract plans is inadequate, all necessary information (design analysis, plans and specifications) shall be submitted for review and approval by AED Engineering. The COR shall be informed of this change to coordinate a modification. Even if foundation design changes are required, all other features of work shall be accomplished in strict compliance with the drawings, details and specifications provided in the Contract, unless changes are requested under the Changes Clause. Design Submittal content shall include field testing, laboratory testing, design analysis, and plans and

specifications for: Geotechnical Report; existing topographic survey; final grading/drainage plans; complete water distribution system; complete wastewater system; road and sidewalk network; electrical distribution system; and all other site work features not included in the furnished plans and specifications. See section 01335 for more information on required submittals.

4.1.2 GENERAL REQUIREMENTS FOR FACILITIES

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. Provide heating for all facilities unless otherwise stated in Section 1010 or 1015. Do not provide cooling for facilities unless otherwise stated in Section 1010 or 1015. All toilets shall be eastern style. All eastern toilets shall face north or south.

All standard construction amenities and details such as heating, lighting, site drainage, utility connections, etc. shall be implied as a design and construction requirement. Drawings referenced are contained in Section 01015 or Appendix B.

The design and construction work shall include but not be limited to the following sub-paragraphs. The wastewater system shall be designed to handle a population of 12,000 and to easily expand to handle a build-out population of 24,000 in the future within the designated project site.

In general, this project consists of designing and constructing the following facilities:

4.1.3 BASE BID

- Influent Pump Station
- Headworks
- Administration/Laboratory/Chlorination Building
- Aeration and Settling Ponds
- Polishing Pond w/Water Tanker Filling Station
- Sludge Pump Station
- Sludge Drying beds

4.2 WATER SYSTEM

Design and construct a Potable Water System (PWS), to include booster pumps and hydropneumatic tank(s) if needed, and an underground pipe distribution network system. Connect to existing water system shown in Appendix B. The water system shall be designed and constructed in accordance with the AED Design Requirements, latest version, and UFC 3-230-03A Water Supply which include the use of a capacity factor. Water demand required for fire fighting and for irrigation and landscaping needs shall not be included in design demand calculations.

4.3 SANITARY SEWER SYSTEM

The existing sanitary sewer collection system is shown in Appendix B. The contractor shall design and construct modifications to this system to convey wastewater to a new influent pump station at the new wastewater treatment plant site. These modifications shall include upgrading or constructing new lift stations, constructing new force mains, and constructing new gravity sewers and appurtenances. The modified collection system shall be designed with the minimum number of lift stations and lineal feet of force mains.

The Contracting Officer shall approve locations for new lift stations. The modified collection system shall be able to handle all existing facilities, and facilities currently under design and construction as shown in Appendix B. The modified collection system shall also be designed to handle all other build-out development shown in Appendix B (including flows from Camp Spann and Deh Dadi) without replacing or reconstructing any new gravity line, force main, or lift station installed as part of this project.

4.4 DEMOLITION AND GRADING

4.4.1 NEW PLANT SITE

The contractor shall demolish all existing structures and buildings at the site for the new wastewater treatment plant prior to commencement of new work. The Contractor shall remove and dispose of all debris, concrete, and foundations. The Contractor shall verify the location of debris disposal with the Contracting Officer. The Contractor shall perform complete final site grading after installation of all required drainage structures per the Drainage Plan that shall be prepared as part of this project and after installation of any other buried utilities or other project components.

Native crushed stone 100 mm thick shall be placed around all buildings, from the building wall or building landscaping out 3m and all areas of anticipated foot or vehicle traffic to reduce erosion and to provide dust control. Aggregate walkways shall be installed between buildings and parking areas.

4.4.2 EXISTING PLANT AND LIFT STATION SITES

The Contractor shall decommission the existing wastewater treatment plant when the new plant is fully operational and shall decommission any lift station when it is no longer needed. All mechanical equipment in good repair and spare parts for this equipment shall be removed and transported for storage to a location as directed by the Contracting officer.

After all salvageable equipment and spare parts is removed, the Contractor shall pump out and dispose of any wastewater or waste residue at the new wastewater treatment plant. The Contractor shall then demolish all existing structures, and remove and dispose of all debris. The Contractor shall verify the location of debris disposal with the Contracting Officer.

The Contractor shall grade and restore site to original condition.

4.5 ELECTRICAL SYSTEM

The contractor shall construct all electrical systems for the facilities to be provided. This includes all necessary labor, equipment, and material for a fully functional system. Design of electrical systems shall be as required below.

Utilization voltage/frequency for this project shall be 400Y/230V, 50Hz, 3 phase, 5 wire (4 wire plus circuit protective conductor using 5 wire TN-S), designed and constructed in compliance with BS 7671 Requirements for Electrical Installations, Institution of Electrical Engineers (IEE), Wiring Regulations, Seventeenth Edition. Design of electrical systems shall comply with AED-N Electrical Design Requirements.

The source of power for this contract is connection to existing medium voltage distribution system.

Contractor shall connect to the existing 15 kV underground distribution system. The wastewater treatment plant shall be fed from an existing feeder, 300 meters away. The feeder will be routed underground to a point approximately 100 meters inside the existing garrison wall. Mount a new pad-mounted switch next to transformer TR#05 and EMH#12 and connect to the existing medium voltage feeder. The pumps stations shall also be served underground from the nearest primary pole which is approximately 50 meters away.

The contractor shall design and construct an electrical distribution system to supply power to all buildings, facilities and other loads in this contract. Primary distribution voltage shall be 15kV,50Hz. The secondary distribution system shall be underground and the voltage shall be 400/230V, 50 hertz.

OTHER ELECTRICAL SYSTEMS: Interior electrical systems shall be designed and constructed by the Contractor and include, but are not limited to: interior secondary power distribution system, lighting and power branch circuits, communications, exterior lighting, and lightning protection system. All systems shall be designed for the ultimate demand loads, plus 25% spare capacity.

4.6 FORCE PROTECTION MEASURES

The Contractor shall design and construct force protection measures to include perimeter fence and gates (see Appendix B), and communication systems. The designer shall incorporate force protection setbacks for new facilities to the maximum extent possible as permitted by size of the site and the requirements of the user. Force protection design shall be in accordance with Joint Security Directorate Antiterrorism/Force Protection Guide, March 2002.

4.6.1 PERIMETER FENCE

Chain link fence with sniper screen shall be constructed around the perimeter of the site. The height of the fence shall measure at least 2.5 meters from the inside and outside grades. The fence shall be topped with barbed wire outriggers and single-coil concertina style razor wire. The fence shall be designed to keep all pedestrian and truck traffic outside the compound from having a visual line of site into the compound.

4.6.1.1 GATES

A minimum of two vehicular gates shall be provided to allow maintenance trucks and water tankers easy entrance into and exit from the site. The gates shall be chain link with sniper screen, and double-swing type consisting of a pair of 3.65 m wide x 2.4 m high leafs. A pedestrian gate shall also be provided next to each vehicular gate.

Gate leafs shall not rack or deflect when install on its hinges. Gates shall have a sufficient number of hinges to support each gate leaf. Provide a locking mechanism and locks to secure the gates in the closed position. Also

provide a drop bolt that engages a steel sleeve embedded in the ground for the vehicular gates.

4.7 ACCESS ROAD, ROAD NETWORK, SIDEWALK, AND PARKING

The Contractor shall design and construct aggregate access road from the main garrison to the main entrance of the wastewater treatment plant site, and entire aggregate road and parking network within the plant site. The roads shall be designed to carry traffic of a 40 metric-ton five-axle vehicle. A storm drainage system shall also be included.

The road layout within the plant site shall provide access to vehicular gates, parking lots, and plant facilities. Turnouts shall be provided at influent pump station area to allow pumper trucks to discharge their load in manhole upstream of pump station and at water tanker filling station to allow tanker trucks to park without impeding the flow of traffic through the plant site. Provide parking area for 10 vehicles inside the compound. Road design shall be designed per Section 01015, Technical Requirements.

The Contractor shall design and provide a network of aggregate sidewalks to connect the buildings. Roadways and sidewalks shall be designed and constructed based upon recommendations from geotechnical analysis as required herein.

4.8 FACILITIES

This project shall consist of the following facilities:

4.8.1 WASTEWATER TREATMENT AND DISPOSAL SYSTEM

The wastewater treatment plant shall include an influent pump station, headworks, administration/laboratory/chlorination building, three aeration ponds, three settling ponds, sludge pump station, and sludge drying beds. See Appendix B for flow schematic diagram of the plant and conceptual drawing of the headworks.

The wastewater disposal system shall include a polishing pond with water tanker filling station and plant effluent drainage channel. Water from the polishing pond that is not used to fill water tankers will discharge into the drainage channel. Two potential locations for the effluent drainage channel are shown in Appendix B. The contractor shall develop one of these or another option for safely disposing discharge from the polishing pond away from the project site.

The plant shall be designed to handle wastewater flow for 12,000 people having a wastewater generation rate of 125 liters per person per day. The structures for the influent pump station, chlorination portion of the administration/laboratory/ chlorination building, and sludge pump station shall be designed to handle a build-out flow for 24,000 people. These structures shall be designed so that they may be expanded in the future by adding only additional equipment (e.g., pumps), piping, fittings, etc. to handle up to the build-out flow. The headworks shall be designed to handle a build-out flow for 24,000 people.

The facilities shall be situated on the plant site to allow expansion from 12,000 to 24,000 people within the site boundaries. Future facilities shall be shown in design submittals. Piping, valves, stubouts, and other appurtenances shall be provided to facilitate connections to future facilities.

A geotechnical investigation of the proposed sewage treatment site is required and the contractor shall design the sewage treatment system to be compatible with site and soil conditions.

4.8.2 ADMINISTRATION/LABORATORY/CHLORINATION BUILDING

The Contractor shall design and construct a single Administration/Laboratory/Chlorination Building. See Appendix B, Control Building Floor Plan as a possible layout solution.

Heating and Air Conditioning: Split pack air conditioning, in addition to ceiling fans, shall be provided for the Administration Office, Control Room and Laboratory. The A/C system of the Administration office, Control Room and Laboratory shall each be sized to accommodate 2 personnel with 2 computers plus the operational load of equipment in the space and infiltration / outside air ventilation. Provide an exhaust fan and unit heater in the Toilet room. Provide unit heater in the Storage Room.

Chlorination & Service Water Room: Provide corrosion resistant exhaust fan, unit heater, outside air wall louver with motorized damper interlocked with fan, manual and thermostat control of exhaust fan. Note: it is the intent of this design to provide exhaust for the room to prevent buildup of chlorine out gas from liquid or solid based chlorine chemical stored in the room. Gaseous chlorine will not be stored or used in this room.

Plumbing Domestic Water, Waste & Vent: Provide Domestic water service, 40mm minimum, riser in Chlorination and Service Water Room. Install service isolation valve and double check backflow valve on riser. Install 150L electric water heater in storage room. Extend hot and cold water service to Toilet Room and Laboratory Room. Provide basin style mop sink in toilet room.

Laboratory: Provide emergency eyewash and chemical resistant floor drain. Provide acid & chemical resistant deep double tub sink with acid resistant side board designed for chemical laboratory use. Provide lavatory style high swivel goose neck faucet. Provide hand wash lavatory with faucet. Provide two acid resistant floor drains in addition to the drain at the eyewash.

Chlorination & Service Water Room: Provide 25mm water service line & trench drain. Install two floor drains. Slope floor to floor drains. Install separate double check valve on water line serving equipment in the room. Extend water line to serve equipment to be installed in the room.

4.9 HVAC, HEATING VENTILATION AIR-CONDITIONING
Environmental control of the facilities shall be achieved by HVAC equipment proposed by the contractor and approved by the U.S. Government. See section 01015 for scope of work required.

4.10 LIFE SAFETY
Design and Construct circulation pathways in accordance with building code references herein. Fire sprinkler system is not required. The facility shall comply with all other safety requirements as required within references. Smoke detectors and fire alarm systems shall be installed in accordance with requirements herein.

4.11 LIGHTING
General lighting shall be provided as indicated and shall meet recommendations from IESNA for each building type and function within each

building. Design and installation shall meet NEC 70 requirements. Exterior lighting shall be high intensity discharge luminaires on 10 meter high minimum spun aluminum or galvanized steel poles. If to be installed on an existing installation, type of luminaries shall match existing predominant type within installation.

4.12 FOUNDATION DESIGN
Foundations, including subgrade, shall be designed and constructed based on recommendations from geotechnical investigation required herein.

5. COMPLETION OF WORK
See Section titled “Design Build Process” for performance schedule.

6. REFERENCES
Refer to Section 01015 for required references.

-- END OF SECTION --

SECTION 01015

TECHNICAL REQUIREMENTS – DESIGN/BUILD

1.0 GENERAL

1.1 COMPLIANCE

The Contractor's design and construction must comply with technical requirements contained herein. The designer shall have a minimum of 5 years experience with the design and construction of the same magnitude and complexity as required in this project. The Contractor shall provide design and construction using the best blend of cost, construction efficiency, system durability, ease of maintenance and environmental compatibility.

1.2 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 material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from the Contracting Officer.

1.3 SAFETY

1.3.1 UNEXPLODED ORDNANCE (UXO)

1.3.1.1 UXO/MINE DISCOVERY DURING PROJECT CONSTRUCTION

It is the responsibility of the Contractor to be aware of the risk of encountering UXO/Mines and to take all actions necessary to assure a safe work area to perform the requirements of this contract. It is highly recommended that all construction ground guide / ground observation personnel maintain a minimum 16 meter buffer zone from all heavy equipment during excavation activities. A daily check of the area for signs of recently emplaced UXO/IED’s is also highly recommended, to include unusual disturbed soil areas or mounds of soil from the previous day. If during construction, the contractor becomes aware of or encounters UXO/Mine or potential UXO/Mine, the contractor shall immediately stop work at the site of encounter, clearly mark the area of UXO/Mine, move to a safe location, notify the COR, and mitigate any delays to scheduled or unscheduled contract work. Once the contractor has informed the COR, the contractor will await further direction. The Contractor assumes the risk of any and all personal injury, property damage or other liability arising out of or resulting from any Contractor action taken hereunder.

Note: The Contractor and its subcontractors may not handle, work with, move, transport, render safe, or disarm any UXO/mine, unless they have appropriate accreditations from the UNMACA.

1.4 LIMITATION OF WORKING SPACE

The Contractor shall, except where required for service connections or other special reason(s) confine his operations strictly within the boundaries of the site. Workmen will not be permitted to trespass on adjoining property. Any operations or use of space outside the boundaries of the site shall be by arrangement with all interested parties. It must be emphasized that the Contractor must take all practical steps to prevent his workmen from entering adjoining property and in the event of trespass occurring the Contractor will be held entirely responsible.

Areas located immediately outside the construction area are known to contain mines and unexploded ordnance (UXO). Contractors assume all risks when venturing in or out of the designated work area.

1.5 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.

1.6 SUBCONTRACTORS

Compliance with the provisions of this section by subcontractors will be the responsibility of the contractor.

1.7 LIST OF CODES AND TECHNICAL CRITERIA:

The following codes and technical criteria and those referenced therein shall be required for this project. References within each reference below shall be required and adhered to. If there is conflict in the criteria the most stringent requirement shall be applied. This list is not exhaustive and is not necessarily complete. The publications to be taken into consideration shall be those of the most recent editions.

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

ACI 301M Specifications for Structural Concrete - latest edition, American Concrete Institute

ACI 318 Building Code Requirements for Structural Concrete - latest edition, American Concrete Institute

ACI 530/ASCE 5/TMS 402, Building Code Requirements for Masonry Structures - latest edition

A/E/C CAD Standards, V3.0 (or newer) available online at: https://cadbim.usace.army.mil/default.aspx?p=s&t=13&i=4

AISC 360 Specification for Structural Steel Buildings - latest edition, American Institute of Steel Construction

American Water Works Association, ANSI/AWWA C651-99 standard

ARI - Air Conditioning and Refrigeration Institute

ASCE 7, Minimum Design Loads for Buildings and Other Structures - latest edition

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

Engineers Handbooks latest editions: Fundamentals; HVAC Systems and Equipment; HVAC Applications; Refrigeration.

ASHRAE Standard 55-latest edition, Thermal Environmental Conditions for Human Occupancy

ASHRAE Standard 62.1-latest edition, Ventilation for Acceptable Indoor Air Quality

ASME - American Society for Mechanical Engineering

ASTM - American Society for Testing and Materials

ASTM-D-1586 Standard Test Method for Standard Penetration Test

ASTM-D-5299 Standard Guide for Decommissioning Ground Water Wells

AWS D1.1, Structural Welding Code for Steel - latest edition, American Welding Society

DCID 6/9 Physical Security Standards for Sensitive Compartmented Information Facilities

DCID 1/21, Manual for Physical Security Standards For Sensitive Compartmented Information Facilities (SCIF)

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

Factory Mutual (FM) Approval Guide-Fire Protection, latest edition

IBC - International Building Codes - latest edition (and its referenced codes including those inset below)

IEEE C2, National Electrical Safety Code (NESC), latest edition

IFGC – International Fuel Gas Code, latest edition

IMC – International Mechanical Code, latest edition

IPC – International Plumbing Code, latest edition

Lighting Handbook, IESNA, latest edition

MIL-HDBK-1190, Facility Planning and Design Guide

Codes and Standards of the National Fire Protection Association (NFPA)

[as applicable and enacted in 2002 or later, unless otherwise noted]

NFPA 1, General Fire Protection, latest edition

NFPA 10, Portable Fire Extinguishers, latest edition

NFPA 13, Fire Sprinkler Code, latest edition

NFPA 30, Flammable and Combustible Liquids Code, latest edition

NFPA 54, National Fuel Gas Code, latest edition

NFPA 70, National Electrical Code, latest edition

NFPA 72, National Fire Alarm Code, latest edition

NFPA 75, Standard for the Protection of Information Technology Equipment

NFPA 80, Fire Rated Doors and Windows, latest edition

NFPA 90A, Air Conditioning and Ventilating Systems, latest edition

NFPA 101, Life Safety Code, 2009 edition

NFPA 110, Standard for Emergency and Standby Power Systems, latest edition

NFPA 1141, Site Fire Protection, latest edition

Plumbing and Drainage Institute (PDI-WH-201) water hammer arrestors

SMACNA - Sheet Metal and Air Conditioning Contractors' National Association, Standards and Guides, latest editions

International Mine Action Standards, latest edition; (see http://www.mineactionstandards.org for copy of standards)

TM 5-785 Weather Data

TM 5-802-1 Economic Studies

TM 5-805-4 Noise and Vibration

TM 5-811-1 Electrical Power Supply and Distribution

UFC 1-200-01, Design: General Building Requirements

UFC 1-300-07A, Design Build Technical Requirements

UFC 3-220-03fa, Soils and Geology

UFC 3-230-03a, Water Supply, 16 Jan 2004

UFC 3-230-04a, Water Distribution, 16 Jan 2004

UFC 3-230-06a, Subsurface Drainage, 16 Jan 2004

UFC 3-230-07a, Water Supply: Sources and General Considerations, 16 Jan 2004

UFC 3-230-08a, Water Supply: Water Treatment, 16 Jan 2004

UFC 3-230-09a, Water Supply: Water Storage, 16 Jan 2004

UFC 3-230-10a, Water Supply: Water Distribution, 16 Jan 2004

UFC 3-230-13a, Water Supply: Pumping Stations, 16 Jan 2004

UFC 3-230-17FA, Drainage in Areas Other than Airfields, 16 Jan 2004

UFC 3-240-03N, Operation and Maintenance: Wastewater Treatment System Augmenting Handbook, 16 Jan 2004

UFC 3-240-04a, Wastewater Collection, 16 Jan 2004

UFC 3-240-09fa Domestic Wastewater Treatment 16 Jan 2004

UFC 3-240-07fa Gravity Sewers 16 Jan 2004

UFC 3-240-04A Wastewater Collection 16 Jan 2004

UFC 3-260-01, Airfield and Heliport Planning and Design, 1 Nov 2001 with changes dated 19 May 2006

UFC 3-260-02, Pavement Design for Airfields, 30 June 2001

UFC 1-300-09N, Design Procedures

UFC 3-310-01, Structural Load Data

UFC 3-310-02A, Structural Design Criteria for Buildings

UFC 3-400-01, Design: Energy Conservation, latest edition

UFC 3-410-01FA Heating, Ventilating and Air Conditioning, latest edition

UFC 3-410-02A, HVAC Control Systems, latest edition

UFC 3-410-04N, Industrial Ventilation, latest edition

UFC 3-420-01, Plumbing Systems Design, latest edition

UFC 3-430-01FA, Heating and Cooling Distribution Systems, latest edition

UFC 3-460-01, Petroleum Fuel Facilities, latest edition

UFC 3-501-01, Electrical Engineering, 3 Feb 2010

UFC 3-520-01, Interior Electrical Systems, 3 Feb 2010

UFC 3-530-01AN, Design: Interior and Exterior Lighting and Controls, 22 Aug 2006

UFC 3-535-01, Visual Air Navigation Facilities, 17 November 2005

UFC 3-540-04N Design: Diesel Electric Generating Plants, 16 Jan 2004

UFC 3-550-03 Design: Electrical Power Supply and Distribution Systems, 3 Feb 2010

UFC 3-600-01, Design: Fire Protection Engineering for Facilities, 26 Sept 2006

UFC 4-010-01, Design: Minimum DoD Antiterrorism Standards for Buildings, 22 Jan 2007

UFC 4-020-03FA, Security Engineering: Final Design, 1 Mar 2005

UFC 4-020-04A, Electronic Security Systems: Security Engineering, 1 Mar 2005

UFC 4-021-01, Design and O&M: Mass Notification Systems, 9 Apr 2008

UFC 4-022-01, Security Engineering: Entry Control Facilities/Access Control Points, 25 May 2005

UFC 4-022-03, Security Engineering: Fences, Gates, and Guard Facilities, 14 June 2007

UL Standards (as applicable)

UL 752, Bullet Resisting Equipment, 2000 or later

USCINCCENT OPORD 97-1

Overseas Environmental Baseline Guidance Document, Department of Defense, May 2007

Unified Facility Criteria (UFC) is available online at http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

In addition, technical criteria provided in USACE-AED Design Requirements (most recent version) shall be required for use in design and construction specifications as indicated in the following documents. The following design criteria shall be used:

AED Design Requirements – Voltage Drop Calculations Process, latest version

AED Design Requirements – Breaker and Conductor Sizing, latest edition

AED Design Requirements - Site Layout Guidance, latest version

AED Design Requirements - Well Pumps & Well Design, latest version

AED Design Requirements – Water Tanks and System Distribution, latest version

AED Design Requirements - Booster Pumps, latest version

AED Design Requirements – Chlorinators, latest version

AED Design Requirements - Hydro-Pneumatic Tanks, latest version

AED Design Requirements - Jockey Pumps, latest version

AED Design Requirements – Hydrology, latest version

AED Design Requirements - Culvert and Causeways, latest version

AED Design Requirements - Sanitary Sewer and Septic System, latest version

AED Design Requirements - Grease Trap Design, latest version

AED Design Requirements - Oil/Water Separators, latest version

AED Design Requirements - Package Wastewater Treatment Plants and Lagoons, latest version

AED Design Requirements - Vertical Curve Design, latest version

AED Design Requirements – Superelevation Road Design, latest version

AED Design Requirements – CERP Road – Geometric Requirements and Flexible Pavement Section Design

AED Design Requirements – Geotechnical Investigations, latest version

AED Design Requirements – CAD Design Guide

AED Design Requirements – Mechanical Guide

Standards other than those mentioned above may be accepted if the standards chosen are internationally recognized and meet the minimum requirements of the specified standards. The Contractor shall be prepared to submit proof of this if requested by the Contracting Officer.

1.8 AED DESIGN REQUIREMENTS DOCUMENTS

Unless specifically stated herein, AED Design Requirements documents (latest version) listed above shall be adhered to in this contract. These documents are available from the AED-N website located at: http://www.aed.usace.army.mil/engineeringtop2010.asp. These documents shall be used as the basis for design and construction, and for selecting options within the United Facilities Guide Specifications (UFGS). It is the contractor’s option to use specifications contained in the AED Design Requirements Documents, when provided, or to adapt the UFGS specifications to match the requirements provided in the AED Design Documents and specifications. Site or project specific data and requirements in the AED Design Requirements documents shall supersede UFGS language where there are differing criteria which must be evaluated and selected.

2.0 SITE DEVELOPMENT

2.1 GENERAL

The project includes furnishing all materials, equipment and labor for constructing electrical, water, communication, sanitary sewer and storm sewer service lines, as applicable, and connecting to the existing utility networks.

2.2 ENVIRONMENTAL PROTECTION

The Contractor shall comply with all requirements of Section 01355 ENVIRONMENTAL PROTECTION.

2.3 CIVIL SITE DEVELOPMENT

2.3.1 SITE PLAN

The contractor shall prepare plat or plan of property as part of the design package consists of a Boundary Survey of the new wastewater treatment plant site located at Camp Shaheen in the city of Mazar E Sharif, Afghanistan. The survey shall show the closure of the property boundary consisting of identifying all property corners, establishing horizontal and vertical control listing all bearing and distances of property lines from the centerline of all adjacent roads. The contractor shall place property corner markers and a monument on the property showing site elevations, coordinate grid systems and WGS 84 latitude longitude. This survey shall meet the requirements of World Geodetic System 1984 in decimal degrees. The survey design shall include topographic map and the locations of all building corners, structures, major trees, road right of ways, names of roads, widths of roads, easements, right of ways, setbacks, parking and paving areas, storage containers, stoops, sidewalks and walkways, above ground utilities, electrical and bunker locations. The contractor shall identify and show perimeter walls, fences, Hesco barriers, guard towers and entry control point structures. The contractor shall locate the facilities in general agreement with the drawings included and any requirements in the Scope of Work 01010. All site features shall be clearly defined and dimensioned on the site plan. Buildings shall be located to provide access for emergency vehicles and fire fighting. Roads and parking areas shall be designed for turning radius of the largest vehicle entering the compound. The site plan shall show geometric design of the site, including applicable dimensions of all exterior facilities, mechanical equipment, pavements, utilities, etc. Required facilities are described in the following sections of this specification. All roads and areas where tractor-trailer vehicles will travel shall be designed for the worst case turning radius. Design and construction of roads and pavements shall be based on recommendations from geotechnical investigation required herein. All site plans and master plans shall be drawn in the following projection and datum for incorporation into the U.S. Army Corps of Engineers GIS system:

WGS 1984 UTM Zone 42 N

2.3.2 DEMOLITION

Demolition shall include removal of all structures, foundations, pavements, and utilities, to include clearing and grubbing. All refuse and debris shall be disposed of off-site as described in paragraph DISPOSAL. Holes and

depressions shall be backfilled and compacted in lifts not to exceed 200 mm in height unless specified otherwise. Fill materials shall be composed of satisfactory soils or aggregates defined in ASTM D 2487 as GW, GP, GM, SP, SM, and SW. Minimum soil compaction shall be 95 percent of maximum density as defined in ASTM D 1557

Scrap metal shall be the property of the Host Government. The scrap metal on site shall be moved to an area away from the site perimeter as directed by the Contracting Officer's Representative and left for the Host Government to remove and/or salvage. Demolished fencing and concertina wire shall be neatly rolled up for reuse by the host government. Likewise, used fence posts and outriggers shall be neatly stockpiled for reuse by the host government.

2.3.3 SITE GRADING & DRAINAGE

The contractor will provide all necessary site grading to insure adequate drainage so that no areas will be flooded due to a rainfall of a 10-year frequency. Drainage of the area should be compatible with the existing terrain. Building floor elevation shall be a minimum 150mm above grade and slope away from the building on all sides at a minimum of 3% for 3 meters. Protection of facilities from flood waters originating offsite of an installation is required and shall be based on a rainfall for a 25-year frequency event. This shall include the design or evaluation of bridges, culverts and causeways on road projects.

Rainfall data utilized for hydrology calculations shall be based on data obtained from meteorological records collected in Afghanistan. National agencies may be consulted for data. In the absence of site specific data, intensity-duration-frequency curves contained in the AED Design Requirements – Hydrology, latest edition shall be used by extrapolating the rainfall intensity information from the stations in closest proximity to the project. Under no circumstances will relationships developed by extrapolation from foreign countries be used for hydrologic studies.

2.3.4 ROADS

Aggregate roads are required for access to the site and within the compound. All roads shall be a wearing surface 7.3 meters (24 feet) wide, unless otherwise noted, graded for proper drainage, provided with necessary drainage structures and completed with prescribed surfaces in accordance with applicable sections of UFC 3-250-18FA and UFC 3-250-01FA. Aggregate pavement surface should consist of 150mm (6 inches) thick aggregate base course material compacted to 95% maximum proctor density, placed above 150mm of scarified subgrade compacted to 95% maximum density. Provide 1.0 meter wide shoulder on both sides of roadways, consisting of a surface of aggregate base course material and it should be 150mm thick @ 2.0% slope. Contractor shall notify the Contracting Officer immediately if initial site survey determines that the area hydrology requires major drainage structures or bridges.

2.3.4.1 BRIDGES AND SITE GRADING PLAN

Preliminary investigation indicates no need for bridges or major drainage structures. The Contractor shall notify the Contracting Officer immediately if initial site survey determines that area hydrology requires major drainage structures or bridges. The contractor shall design a site grading plan that provides positive drainage and minimizes the requirement for major structures in a cost effective manner.

2.3.4.2 PARKING AREAS

Contractor shall construct parking and storage areas using aggregate surface. Aggregate pavement surface should consist of 150mm (6 inches) thick Aggregate Base Course (ABC) material compacted to 95% maximum proctor density, placed above 150mm of scarified subgrade compacted to 95% maximum density. Provide 1.0 meter wide shoulder around all parking areas and motor pools, consisting of a surface of an ABC material and it should be 150mm thick @ 2.0% slope.

The ABC material must be well graded, durable, uniformly moistened, and mechanically stabilized by compaction. Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure in ASTM D 1557

2.3.5 FORCE PROTECTION DESIGN

The Contractor shall design and construct force protection measures to include a complete perimeter fence. The Force Protection design shall incorporate minimum setbacks for new facilities to maximum extent possible as permitted by size of the site and the requirements of the user. Force protection design shall be in accordance with Joint Security Directorate Antiterrorism/Force Protection Guide, March 2002. Force Protection design shall also meet the requirements of UFC 4-010-01, Design: Minimum DoD Antiterrorism Standards for Buildings, 8 Oct 2003 and UFC 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings, 8 Oct 2003 and Joint Security Directorate Antiterrorism/Force Protection Guide, March 2002.

See Appendix B for standard details for Perimeter Fence.

2.3.5.1 OUTRIGGERS

Outrigger supporting arms shall be “Y” shaped with 50 mm diameter metal tube middle post, securely embedded 400 mm into the top of the wall. Posts shall conform to ASTM F 1083, Pipe, Steel, Hot Dipped Zinc Coated (Galvanized) Welded. Outriggers shall be spaced a maximum of 3000 mm on center.

2.3.5.2 REINFORCED BARBED TAPE

Reinforced barbed tape shall be 600 mm diameter concertina style coil consisting of 31 loops. Each loop shall consist of 19 barb clusters per loop. Adjacent coils loops shall be alternately clipped together at three points about the circumference to produce the concertina effect upon deployment. Spacing between attachments points when deployed shall be 400 mm. The reinforced barbed tape shall be fabricated from 430 series stainless steel with hardness range of Rockwell (30N) 37-45 conforming to the requirements of ASTM A 176. Each barb shall be a minimum of 30.5 mm (1.2 inch) in length, in groups of 4, spaced on 102 mm (4 inch) centers. The stainless steel core wire shall have a 2.5 mm (0.098 inch) diameter with a minimum tensile strength of 895 MPa. Sixteen gauge stainless steel twistable wire ties shall be used for attaching the barbed tape to the barbed wire. The reinforced barbed tape shall be equivalent to NSN: 5660-01-457-9852.

2.3.5.3 CHAIN-LINK FENCE AND GATES

Provide chain-link fence and gates around the new wastewater treatment plant site. Chain link fence and gate fabric shall be No. 9 gage wires woven into a 50 mm diamond mesh. Fabric shall be coated with 366 grams per square meter

zinc galvanizing. Posts shall be ASTM F 1083 Pipe, Steel, Hot Dipped Zinc Coated (Galvanized) Welded or equal. Top of fence and gates shall be provided with outriggers and reinforced barbed tape as indicated above. Post sizes shall be as shown on drawings.

The gates shall be swing type. Hinged gates shall be a pair of 3.00 m wide x 2.4 m high leafs, constructed of a steel tube frame and steel tube intermediate posts and rails. The design of the gates shall insure that it is dimensionally stable, square, true and planar. Gate leafs shall not rack or deflect when install on its hinges. Gates shall have a sufficient number of hinges; anchor mounted to the exterior masonry walls, to support each gate leaf. Provide a locking mechanism that holds the gates together when in the closed position as well as a drop bolt that engages a steel sleeve embedded in the pavement.

2.3.5.4 SNIPER SCREEN

Sniper screen material will be ultraviolet light resistant and guaranteed against sunlight degradation for five years. Material will allow wind to blow through, without stretching the material, or distorting the frame. Sniper screen material will be fastened to standard galvanized fencing (see above) mounted to a rigid frame. The frame shall be securely embedded into the top of the wall. Frame components shall conform to ASTM F 1083, Steel Pipe, Hot Dipped Zinc Coated (Galvanized Welded.

2.3.6 LOUDSPEAKERS AND ALARM SYSTEM

Install Loud Speaker & Alarm System that can alert the entire compound via panic button from any tower or guard post station. Speaker & Alarm System shall be exterior grade components to withstand severe weather conditions of cold, heat, rain, sleet, and dust storms and to be completely understandable during these conditions from any point within the compound. All wires shall be installed in conduits.

2.4 CIVIL UTILITIES

2.4.1 WATER

2.4.1.1 GENERAL

The Contractor shall provide water distribution mains, branches, service connections to include all pipe, valves, bends, thrust blocking, fittings and appurtenances. Exterior water line construction shall include service to all buildings as described in the Scope of Work Section 01010. The required average daily flow (ADF) shall be the average daily demand (ADD) per person - derived from 155 liters (or 41 gallons) per capita per day (lpcd) – times a capacity factor, times the effective population. A capacity factor of 1.5 shall be used if the effective population is less than or equal to 5,000. The capacity factor for larger populations is found in UFC 3-230-07a, Water Supply: Sources and General Considerations guidance. The capacity factor shall be utilized as described in the following paragraph. 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) outside water hydrant (hose spigot) for all buildings with water service. All buildings with water supply

shall have a water meter installed in a locked cabinet area inside the building.

Features of the water system shall be sized to provide flow or storage capacity as follows:

- Booster Pumps – For installations with fewer than 400 persons, the capacity shall be based on the installation wide, total fixture unit flow. For installations with greater than 400 persons, the capacity shall be based on the installation wide, total fixture unit flow or 2 times the average daily flow (16 hour basis), whichever is greater. Three identical pumps shall be provided which are all sized to deliver 50% of the calculated capacity. Pumps shall automatically alternate to distribute wear and shall automatically turn on and off based on demand and system pressures. The total dynamic head (TDH) of the booster pumps shall be calculated to maintain a minimum, residual system pressure of 40 psi at the calculated capacity unless stated otherwise in the contract documents. Either a bladder style expansion tank or a hydro-pneumatic tank shall be supplied when booster pumps are used in the water system.

- Hydro pneumatic tanks – Volume and pressure regulation to maintain a pressure range provided in the technical requirements based on a rate equal to the ADF (ADD x c x CF).

- Water Mains – Diameter based on the installation fixture unit flow or two times the ADF (ADD x c x CF) and velocity requirements per this guide unless a minimum diameter is specified which is adequate to provide flow and meet the specified maximum velocity. The flow through the system shall be distributed on the basis of fixture unit flow in each the buildings serviced or per contract

- Water Service Lines - Diameter based on fixture units of the building serviced or per contract

2.4.1.2 SERVICE BOOSTER PUMPS

Contractor shall provide a booster pump station with capacities defined above 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). Provide suitable expansion tank for booster pump system sized for anticipated pressure surges, if hydro pneumatic tanks are not to be used. 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 gage and air relief valve.

2.4.1.3 HYDRO-PNEUMATIC WATER STORAGE TANK

The Contractor shall provide horizontally mounted and insulated above ground hydro-pneumatic tank(s) containing water and compressed air located adjacent to the well house to maintain system pressures between 275 kPa to 282 kPa (40 psi to 70 psi). A compressor is required to charge the tank with air. At low

level the water remaining in the tank shall be at least ten percent of the capacity of the tank. The tank size shall be determined such that the pump cycles not less than 4 times per hour nor more than 10 times per hour. Storage may be divided between duplicate units in cases where a single tank would be too long to easily transport to the site. Volume of the tank shall be a minimum storage volume of a full days demand. 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.

2.4.2 WATER DISTRIBUTION SYSTEM

2.4.2.1 GENERAL

The Contractor shall provide a water distribution system. The distribution network shall be laid out in a combination grid and looped pattern with dead ends not exceeding 30m (99 feet). Use similar piping materials for all buildings and pipe runs in the distribution system for efficiency of future maintenance activities. Distribution lines shall not be less than 100mm (4 inches) in diameter. Dead end sections shall not be less than 150mm (6 inch) 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 (6 inch) in diameter. Water supply distribution shall connect to a building service at a point approximately 1.5m (5 feet) outside the building or structure to which the service is required. All piping and joints shall be capable of at least 1.03 MPA (150 psi) leakage testing and 1.38 MPa (200 psi) hydrostatic test pressure, unless otherwise specified. Pipe diameters shall be adequate to carry the maximum flow of water at velocities less than 1.5m/sec (5 ft/sec). Piping segments where velocities less than 0.15 m/sec (0.5 ft/sec) are anticipated shall be noted and brought to the attention of AED.

The operating pressure range for the distribution system shall be between 276kPa (40 psi) and 480kPa (70 psi) at all points of the distribution system. If pressures greater than 480kPa (70 psi) cannot be avoided, pressure-reducing valves shall be used. A system pressure below 40 psi shall be considered a deviation in the technical requirements requiring Contracting Officer approval.

Contractor shall not use uPVC or HDPE pipe and fittings without specific approval from AED through the variation process. This applies even if the existing project water distribution system had this pipe material. Pipe material shall meet the requirements of Pipe below

Adequate cover must be provided for frost protection. A minimum cover of 800mm (2’-8”) is required to protect the water distribution system against freezing. Water lines less than 1.25 meters (4 feet) deep under road crossings shall have a reinforced concrete cover of at least 150 mm (6 inch) thickness around the pipe extending out to 1m from each road edge.

2.4.2.2 PIPE

The Contractor shall provide pipe of adequate strength, durability and be corrosion resistant with no adverse effect on water quality.

2.4.2.2.1 WATER MAINS AND BRANCHES

Pipe material for water mains and branches shall be PVC or Ductile Iron (DI). The exterior surface of the pipe must be corrosion resistant. Distribution lines shall be 100mm (4 inch) and larger and shall be reduced only at the junction of building connections. Pipe diameters shall be selected to meet the previously specified flow, velocity, and pressure conditions. If Ductile Iron (DI) pipe is installed underground the pipe shall be encased with polyethylene in accordance with AWWA C105. Ductile iron pipe shall conform to AWWA C104. 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. DI fittings shall be cement mortar lined (standard thickness) in accordance with C104. All pipes and joints shall be capable of at least 1.03 MPa (150 psi) and 1.38 MPa (200psi) hydrostatic test pressure unless otherwise specified herein. 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, Schedules 40, 80 and 120. Pipe less than 80mm (3 inch), 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.

2.4.2.2.2 WATER SERVICE

Building service lines will be sized according to the following guidance. Water service connections from the mains to the buildings shall vary from 19mm, 25mm, 38mm, 75mm, to 100mm as calculated, depending on the maximum flow velocity and minimum pressure requirements as determined by hydraulic analysis of fixture flows. 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. PVC pipe couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. Contractor shall not use HDPE for any of the water pipes.

2.4.2.3 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 concrete thrust blocking, unless otherwise approved. Pressure and leakage testing shall be as specified in AED Design Requirements – Water Tank and Water Distribution Systems, latest version.

2.4.2.3.1 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 1.38 MPa (200 psi). 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.

2.4.2.3.2 LEAKAGE TEST

Leakage tests shall be conducted after all pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least 2 hours, and, during the test, water lines shall be subjected to not less than 1.38 MPa (200 psi). 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 (5 psi) of the specified leakage test pressure after the pipe has been filled with water and all air expelled. Pipe installation will not be accepted if leakage exceeds the allowable leakage, as determined by the following formula:

L = 0.0001351ND (P raised to 0.5 power), where:

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

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.

2.4.2.3.3 BACTERIOLOGICAL DISINFECTION

2.4.2.3.3.1 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 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.

2.4.2.3.3.2 SAMPLING

For each building connected to the water system, personnel from the 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. Contractor shall submit a water sampling protocol for approval. This shall include at a minimum the name of the laboratory, parameters to be tested, the Company conducting the sampling, and the sample locations.

2.4.2.3.3.3 ACCEPTANCE REQUIREMENTS

The disinfection shall be repeated until tests indicate the absence of bacteria for at least 2 full days. The unit will not be accepted until satisfactory bacteriological results have been obtained. All retests shall be conducted at the Contractor’s expense.

2.4.2.3.4 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.

2.4.2.3.5 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. Pressure and leakage testing may be conducted concurrently. 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.

2.4.2.4 VALVES

2.4.2.4.1 GATE AND BUTTERFLY VALVES

Valves (Gate valves w/box) shall be placed at all pipe network tees 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 3600 mm (12 feet). 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 (3’-4”) square, for all valve boxes. Valves shall be pressure rated to 1.38 MPa (200 psi).

2.4.2.4.2 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.

2.4.2.4.3 BLOW-OFF VALVES

The Contractor shall provide 40-50mm (1-5/8″ – 2″) 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.

2.4.2.5 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.

2.4.3 SANITARY SEWER

2.4.3.1 GENERAL

There are existing sanitary sewer collection, treatment and disposal facilities at this 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 (4 feet) under road crossings shall have reinforced concrete cover at least 150 mm (6 inch) thick around the pipe. Concrete cover will extend out to at least 1 m from each road edge.

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 the initial occupancy and a reasonable expansion capability. Sewer collection capacity shall be based on the two times the average daily wastewater flow unless minimum diameter specified is adequate to provide flow and required maximum velocity; wastewater flow through the system shall be distributed on the basis of fixture unit flow in each the buildings serviced by multiplying the proportion of the total fixture flow from each building or facility times the total wastewater flow for the project or installation as determined above.

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.

The Contractor shall use the following criteria where possible to provide a layout which is practical, economical and meets hydraulic requirements:

a. Follow slopes of natural topography for gravity sewers.

b. Check subsurface investigations for groundwater levels and types of subsoil encountered. If possible, avoid areas of high groundwater and the placement of sewers below the groundwater table.

c. Avoid routing sewers through areas which require extensive restoration or underground demolition

d. Depending upon the topography and building locates, 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. The intent is to provide future access to the lines for maintenance without impacting vehicular traffic.

e. Avoid placing manholes in low-lying areas where they could be submerged by surface water or subject to surface water inflow. In addition, all manholes shall be constructed 50 mm higher than the finished grade, with the ground sloped away from each manhole for drainage.

f. Sewer lines shall have a minimum of 800 mm of cover for frost protection.

g. Locate manholes at change in direction, pipe size, or slope of gravity sewers.

h. Sewer sections between manholes shall be straight. The use of a curved alignment shall not be permitted.

i. If required by the design, locate manholes at intersections of streets where possible. This minimizes vehicular traffic disruptions if maintenance is required.

j. Sewer lines less than 1.25 meters deep under road crossings shall have a reinforced concrete cover of at least 150mm thickness around the pipe or shall utilize a steel or ductile iron carrier pipe. It is recommended to continue the reinforced concrete cover or carrier pipe a minimum of one (1) meter beyond the designated roadway.

k. Verify that final routing selected is the most cost effective alternative that meets service requirements.

2.4.3.2 PROTECTION OF WATER SUPPLIES

The Contractor shall ensure that the sewer design meets the following criteria:

a. Sanitary sewers shall be located no closer than 30m (100 feet) horizontally to water wells or reservoirs to be used for potable water supply.

b. Sanitary sewers shall be no closer than 3 m (10 feet) horizontally to potable water lines; where the bottom of the water pipe will be at least 300mm (12 inches) above the top of the sanitary sewer, horizontal spacing shall be a minimum of 1.8m (6 feet).

c. 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 (9 feet) on each side of the crossing. Pressure pipe will be as required for force mains in accordance with local standards and shall have no joint closer than 1m (3 ft) horizontally to the crossing, unless the joint is fully encased in concrete.

2.4.3.3 QUANTITY OF WASTEWATER

The Contractor shall verify the average daily flow considering both resident (full occupancy) and non-resident (8hr per day) population. The average daily flow will represent the total waste volume generated over a 24-hour period, and shall be based on the total population of the facility and water usage rate of 155 liters (41 gallons) per capita per day (water usage). The wastewater flow rate shall be calculated as approximately 80% of water usage rate, or 124 liters (33 gallons) per capita per day times the capacity factor requirements.

2.4.3.4 GRAVITY SEWER

Sanitary sewers shall be designed in accordance with the AED Design Requirements for Sanitary Sewer and Septic Systems, latest version to flow at a maximum in the following way: 1) sanitary sewer laterals, mains and trunk lines flow velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps) or 2.0 feet per second (fps), 2) a minimum velocity of 0.8 to 1.05 mps (2.5-3.5fps) at the peak diurnal flow rate, 3) flows shall be based on allocating the proportion of the average daily or peak daily flow to each building or facility on the basis of fixture unit flow developed for the plumbing design, and 4) minimum pipe slopes shall be provided regardless of the calculated flow velocities to prevent settlement of solids suspended in the wastewater. Minimum pipe slopes are provided in the AED Design Requirements for Sanitary Sewer and Septic Systems.

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 800 mm (2’-8”) will be required to protect the sewer against freezing.

2.4.3.4.1 MANHOLES

The Contractor shall provide standard depth manholes (MH), (depth may vary) an inside dimension of 1.2m (4 ft). Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover. Alternate pre-cast manhole option shall taper to a 750 mm (30-inch) cast iron frame that provides a minimum clear opening of 600 mm (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. Sanitary sewer lines shall enter at the manhole flow line. Where the invert of the inlet pipe would be more than 0.5 meter above the manhole floor, a drop inlet shall be provided. No internal drop structures shall be permitted at lift stations. Inlet to lift station wet wells shall enter below the lowest water level of the pump operating range, and if necessary a drop inlet approach pipe external to the lift station may be used to avoid cascading influent flow.

2.4.3.4.2 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. Manholes shall be installed at start of all main runs.

2.4.3.4.3 SPACING

The distance between manholes must not exceed 120m (400 ft) in sewers of less than 460mm (18 in) in diameter. For sewers 460mm (18 in) 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 sedimentation of solids.

2.4.3.4.4 PIPE CONNECTIONS

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

2.4.3.4.5 FRAMES AND COVERS

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

2.4.3.4.6 STEPS FOR MANHOLES

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

2.4.3.5 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 380 mm (15inch) or less in diameter. PVC shall be certified as meeting the requirements of ASTM D 1784, cell Class 12454 B. Minimum pipe sizes for the main lines shall be 200mm (8 inch) diameter and service lines/laterals shall be a minimum of 150 mm (6 inch) diameter. Smaller diameters shall not be used.

2.4.3.5.1 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.

2.4.3.5.2 JOINTS

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

2.4.3.5.3 BRANCH CONNECTIONS

Branch connections for new piping installations shall be made using regular fittings. Branch connections for upgrades or repairs may be made using regular fittings or solvent-cemented saddles as approved. Saddles for PVC pipe shall conform to Table 4 of ASTM D 3034.The minimum depth of the cover over the pipe crown shall be 0.8m (2 ft 8”).

2.4.3.5.4 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. Tee connections to the main or branch are not allowed. Service connection lines will be a minimum of 150 mm (6 inch) diameter and laid at a minimum 1% grade. Service laterals shall be at least 150 mm (6 inch) and sloped to maintain the minimum velocity as described in paragraph “Gravity Sewer.”

2.4.3.5.5 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 150mm (6 in). Cleanouts shall be located within 1m from the building.

2.4.3.6 FIELD QUALITY CONTROL

2.4.3.6.1 FIELD TESTS AND INSPECTIONS

The Contracting Officer will conduct field inspections and witness field tests specified in this section. The Contractor shall perform field tests and provide labor, equipment and incidentals required for testing.

Check each straight run of pipeline for gross deficiencies by holding a light in a manhole; it shall show a 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.

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.

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 and ASTM 969.

Low-pressure air tests: Perform tests as follows:

a. 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;

b. 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;

c. 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.

2.4.3.6.2 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.

2.4.4 WASTEWATER TREATMENT PLANT

2.4.4.1 WASTEWATER TREATMENT PLANT CAPABILITIES

The wastewater treatment system shall be designed to accommodate the total facility compound population as specified in the Scope of Work and verified by the Contractor with the project manger prior to design. System capacity shall be calculated based on a hydraulic waste load equivalent to 80 percent of the Average Daily Demand (ADD) water usage rate or calculated using methods provided in UFC 3-240-09fa, Domestic Wastewater Treatment guidance. The wastewater treatment plant shall be designed and constructed such that it operates with the ability to process inflow rates to the wastewater plant headworks based on the calculated peak hourly flow. Feed rate to the plant components shall be determined by the Contractor from the analysis of the installation peak flow and average daily flow evaluation.

2.4.4.2 REQUIREMENTS OF DESIGN

Design Population: See equivalent design population in Section 01010, 1. General.

Wastewater Hydraulic Load: Individual waste water generation rate of 80 percent domestic waster use as stated above.

Influent Characteristics of Wastewater:

BOD_5 – 400 mg/L or based on 0.09 kilograms (0.20 pounds) per person per day whichever is greater loading

TSS –400 mg/L

TKN – 80 mg/L

Fecal Coliform – 10^8 MPN /100 mL

Effluent Criteria Limitations for Direct Surface Water Discharge:

BOD_5

The 30-day average will not exceed 30 mg/L.

The 7-day average will not exceed 45 mg/L.

$CBOD_5$ may be substituted for BOD_5. In those cases the following limits will apply:

30-day average will not exceed 25 mg/L.

The 7-day average will not exceed 40 mg/L.

Note: Parameter $CBOD_5$ limit, if substituted for the parameter BOD_5, should be at least 5 mg/L less than each numerical limit for the 30 day and 7 day average for the BOD_5 limit. The $CBOD_5$ test procedure suppresses the nitrification component in the BOD_5 test procedure, thereby reducing the value or effects and lowering the oxygen demand.

TSS

The 30-day average will not exceed 30 mg/L.

The 7-day average will not exceed 45 mg/L.

pH

The effluent pH values will be maintained between 6.0 and 9.0.

Temperature Ranges: see the mechanical section for the range of temperatures that apply.

Processes: To be determined by the Contractor as part of the scope of work subject to Government approval as required in AED Design Requirements - Package Wastewater Treatment Plants and Lagoons latest version. They shall include the generic components: preliminary treatment, secondary treatment, sludge dewatering and disposal, effluent disposal including disinfection.

2.4.4.3 SITE SURVEY AND PLAN REQUIREMENTS

Topographic survey and geotechnical investigation of the proposed sewage treatment site is required and the Contractor shall design the wastewater treatment system to be compatible with site and soil conditions.

a. Wastewater Plant Site Survey. The Contractor shall conduct a topographic survey to determine existing site characteristics. The Contractor shall conduct a utility survey to determine the locations of any nearby security fences and buildings, water lines, wells, sanitary sewers, storm sewers and communication/electrical lines.

b. Sanitary Sewer Collection Network System Layout. The Contactor shall design modifications to the sanitary system layout required for the transport of wastewater to the influent pump station of the WWTP. Pipe, fittings, and connections shall conform to the respective specifications and other requirements as listed in Section 01015 and all of its referenced codes.

c. Wastewater Treatment Plant Layout. The Contractor shall design a layout for the system to include all basin geometry, wastewater inlet and lift station configurations, number of process compartments, yard piping, laboratory and operational buildings, aeration and disinfection equipment shelters and piping, effluent contact chambers and discharge facilities including the outfall system, and sludge drying and disposal facilities and related site preparation and earthwork. See wastewater treatment plant design submittal requirements.

2.4.4.4 CONSTRUCT ADMINISTRATION/LABORATORY/CHLORINATION BUILDING

Construct the Administration/Laboratory/Chlorination Building. A floor plan of this building is in Appendix B. Provide heating and cooling using a split pack heat pump unit, exhaust fan with makeup air opening and two counter mounted stainless steel sinks. Provide hot and cold water, drain and venting for the sinks. Provide a floor drain and hose bib to facilitate wash down of the laboratory.

2.4.4.5 SUBMITTAL REQUIREMENTS:

The Contractor shall perform all design work required to provide a fully functional wastewater treatment system for the project at 65% submittal as outlined in the AED Design Guide for WWTP Plants and in Section 01335.

2.4.4.6 STARTUP AND TESTING

All WWTP projects shall include a proposed start-up testing and training program in including operation and maintenance manuals. When the wastewater system construction nears completion and all units are operative, the contractor shall commence a commissioning and startup procedure for the treatment system. The treatment system includes all lift stations, force main, gravity sewers, treatment plant units and associated equipment, sludge holding and digestion, septage dump pad, and laboratory building. The contractor will operate the treatment facility for a trial period of three months performing all daily and weekly operation and maintenance (O&M) tasks recommended by the equipment manufacturer. The contractor shall utilize services of qualified operators; including the use of at least two Afghan Nationals that the contractor shall train. During the routine O&M, the

contractor shall perform all sampling and testing necessary to ensure proper daily operations in achieving the required effluent standards. The contractor shall maintain a log that includes records of daily O&M activities, e.g. repairs, inflow measurement, aeration cycles, effluent cycling, waste and return sludge pumping, and sludge drying. The contractor shall also maintain and operate the sludge disposal operation during the trial period.

2.4.5 STORM SEWER SYSTEMS

2.4.5.1 DESIGN STORM RETURN PERIOD (BASELINE FREQUENCY)

Developed portions of the site installation such as administration, industrial and barracks areas, shall be based on a rainfall of 10-year frequency. Basic system design shall be in accordance with UFC 3-230-17A, Chapter 2. Potential damage or operational requirements may warrant a more severe criterion or in certain areas a lesser criterion may be appropriate. The design of roadway culverts and other on-site storm drainage features & structures will normally be based on 10-year rainfall event. Protection of installations against flood flows originating from areas exterior to the base installation shall be based on a 25-year or greater rainfall depending on cost vs. benefit considerations.

2.4.5.2 STORM DRAINAGE SYSTEM DESIGN

The Contractor shall be responsible for the complete design of the storm drainage system. Drainage of runoff from turf areas onto pavements shall be minimized. If storm drain piping is required it shall comply with the requirements in this section. Where storm drain pipes are of different diameters, the pipe crown elevations should be matched at the drainage structure. Storm drain lines shall be located outside of paved areas to the extent possible. Under no circumstance shall storm drain lines be located beneath buildings. Erosion control shall be provided for all storm drain structures during construction. Water from roof down spouts shall be drained off building site. All storm drain pipe and structures shall comply with the requirements specified in UFGS Section 33 40 00 STORM-DRAINAGE.

2.4.5.3 HYDRAULIC DESIGN

New storm drain pipes shall be designed for gravity flow during the design storm baseline unless otherwise approved by the Government. The hydraulic grade line shall be calculated for the storm drain system and all energy losses accounted for. Design computations shall adhere to procedures contained in UFC 3-230-17A. Storm drain systems shall be designed to provide a minimum flow velocity of .75 meters per second when the drains are one-third or more full.

2.4.5.4 AREA INLETS

Area inlets shall be properly sized and designed to accommodate the design flows. All grates shall be of a “bicycle safe” design.

2.4.5.4.1 CONCRETE PIPE

Reinforced concrete pipe shall be a minimum Class III. Type I cement may be used only when sulfates in the soil are 0.1 percent or less and dissolved

sulfates in the effluent are 150 ppm or less. Type II cement may be used only when sulfates in the soil are 0.2 percent or less and dissolved sulfates in the effluent are 1,500 ppm or less. Only Type V cement may be used if sulfates in the soil exceed 0.2 percent or dissolved sulfates in the effluent exceed 1,500 ppm. Concrete pipe shall be assumed to have a minimum design service life of 50 years unless the Contractor determines that conditions at the site will reduce the service life. Concrete culverts and storm drains shall be protected by a minimum of 1 meter of cover during construction to prevent damage by heavy construction equipment.

2.4.5.4.2 PLASTIC PIPE

Stiffness of the plastic pipe and soil envelope shall be such that the predicted long-term deflection shall not exceed 7.5 percent. Plastic culverts and storm drains shall be protected by a minimum of 1 meter of cover during construction to prevent damage by heavy construction equipment. Split couplers shall not be allowed for corrugated high-density polyethylene pipe. Plastic pipe shall be assumed to have a minimum design service life of 50 years unless the Contractor determines that conditions at the site will reduce the service life (then plastic pipe shall not be used).

2.5 GEOTECHNICAL

2.5.1 SOIL INVESTIGATION

Existing geotechnical information is not available at the project site. Any site-specific geotechnical data required to develop foundations, materials, earthwork, and other geotechnical related design and construction activities for this project shall be the Contractor’s responsibility. The Contractor shall develop all pertinent geotechnical design and construction parameters by appropriate field and laboratory investigations and analyses. The Contractor shall produce a detailed geotechnical report containing field exploration and testing results, laboratory testing results (particle sizes and distribution, liquid and plastic limit test, and moisture and density test, etc.). Information in the report shall include, but not limited to: existing geotechnical (e.g. surface and subsurface) conditions, location of subsurface exploration logs on site plan, exploration point, allowable soil bearing capacity and foundations recommendations, bearing capacity, pavement design criteria (e.g. CBR values, K values), ground-water levels, and construction materials (e.g. concrete cement, asphalt, and aggregates). For standard penetration test (SPT), the Contractor shall use ASTM D1586. All geotechnical laboratory and field work shall be based on standards set forth in the ASTM. Contractor shall not use any DIN standards for penetration tests in lieu of ASTM D 1586. Soil investigations shall conform with AED Design Requirements: Geotechnical Investigations for USACE Projects, latest version.

For foundation design, allowable soil bearing pressures, shall be based on the International Building Code (IBC) 2006 Table 1804.2. The contractor shall conduct soils classification per ASTM D 2487-06. There shall be no variation from the values listed in the table above, unless the soils investigation indicates lower allowable values should be used.

The contractor shall submit a geotechnical investigation plan prior to commencing any field investigation to the USACE-AED Engineering Branch through the COR for review and approval. Once the plan is reviewed and approved, the Contractor can start the field investigation. The Geotechnical

report shall be submitted with all the design review submittals as specified in the 01335. No design review submittal shall be considered complete without an approved geotechnical report. Geotechnical investigation plans and report of investigations shall be submitted promptly in accordance with Section 01335.

2.5.2 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. The geotechnical firm conducting either the field investigation or laboratory work shall be certified by the Chief, Quality Assurance Branch USACE-AED. Certification document shall be submitted as part of the Geotechnical Report.

3.0 STRUCTURAL

3.1 GENERAL

Field welding shall not be used for any part of the Main Structural Force Resisting System for significant structures. The Main Structural Force Resisting System is that part of the structural system providing the required resistance to all gravity loads (dead; live) and all lateral loads (wind; seismic). Bolted connections in lieu of welding are strongly recommended. Exemptions to these guidelines would be minor structural connections; including metal trusses bearing on a reinforced concrete roof, and non-load bearing applications. Certified shop welding of pre-engineered buildings and various structural members shall be permitted.

3.2 DESIGN

Design shall be performed and design documents signed by a registered professional architect and/or engineer. Calculations shall be in SI (metric) units of measurements. All components of the structures shall be designed and constructed to support safely all loads without exceeding the allowable stress for the materials of construction in the structural members and connections.

3.3 STANDARDS

The Contractor should use the following American standards to provide sound structural design if local standards are not available, relevant, or applicable. The Contractor shall follow American Concrete Institute Standards (ACI) for design and installation of all concrete structures.

Concrete	ASTM C 39 and ACI 318; 28 MPa (f'_c = 4,000 psi) minimum specified compressive strength @ 28 days, and maximum water-cement ratio of 0.45.
Steel Reinforcement	ASTM A 615; 420 MPa (F_y = 60 ksi) yield strength.

Welded Wire Fabric	ASTM A 185.
Anchor Bolts	ASTM F 1554; Grade 36 steel.
Plaster	ASTM C 926.
Concrete Masonry Units	ASTM C 90; Type I (normal weight, moisture control).
Mortar	ASTM C 270; Cement-Lime, Type S (ultimate compressive strength of 13 MPa).
Grout	ASTM C 476; 14 MPa (2,000 psi) minimum compressive strength @ 28 days (slump between 200 mm to 250 mm).
Structural Steel	
Plates, Shapes & Bars	ASTM A 36; 250 MPa (F_y = 36,000 psi) minimum yield strength.
Hollow Sections	ASTM A 500; Grade B.
Bolts	ASTM A 325.
Welding	AWS D1.1 (American Welding Society).

3.4 DEAD AND LIVE LOADS

Dead loads consist of the weight of all materials of construction incorporated in the buildings. Live loads used for design shall be in accordance with the Structural Load Data, UFC-3-310-01, and edition as referenced herein.

3.5 SNOW LOADS

Snow Loads shall be calculated using a Ground Snow Load of 1.5 kPa.

3.6 WIND LOADS

Wind Loads shall be calculated using a "3-second gust" wind speed of 135 km/hr.

3.7 SEISMIC

The building and all parts thereof shall be designed for the seismic requirements as defined by the International Building Code referenced herein.

Spectral ordinates shall be S_s = 0.80g and S_1 = 0.40g.

3.8 STRUCTURAL CONCRETE

3.8.1 GENERAL

Concrete structural elements shall be designed and constructed in accordance with the provisions of the American Concrete Institute, Building Code Requirements for Structural Concrete, ACI 318.

3.8.2 MATERIALS

A minimum cylinder 28 day compressive strength of 28 MPa (4,000 psi) shall be used for design and construction of all concrete, except that 24 MPa (3,500 psi) shall be used for shotcrete applications. Reinforcing steel shall be deformed bars conforming to American Society for Testing and Materials publication ASTM A 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. Concrete shall have maximum water-cement ratio of 0.45.

3.8.3 CONCRETE PLACING AND CURING

Where concrete is cast-against and exposed to soil, a minimum concrete cover over reinforcement of 75 mm (3 inches) shall be provided.

No concrete shall be placed when the ambient air temperature exceeds 32 degrees C (90 degrees F) unless an appropriate chemical retardant is used. In all cases when concrete is placed at 32 degrees C (90 degrees F) or hotter it shall be covered and kept continuously wet for a minimum of 48 hours. The curing requirements and recommendations in ACI 308 - Guide to Curing Concrete (and ACI 506 – Guide to Shotcrete) shall be followed for all temperature conditions. The contractor shall submit to AED plans for placing and curing concrete during cold weather (per ACI 306 - Cold Weather Concreting) and hot weather (per ACI 305 - Hot Weather Concreting).

3.9 MASONRY

Masonry shall be designed and constructed in accordance with the provisions of Building Code Requirements for Masonry Structures, ACI 530/ASCE 5/TMS 402. Mortar shall be Type S and conform to ASTM C 270. Masonry shall not be used below grade.

All cells of exterior CMU walls shall be fully grouted. For interior CMU walls, only the reinforced cells need to be grouted. All interior and exterior CMU walls shall have reinforced concrete horizontal bond beams at the top and bottom of the walls and at a maximum spacing of 1,200 mm on center.

Brick and unreinforced masonry shall not be used as a construction material for any buildings.

3.10 STRUCTURAL STEEL

Structural steel shall be designed and constructed in accordance with the provisions of American Institute of Steel Construction (AISC), Specifications for Structural Steel Buildings. Design of cold-formed steel structural members shall be in accordance with the provisions of American Iron and Steel Institute (AISI), Specifications for Design of Cold-Formed Steel Structural Members.

3.11 METAL DECK

Deck units shall conform to SDI Steel Deck Design Manual, latest edition. Panels of maximum possible lengths shall be used to minimize end laps. Deck units shall be fabricated in lengths to span three or more supports with flush, telescoped or nested 50 mm (2 inch) laps at ends, and interlocking, or nested side laps. Metal deck units shall be fabricated of steel thickness required by the design and shall be galvanized.

3.12 FOUNDATIONS

Foundations shall be properly placed on suitable compacted ground area and shall be in accordance with the recommendations from the geotechnical investigation. Building foundations shall be founded a minimum of 800 mm below grade or below frost line, whichever is greater. Foundation designs shall be corroborated with the geotechnical findings and recommendations.

Ensure that footing subgrades have been inspected and approved by the Contracting Officer prior to concrete placement.

3.13 EARTHWORK AND FOUNDATION PREPARATION

3.13.1 CAPILLARY WATER BARRIER

ASTM C 33 fine aggregate grading with a maximum of 3 percent by weight passing ASTM D 1140, 75 micrometers, No. 200 sieve, or 37.5mm and no more than 2 percent by weight passing the 4.75mm No. 4 size sieve and conforming to the soil quality requirements specified in the paragraph entitled “Satisfactory Materials.”

3.13.2 SATISFACTORY MATERIALS

Any materials classified by ASTM D 2487 as GW, GW-GM, GW-GC, SW, SW-SM, or SW-SC and free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall be one-half the lift thickness at the intended location.

3.13.3 UNSATISFACTORY MATERIALS

Any materials which do not comply with the requirements set forth in the Satisfactory Materials paragraph. Unsatisfactory materials also include man-made fills, trash, refuse, or backfills from previous construction. Unsatisfactory material also includes material classified as satisfactory which contains root and other organic matter, frozen material, and stones larger than 75mm. The Contracting Officer shall be notified of any unsatisfactory materials.

3.13.4 CLEARING AND GRUBBING

Unless indicated otherwise, remove tress, stumps, logs, shrubs, brush and vegetation, and other items that would interfere with construction operations within lines 1.5 meters outside of the building and structure line. Remove stumps entirely. Grub out matted roots and roots over 50mm in diameter to at least 460mm below existing surface.

3.13.5 STRIPPING

Strip suitable soil from the site where excavation or grading is indicated and stockpile separately from other excavated material. Material unsuitable for use as topsoil shall be stockpiled and used for backfilling. Locate topsoil so that the material can be used readily for the finished grading. Where sufficient existing topsoil conforming to the material requirements is not available on site, provide borrow materials suitable for use as topsoil. Protect topsoil and keep in segregated piles until needed.

3.13.6 EXCAVATION AND COMPACTION OF FILL

Excavate to contours, elevation, and dimensions indicated. Reuse excavated materials that meet the specified requirements for the material type required at the intended location. Keep excavations free from water. Excavate soil disturbed or weakened by Contractor’s operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be removed as directed. Refill with satisfactory material and compact to at least 95 percent of the maximum dry density, as determined by the Modified Proctor laboratory procedure. ASTM D 1557 shall be used for producing the Modified Proctor moisture-density curve, unless the soil to be compacted includes more than 30% retained on the 19 mm (3/4") sieve. In this case, the Contractor must replace the ASTM D 1557 laboratory compaction procedure with AASHTO T 180, Method D, corrected with AASHTO T 224.

During compaction, the moisture content of the soil shall be within 1.5 percent of the optimum moisture content, as determined by the Modified Proctor laboratory procedure. The thickness of compacted lifts shall not exceed 15 cm and the dry density of each compacted lift shall be tested by either sand cone (ASTM D 1556) or nuclear gage (ASTM D 2292). If the nuclear gage is used, it must first be compared to sand cone tests for each soil type to verify the accuracy of the nuclear gage measurements for moisture content, wet density, and dry density. Furthermore, every tenth nuclear gage test must be accompanied by a sand cone test and these verification data must be summarized and submitted to the Contracting Officer. Density tests shall be performed at a frequency of not less than one test for each 200 square meters and not less than two tests per compacted lift.

4.0 ARCHITECTURAL REQUIREMENTS

4.1 GENERAL

All material approved shall become standardized material to be used throughout the facilities under contract. Different sub-contractors shall not use different material or standards under the contract. Intent of the project is to use locally procured materials (unless specified otherwise) and labor to the maximum extent possible while satisfying seismic, international building code, and national fire protection agency life safety code. Conflicts between criteria shall be brought to the attention of the Contracting Officer for resolution. In such instances, the Contractor shall furnish all available information with justification to the Contracting Officer.

4.2 DESIGN CRITERIA

Schematic designs for the facility types requested in this proposal are provided in Appendix B. These designs shall be used to create a complete and usable facility meeting the minimum requirements stated in these documents. The Codes, Standards, and Regulations listed in these documents shall be used in the construction of this project. The publications shall be the most recent editions. 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.

IBC - International Building Code, latest edition

NFPA 101 - Life Safety Code, latest edition

4.2.1 LIFE SAFETY/ FIRE PROTECTION/ HANDICAPPED ACCESSIBILITY

A life safety and fire protection analysis shall be completed prior to construction commencement. This analysis shall be documented in plans and in the design analysis. All spaces shall be classified following NFPA 101 or IBC. Whichever code is used shall be stated and referenced in the life safety plan. The facility shall comply with all other safety requirements of the NFPA 101. To the extent possible, all facilities shall be designed in accordance with recognized industry standards for life safety and building egress. An adequate fire alarm system, fire extinguishers, and smoke alarms shall all be included as required. Due to the lack of adequate water volume and pressure, sprinkler systems are not feasible. In keeping with the intended function of these facilities, handicapped accessibility will not be incorporated in this project. Due to the war contingency requirement, it is assumed that only able-bodied military and civilian personnel will use the facilities listed herein.

4.2.2 ANTITERRORISM / FORCE PROTECTION

Force protection/anti-terrorism measures for this location shall be followed and incorporated into this project as indicated, in accordance with the referenced DoD Regulations. Information regarding force protection may be found herein and at the following link: www.tisp.org . UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings, including change 1, 22 January 2007; is the primary DoD AT/FP regulation for projects.

4.3 CONCRETE

4.3.1 FINISH

Horizontal finish shall be troweled or screed. If finish is exposed concrete, i.e. sidewalks, then the floor shall be a broom finish for texture and shall not interfere with sloping for drainage of the surface. Vertical work shall have a form finish. Exposed concrete shall be sealed with an approved sealer.

4.3.2 INSULATED CONCRETE SANDWICH WALL SYSTEM (3-D BUILDING SYSTEM)

As an option to standard masonry construction, the Contractor may construct walls of single story buildings using an insulated concrete sandwich wall system. The insulated concrete sandwich wall system shall be field fabricated and composed of a 76 mm (3 inch) expanded polystyrene core that spans in a single piece from floor elevation to top of wall elevation. The polystyrene core shall have a welded wire fabric, 50 mm x 50 mm (2 inch x 2 inch) mesh, 2.52 mm (12.5 gauge) wire, attached to both faces of the polystyrene core. The welded wire mesh shall be installed at 13 mm from the face of the polystyrene core. The welded wire mesh on each face shall be attached to each other and the polystyrene core with diagonal truss wires. Apply sprayed concrete (shotcrete) to a minimum thickness of 45 mm (1-3/4 inch) or as structural calculations require, whichever is greater. Method of placing the shotcrete shall be in conformance with ACI 506R-85. Concrete finishing shall be done by appropriate hand tools (darby, trowel, etc.) to provide the desired finish effect.

4.3.3 PRECAST

Storage of precast units shall be in a dry place or materials shall be covered with a plastic or protective layer. Units shall be detailed to provide size, shape and location of installation. Precast units shall meet the minimum concrete strength requirements.

4.4 MASONRY

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. Masonry construction systems shall be reinforced.

4.4.1 CONCRETE MASONRY UNITS

Concrete masonry units (CMU) for exterior walls shall be either 190 mm or 290 mm wide x 390 mm x 190 mm high as shown on drawings. They shall be installed in running bond level and plumb. Mortar joints shall be 10 mm on all sides between CMU. Joints shall be struck with a concave tool to provide a smooth recessed curved surface. Install only quality units. The surface shall be free of chips, cracks, or other imperfections that would detract from the overall appearance of the finished wall. Defective CMU or mortar shall be rejected.

4.5 THERMAL PERFORMANCE OF EXTERNAL BUILDING ASSEMBLIES

External building assemblies shall meet the requirements of TI-800, Design Criteria, UFC 3-400-01 Design: Energy Conservation, and ASHRAE Standard 90.1, latest editions, but shall meet the following minimum requirements:

Exterior walls (above grade)	RSI 2.280 (R 13)
Ceilings/roof	RSI 5.284 (R 30)
Floor (over unheated space)	RSI 3.346 (R 19)
Exterior doors	RSI 0.252 (R 1.43)

This table is a summary of ANSI/ ASHRAE 90.1 Table 5.5-5, Climate Zone 5 (A,B,C)

RSI measured in K-m2/W, R measured in SF-F-hr/BTU. 1 K-m2/W = 5.678 SF-F-hr/BTU.

The building design shall utilize solar heating by orientating the buildings and wind breaks, insulation and exterior window shading techniques to reduce building heat loss and heat gain. Contractors shall include energy efficient heating and cooling solutions to minimize energy consumption.

4.6 CARPENTRY

The use of wood framing as indicated below is acceptable only where allowed by IBC and NFPA 101.

4.6.1 WOOD PURLINS

If Contractor chooses to utilize wood purlins, provide and install roof purlins of natural wood, locally available material 1 meter on center

securely wedged between steel H structural joists. Tightly fit 25mm or 30 mm boards over roof structure and nail into wood purlins. New roofing shall extend a minimum of 600 mm past the exterior surface of the wall.

4.6.2 WOOD BATTENS

If Contractor chooses to utilize wood ceiling batten strips, wood ceiling batten strips, 20 mm x 60 mm, shall be nailed to the bottom of the wood purlins. Battens shall be spaced at 400 mm on center (or per UBC requirements if sheetrock is substituted for plaster). This is for the support of a plaster ceiling.

4.7 ROOFING AND WEATHERPROOFING

The building shall have a sloped metal roof, with metal eaves, and soffits. All exterior entry ways to be covered and protected by rain gutters and diverters as to not have water falling on the entry ways to all buildings.

4.7.1 SLOPED ROOFS

A sloping roof shall be as defined in the IBC. On sloping roofs provide and install 0.60 mm (24 gauge) galvanized steel in either corrugated or standing seam design. Use 0.75 mm (22 gauge) for pre-denotation roof issues which should be augmented with sand bags in the ceiling below the metal roofing. Metal roofing shall be anchored to the steel “Z” purlins or wood deck sub-surface using exposed fasteners at 300 mm on center at all seams and at 600 mm on center in the panel field. Wood deck sub-surface shall either be solid wood boards or plywood. Fasteners shall be placed at the top of the corrugation taking care not to dent panel. Roof sealant or adhesive shall be placed over each anchor head. Roofing system shall include all edge, ridge and penetration flashings necessary for a watertight installation and as described in this section. Roofing shall be galvanized mil finish. Panels shall be overlapped two corrugations side to side and be continuous sheets from ridge to eave. Provide continuous ridge vents on all gable roofs.

4.7.2 LOW SLOPE ROOFS

A low slopping roof shall be as defined in the IBC. Provide and install 3 ply built up roofing over concrete deck. Contractor may propose to the Contracting Officer an alternate roofing system with justification for consideration and alternate pricing. Concrete roof deck shall slope 21 mm per m.

4.7.2.1 INSULATION

Provide a 50 mm (2 inch) thick extruded polystyrene rigid thermal insulation boards, conforming DIN, EN 13164 BS, EN 13164, k=0.2 @ 75 degrees F mean temperature, 2.82 kg/sq cm (40 lbs/sq in) compressive strength, hydrophobic, Type VI. Provide thickness by multiple boards to meet the designed R-value.

4.7.2.2 INSULATION INSTALLATION

Comply with insulation manufacturer's instructions and recommendations for handling, installing, and bonding or anchoring insulation to substrate. Insulation boards shall be installed loose, without glue, in staggered manner. Attention should be paid not to leave separation along edges. Where

overall insulation thickness is 50 mm (2 inches) or greater, install required thickness in two layers with joints of second layer offset from joints of first layer a minimum of 300 mm (12 inches) each direction. Trim surface of insulation where necessary at roof drains so completed surface is flush with drain ring. Polyester felt or geotextile shall be installed over insulation layers as a filter layer to prevent the passage of fines in gravel layer to lower strata.

4.8 CONNECTIONS AND JOINTING

4.8.1 SOLDERING

Soldering shall apply to copper and stainless steel items. Edges of sheet metal shall be pre-tinned before soldering is begun. Soldering shall be done slowly with well heated soldering irons so as to thoroughly heat the seams and completely sweat the solder through the full width of the seam. Edges of stainless steel to be pre-tinned shall be treated with soldering acid flux. Soldering shall follow immediately after application of the flux. Upon completion of soldering, the acid flux residue shall be thoroughly cleaned from the sheet metal with a water solution of washing soda and rinsed with clean water.

4.8.1.1 SEAMING

Flat-lock and soldered-lap seams shall finish not less than 25 mm. wide. Unsoldered plain-lap seams shall lap not less than 75 mm. unless otherwise specified. Flat seams shall be made in the direction of the flow.

4.8.1.2 CLEATS

A continuous cleat shall be provided where indicated or specified to secure loose edges of the sheet metalwork. Butt joints of cleats shall be spaced approximately 3 mm. apart. The cleat shall be fastened to supporting wood construction with nails evenly spaced not over 300 mm. on centers. Where the fastening is to be made to concrete or masonry, screws shall be used and shall be driven in expansion shields set in concrete or masonry.

4.9 METAL

4.9.1 MATERIALS

Any metal listed by ASTM, DIN, BS or EN standards. Manual for a particular item may be used, unless otherwise specified or indicated. Materials shall conform to the requirements specified below and to the thicknesses and configurations established in ASTM, DIN, BS or EN standards. Different items need not be of the same metal, except that if copper is selected for any exposed item, all exposed items shall be copper.

4.9.1.1 STEEL SHEET, ZINC-COATED (GALVANIZED)

Zinc coated steel conforming to ASTM A 653, DIN BS or EN Standards.

4.9.1.2 ALUMINUM WALL CAPPING

Aluminum wall capping shall conform to ASTM B 209 M, DIN 18339, BS or EN Standards.

4.9.2 FLASHING

Flashing shall be installed at locations indicated and as specified below. Sealing shall be according to the flashing manufacturer’s recommendations. Flashings shall be installed at intersections of roof with vertical surfaces and at projections through roof, except that flashing for heating and plumbing, including piping, roof and floor drains, and for electrical conduit projections through roof or walls are specified in other sections. Except as otherwise indicated, counter flashings shall be provided over base flashings. Perforations in flashings made by masonry anchors shall be installed on top of joint reinforcement. Lashing shall be formed to direct water to the outside of the system.

4.9.2.1 THROUGH-WALL FLASHING

Through-wall flashing includes sill, lintel, and spandrel flashing. The flashing shall be laid with a layer of mortar above and below the flashing so that the total thickness of the two layers of the mortar and flashing are the same thickness as the regular mortar joints. Flashing shall not extend further in to the masonry backup wall than the first mortar joint. Joints in flashing shall be lapped and sealed. Flashing shall be one piece for lintels and sills.

4.9.2.2 LINTEL FLASHING

Lintel flashing shall extend the full length of lintel. Flashing shall extend through the wall one masonry course above the lintels and shall be bent down over the vertical leg of the outer steel lintel angle not less than 50 mm, or shall be applied over top of masonry and pre-cast concrete lintels. Bed joints of lintels at joints shall be under laid with sheet metal bond breaker.

4.9.2.3 SILL FLASHING

Sill flashing shall extend the full width of the sill and not less than 100 mm beyond ends of sill except at joint where the flashing shall be terminated at the end of the sill.

4.9.3 METAL FASCIA & SOFFIT

No wood fascias and/or soffits are allowed. Use metal fascias and soffits throughout. Extend roof decking out over fascia a minimum of 20 mm. Provide a 40 mm drip flashing over edge of roof decking so that it extends past bottom of decking on all sides of the building. Soffits shall be a minimum width of 600mm extending from the building wall.

4.9.4 CONTINUOUS SOFFIT VENT

Enclose soffits and return to vertical wall. Provide continuous soffit venting of all overhangs on the underside of the soffit. The opening shall be no larger than 100 mm and set in a minimum of 50 mm from the exterior fascia edge.

4.9.5 RIDGE VENT

For sloping roofs, provide continues metal ridge vent at the top of roof along the ridge. Ridge vent shall be sized to provide adequate ventilation of the roofing system.

4.9.6 SCREEN

Provide insect screen for all soffit, ridge, vents, louvers and all openings except for doors and windows unless otherwise specified.

4.9.7 EXPANSION JOINT PROFILES

Metal expansion joints shall have a profile to allow deflection and expansion in two directions. Metal shall be treated for exterior conditions. Expansion joints shall be water proof.

4.9.8 ROOF GUTTERS

Roof gutters shall be installed as indicated. Roof gutters shall be rigidly attached to the building. Supports for roof gutters shall be spaced according to manufacturer’s recommendations. A 600 mm overlap, jointing with approved crimping or welding shall provide a continuous gutter along the building eaves.

4.9.9 DOWNSPOUTS

Downspouts shall be designed and fabricated for each specific application. Unless otherwise specified or indicated, exposed edges shall be folded back to form a 13 mm (1/2 inch) hem on the concealed side, and bottom edges of exposed vertical surfaces shall be angled to form drips. Bituminous cement shall not be placed in contact with roofing membranes other than built-up roofing and shall not block the flow of water to the downspout for low sloped roofs. Downspouts shall be rigidly attached to the building with supports a minimum of 1.5 M apart. At the base of each downspout, concrete splash block shall be placed to eliminate damage to the building due to rain water runoff toward the building. In rural locations, a layer of rock 10 - 80 mm in size, 100 mm thick, may be substituted upon governmental approval.

Wall Capping

Wall Capping shall be installed according to the manufacturer’s recommendations.

4.10 SEALANTS

Provide a sealant compatible with the material(s) to which it is applied. Do not use a sealant that has exceeded shelf life or has jelled and cannot be discharged in a continuous flow from the gun. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without air pockets. Tool smooth fresh sealant after application to ensure adhesion. Sealant shall be uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints; apply sealant, and tool smooth as specified. Sealer shall be applied over the sealant when and as specified by the sealant manufacturer.

4.10.1 INTERIOR SEALANT

ASTM C 834 or ASTM C 920, Type S or M, Grade NS, Class 12.5. Use NT, DIN, BS, or EN equal standards.

4.10.2 EXTERIOR SEALANT

For joints in vertical and horizontal surfaces, provide ASTM C 920, Type S or M, Grade NS, DIN, BS, or EN equal standards.

4.10.3 FLOOR JOINT SEALANT

(ASTM C 920) Type S or M, Grade P, class 25, use T

4.10.4 PRIMERS

Provide a non-staining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application. Immediately prior to application of the sealant, clean out loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's instructions. Do not apply primer to exposed finish surfaces.

4.10.5 BOND BREAKERS

Provide the type and consistency recommended by the sealant manufacturer to prevent adhesion of the sealant to backing or to bottom of the joint. Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used, to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.

4.10.6 BACKING

Backing shall be 25 to 33 percent oversize for closed cell and 40 to 50 percent oversize for open cell material, unless otherwise indicated.

4.10.7 SURFACE PREPARATION

Surfaces shall be clean, dry to the touch, and free from dirt frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. Oil and grease shall be removed with solvent and surfaces shall be wiped dry with clean cloths. When resealing an existing joint, remove existing calk or sealant prior to applying new sealant. For surface types not listed below, the sealant manufacturer shall be contacted for specific recommendations.

4.10.8 MASKING TAPE

Masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or sealant smears. Masking tape shall be removed within 10 minutes after joint has been filled and tooled.

4.10.9 BACKSTOPS

Install backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified.

4.10.10 PROTECTION

Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled.

4.10.10.1 FINAL CLEANING

Provide cleaning solvent type(s) recommended by the sealant manufacturer except for aluminum and bronze surfaces that will be in contact with sealant. Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.

4.10.10.1.1 MASONRY AND OTHER POROUS SURFACES

a. Immediately scrape off fresh sealant that has been smeared on masonry and rub clean with a solvent as recommended by the sealant manufacturer. Allow excess sealant to cure for 24 hour then remove by wire brushing or sanding.

4.10.10.1.2 METAL AND OTHER NON-POROUS SURFACES

a. Remove excess sealant with a solvent-moistened cloth.

4.11 WINDOWS, DOORS & GLAZING

4.11.1 WINDOWS

Windows shall be operable. Operable windows shall be slider or awning type. A window with blackout film on the inside shall be provided only for the laundry space.

4.11.1.1 MATERIALS

4.11.1.1.1 ALUMINUM EXTRUSIONS

Provide alloy and temper recommended by the window manufacturer for the strength, corrosion resistance, and application of required finish, meeting the DIN 1725 raw material requirements, but not less than 215 N/mm2 ultimate tensile strength and not less than 1.5 mm thick at any location for main frame and sash members

4.11.1.1.2 FASTENERS:

Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

4.11.1.1.3 REINFORCEMENT

Where fasteners screw-anchor into aluminum less than 3 mm (0.125 inch) thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard non-corrosive pressed-in splined grommet nuts.

4.11.1.1.4 EXPOSED FASTENERS

Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match the finish of the member or hardware being fastened, as appropriate.

4.11.1.1.5 ANCHORS, CLIPS, AND WINDOW ACCESSORIES

Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with the requirements of DIN 1748; provide sufficient strength to withstand design pressure indicated. As a minimum provide 3 anchors on each side of the frame.

4.11.1.1.6 COMPRESSION-TYPE GLAZING STRIPS AND WEATHERSTRIPPING

Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets.

4.11.1.1.7 SEALANT

For sealants required within fabricated window units, provide type recommended by the manufacturer for joint size and movement. Sealant shall remain permanently elastic non-shrinking, and non-migrating. Comply with Sealants of these specifications for selection and installation of sealants.

4.11.1.1.8 WIRE FABRIC INSECT SCREEN

Wire Fabric Insect Screen shall be permanently fixed to the exterior of operable windows.

4.11.1.2 HARDWARE

Provide the manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended. Provide at a minimum one locking device on the interior of each window. Any operable window over 2 square meters shall have two locking devices as a minimum.

4.11.1.3 FABRICATION

Provide aluminum windows with factory finish in all buildings as indicated in the design drawings. Window openings shall be provided with insect screening permanently fixed to the exterior. Provide a minimum of 3 anchors on each side of the frame into the adjoining structure. Provide weather stripping system for all exterior windows and doors.

4.11.1.4 METAL WINDOW SILLS

Galvanized metal window sills, 0.90 mm (20 gauge), shall be installed on the exterior of all windows. The metal window sills shall have a turn down of 50 mm over the exterior masonry and stucco. Metal sills shall extend from side to side of the masonry opening in a single piece. Extend the metal window sill a minimum of 20 mm 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 6 mm to the exterior and not allow water to puddle.

4.11.1.5 FINISHES

Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting. Color shall be white meeting the requirements of DIN 50018

4.11.1.6 INSPECTION

Inspect openings before beginning installation. Verify that rough or masonry opening is correct and the sill plate is level. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.

4.11.1.7 INSTALLATION

Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, and other components of the work. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place. Set sill members and other members in a bed of compound or with joint fillers or gaskets, as shown, to provide weather tight construction. Refer to the Sealant sections for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the work.

4.11.1.8 ADJUSTING

Adjust operating sash and hardware to provide a tight fit at contact points and at weather stripping for smooth operation and a weather tight closure.

4.11.1.9 CLEANING

Clean aluminum surfaces promptly after installation of windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.

4.11.2 DOORS

Fire rated door assemblies including hollow metal frame and hardware shall be provided as indicated in the design drawings. Rated doors and frames shall be tested and approved as an assembly and shall be provided by a single manufacturer/distributor. Hardware for fire rated door assemblies shall be labeled as appropriate for fire rated applications and shall be coordinated with door manufacturer. All exterior doors shall be heavy duty metal doors with metal frames. Interior door shall be hollow metal doors with hollow

metal frames. Commercial duty lock sets and hardware shall be used on all doors. Hinges shall be the 5 knuckle type or equivalent. Provide door handles and locksets that can be locked with a key on all doors. All door locks shall have a thumb latch on inside of door such that no key is necessary to exit the room or building. Coordinate the final keying schedule with Contracting Officer prior to ordering lock sets. Include 25% spare key blanks for the amount of keys provided per building. Provide numbering system identifying key to associated room door. Provide weather stripping system for all exterior doors.

4.11.2.1 STEEL DOORS

SDI A250.8, except as specified otherwise. Prepare doors to receive specified hardware. Undercut where indicated. Exterior doors shall have top edge closed flush and sealed to prevent water intrusion. Doors shall be 44.5 mm thick, unless otherwise indicated. Doors shall be constructed using heavy gauge steel with minimum thickness of 1.2 mm.

4.11.2.2 SOLID PLASTIC & PHENOLIC DOORS

Solid Plastic & Phenolic doors and frames may be used for bathroom stall and toilet stall.]

4.11.2.3 FIRE AND SMOKE DOORS AND FRAMES

The requirements of NFPA 80 and NFPA 105 respectfully shall take precedence over details indicated or specified.

4.11.2.4 THRESHOLDS

All exterior doors (except Mech/Elect rooms) shall be provided with manufactured metal thresholds conforming to ANSI/BHMA A156.21. Doors at all wet areas with ceramic tile or terrazzo tile flooring shall be provided with solid marble thresholds with marble threshold set 13 mm above tile. Thresholds shall span continuously from jamb to jamb.

4.11.2.5 STANDARD STEEL FRAMES

SDI A250.8, except as otherwise specified. Form frames to sizes and shapes indicated, with welded corners or knock-down field-assembled corners.

4.11.2.6 WELDED FRAMES

Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets. Grind welds smooth.

4.11.2.7 STOPS AND BEADS

Form stops and beads from 0.9 mm thick steel. Provide for glazed and other openings in standard steel frames. Secure beads to frames with oval-head, countersunk Phillips self-tapping sheet metal screws or concealed clips and fasteners. Space the fasteners approximately 300 to 400 mm on centers. Miter molded shapes at corners. Use butt or miter square or rectangular beads at corners.

4.11.2.8 WEATHER-STRIPPING, INTEGRAL GASKET

Provide weather-stripping that is a standard cataloged product of a manufacturer regularly engaged in the manufacture of this specialized item. Black synthetic rubber gasket with tabs for factory fitting into factory slotted frames, or extruded neoprene foam gasket made to fit into a continuous groove formed in the frame, may be provided in lieu of head and jamb seals. Weather stripping shall be looped neoprene, synthetic rubber gasket, or vinyl held in an extruded non-ferrous metal housing. Air leakage of weather stripped doors shall not exceed 0.003125 cubic meters per second of air per square meter of door area when tested in accordance with ASTM E 283.

4.11.2.9 ANCHORS

Provide anchors to secure the frame to adjoining construction. Provide steel anchors, zinc-coated or painted with rust-inhibitive paint, anchors not lighter than 1.2 mm thick.

4.11.2.9.1 WALL ANCHORS

Provide at least three anchors for each jamb. For frames which are more than 2285 mm in height, provide one additional anchor for each jamb for each additional 760 mm or fraction thereof.

4.11.2.9.2 FLOOR ANCHORS

Provide floor anchors drilled for 10 mm anchor bolts at bottom of each jamb member. Where floor fill occurs, terminate bottom of frames at the indicated finished floor levels and support by adjustable extension clips resting on and anchored to the structural slabs.

4.11.2.10 HARDWARE PREPARATION

Provide minimum hardware reinforcing gages as specified in ANSI A250.6. Drill and tap doors and frames to receive finish hardware. Prepare doors and frames for hardware in accordance with the applicable requirements of SDI A250.8 and ANSI A250.6. For additional requirements refer to BHMA A115. Drill and tap for surface-applied hardware at the project site. Build additional reinforcing for surface-applied hardware into the door at the factory. Locate hardware in accordance with the requirements of SDI A250.8, as applicable. Punch door frames, with the exception of frames that will have weather-stripping or lightproof or soundproof gasketing, to receive a minimum of two rubber or vinyl door silencers on lock side of single doors and one silencer for each leaf at heads of double doors. Set lock strikes out to provide clearance for silencers.

4.11.2.11 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 125 mm x 125 mm for doors 900 mm to 1,200 mm wide. Interior hinges shall be Grade 1; antifriction or ball bearing; and 3 each of 115 mm x 115 mm per leaf up to 900 mm wide door 125 mm x 125 mm for doors 900 mm to 1,200mm 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.

4.11.2.12 CLOSERS

Closers shall be provided on all exterior doors and fire-rated doors. All exterior doors and interior doors that require security or privacy such as toilet room shall be provided with heavy-duty hydraulic closers. Closers shall conform to ANSI/BHMA A156.4, Grade 1. Closers shall be surface-mounted, modern type, with cover. Closer shall be adjustable type and have slow-down control to prevent door leaf from slamming to frame. Provide door silencers on all door frames provided with closers.

4.11.2.13 DOOR STOPS

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

4.11.2.14 KEYING SYSTEM & LOCK CYLINDERS

Provide locks for all doors. A [Master] key system shall be provided. [Master key system shall include a separate & different key for each door with a master key provided to open any & all doors.] 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.

4.11.2.15 FINISHES

All surfaces of doors and frames shall be thoroughly cleaned, chemically treated and factory primed with a rust inhibiting coating as specified in SDI A250.8, or paintable A25 galv-annealed steel without primer. Where coating is removed by welding, apply touchup of factory primer. Provide door finish colors as selected by the Contracting Officer from the color selection samples.

4.11.2.16 WATER-RESISTANT SEALER

Provide a water-resistant sealer compatible with the specified finish as approved and as recommended by the door manufacturer.

4.11.2.17 FABRICATION AND WORKMANSHIP

Finished doors and frames shall be strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle. Molded members shall be clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded and soldered joints smooth. Design door frame sections for use with the wall construction indicated. Corner joints shall be well formed and in true

alignment. Conceal fastenings where practicable. On wraparound frames for masonry partitions, provide a throat opening 3 mm larger than the actual masonry thickness. Design other frames in exposed masonry walls or partitions to allow sufficient space between the inside back of trim and masonry to receive calking compound.

4.11.2.18 INSTALLATION

Before installation, seal top and bottom edges of doors with the approved water-resistant sealer. Seal cuts made on the job immediately after cutting using approved water-resistant sealer. Fit, trim, and hang doors with a 2 mm minimum, 3 mm maximum clearance at sides and top, and a 5 mm minimum, 6 mm maximum clearance over thresholds. Provide 10 mm minimum, 11 mm maximum clearance at bottom where no threshold occurs. Bevel edges of doors at the rate of 3 mm in 50 mm. Door warp shall not exceed 6 mm when measured in accordance with WDMA I.S. 1-A. Hang doors in accordance with clearances specified in SDI A250.8. After erection and glazing, clean and adjust hardware.

4.11.2.18.1 FRAMES

Set frames in accordance with SDI 105. Plumb, align, and brace securely until permanent anchors are set. Anchor bottoms of frames with expansion bolts or powder-actuated fasteners. Build in or secure wall anchors to adjoining construction. Backfill frames with mortar. When an additive is provided in the mortar, coat inside of frames with corrosion-inhibiting bituminous material. For frames in exterior walls, ensure that stops are filled with rigid insulation before grout is placed.

4.11.2.18.2 GROUTED FRAMES

For frames to be installed in exterior walls and to be filled with mortar or grout, fill the stops with strips of rigid insulation to keep the grout out of the stops and to facilitate installation of stop-applied head and jamb seals.

4.11.2.19 PROTECTION AND CLEANING

Protect doors and frames from damage. Repair damaged doors and frames prior to completion and acceptance of the project or replace with new, as directed. Wire brush rusted frames until rust is completely removed. Clean thoroughly. Apply an all-over coat of rust-inhibitive paint of the same type used for shop coat. Upon completion, clean exposed surfaces of doors and frames thoroughly. Remove mastic smears and other unsightly marks.

4.11.2.20 WEATHER STRIPPING

Install doors in strict accordance with the manufacturer's printed instructions and details. Weather strip the exterior swing-type doors at sills, heads and jambs to provide weather tight installation. Apply weather stripping at sills to bottom rails of doors and hold in place with a brass or bronze plate. Apply weather stripping to door frames at jambs and head. Shape weather stripping at sills to suit the threshold. Insert gasket in groove after frame is finish painted.

4.11.2.21 PRE-FITTING

At the Contractor's option, doors may be provided factory pre-fit. Doors shall be sized and machined at the factory by the door manufacturer in accordance with the standards under which they are produced. The work shall include sizing, beveled edges, mortising, and drilling for hardware and providing necessary beaded openings for glass and louvers. Provide the door manufacturer with the necessary hardware samples, and frame and hardware schedules as required to coordinate the work.

4.12 FINISHES

All exterior metal surfaces, including container exterior shall be painted to match existing adjacent buildings. Interior shall be painted gypsum board or plaster ceilings and walls. Provide color boards with all materials, paints and finishes for COR approval prior to ordering materials. Color boards shall remain on site in view or with the project engineer until completion of the facility.

4.12.1 PAINTS & COATINGS

Paints and coatings shall be provided as a specification 09 90 00 Finishes, Paints and Coatings.

4.12.2 CONCRETE HARDENER

Concrete sealers shall be a liquid chemical sealer-hardener compound. Apply a minimum of two coats. Sealer shall be compatible with climate temperatures and not reduce the adhesion of resilient flooring, tile, paint, roofing, waterproofing or other materials applied to the concrete.

4.12.3 PAINT

Paint shall be oil based or latex. A primer shall be placed prior to any coats of paint. A minimum of two (2) coats of paint shall be used for each surface

4.12.3.1 EXPOSED EXTERIOR STEEL

Exposed exterior steel shall include items such as trim, frames, door, pipe rails and other exposed steel surfaces. Paint with one coat oil-based primer, with 2 coats of oil-based alkyd gloss enamel, color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.12.3.2 EXPOSED WOOD

Exposed wood shall include items such as trim, paint with one coat oil-based primer, 2 coats of gloss enamel, color to be selected by the Contracting Officer from the color board provided by the Contractor

4.12.4 EXPANSION JOINTS IN PLASTER & STUCCO

Expansion joints shall be provided as specified in ASTM, DIN 18339, BS or EN Standards for all walls, floors and ceilings.

4.12.5 EXTERIOR WALLS

The exterior of building may be stucco and/or plaster conforming to ASTM C926. A temperature of between 4 and 27 degrees C shall exist for a period of not less than 48 hours prior to application of plaster and for a period of at least 48 hours after plaster has set. Control joints shall be designed for expansion and contraction of plaster work due to thermal exposure. Control joints shall comprise of back to back casing beads. Install new stucco in 2 coats. The first coat shall be a scratch coat approximately 10 mm thick. Allow 7 days to cure. The second coat shall be finish stucco, smooth finish, approximately 10 mm thick. Allow 7 days to cure before painting. Stucco showing over sanding, cracks, blisters, pits, checks, discoloration or other defects is not acceptable. Defective plaster work shall be removed and replaced with new plaster at the expense of the Contractor. Patching of defective work will be permitted only when approved by the Contracting Officer. Patching shall match existing adjacent work in texture and color. All exterior color finish shall be integral with the stucco finish. No painted stucco shall be permitted due to minimize future maintenance.

4.12.6 INTERIOR WALLS

4.12.6.1 PLASTER WALLS

Interior walls shall be plaster applied in a similar manner as exterior stucco. Paint with 2 coats of semi-gloss off-white with less than .06% lead by weight color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.12.6.2 GYPSUM BOARD WALLS

Gypsum wall board shall not be used unless specifically noted in the contract documents or written approval from the Contracting Officer. If GWB is used; contractor must meet fire rating requirements per NFPA 252 standards. For 13 mm (½″) thick gypsum board structural fastener supports shall be not further apart than 400 mm.

4.12.6.3 HARDEN INTERIOR WALLS

IMPORTANT: INTERIOR WALL STRUCTURE SHALL BE EITHER CMU (MIN THICKNESS = 100 mm), 3D PANEL OR REINFORCED CONCRETE. Interior walls shall be plaster applied in a similar manner as exterior stucco. Paint with 2 coats of semi-gloss off-white with less than .06% lead by weight color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.12.7 INTERIOR CEILINGS

4.12.7.1 PLASTER CEILINGS

Ceilings shall be plaster applied in 2 coats over wire mesh, which is to be stapled or secured by wire to the 20 mm x 60 mm wood battens. Paint ceiling with 2 coats of flat white, with less than .06% lead by weight.

4.12.7.2 GYPSUM BOARD CEILINGS

Gypsum board may be used in lieu of plaster but framing supports for Gypsum board shall be as follows: For 13 mm (½″) thick gypsum board structural

fastener supports shall be not further apart than 400 mm. If gypsum board is thicker follow guidelines in ASTM C 840 for supports and fastener frequency. Fire rated gypsum board: follow NFPA 252 guidelines. The minimum for one hour fire rating is two layers of 15 mm type X GWB or European EN 520 equivalent.

4.12.7.3 CONCRETE CEILINGS

Concrete ceilings shall be exposed concrete painted with 2 coats of flat white, with less than .06% lead by weight.

4.12.8 TILE WORK

Tile work shall not be performed unless the substrate and ambient temperature is at least 10 degrees C and rising. Temperature shall be maintained above 10 degrees C while the work is being performed and for at least 7 days after completion of work. Upon completion, tile surfaces shall be thoroughly cleaned in accordance with manufacturer’s approved cleaning instructions. Acid shall not be used for cleaning glazed tile. Floor tile with resinous grout or with factory mixed grout shall be cleaned in accordance with instructions of the grout manufacturer. After the grout has set, tile wall surfaces shall be given a protective coat of a non-corrosive soap or other approved method of protection.

a. Floors in wet areas shall be either ceramic or 300 mm x 300 mm terrazzo tile with thin set mortar. Joints shall be 2-3 mm. Waterproof gray grout shall be applied the full depth of the tile. Floors shall slope, minimum 1/50, to floor drains. Slope shall be obtained with sloping mortar bed of minimum 20 mm thickness. Provide continuous waterproofing membrane beneath sloping mortar bed, turn up wall 300 mm behind wall base. Membrane shall be fully sealed at joints and shall shed water into body of floor drain. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.

b. Floors in administration areas, corridors, and all rooms unless otherwise stated shall be sealed concrete.

c. Walls in wet areas shall be tiled with 150 mm x 150 mm glazed ceramic tile up to 2000 mm above the floor to include interior of toilet stalls, and behind sink and lavatory. 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 shall be selected by the Contracting Officer from samples provided by the Contractor.

d. Laboratory area shall be covered with terrazzo tile or slip resistant quarry tile. Walls in the laboratory shall be ceramic tile up to 2000 mm above finished floor.

4.12.9 MIRRORS

600 mm x 900 mm, 6 mm plate glass shall be mounted above lavatory. Mount bottom of mirrors 1100 mm above finished floor.

4.12.10 TOILET PAPER HOLDERS

Toilet paper holders with removable pin shall be stainless steel, installed approximately 200 mm above floor by eastern toilets.

4.12.11 PAPER TOWEL DISPENSERS

Paper towel dispensers, 0.683 mm Type 304 stainless steel, surface mounted. Furnish tumbler key lock locking mechanism.

4.12.12 LIGHT DUTY METAL SHELF

Provide a 600 mm long x 150 mm wide, light duty stainless steel shelf with integral brackets over lavatory andand above Laboratory sink.

4.13 BUILDING SYSTEMS

4.13.1 ARCH SPAN

As a building option: Insulated Arch-Span. Insulated Arch-Span metal roofing systems shall be supported by reinforced concrete stem walls approximately 2500 mm in height. Stem walls shall be insulated and finished with gypsum board or plaster on the interior, and finished with stucco on the exterior. The floor slab shall be reinforced concrete with a minimum thickness of 150 mm placed on a clean vapor barrier above a capillary water barrier of 150 mm minimum thickness on properly compacted soil. Exterior walls shall be insulated with a minimum of R-13 insulation, and provide a minimum of R-30 insulation for the roof. The roof insulation system shall be spray applied and harden to a durable rigid surface, as per the arch span manufacturer’s standards.

Ribbed steel roof panels shall be mechanically fabricated from prefinished steel coil and joined by machines and operators, all certified by the arch span building manufacturer. The contractor shall present certificates of manufacturer’s training for machine operators, and certificates of authenticity for proprietary machines and equipment.

Only prefinished steel coil certified by the arch-span system manufacturer shall be used on this project. Fasteners for accessories shall be manufacturer’s standard. All materials and Concealed fasteners for steel roof panels shall be zinc-coated steel, aluminum, corrosion resisting steel, or nylon capped steel. Fasteners for structural connections shall provide both tensile and shear strength of not less than 350 kg per fastener.

4.13.2 PRE-ENGINEERED METAL BUILDING SYSTEMS

As a building option: Pre-Engineered Metal Building. Metal building systems shall comply with the requirements of the MBMA Low Rise Building Systems Manual-latest edition. Facilities designated as long-span, shall have no interior columns.

4.14 FACILITY TYPES

4.14.1 ADMINISTRATION/LABORATORY/CHLORINATIONFACILITIES

4.14.1.1 CEILING FINISH

Ceilings of the Facility shall be exposed concrete painted with 2 coats of flat white, with less than .06% lead by weight.

4.14.1.2 COUNTER TOP

Provide 1.6 mm (16 gauge) stainless steel, or 40 mm marble, counter Edges shall be turned down 30 mm and corners shall be welded and ground smooth. Provide anchor angles welded to the bottom of the counters to anchor tops to masonry walls below. Provide a minimum of eight (8) anchors on the Counter, four (4) on each side of the wall. Anchor angles to wall with masonry expansion sleeves and stainless steel screws. Counter tops are to be 600 mm wide x length of opening shown. Counter height is 1000 mm above floor finish (AFF).

5.0 MECHANICAL

5.1 GENERAL

The work covered by this section consists of design, supply, fabrication, and installation of new building heating, ventilation and air-conditioning (HVAC) systems. It also includes the delivery to site, erection, setting to work, adjusting, testing, balancing and handing over in perfect operating and running condition all of the HVAC equipment including all necessary associated mechanical works.

5.2 SPECIALIST SUB-CONTRACTORS QUALIFICATIONS

The HVAC works shall be executed by an air-conditioning specialist sub-contractor experienced in the design and construction HVAC equipment to include conventional compression systems, heat pump units, space heaters and knowledge in fabricating specialized units consisting of supplemental electric resistance heaters in satisfying the specified indoor design conditions. HVAC equipment will normally consist of split-pack heat pump units, industrial quality unit heaters, air ventilation systems and specialized industrial ventilation systems. The HVAC heating and cooling load calculations shall be prepared using recognized HVAC load analysis programs such as Trane “Trace” or Carrier “HAP”. The heating and cooling load calculations shall take into account the site elevation and ambient design temperatures when determining required HVAC equipment capacities and airflows. The HVAC specialist shall submit the complete HVAC analysis with equipment layout drawings at the 65% design submittal. The HVAC analysis shall clearly state and the drawings clearly show the type of systems to be used and how the system will satisfy the specified indoor design conditions. Provide related psychrometric charts showing the air wet bulb and dry bulb temperatures at each section of the heat/cool unit during both design heating and cooling operation.

Provide complete, edited specifications using the UFGS specs for selected HVAC system. The edited specifications shall be submitted along with the 65% design submittal. The specifications shall be coordinated with the manufacturer of the equipment.

5.3 CODES, STANDARDS AND REGULATIONS

The equipment, materials and works covered under the heating, ventilation and air-conditioning services shall conform to the referenced standards, codes and regulations where applicable except where otherwise mentioned under each particular clause.

5.4 DESIGN CONDITIONS

Outside Design Conditions - Contractor shall use the below weather date for equipment compatibility with the site conditions.

Mazar-e-Sharif area:

Latitude – (approx.) 36 deg. North

Longitude – (approx.) 67 deg. East

Elevation – (approx.) 391 M (1284 ft.)

Summer – 37.8 deg C (100 deg F) Dry Bulb (DB) & 20.5 deg C (69 deg F) Wet Bulb (WB)

Winter – (0 deg C / 32 deg F)

Daily Range – data unknown)

5.4.1 INDOOR DESIGN CONDITION

Administrative Buildings/Offices	Cooling 25.6 C (78 F)	Heating 20 C (68 F)
Maintenance Facilities	No cooling	Heating 12.7 C (55 F)

5.4.2 NOISE LEVEL

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

5.4.3 INTERNAL LOADS

a. Occupancy: Use ASHRAE standards to calculate sensible and latent heat from people. In general, light/moderate office work is 73watts sensible and 45watts latent.

b. Lighting: 21.5 W/m2 (2 W/Ft2) maximum (however lighting levels shall meet minimum requirements and shall be accounted for in the heating and cooling loads based on the actual lighting design).

c. Outdoor Air: Outdoor ventilation air shall be provided per ASHRAE Standard 62.1 with the exception of guard towers, guard shacks, and

storage facilities. In general this requires 2.5 L/s/Person (5 CFM/Person) and 0.3 L/s per square meter of floor space (0.06 CFM/sqft); outdoor air requirements can be satisfied by opening windows and doors for facilities without a ducted system.

d. Latrine/Bathroom Exhaust– 85 CMH (50 CFM) per toilet, urinal, or shower head.

5.5 NEW AIR COOLING & HEATING EQUIPMENT

Environmental control of the facilities shall be achieved by HVAC equipment as listed below and approved by the U.S. Government. Unless otherwise noted, the Contractor may choose any combination of equipment to achieve the inside design conditions specified for the floor plans that is the most Life Cycle Cost Effective to the government. Contractor shall size and select equipment based on equipment manufacturer’s performance data at the project site elevation and ensures the equipment’s performance meets the design heating and cooling sizing requirements.

Facility Type	Cooling	Heating	Type of HVAC System	Remarks
Bathroom/Shower/ Laundry	None	20C 68 F	Unit Heaters	Provide adequate ventilation
Storage	None	7.2 C 45 F	Unit Heaters	
Administration / Control Room	25.6C 78 F	20C 68 F	Split Pack heat pump	
Laboratory	25.6C 78 F	20C 68 F	Split pack heat pump	Provide adequate ventilation
Chemical Storage	None	13C 55 F	Unit Heaters	Provide adequate ventilation

5.5.1 UNITARY (DUCTLESS SPLIT-PACK) HEAT PUMP UNITS

Unitary ductless split-pack heat pump units shall be provided for small and isolated rooms, such as the guard tower, guard shed and remote small buildings. Ductless split units shall be unitary in design and factory manufactured ready for installation. Heat pump units shall provide cooling during summer and heating during winter. **Heat pump units shall be suitable for low ambient operation.** Interior evaporator fan coil units shall consist of a DX coil, blower, 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 exterior condensing units shall contain compressor, condenser coil, and all controls/fittings enclosed in a weatherized housing. Outdoor condensing unit shall be wall-mounted on steel supports or on a concrete pad. 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.

5.5.2 SUBMITTALS

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer’s data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

5.5.3 WALL PENETRATIONS

Building wall penetrations shall be carefully made so as not to deteriorate the structural integrity of the wall system. The Contractor shall consult with the building manufacturer, if possible, to determine the best way to penetrate the wall. If the building manufacturer is not available, a structural engineer shall be consulted. In either case, the recommendations of the engineer shall be strictly adhered to.

5.6 VENTILATION AND EXHAUST SYSTEMS

All fans used for building ventilation, exhaust, and pressurization shall be selected for minimum noise level generation. All fans used for supply or roof/wall exhaust shall be centrifugal forward curved, backward inclined, or airfoil fans with non-overloading characteristics of high efficiency and quiet running design. The fans shall be of the heavy-duty type with durable construction and proved performance in a desert environment. Each wall exhaust fan shall be provided with motorized or gravity dampers which close automatically when the fan is not running. Each ventilation or intake air fan shall be provided with an interlocked motorized damper which closes automatically when the fan is not running and shall be sized for and provided with filter and insect screen. Also, each fan shall be complete with vibration isolator, external lubricators, individual wall on/off switches, and all accessories and sound attenuators as necessary.

To reduce sand and dirt migration, outside air intakes shall be installed as high as possible within architectural constraints or a minimum of 1.5 meters above the ground. The intakes for gravity or natural ventilation type systems shall be sized so that the free air velocity is below 2.5 m/s (500 fpm).

Toilet and Wash Area: Minimum exhaust ventilation shall be 85 CMH (50 CFM) per water closet, urinal or shower head. At extreme cold in winter these values can be reduced for short periods to 10 CMH/SM or 40 CMH/toilet (WC) to conserve heat. Provide two speed fans.

5.6.1 OUTSIDE AIR INTAKE LOUVERS

Outside air louvers shall be factory fabricated of steel or aluminum and allow the specified air quantity into the space intended. Louvers shall be rectangular with rain-proof exterior face blades and internal grille. Louvers shall be mounted a minimum of 1.8 m (70 inches) above the floor on the sidewalls. Consideration shall be given to locating the louvers near the heating and cooling unit and encourage air floor across the room in

conjunction with the exhaust fan. Louvers shall be provided with air filter (See Air Filtration), insect screen, and motorized dampers interlocked to open when the laboratory exhaust fan operates. Minimum louver dimensions shall be 300 mm x 300 mm (12" x 12").

5.6.2 WALL PENETRATIONS

Building wall penetrations for fans and louvers shall be carefully made so as not to deteriorate the structural integrity of the wall system. The Contractor shall consult with the building manufacturer, if possible, to determine the best way to penetrate the walls. If the building manufacturer is not available, the Contracting Officer shall be consulted. In either case, the recommendations of the manufacturer and/or Contracting Officer shall be strictly adhered to.

5.6.3 AIR FILTRATION

All outside air shall be filtered using manufacturer’s standard washable filters mounted inside the louvers. Outdoor air intakes shall be equipped with 50 mm (2 inch) thick washable filters.

5.6.4 SUBMITTALS

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer’s data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

5.7 ELECTRIC HEATERS

Electric heat trace cable for freeze protection shall not be provided as a substitute for space heating system.

5.7.1 UNIT HEATER

Electric resistance unit heaters shall be installed in spaces where only heating is required. Generally, unit heaters shall be mounted as high as possible. Unit heaters shall be of the industrial grade, very durable and securely fastened to the ceiling, wall or structure. Provide a self-contained electric heating unit, suspended from ceiling or structure, fan with at least two-speeds and heating elements. Provide control-circuit terminals and single source of power supply with disconnect. Heating wire element shall be nickel chromium. Include limit controls for overheat protection of heaters. Provide hard-wired tamper resistant integral thermostat located as indicated on the drawings.

5.7.2 SUBMITTALS

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer’s data including performance characteristics at design conditions; manufacturer’s certificate stating that each unit will perform to the conditions stated, catalog cuts showing dimensions, performance data, electrical requirements, compliance

with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; complete shop drawings indicating location and installation details.

The manufacturer shall also submit a 2 year warranty for each of the units.

5.8 TEST ON COMPLETION

After completion of the work, the Contractor shall demonstrate to the Contracting Officer that the installation is adjusted and regulated correctly to fulfill the function for which it has been designed. The Contractor shall test, adjust, balance and regulate the section or sections of concern as necessary until the required conditions are obtained. Operational test shall be conducted once during the winter and once during the summer. Coordinate with the Contracting Officer on when the test shall be scheduled. Include tests for all interlocks, safety cutouts and other protective device to ensure correct functioning. All such tests shall be carried out and full records of the values obtained shall be prepared along with the final settings and submitted to the Contracting Officer in writing.

The following tests and readings shall be made by the Contractor in the presence of the Contracting Officer and all results shall be recorded and submitted in a tabulated form.

a. Ambient DB and WB temperatures

b. Room Inside Conditions:

i. Inside room DB & WB temperatures

ii. Air flow supply, return and/or exhaust

c. Following readings shall be made:

i. Total CMH (CFM) exhausted by each exhaust fan

ii. Motor speed, fan speed and input ampere reading for each fani.

iii. Supply, return and outside air temperature for each air-conditioning system.

d. Electric Motors: For each motor:

i. (1) Speed in RPM

ii. (2) Amperes for each phase

iii. (3) Power input in KW

5.9 ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT

a. Note that electrical requirements for all HVAC systems shall be designed and installed to operate on the secondary power standard required herein. The existing power distribution system may require modifications or upgrades to support the additional power required by the HVAC unit. The Contractor is responsible to field verify all the conditions and provide complete shop drawings showing any incidental

power upgrades. All electrical work shall comply with the National Electric Code.

b. All thermostats shall be wall-mounted. Wall-mounted thermostats shall be mounted 1.5 meters (5 feet) above the finished floor and be easily accessible. Operation of the control system shall be at the manufacturer’s standard voltage for the unit.

c. The following are the minimum requirements for motors regarding enclosure, insulation and protection:

i. Compressor Hermetic: Provide inherent (internal) overload protection.

ii. Condenser: Provide internal thermal overload protection.

iii. Evaporator (Open Class "A") fan motor type provides internal thermal overload protection.

5.10 MECHANICAL REQUIREMENTS FOR GENERATORS

a. The following shall be provided for the Mechanical design and installation for Standby stationary generator sets and related mechanical systems with their interface with the facility. This includes, but not limited to, the following: Foundations, mountings, exhaust systems, cooling systems, ventilation, fuel systems, noise reduction, fire protection & safety, and equipment room configuration. See Electrical for power and electrical equipment requirements.

b. The generator set(s) shall be the manufacturer's design for outdoor weatherproof installation with skid-mounted radiator. Weatherproof generator set(s) shall be protected from the elements with a structural cover which extends over the bulk fuel storage tank.

c. Heating devices for the generator set engine coolant and starter batteries shall be provided as per manufacturer's recommendation for cold starting. Ambient temperature and elevation derating calculations shall be clearly shown in the design analysis (DA).

d. Generator noise levels shall be based on the location. For continuous day-nighttime operation in a non-residential area (i.e. Workshops, Offices, etc.), 60 dB(A) shall be the maximum noise level outside the nearest occupied building. All generator sets shall be provided with sound attenuation enclosure, as a minimum, to reduce noise.

e. Exterior exhaust system shall be, with minimal backpressure, directed to disperse the noise away from people, and be located near the radiator air discharge.

f. For fuel and day tank requirements, see Plumbing paragraph, "GENERATOR FUEL STORAGE/DISTRIBUTION."

g. For fire emergencies, see Fire Protection paragraph, "PORTABLE FIRE EXTINGUISHERS."

h. Generator set facilities shall be oriented with the prevailing winds when possible (with the alternator upwind) to assist ventilation air flow across the alternator and engine and promote heat removal by the fan and radiator. All generator sets with skid-mounted radiators and installed in an enclosed building shall have the ventilation air drawn directly from the outside and discharged directly to the outside. All weather-proof generator sets shall be provided with a covered (roof-only) shelter enclosed with a chain link security fence for both the generator(s) and fuel storage tank(s).

i. Air flow calculations for static pressure (SP) shall be provided in the design analysis (DA) for all indoor and/or ducted generator sets. Calculations shall clearly state the following information located in the manufacturer's specifications: a) minimum air flow through the radiator. b) minimum engine combustion air flow. c) maximum SP allowable by the radiator fan. Actual SP calculations shall include and clearly show the SP drop across any louvers, bird screens, dampers in the open position, duct transitions, and any equipment that restricts air flow.

5.11 OPERATIONS AND MAINTENANCE (O&M) FOR MECHANICAL

a. Contractor is required to provide a 12 month supply of parts for operation and maintenance of equipment according to the manufacturer’s recommendations. In addition to this, the contractors shall provide an inventory of all items, location/address stored and secured, and commissioning plans.

b. The O&M manuals must be provided in the English language and prior to any training activities..

c. All control panels shall have tri-lingual name plates in Dari, Pashto and English.

d. The contractor shall provide an outline of the training lesson plan (to be approved by the Government) prior to conducting training. CD recordings of training on video shall also be provided, after training is conducted.

5.12 PLUMBING

5.12.1 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 01010 Scope of Work and as described herein. The Contractor shall also be responsible for complete design and construction of all domestic and special plumbing systems required for full and safe operations in the Generator Plant, Water Storage and other facility or structures required in this contract.

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.

5.12.2 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.

5.12.3 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.

5.13 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. Standards other than those mentioned herein 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 if requested by the Contracting Officer.

IPC – International Plumbing Code

NFPA - National Fire Protection Association

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

UFC 4-229-01N dated 16 January 2004

5.14 PLUMBING SYSTEMS REQUIREMENTS

5.14.1 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. The building service line shall be provided with a shut off valve installed either outside in a valve pit or inside the mechanical room or similar spaces. Water piping shall not be installed in or under the concrete foundation except for the service line. 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. Electric heat trace cable for freeze protection shall not be provided as a substitute for space heating systems.

5.14.2 PIPING MATERIALS

Domestic cold water shall be distributed by means of standard weight (schedule 40) Polyvinyl Vinyl Chloride (PVC) (ASTM D 1784) plastic piping. Domestic hot water shall be distributed by means of standard weight (schedule 40) Chlorinated Polyvinyl Vinyl Chloride (CPVC) piping. Waste and vent piping shall be made of schedule 40 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.

5.14.3 PLUMBING WATER FIXTURES

The following typical plumbing fixtures shall be provided:

a. Eastern Water Closet with flush tank assembly. Provide acid resisting fired porcelain enameled cast iron water closet complete with rotating No-Hub 'P' trap and No-Hub coupling to meet piping requirements. Eastern Style water closet shall be furnished with integral non-skid foot pads and bowl wash down non-splashing flushing rim. The water closet shall be completely self supporting requiring no external mounting hardware and shall be flush with floor. The Eastern Style water closet shall incorporate waterproofing membrane flashing flange. Provide a cold water spigot 300mm above finished floor on the right (from a perspective of standing inside of the cubicle and looking out) sidewall of the cubicle. Spigot shall have a flexible hose and spray nozzle such that the occupant can wash over the water closet. Toilets shall be oriented north and south. Toilets shall not face east or west.

b. Lavatories. Vitreous china wall-mounted type: Provide maintenance access to waste piping and P-traps from under the sink. Drum traps are not approved.

c. Sink Faucets. Faucets shall be chrome plated brass or bronze alloy with hot and cold water valves for manual mixing. Faucet handles shall be chrome plated brass or bronze alloy and non-lever type. Goose neck faucet fixtures shall be used on Laboratory double sink.

d. Janitor’s Sink. Floor mounted trough type tile lined concrete. Provide hot and cold water valves with manual mixing. Faucet handles shall chrome plated brass or bronze alloy. Install water lines on wall with line supports and bracket to support Janitor’s sink faucet. Include a stainless steel shelf and three mop holders.

e. Emergency Eye Wash Assembly. Provide emergency eye wash assembly in Laboratory and Chemical storage area. Provide a floor drain near to the Eye Wash Assembly.

f. Trench Drains: Floor trench shall be concrete construction with a cast iron grate. The cast iron grate shall be sectionalized and hinged so that it can easily be opened to clean out the trench. Iron grates shall be fabricated in sections in length not greater than 1500 mm.

g. Provide P-Traps per International Plumbing Code IPC for all fixture drains, floor and trench drains, and shower drains. P-traps shall have minimum of 50 mm water seal.

5.14.4 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 30m.

5.14.5 HOT WATER HEATERS

The hot water shall be generated by electric water heaters. The unit shall be typically located inside the storage room or similar type space and be wall-mounted or be floor-mounted on a 100 mm (4 inch) raised concrete pad. 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, a pressure reducer shall be installed in the line before the water heater. Each water heater shall be equipped with a vacuum relief valve and temperature and pressure (T&P) relief valve that discharge into a nearby floor drain; discharge piping shall terminate 50 mm (2 inches) above the floor drain. Multiply water heaters shall be connected by common inlet and outlet manifolds to ensure equal flow and drawdown rates.

5.15 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. Floor drains shall be provided next to the electric water heaters. 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.

Every trap and trapped fixture shall be vented in accordance with the IPC. In order to minimize vent piping, consider incorporating circuit venting or combination drain and vent systems in accordance with Section 911 and 912 of the IPC.IPC Section 708.3 states that cleanouts be provided no more than 100 feet apart measured from the upstream entrance of the cleanout. AED standard is to provide cleanouts at 25 feet intervals due to the nature of Afghans plugging up the drains and the limitation of the cleanout routers available in Afghanistan

5.15.1 GENERATOR FUEL STORAGE/DISTRIBUTION

Provide above-ground, horizontal storage tanks within a concrete containment dike. Provide 30-day storage capacity for prime duty plants. Storage tank volume shall be based on the rate of fuel consumption of all engines including spares, at 100 percent load, multiplied by a 0.75 operating factor. Tanks shall be factory fabricated and shall be of the manufacturer standard sizes.

Day tanks shall be integral with the engine generator (belly tanks). Each belly tank shall have storage for not less than 2 hours full load operation and with automatic transfer pumps and level controls.

The containment dike shall be sized to contain 110% of the total fuel in the single largest storage tank, and the dike structure shall be constructed of reinforced concrete. Underground fuel piping shall be installed in a concrete secondary containment trench with removal covers and applied POL-resistant coating.

Fuel shall be transferred from the bulk storage tanks to the generator belly tanks by use of duplex transfer pumps.

Bulk storage tanks shall be complete with fill tube and cap, suction tube, tank gauge, vent, and other fittings and appurtenances required for full and safe operation. Tanks shall be provided with support saddles, platform/stair and concrete pad.

Tanks of 3,780 to 45,430 liters (1,000 to 12,000 gallons) capacity shall be provided with 760 mm (30 inch) diameter manways. Tanks larger than 45,430 liters (12,000 gallons) shall be provided with 915 mm (36 inch) diameter manways. Tanks 3,780 liters (1,000 gallons) and larger shall be provided with a minimum of one (1) tank manway to allow for internal tank access. Piping will not penetrate through access manways. Tank shall be provided with a combination cleanout and gauge connection.

Vent pipe sizing shall be not less than 32 mm (1-1/4") nominal inside diameter Vent shall be the rupture disc type calibrated to burst at 14 kPa (2 psi) pressure, and operate at 80 percent of burst setting. Tank shall be provided with an overfill alarm system. Tank shall be provided with two (2) stick gauges graduated in m and mm. Stick gauge shall be of wood and treated after graduating to prevent swelling or damage from the fuel being stored. Each storage tank shall be provided with an automatic analog reading gauge which is directly mounted to a tank's manway cover. Cathodic protection shall be provide for metal components in accordance with the manufacturer's recommendations. Storage tanks shall be handled with extreme care to prevent damage during placement and shall be installed in accordance with the manufacturer's installation instructions. External platform/ladder access to tank top (i.e. manhole) shall be installed on a concrete pad.

A tightness test shall be performed on each above ground storage tank. The tests shall be performed prior to making piping connections. Tests shall be capable of detecting a 0.1 mL/s (0.0126 cu.ft/h) leak rate from any portion of the tank while accounting for effects of thermal expansion or contraction. Each storage tank shall be pressurized with air to 35 kPa (5 psi) and monitored for a drop in pressure over a 2-hour period during which there shall be no drop in pressure in the tank greater than that allowed for pressure variations due to thermal effects. Following the tank tightness test, each storage tank shall be leak tested in accordance with the manufacturer's written test procedure if the manufacturer's test procedure is different from the tightness tests already performed. **The Contractor shall provide a full supply of fuel to each tank at the time of turnover to the Government.**

5.15.1.1 FILLING SYSTEM

A fuel filling system shall be provided for unloading fuel from fuel tanker into individual bulk storage tanks comprising of truck pad(s), duplex fuel

transfer pumps, piping manifold and valves. The system shall provide remote fuel level monitoring panels at the pad(s).

5.15.2 MOTOR POOL FUEL POINT (STORAGE/DISPENSING)

Fuel storage and distribution shall be provided to support the vehicles used at various locations on base. The fuel shall be stored in above-ground horizontal steel tank as per capacity schedule given below.

Motor Pool 38,000 liters of Diesel and 10,000 liters of MOGAS.

These tanks shall be complete with fill tube and cap, suction tube, tank gauge, vent, and other fittings and appurtenances required for full and safe operation. Tanks shall have overfill protection devices and remote overfill alarm. Tanks shall be provided with support saddles, platform/stair, concrete pad and leak spillage containment provisions. Underground tanks shall be with either outer double-wall fiberglass, outer double-wall steel with cathodic protection, or a concrete secondary containment vault with applied POL-resistant coating. The secondary containment vault shall be sized to contain 110% of the total fuel in the tanks. Fuels shall be transferred from the storage tanks by transfer pumps located within the fuel dispensing units. Fuel piping shall be steel for piping located above grade. Underground piping shall be provided within a concrete secondary containment trench with removal covers and applied POL-resistant coating. Provide separate dispensing units for diesel and MOGAS. Each dispensing unit shall be equipped with dual nozzles and key control. Fuel dispensing unit shall be installed on an island such that two vehicles can simultaneously fuel on either sides of the dispensing unit. Coordinate site design and route all contaminated drainage water from the fuel dispensing pad through an oil/water separator.

5.16 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.

6.0 FIRE PROTECTION

6.1 PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers shall be provided inside all facilities and at exterior locations as required in accordance with NFPA 10. Generally, extinguishers will be of the multi-purpose dry chemical type except for occupancies requiring a special type extinguisher (e.g., carbon dioxide

portable fire extinguishers for electrical rooms).

7.0 ELECTRICAL

7.1 GENERAL DESIGN AND PRODUCT CRITERIA

7.1.1 DESIGN STANDARDS

- Calculations in the Design Analysis, at a minimum, shall include:
  - Load Analysis
  - Voltage Drop for all feeders and one worst case branch circuit per feeder
  - Lighting Calculations
  - Lightning Protection Risk Analysis

- Conflicts between criteria and/or local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, all available information shall be furnished to the Contracting Officer for approval.

- All electrical systems and equipment shall be installed in accordance with the requirements set forth in the documents referenced herein.

- Acceptance test procedures on all systems provided. As a minimum the testing procedures shall comply with the requirements of the National Fire Protection Association (NFPA) and the International Electrical Testing Association (NETA).

- Electrical design shall be in the International System of Units (SI).

7.1.2 ELECTRICAL PRODUCTS/MATERIAL

Unless noted otherwise, all electrical material used shall be tested and marked by a Nationally Recognized Testing Laboratory (NRTL) such as Underwriters Laboratories (UL). In the event that NRTL-tested materials are not available, the contractor may then select applicable IEC manufactured, and CE marked material but the contractor must prove equivalence and must provide the government with a full copy of the relevant specification(s)/standard(s). If IEC manufactured, CE marked material is chosen, the product shall be provided with a “Declaration of Conformity”. The “Declaration of Conformity” contains information to allow tracing of the product, including product identification, manufacturer’s name, address, signature and standards by which the product is tested. IEC manufactured, CE marked material shall also be independently certified by a “Notified Body.” A “Notified Body” must serve as an independent test lab and perform type-tests that comply with the applicable IEC standard. These tests shall be recorded in “Technical Documentation” by the laboratory and submitted for review.

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.

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.

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.

7.2 SPECIFIC SYSTEM STANDARDS

7.2.1 ELECTRICAL DISTRIBUTION SYSTEM

Aerial distribution systems shall be on steel poles with vertical and horizontal clearances meeting the requirements of the National Electrical Safety Code (NESC) and designed in accordance with TM 5-811-1. The new system shall match the current carrying capacity of the existing system. 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.

Underground distribution systems shall be in concrete encased schedule 40 PVC ductbanks under roadways, parking lots and heavy traffic areas, and direct buried Schedule 80 PVC ductbanks in other areas. Underground ducts shall be not less than 100mm diameter and not less than 1220mm below grade. Manholes and handholes shall be provided at changes of direction of more than 40 degrees and elsewhere as required to limit the pulling tension and sidewall pressure on the cables during installation to acceptable levels as defined by the cable manufacturer. Manholes shall be provided for ductbanks with more than 2 ducts. Handholes shall be provided wherever a manhole is not required by quantity of ducts or by cable manufacturer’s installation recommendations. Splices shall not be allowed in manholes.

7.2.1.1 TRANSFORMERS

Oil-filled, pad-mounted medium voltage transformers shall conform to either IEC 60076 or ANSI C57.12. Primary side load-break disconnecting means shall be provided with all transformers. Transformer substations shall be dead front, loop-feed, pad-mounted, compartmental, 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. Transformers shall be Primary‘Delta’ and Secondary ‘Wye’ connected. Transformer selection, design, and installation shall be governed by NEC, NESC, ETL 1110-3-412, TM 5-684, 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.

Aluminum windings shall not be used in transformers.

Transformers shall be strategically located close to the loads. Dedicated transformer substations shall be provided for large loads.

Each padmounted transformer shall be sized to provide power for the total load of the facility served without being loaded to more than 110% of its rated capacity. At a minimum provide 50 kVA transformers at each lift station and a 300 kVA transformer at the water treatment plant.

7.2.1.2 PAD MOUNT SWITCH

Pad-mounted Switches shall be in metal enclosure and approved for outdoor type. The switch shall be configured with incoming compartment for radial feed. The outgoing compartments shall be provided with fused disconnects. Switch enclosures shall be of freestanding, self-supporting construction provided with separate incoming and outgoing compartments configured for bottom cable entry. Enclosures shall be of deadfront construction, provided with a hinged door for access to each compartment. Switch and enclosure selection, design, and installation shall be governed by NEC, NESC, IEEE 386, IEEE C57.12.28 and IEEE C37.20.3, Category A. Applicable standards include IEC 60694, IEC 62271-200, IEC 60265-1, IEC 62271-100, IEC 62271-105, IEC 62271-102 and IEC 60255.

7.2.1.3 PANELBOARDS

Panelboards shall meet one of the following requirements:

- UL67 listed
- Tested and Marked by another NRTL
- BS/EN 60439 or IEC 60439-manufactured, AND type-tested assembly (TTA)

All panelboards shall be circuit breaker ‘bolt-on’ type panels.

Enclosures for exterior and interior applications shall be NEMA Type 3 (IEC Classification IP54) and NEMA Type 1 (IEC Classification IP10) respectively.

Circuit breakers shall be connected to copper bus bars within the panelboards. Daisy chain (breaker-to-breaker) connection(s) made with conductor or interconnecting busbar are not acceptable. 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 bridge to make a 3-pole breaker.

For large panels (225 Ampere and above) provide an ammeter, voltmeter and kilowatt-hour meter to monitor energy usage. Selector switches shall be provided for each meter to read all 3 phases. Receptacle locations shall be coordinated with architectural requirements.

All panelboards shall be surface mounted. All panels shall be provided with a minimum of 25% spare capacity for future load growth.

All panelboards shall be provided with a nameplate including the following information:

- Manufacturer’s Name or trade mark

- Type designation or identification number, or other means of identification making it possible to obtain relevant information from the manufacturer
- Mark of the NRTL (such as UL), IEC 60439-1, or BS/EN 60439-1
- Rated current, operational voltage, and impulse withstand voltage
- Short-circuit withstand strength
- Degree of Protection

All panelboards and load centers shall be provided with a panel schedule. All circuit breakers shall be labeled with an identification number corresponding to the panel schedule. Panel Schedule shall be typed written in English, Dari and Pashto. The panel schedule shall identify the conductor color code present in the panel.

All loads shall be coordinated to provide balanced loading. Phase imbalance at each panel shall not exceed 5%.

Any building with any branch circuit breakers larger than 32A, 3 pole shall have at least one distribution panel for the larger breakers.

7.2.1.4 CIRCUIT BREAKERS

Circuit breakers shall meet one of the following requirements:

- UL 489 listed
- Tested and marked by another NRTL
- BS/EN 60947 or IEC 60947-manufactured
- BS/EN 60898 or IEC 60898-manufactured

Circuit breakers shall not be rated less than 15-amperes. All Breakers feeding wet areas shall be Residual Current Breakers w/ Overload (RCBO), Ground Fault Protector (GFP), or Ground Fault Circuit Interrupter (GFCI).

All circuit breakers shall use down-stream coordination to ensure the breaker nearest a fault or overload is the first to trip.

7.2.2 INTERIOR DISTRIBUTION SYSTEM

Contractor shall design and provide circuits for all mechanical equipment and any other equipment that requires power and make the final connections.

7.2.2.1 CONDUCTORS

All cable and wire conductors shall be copper. Conductors shall be single core; multiconductor cables shall not be used. All wiring, unless noted otherwise, shall be conductor-in-conduit. Conductor jacket or insulation shall be color coded to satisfy IEC requirements. For a three-phase system, phase A shall be brown, phase B shall be black, phase C shall be grey, the neutral shall be blue and the ground shall be green/yellow. Conductor color coding shall be identified on the plans. If a new feeder is added to an existing panelboard, colored electrical tape shall be used on the new conductors to match the existing color code. The grounded (neutral) conductor shall be permanently identified by a tag, label, or marking at the interface with an “N” on both the old and new grounded (neutral) conductor. The use of 75 or 90 degree C (minimum) terminals and insulated conductors is required. Use of higher degree C rated conductors on circuits with protective device terminals rated at a lower degree C is allowed but must be

derated to the rating of the device terminals.

Aluminum conductors shall not be specified or used except as bare steel reinforced (ACSR) overhead conductors in an aerial primary distribution system.

All branch circuit wiring shall be copper, minimum #4 mm^2 (#12 AWG) installed in metal conduit.

Conductors shall be sized in accordance with the AED Design Requirement entitled “Breaker and Conductor Sizing.” Manufacturer-provided ampacity charts shall not be used in determining conductor size.

Voltage Drop for branch circuits shall be limited to no more than 3%; voltage drop for branch and feeder circuits combined shall be limited to no more than 5%.

7.2.2.2 CONDUIT

Metal conduit (EMT) system shall be complete, to include but not limited to, necessary junction and pull boxes for all surface mounted conduit systems. Surface-mounted Nonmetallic Raceways shall not be allowed. Smallest conduit size shall be no less than 20mm (0.75 inch) in diameter. All empty conduits shall be furnished with pull wire or cord or rope (depending on the size of conduit and length of run). Exterior conductors below grade shall be installed in concrete encased PVC conduit at a depth of 1220 millimeters.

Conduit shall be surface mounted in all areas.

Provide rigid steel conduit and PVC-coated, liquid-tight flexible conduit in and around an open sewage. Protect any metal in and around open sewage from corrosion.

7.2.2.3 RECEPTACLES

Receptacles shall be placed at a maximum of 3-meter (10 feet) intervals. Areas with computer work-stations or similar equipment will have additional receptacles. Receptacles shall not be provided in latrines, bathrooms, restrooms, ablution areas, or shower rooms. Total number of duplex receptacles shall be limited to six (6) per 20-ampere circuit breaker.

Receptacles (outlets) shall be duplex type 16A, 230V, 50 hertz, type CEE 7/7 (Schuko) with Earth Ground.

7.2.3 LIGHTING

Design levels shall be per IES standards as a minimum. For convenience, the following lighting level table is listed. Note: all spaces listed below may not be within the work required within this contract.

Living room/Quarters	35 FC (350 Lux)
Toilets, Showers, Latrines, washrooms	20 FC (200 Lux)
Mechanical/Electrical rooms	30 FC (300 Lux)
Corridors and Stairways	20 FC (200 Lux)
Offices (private)	50 h/5 v FC (500 h/50 v Lux)
Office areas (open)	30 h/5 v FC (300 h/50 v Lux)

Kitchens (commercial)	70 h/3 v FC (700 h/30 v Lux)
Dining Areas	20 h/3 v FC (200 h/30 h Lux)
Auditoriums (assembly)	100 h (10 h Lux)
Auditoriums (social)	5 h/3 v FC (50 h/30 v Lux)
Conference	30 h/5 v FC (300 h/50 v Lux)
Video Conference	50 h/30 v FC (500 h/300 v Lux)
Armories	30 h/3 v FC (100 h/30 v Lux)
Reading (in chair-casual)	30 h/5 v FC (300 h/50 v Lux)
Reading (in chair-serious)	50 h/10 v FC (500 h/100 v Lux)
Reading (at desk-casual)	30 h/3 v FC (300 h/30 v Lux)
Reading (at desk-serious)	50 h/10 v FC (500 h/100v Lux)
Patient Rooms (general)	Per UFC 4-510-01
Patient Rooms (critical)	Per UFC 4-510-01
Egress path (incl. exterior)	1 FC (10.8 Lux)
At equipment platforms and catwalks	10 FC (108 Lux)
Around Fences	0.5 FC (5 Lux)
Outside Gatehouses	3 FC (30 Lux)
In EPC Areas	1 FC (10 Lux)

FC = FootCandle

h = horizontal component

v = vertical component

Indoor lighting for all areas shall consist of fluorescent surface mounted light fixtures. Exterior lighting shall be HID (metal halide or high pressure sodium) as referenced. Moisture resistant/waterproof (IPx4 rated or better) fluorescent light fixtures shall be provided in high humidity and wet areas such as latrines, showers and outside. Battery powered ‘emergency’ and ‘exit’ lights shall be provided within each building, as applicable, for safe egress during a power outage. All light fixtures shall be factory finished, complete and operational, to include but not be limited to, lens, globe, lamp, ballast etc. Industrial type fluorescent light fixtures shall not be used. Every room shall be provided with a minimum of one light switch. Light fixtures shall be mounted approximately 2.5-meters (8 feet) above finished floor (AFF) minimum. Fixtures may be pendant or ceiling mounted, depending on the ceiling type and height.

Lighting in large rooms/areas may be controlled from multiple switches. Three-way or four-way lighting shall be provided in all rooms / areas with multiple entrances.

Above mirror lights shall be provided in toilet rooms. Above-mirror lights shall be IPx4 rated if within Zone 2 as identified in BS7671.

7.2.3.1 EMERGENCY LIGHTING

Battery powered emergency lights shall be provided within each building per NFPA 101. Fixtures shall be provided with self-contained nickel cadmium battery pack to operate on stand-by circuit for 90-minute minimum. Unit shall have test/re-set button and failure indication lamp.

Emergency light fixtures shall be UL 924 listed, marked/tested by another NRTL, or IEC 60598 manufactured.

7.2.3.2 LIGHT FIXTURES

Lighting fixtures shall be a standard manufacturer’s product. Fluorescent surface mounted light fixtures shall be power factor corrected and equipped with standard electronic ballast(s). Fixtures in medical facilities shall also have electronic ballasts. All light fixtures shall properly operate using standard lamps available locally. Fixtures shall be fully factory wired and designed for appropriate application i.e. appropriate for that location where installed.

7.2.3.3 ILLUMINATED EXIT SIGNS (EXIT LIGHTS)

Battery powered exit lights shall provided where required by NFPA 101. Exit lights are not required where the exit or way to reach the exit is readily apparent to the occupants.

Fixtures shall be single or double sided as required by the location and for wall/ceiling mounting. Unit shall illuminate continuously and be provided with self-contained nickel cadmium battery pack, to operate on floated-battery or trickle charge circuit. Fixture shall operate satisfactorily for 90 minutes during a power outage. Unit shall have test/reset button and failure indication lamp. Lettering “EXIT” shall be color red and not less than 6 inches (150 mm) in height and on matte white background. Illuminations shall be with LEDs.

7.2.4 SINGLE LINE DIAGRAM

Complete single line diagrams shall be provided for all systems installed. All major items in each system shall be identified and labeled for respective ratings. Single line diagrams for each system, installed in a clear plastic frame, shall be provided.

7.2.5 SURGE PROTECTIVE DEVICES (SPD’S)

Transient Voltage Surge Suppression shall be provided utilizing surge arresters to protect sensitive and critical equipment. As a minimum TVSS protection shall be provided at each panel serving electronic loads and shall be shown on the panel schedule. It is recommended that Metal Oxide Varistor (MOV) technology be used for such applications.

7.2.6 GROUNDING AND BONDING

Grounding and bonding shall comply with the requirements of BS7671 for 50Hz systems and NFPA 70 for 60Hz systems. All raceways shall include insulated equipment grounding conductor (protective earth conductor), and grounding electrodes (earthing) shall be installed at every building or structure. Grounding electrodes shall include, at a minimum: concrete

encased electrode, bond to building steel (if available), bond to metallic water pipe (if available), and ground rod(s). Underground connections shall be exothermally welded. All exposed non-current carrying metallic parts of electrical equipment in the electrical system shall be grounded. Final measurement of the ground resistance shall not exceed 25 ohms when measured more than 48 hours after rainfall.

Ground rods shall be copper clad steel, with minimum diameter of 17.2mm and minimum length of 3000mm.

7.2.7 LIGHTNING PROTECTION SYSTEM

The contractor shall perform a Lightning Risk Assessment IAW NFPA 780 for every structure provided in this contract, and submit the calculations in the Design Analysis. If the Lightning Risk Assessment determines that a Lightning Protection System (LPS) is required, the LPS shall be designed and installed by the contractor IAW NFPA 780. A yearly average flash density of 4.0 flashes/km^2 shall be used for all regions of Afghanistan. The LPS shall be bonded to the electrical grounding system. At the very least provide grounding at guard towers and at the administration building.

8.0 COMMUNICATIONS – TELEPHONE AND DATE DISTRIBUTION

8.1 APPLICABLE SPECIFICATIONS

The Publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by designation only.

United States Department of Agriculture, Rural Utilities Service

RUS Bulletin 1751F-643 (2002) Underground Plant Design

RUS Bulletin 1751F-644 (2002) Underground Plant Construction

RUS Bulletin 1753F-151 (2001) Construction of Underground Plant,

Parts II & III

RUS Bulletin 1753F-201 (1997) Acceptance Test and Measurements

Of Telecommunications Plant

RUS Bulletin 1753F-208 (1993) Specifications for Filled

Telephone Cables with Expanded

Insulation (PE-89)

RUS Bulletin 1753F-401 (1995) Standards for Splicing Copper

And Fiber Optic Cable (PC-2)

RUS Bulletin 1753F-601 (1994) Specifications for Filled

Fiber Optic Cables (PE-90)

RUS Bulletin 1753E-001 (1996) RUS General Specification for Digital, Stored Program

Controlled, Central Office Equipment, RUS Form 522.

RUS Publication IP 344-2 (2006) List of Materials Acceptable

For Use on Telecommunications Systems of RUS Borrowers.

RUS Bulletin 345-65 (1978) Shield Bonding Connectors (PE-33)

RUS Bulletin 345-83 (1982) REA Specification for Gas Tube

Surge Arrestors (PE-80)

RUS Bulletin 1753E-001 (1996) RUS General Specification for

Digital Stored Program Controlled Central

Office Equipment, (Form 522)

American National Standards Institute/Telecommunications Industry Association/Electronics Industry Association

ANSI TIA/EIA 606-A (2002) Administration Standard for

The Telecommunications Infrastructure ANSI TIA/EIA 607-A (2002) Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications

The Telecommunications Infrastructure

ANSI TIA/EIA 607-A (2002) Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications

ANSI TIA/EIA 568 (2001) Commercial Building Telecommunications Cabling Standard

ANSI TIA/EIA 569-B (2004) Commercial Building Standard for Telecommunications Pathways and Spaces

ANSI TIA/EIA 758-A (2004) Customer-owned Outside Plant Telecommunications Infrastructure Standard

8.2 COMMUNICATION SYSTEMS DESIGN

The communications system for the new Water Treatment Plant Administration building is to be designed, supplied and constructed by the Contractor. The design and construction of the systems shall be in accordance with the references and the requirements contained herein. See Appendix B for suggested layout.

8.3 EXTERIOR COMMUNICATION MANHOLE SYSTEM

The contractor shall extend the existing communications system. The water treatment plant shall be served from an existing point of service, 500 meters away. The conduit will be routed underground to a point thirty meters inside the existing garrison wall and then may transition to aerial for the remaining run. The manholes and hand-holes shall be constructed in accordance with the contract drawings. The maximum distance between manholes and/or hand-holes shall be 140 m (450 ft). The ducts shall be direct buried with a minimum of 1000 mm of properly tamped dirt/backfill on the top. Hand-holes shall be installed in laterals in between manholes and buildings and only where the distance between the main duct system and the building is 100 meters or more. The maximum number of ducts in a hand-hole wall shall be two, with one having four (4) inner ducts installed unless there are two buildings close by and can be fed from one hand hole. In this case, four (two with inner ducts) conduits can be installed in the walls.

8.4 EXTERIOR CONDUIT

The underground conduit for the manhole and duct system shall be direct buried (1 meter below surface), 100 mm or schedule 80, PVC. Inner ducts shall be four (4) 25mm PVC or PE inner ducts field installed in the outer-duct. The inner ducts shall be installed in the duct face and secured with properly sized duct plugs which expand to seal the duct. The ducts will be reinforced concrete encased where a road or taxi way is crossed. The ducts (inner and outer) shall be listed on the RUS list of materials acceptable for use on RUS projects. Cable racking diagrams (manhole/hand-hole butterflies) shall be provided for the manholes and hand-holes. The minimum duct configuration in the main duct system shall be a six way duct, being three conduits wide by two conduits deep (3 X 2) with two of the conduits having inner-ducts installed. Laterals off of the main duct system manhole to manhole shall be a minimum of a 4 way (2x2) with one duct having inner ducts. The duct system from the manhole/hand hole to a building with cable installed shall be a 1x 2, 100 mm PVC duct bank with one duct having inner ducts. The duct system from a manhole/hand hole to a building with allocations only shall be two (2), four inch (100mm) Schedule 80 PVC conduits stubbed out 3 meters from the manhole/hand hole. All conduits shall be terminated in ABS plastic terminators cast into the walls of the concrete structures. In manholes, all conduit windows shall be recessed.

8.5 MAIN DISTRIBUTION FRAME

The contractor shall route all communications to the Main Distribution Frame in the existing communications building.

8.5.1 PROTECTED ENTRANCE TERMINALS

Building Protected Entrance Terminal, 25, 50 or 100 Pair

The PETs shall consist of an input splice chamber with punch down blocks for the copper cable pairs, a protector field for 5 pin connectors and a factory installed output punch down block terminal for each outside plant cable pair. The PET shall be listed in RUS 344-2. The station cables shall be terminated on a field installed category 6, 110 type punch down block and jumpers shall be installed between the PET block and the field installed block to connect dial tone to the outlet.

8.5.2 PROTECTED ENTRANCE TERMINAL, 6 OR 12 PAIR.

The PETS shall consist of blocks with two well type heavy duty gas tube protector units. The six pair shall consist of three units where as the 12 pair will consist of 6 units. Every building with terminated cable shall be equipped with gas tube protectors. The station cables will be terminated on a category 6 110 “station” block and jumpers shall be installed between the PET and the “station” block to connect dial tone to the outlet.

8.6 PATCH PANELS

8.6.1 COPPER PATCH PANELS, CATEGORY 6

Provide one patch panel port per data outlet plus 20% spare. The largest patch panel allowed shall be 48 port and the smallest 12 port. Where the 12 port is used, it shall be a category 6, 12 port patch panel mounted on an 89 type block frame for the station cables. The 24 or 48 port patch panel shall

be mounted on a swing down bracket mounted on the backboard. Cable guides and wire management bars shall be provided. Provide one category 6 patch cord, (RJ45-RJ45) per patch panel port. The Patch cords shall meet the minimum performance requirements specified in EIA/TIA-568B.1, EIA/TIA-568B.2 and EIA/TIA-568B.3.

8.7 TELEPHONE/DATA DISTRIBUTION SYSTEM FOR EACH BUILDING.

The Contractor shall provide two telephone/data boxes per workstation in the office and one in the laboratory. Each box shall have dual RJ-45 outlets, one for telephone and one for data. Each telephone/data junction box shall be fitted with two RJ-45 jacks (1-voice / 1-data). Contractor shall be responsible for providing one enclosed 480 mm wide, 1 800 mm tall communications equipment rack with top-mounted cooling fans and front & rear closing doors. Contractor shall provide two 480 mm 48-port patch-panel mounted in the rack. Contractor shall coordinate the location of the communications rack with the Contracting Officer Representative (COR). Termination configuration shall be EIA/TIA T568B. Two 103 mm empty conduits shall be provided from the room to the outside for to facilitate future telephone cabling installation into the building. Two additional 103 mm empty conduits shall be provided between the communications rooms of both buildings. Provide all empty conduits with a pull rope. Incoming telephone and data service is to be provided by others. Properly sized metallic conduit and cable tray shall be used as appropriate to distribute the telephone/data cabling throughout the building. Minimum conduit size shall be 20 mm inside diameter. Data/communications face plates shall be surface mounted to the wall.

-END OF SECTION-

SECTION 01040

SECURITY

1.0 SPECIFIC CONTRACT SECURITY ASSESSMENT

The Government has determined that there is an Low Risk associated with the security environment in which this work is to be performed. This rating takes into consideration the geographic location of the work, including the Government's institutional knowledge of the recent history of this area as it relates to security, and the nature of the work to be performed under this contract. As such, the approval of your plan to provide security throughout the period of performance of this contract will be carefully reviewed by the Source Selection Evaluation Board, and will be weighted appropriately for the level of risk described above.

The Government is entitled to assume that the contractor possesses the degree of knowledge that is "standard" to experienced contractors in this industry and location, and that the contractor will gain other relevant information that is reasonably available about the (contract/task order) to be performed. The Government is further entitled to assume that the contractor understands its abilities as they relate to the work to be performed under the contract.

2.0 GENERAL BACKGROUND

Operations in Afghanistan require Armed Contractors (ACs) and Private Security Companies (PSCs) to fulfill a variety of important security functions for the Department of Defense (DOD), Department of State (DOS), and other entities operating in the Combined Joint Operations Area – Afghanistan (CJOA-A). Included in these ACs and PSCs are traditional private security companies, the Afghan security guards, and DOD contractors who are armed for personal protection. Traditional PSCs perform convoy escort, static security, and personal security details (PSDs). Afghan security guards (ASGs) provide local static security to Forward Operating Bases (FOBs), Company Operating Bases (COPs), and other infrastructure with local Afghan companies. DOD contractors may be armed either as a function of the service they provide or their operating location. These AC/PSCs are not combatants; they execute services to protect personnel, supplies and equipment, and fixed facilities. Weapons employed by AC/PSCs are for purely defensive purposes only. This section is in accordance with the "USCENTCOM Policy and Delegation of Authority for Personal Protection and Contract Security Service Arming of DOD Civilian Personnel and Contractors for Iraq and Afghanistan", 7 November 2006.

The intent of these contracted services is to "free" joint forces to conduct military operations and other inherently governmental functions. As the CJOA-A experiences both building of combat power as well as the parallel civilian uplift effort, the reliance on contracted services to include AC/PSCs is likely to increase. AC/PSC services are necessary to secure installations and other infrastructure, conduct movement support for sustainment, train Afghan Forces to proficiency, and transport key personnel throughout the CJOA-A. The terms armed contractor, private security company, or contractor personnel, includes all personnel directly employed by the

contractor at any tier of contract or subcontract. This section applies to all armed contractors providing service on DOD contracts.

3.0 GOVERNMENT REPRESENTATIVES

USACE will have a hierarchical security organization that disseminates essential security information and provides consistent and comprehensive use of security information. The USACE Area OIC/NCOIC will serve as the Area Office security officer and the Resident OIC/NCOIC will serve as the security officer at each Resident Office. When required the Area Office will request security plan review support from the Anti-Terrorism/Force Protection (AT/FP) expertise in the District Joint Operations Center (JOC). The Contractor may request this support from the Area/Resident Office OIC.

3.1 SECURITY PLAN

The security officers will review and approve all current and future contractor security plans prior to submittal approval by the authorized representative of the contracting officer. The security officer shall ensure that all contractor security plans are in accordance with the contract requirements. The security plans shall address movement of contractor labor, material, and equipment including contractor notification requirements to Government security officers who will in-turn inform Task Force Commanders and other Coalition Forces. The security officers will lead the quality assurance program to ensure contractors are executing their approved security plans. The Government will not allow the Contractor to start work without an approved security plan.

3.2 SECURITY COORDINATION

Contractor will be required to coordinate construction site security with Task Force or Provincial Reconstruction Team (PRT) Commanders. Afghan or Coalition Forces may be available, under certain circumstances, to assist the contractor on a case by case basis. The Government also expects the Contractor to coordinate with local Afghan Forces to the greatest extent possible. Coordination does NOT include nor imply making payments of any nature whatsoever to the local ANA/ANP or Local/Provincial Government Officials for permission or protection to construct the project. The contractor will immediately inform the Government if asked to make any such payments, and the Government will provide further direction to the contractor. Corruption will not be tolerated at any level, under any circumstances. Conducting business in this manner will be grounds for termination of the contract.

3.3 CLAIM FOR SECURITY DELAYS

Following a threat or an attack on a USACE contractor or a contractor claim for security delays, the security officer will validate the incident and assess the incident’s impact to the contract period of performance. Within 30 days of the incident, if the contractor submits a request for an extension of time, the Government ACO will assess the incident’s impact to the construction schedule and as necessary issue a contract modification for additional non-compensable time.

3.4 SECURITY RATING

Each contract/task order will be assigned a rating by the Government security officer (see paragraph 1.0). This rating will determine the level of approval for the security plan. Assistance from the District's JOC AT/FP expertise may be required to assess the rating. Ratings and approval levels are below:

a. Extremely High Risk: District Commander

b. High Risk: Deputy CDR, Chief of E&C, Area OIC, or J3 OIC

c. Moderate Risk: Chief of Construction, Area OIC/NCOIC, or Area Engineer

d. Low Risk: Resident OIC/NCIOC, Resident Engineer

3.5 GOVERNMENT PROVIDED SECURITY

Any U.S. Government provided security/escort services will be in accordance with DFAR 252.225-7040 CONTRACTOR PERSONNEL AUTHORIZED TO ACCOMPANY U.S. ARMED FORCES DEPLOYED OUTSIDE THE UNITED STATES (JUN 2006).

4.0 SITE SECURITY FOR PROJECTS OUTSIDE OF ACTIVE COALITION FORCE BASES

The contractor shall develop a site security plan and program (IAW Security Plan Section) to provide 24 hr/7 days a week security for the project throughout the performance of the Contract. There will be armed guards manning project watch towers, the main entry gate, and roving patrols of the compound, adjacent hills, and observation posts at all times. Tower guards will maintain perimeter security to include thwarting any attempted theft, vandalism, or attacks. Roving guards will patrol vehicle staging areas making sure unauthorized personnel are not present, and prevent damage or sabotage of grounds and/or equipment. Roving patrols will also check nearby hills to prevent snipers or any other terrorist activity that might threaten the site. Facility security shall include access control to limit entry to unauthorized personnel, conduct vehicle and personnel bomb searches, report suspicious persons, question persons as required, and respond to calls for security support and assistance. The Contractor shall employ culturally appropriate means of searching personnel. Local governments, ANA/ANP units, and Coalition Forces should be coordinated with to support the large scale security of the site to the greatest extent possible; however, the contractor is ultimately responsible for providing security. Coordination does NOT include nor imply making payments of any nature whatsoever to the local ANA/ANP or Local/Provincial Government Officials for permission or protection to construct the project. The contractor will immediately inform the Government if asked to make any such payments, and the Government will provide further direction to the contractor. Corruption will not be tolerated at any level, under any circumstances. Conducting business in this manner will be grounds for termination of the contract. The contractor is expected to perform all required actions to protect the construction site compound from theft and vandalism and personnel from physical harm. These measures are strictly for the protection and defense of the on-site people and property; contractors are not authorized to conduct any type of offensive operations. For security of road construction, transportation of supplies, and equipment convoys, see the appropriate section below.

4.1 SITE SECURITY FOR PROJECTS ON-BASE

The Contractor shall provide general perimeter force protection security for developing the site. Security may include but is not limited to temporary fences and private security guards. Perimeter security shall prevent unauthorized site access and provide site protection to the contractor's work force and the Government personnel for the duration of the project. Many bases in Afghanistan have multiple contractors and local Afghan security forces working on them; it is the responsibility of the Contractor to ensure the 24/7 protection of the construction site from vandalism and theft. If the security situation request measures more than the general provision specified by the Contractor, the contractor shall inform the Government immediately. The Contractor has the ultimate responsibility for all security measures. These measures are strictly for the protection and defense of the on-site people and property; Contractors are not authorized to conduct offensive operations.

4.2 SECURITY FOR ROAD PROJECTS, TRANSPORTATION, & CONVOYS

Road construction projects will maintain at least two armed traffic control points (TCPs) at 300 meters in both directions of the road, or at a distance that terrain dictates. TCP guards will thoroughly inspect vehicles, entering the compound for explosives, contraband, and unauthorized personnel. TCP guards will also check for proper identification and conduct physical searches of personnel entering and leaving the site. They will report suspicious persons, question persons as required, and respond to calls for security support assistance. The TCP must have controlling barricades to slow traffic in both directions, but not to block the road completely. The Contractor shall employ culturally appropriate means of searching personnel. The TCP must have a vehicle ready for immediate evacuation or pursuit of AAF trying to access the construction site.

4.2.1 MOVEMENT OF PROJECT EQUIPMENT AND SUPPLIES

The Contractor will inform the Government no later than 72 hours before any movement of project equipment and supplies outside of any Coalition Force bases in the CJOA-A. Both the Government and the Contractor must be aware of information security, using face-to-face meetings, courier mail, or other secure means of communication to discuss movements. All contractor convoys will have a minimum of two armed security details in the front and rear of the convoy. Convoys longer than three vehicles will also have a center armed security detail. The minimum security detail is a vehicle(s) with two armed security personnel, each with AK-47 or equivalent weapons. While the aforementioned is a minimum requirement, the Contractor shall have an armed security detail commiserate with the threat of the route. The threat of attack in Afghanistan is very real, and Contractors must be prepared for violent ambushes from Anti-Afghanistan Forces (AAF). Redundant communication equipment is highly recommended using cell phone, satellite phone, or other Contractor/Government supplied communication/tracking equipment.

4.2.2 SECURITY DETAIL

The project site will also have a security detail on either side of the on-site construction. These details must be able to protect and defend from nearby buildings, hilltops, and concealed terrain while still providing immediate on-site security to the construction equipment and personnel.

4.2.3 REQUIRED TRAINING

The Government recommends the contractor employ personnel that are trained in finding mines and improvised explosive devices along the construction route. Contractor personnel are prohibited from getting close, touching, or handling any explosive devices or unexploded ordinance found. The Contractor will report the location of any of these devices to the Government security officer or local Afghan Forces immediately for disposal/removal.

5.0 SECURITY PLAN

During the Preconstruction Conference, the Contractor will receive the Government's Alignment, Movement, & Security Plan (AMSP). The AMSP will have at a minimum:

a. An estimated threat assessment of the project area and major supply routes.

b. The contact information for the USACE security officers, engineering/construction representatives, local Coalition Forces, and local Afghan Forces near the project site.

c. General emergency procedures and critical information required for Coalition/Afghan Force security assistance.

d. The estimated number of quality assurance (QA) site visits by the Government on a weekly/monthly basis.

e. Any special security requirements directed by the Coalition Force Commanders in the area.

5.1 ESTIMATED THREAT ASSESSMENT

The contractor is expected to develop a site security plan to cover a range of security operations from low to high threat. Included in this plan will be the capability for a surge of manpower and equipment required during high threat conditions. The contractor is expected to notify all on-site personnel of increased threats and protective action to take.

5.2 SECURITY PLAN REQUIREMENTS

The security plan introduction must contain the following information at a minimum: MOI license number, AISA licensed (Yes/No), armed contractor & subcontractor company names, contract number/title, contracting agency (USACE-AED), type of work, number/type of weapons authorized, POC for company with contact details, Government Contracting Officer and COR with contact details, number of security personnel by type (U.S., Afghan, Other), company's country of registration/origin.

5.3 PERSONNEL

The plan shall contain the names, photos, and tazkira numbers of security personnel, those personnel with access to weapons/ammo and those persons who will be handling or transporting explosives. As part of the security plan, the contractor shall continually submit the coordinates of the contractor's base camps, quarries, and current work locations. The Contractor shall

submit, prior to the commencement of construction, a plan for security protection, with a list of the chain of command or a letter of commitment from a licensed security contractor. 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 to the greatest extent possible. Coordination does NOT include nor imply making payments of any nature whatsoever to the local ANA/ANP or Local/Provincial Government Officials for permission or protection to construct the project. The contractor will immediately inform the Government if asked to make any such payments, and the Government will provide further direction to the contractor. Corruption will not be tolerated at any level, under any circumstances. Conducting business in this way will be grounds for termination of the contract. Additionally, our new contracts are going to require that ALL security personnel are to be registered biometrically.

5.4 FORCE PROTECTION CONDITION LEVELS

The contractor will use at least four force protection condition levels (Extremely High, High, Moderate, Low) with corresponding levels and codes for on-site threat postures (uniforms, weapons, and vehicle movements). The contractor will use road movement safety restriction codes (Green, Amber, Red, or Black) for frequently traveled roads in the vicinity of project site. Force protection conditions and vehicle route status will be publicized to the site population. As a guideline, here are the Coalition Force route status codes:

a. Green – Route Open; no restrictions

b. Amber – Route Open; only mission essential travel allowed on this route; the Government Security Officer must approve all Contractor movements.

c. Red – Route Open; requires Commander’s approval for travel. Forces are required to use armored vehicles; all non-essential ground site visits suspended.

d. Black – Route Closed to Coalition Forces except for emergency travel.

5.5 COORDINATION WITH LOCAL POLICE

The contractor will establish a threat assessment group with local police to determine local area threats and adjust force protection conditions as required. The contractor must use language assistants/interpreters if there is a language difference between the armed security personnel, the contractor project manager, and other on-site personnel.

5.6 SECURITY PLAN SUBMITTAL REQUIREMENTS

Contractors will submit security plans in accordance with contract Section 01335 – Submittal Procedures for Projects.

6.0 ARMING LICENSE

Contractor personnel who are armed will be properly authorized to carry arms in Afghanistan by registering and obtaining a license to carry arms from the Afghanistan Ministry of the Interior through USFOR-A. Armed contractor personnel must be properly trained and qualified on each weapon they will be authorized to use. Exceptions to proceed without a valid MOI license may be granted in rare cases at the sole discretion of the Government. Failure to obtain this license is grounds for contract termination. All armed contractors must carry a copy of their Letter of Authorization (LOA) and their MOI license at all times. U.S. and Coalition Forces have the right to ask for this documentation at any time.

7.0 LOCAL HIRE VETTING PROGRAM

The Contractor shall maintain a local hire vetting program for all local hires required under performance of this contract, to include background checks. The Contractor will conduct interviews and review employment application information for their candidates, with results of the interview and information reviews provided to the USACE security representative for appropriate action. The Contractor will be available to accept reports of threats and intimidations, and forward these to the appropriate Government agency for resolution. The Contractor will demonstrate an awareness of cultural nuances (i.e. tribal relationships, etc.) and employ culturally sensitive measures when conducting interviews. The U.S. Government will enter all AC/PSC personnel into the nation-wide Biometrics network to verify Contractor vetting.

8.0 COMMUNICATION

The contractor will operate a 24/7 security operations center with communication capability to each guard on duty and the ability to notify all on-site personnel of increased threats and protective actions to take. The operations center will also have 24/7 communication with the local Coalition, ANA, or ANP security forces. The Contractor shall have communication with the District JOC at all times for rapid emergency response; the Government Security Officer will give the Contractor the JOC contact information. Communication can be via cell phone, email, satellite phones, VHF, HF, CODAN, text, or other communication technologies compatible with the Government’s capabilities. The Contractor will provide the Government with their contact information (names, numbers, frequencies, email addresses, transponder IDs, etc.) for the site encompassing all available communication means.

9.0 CONTRACTOR PROVIDED EQUIPMENT

The contractor will provide the operational security equipment including but not limited to weapons, radios, uniforms, vehicles, vehicle fuel, phones, and other equipment as proposed by the contractor to provide complete site security.

10.0 TRAINING

The contractor will develop a training plan for each aspect of the security operations to ensure all employees receive initial and quarterly training to

maintain certification, proficiency, and safety. Records of the training is an inspectable item for the COR and Security Officer. The Contractor will ensure all security personnel are trained on the required COMISAF/USFOR-A Tactical Directive, ROE/RUF, escalation of force (EOF), withdrawal/clear drills, proportionality, target discrimination, positive ID, Law of War, small unit tactics training, and general convoy drills like vehicle recovery. This training will also include but not limited to weapons qualification, vehicle operations, IED, site security, traffic/entry control points, and safety. The contractor shall provide a sufficient number of trained personnel to meet the required security level for the project beginning on the date of mobilization.

11.0 KEY CONTROL

The contractor shall establish and implement methods in writing to ensure that all keys issued by the Contractor are not lost or misplaced and are not used by unauthorized persons. The contractor shall develop procedures covering key control that will be included in their quality control system (See Section 01451). The project managers will keep a master log of all keys and provide a copy to the contracting officer’s representative (COR) for verification. If a key is lost or stolen, the Contractor shall pay to have all impacted locks changed/rekeyed immediately.

12.0 SAFETY 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 Government site supervisor. As the situation dictates, one security guard will be posted at each safety barricade.

13.0 RESPONSIBILITY FOR PHYSICAL SECURITY

Prior to mobilization, the Contractor shall submit his proposed means of providing project physical security to prevent unauthorized access to equipment, facilities, materials and documents, and to safeguard them against sabotage, damage, and theft. 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. Security may include but is not limited to fence and private security guards. The Contractor shall provide perimeter force protection security for the developing site. The plan shall address in detail the contractors 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. This document shall be referred to as part of the security plan submittal.

14.0 CRITICAL INFORMATION TO REPORT

The Government is responsible for the management and oversight of DOD Contracted AC/PSCs delivering services throughout the CJOA-A. Given the impact of either contractor misbehavior or catastrophic attacks against contractors, it is critical that information regarding AC/PSC incidents is communicated quickly and accurately to the Government for purposes of management, fact-finding, and mitigation where necessary. The Government must receive the information addressed below. The Contractor will report any of these information requirements immediately to the Government site supervisor:

a. AC/PSC Escalation of Force to include the use of weapons resulting in the death or injury of an Afghan citizen, coalition, or U.S. service member, other government official, or contractor

b. AC/PSC accidents, traffic, or otherwise, resulting in the death or injury of an Afghan citizen, coalition, or U.S. service member, governmental official, or contractor.

c. Attacks against AC/PSC activities by Anti-Afghan Forces resulting in the death or injury of an Afghan citizen, coalition or US service member, governmental official, or contractor.

d. Reports of “lost convoys.” These are AC/PSC escort or independent activities which have lost contact with their companies.

e. AC/PSC Escalation of Force, accidents, or other activities that result in significant damage to Afghan or USG vehicles, materials or facilities.

f. Anti-Afghan Force actions including small arms fires (SAF), RPG fire, indirect fire (IDF), improvised explosive devices (IEDs), and/or complex attacks against AC/PSC activities.

g. Contractor accidental or negligent discharge of a weapon.

15.0 REOCCURRING REPORTS

Every month the Contractor will report the following to the designated contract security officer:

a. The number, type, and general description of every weapons discharge by the Contractor or any tier of subcontractor on the project.

b. The name of the Contractor’s security manager and the total number of armed personnel working on the project.

c. The total number by type/caliber of all weapons employed on the project.

d. The serial numbers and license plates of all armored vehicles used for the project.

e. The type of transponder/tracking system used for any moving equipment used for the project.

f. Any changes made to security personnel (new hires, employees who quit or were let go, transfers, etc.).

g. Biometric registration of all new personnel.

16.0 CONTRACTOR SECURITY PERSONNEL REQUIREMENTS

The Contractor shall submit the names of all employees who will be working in security positions prior to their performance of any such work on this contract. All security personnel will be subject to Biometrics (retinal scan) testing by representatives of the Contracting Officer, at any time during performance of work on the contract. The names of security personnel and the Biometrics testing results will be vetted with the Afghanistan government, International Security Assistance Forces (ISAF), or U.S. Forces-Afghanistan to determine if any of the proposed security personnel are on the list of enemy combatants compiled by these sources. If the Contractor is notified by the Contracting Officer that such security personnel are on any of these lists of enemy combatants, such employees must be immediately removed from work on this contract. Repeated incidents of hiring security personnel on any of the lists of enemy combatants will be grounds for terminating the contract for default.

-- END OF SECTION --

SECTION 01060

SPECIAL REQUIREMENTS

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 Contractors 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 Contractors CQC System Manager to prepare detailed minutes of this meeting and submit those minutes to the Contracting Officer for approval within three (3) workdays. 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 seven (7) calendar days after NTP - an Area Use Plan designating intended use of all areas within the project boundaries (it should be delivered with other pre-construction documents, APP, QCP, etc.). 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 and 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 that 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 facilities prior to approval by the Contracting Officer of the Area Use Plan described herein.

1.3 CONTRACTOR'S MOBILIZATION AREA

The Contractor will be permitted to use an area approved by the Contracting Officer within the contract limits for operation of his construction equipment and plants, shops, warehouses, and offices. Utilities will be provided for the Contractor as described below. The Contractor is responsible for obtaining any required additional mobilization area above that designated. The construction site shall be cleared of construction debris and other materials and the area restored to its final grade.

1.3.1 CONTRACTOR'S TEMPORARY FACILITIES

1.3.1.1 GENERAL

All facilities within the Contractor's mobilization area shall be of substantial construction suitable for the local weather conditions. Sanitary facilities shall meet the requirements of Corps of Engineers, Safety and Health Requirements Manual EM 385-1-1. Local nationals will not be granted any privileges under this contract. Government provided services are for American and Foreign national contractors only.

1.3.1.2 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.

1.3.1.3 STORAGE AREA

The Contractor shall construct a temporary 1.8 meter (6 foot) 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.

1.3.1.4 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. If radio communication is approved by Contracting Officer / installation security office, frequency selection shall be approved by Contracting Officer to prevent interference with installation operations. Such devices shall be provided by the Contractor and made available for use by Government personnel as requested.

1.3.1.5 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.

1.3.1.6 MAINTENANCE OF STORAGE AREA

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse unpaved areas which are not established roadways with construction equipment or other vehicles, 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.

1.3.1.7 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 facilities and equipment in accordance with Contract Section 01040.

1.3.1.8 SANITATION

a. The contractor shall comply with the sanitation requirements of Section 02 of 385-1-1.
b. Sanitary Facilities: The Contractor shall be responsible for maintaining such facilities at no expense to the Government.
c. Trash Disposal: The Contractor shall be responsible for collection and disposal of trash from the work areas and from the mobilization area. General construction debris and demolition debris shall be collected and transported by the Contractor to a location designated by the Government. 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 taxiways or runways. Any dirt or soil that is tracked onto paved or surfaced roadways shall be cleaned daily. Materials resulting from demolition activities that 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.

1.3.1.9 TELEPHONE

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

1.3.1.10 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 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 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 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.

1.3.2.1 USE OF EXISTING ROADS AS HAUL ROUTES

The Contractor shall be responsible for coordinating with 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 traffic shall be coordinated with the Base authorities and is the sole responsibility of the Contractor.

1.3.2.2 EMPLOYEE PARKING

The Contractor’s employees may be allowed parking on the military installation. The Contractor is responsible for transporting workers (local nationals) from off post to the worksite, coordinating security identification screening, and cooperating in gate searches with the base authorities. The government reserves the right to terminate any and all contractor parking at any time.

1.3.3 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.

1.3.3.1 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.

1.3.4 HOST NATION AUTHORIZATIONS, PERMITS AND LICENSES

It shall be the Contractor's responsibility to obtain such local authorizations, permits and licenses necessary to establish his quarry operations, batching operations and haul routes (See Special Clause entitled: COMPLIANCE WITH HOST COUNTRY RULES AND CUSTOMS).

1.4 RESPONSIBILITY FOR PHYSICAL SECURITY

Prior to mobilization, the Contractor shall submit his proposed means of providing project security to meet the requirements of Contract Section 01040 and prevent unauthorized access to equipment, facilities, materials and documents, and to safeguard them against sabotage, damage, and theft. 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.

1.5 DUST CONTROL

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.

1.6 DIGGING PERMITS

1.6.1 REQUIREMENTS FOR DIGGING PERMITS

Prior to the start of any work activity that requires excavation within the current base, the Contractor shall obtain a digging permit.

1.6.2 REQUESTS FOR DIGGING PERMITS

Requests for Digging Permits shall be submitted to Contracting Officer a minimum of seven (7) days prior to the start of the work activity covered by the permit. The request for a Digging Permit shall include a narrative description of the work to be performed and a detailed map of the area of the excavation clearly marking the location of all known utilities or other obstructions. If the work activity covered by the Digging Permit request also requires a utility outage, a separate request for the outage shall be submitted in accordance with the paragraph entitled CONNECTIONS TO EXISTING UTILITIES.

1.6.3 PREPARATION OF REQUESTS FOR DIGGING PERMITS

Prior to submitting a request for a Digging Permit, the Contractor shall carefully review the area to be excavated to determine the location of existing utilities and other obstructions. The Contractor will review available drawings and will conduct a visual inspection of the site. The Contractor will utilize underground utility detecting devices such as metal and cable detectors to determine the location of existing utilities. All utility lines found shall be clearly flagged or marked and the location of the utility shall be shown on the drawing to be submitted with the request for Digging Permit.

1.6.4 EXISTING UNDERGROUND UTILITIES

The Contractor shall exercise utmost care in researching locations of existing utilities and reducing damage to existing utilities. Any utilities damaged by the Contractor shall be promptly repaired by the Contractor. The

Contracting Officer will review and approve any proposed repairs. Any damage to existing utilities will be immediately reported to the Contracting Officer and the Base Commander.

1.7 CONNECTIONS TO EXISTING UTILITIES

1.7.1 GENERAL

Any outage involving disruption of electrical service beyond the site area shall be requested in writing at least ten (10) 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 Contractors 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.

1.7.1.1 PERFORMANCE OF WORK DURING NON-STANDARD HOURS

To minimize outage impact to the mission of the installation, all outages shall be scheduled on weekends or after the project area’s regular base duty hours and/or as directed by Contracting Officer Representative (COR). The period proposed for performance of the outage shall include sufficient contingencies to preclude impact to the peak working hours during the workweek.

1.7.1.2 EXTERIOR NIGHT LIGHTING

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

1.7.2 EXISTING UNDERGROUND UTILITIES

The Contractor is provided notice that existing utilities may be present in the construction area. 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.

1.7.2.1 USE OF UNDERGROUND UTILITY DETECTING DEVICE

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.

1.7.2.2 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.

1.7.3 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.

1.8 WATER

The Contractor 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.

1.9 ELECTRICITY

Electrical service is to be provided by the Government within this contract since electrical power connection shall be to existing nearby Government owned electrical power system. However, the Contractor may be required to provide temporary construction power until permanent power system is connected. The means of doing so, such as by temporary distribution systems, shall be the responsibility of the Contractor. 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.

1.10 WORK OUTSIDE REGULAR HOURS

If the Contractor desires to carry on work outside the project area’s regular base duty hours, or on holidays, including the following U.S. holidays: New Year's Day, Memorial Day, Independence Day, Thanksgiving and Christmas. The Contractor shall submit an application to the Contracting Officer. Due to reliance upon local national laborers and time off due to local observances, there may be disruptions. Potentials dates are the following local observances: National Islamic Holiday of Ashura, Ramadan (actual date varies – check with local authorities). 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".

1.11 SCHEDULING OF WORK IN EXISTING FACILITIES

As soon as practicable, but in any event not later than thirty (30) calendar days after award of this contract, 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.

1.12 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. All facilities, furnishings, materials, and equipment shall be new when furnished at the site. The Contractor shall fully maintain and repair all facilities, furnishings and equipment listed below. All facilities, furnishings, materials, and equipment furnished and/or installed by the Contractor under this clause shall remain the property of the Contractor at the completion of the contract. Facility structures shall be modular or containerized, suitable for easy movement at a later date.

1.13 PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR)

1.13.1 AS-BUILT DRAWING SUBMITTALS

a. Government approval is required for As-Built drawings as below in accordance with Section 01335, SUBMITTAL PROCEDURES.
b. Drawings showing final as-built conditions of the project. The final CAD as-built drawings shall be submitted in accordance with section 01780A 1.1 SUBMITTALS.

1.13.2 AS-BUILT DRAWINGS

This paragraph covers as-built drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files," "working as-built drawings" and "final as-built drawings" refer to contract drawings which are revised to be used for final as-built drawings.

1.13.2.1 GOVERNMENT FURNISHED MATERIALS

One set of electronic CAD files in the specified software and format revised to reflect all bid amendments will be provided by the Government at the preconstruction conference for projects requiring CAD file as-built drawings.

1.13.2.2 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. As-built drawings shall be in the English language.

a. Only personnel proficient in the use of Computer Assisted Design and Drafting (CAD) 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 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. Deltas (triangles) associated with those earlier drawing changes shall be left on the drawings and the Contractor shall not add deltas (triangles) to designate modifications associated with representation of the as-built condition. The revision history 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 history 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 native to either AutoDesk AutoCAD 2009 or newer or Bentley Microstation Version 8 (which is easily convertible in both directions to/from AutoCAD). The Government will only accept the final product for full operation, without conversion or reformatting, in these formats.

f. Digital drawing files shall be furnished to the Contracting Officer on CD-ROM 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.

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, file format compatibility with the described CAD software, and all CAD standards as stipulated in Section 01335.

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 upon completion of each road. 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 ten (10) calendar days.

In addition, if the Contractor fails to provide the final as-built drawings within thirty (30) calendar days after contract completion, the Contracting Officer will deduct from the final contract payment an amount representing the lesser of 1% of the total contract cost or $50,000.

1.13.3 DRAWING PREPARATION

The as-built drawings shall be modified as may be necessary to correctly show the features of the project as it has been constructed by bringing the contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints shall be neat, legible and accurate. These drawings are part of the permanent records of this project and shall be returned to the Contracting

Officer after approval by the Government. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

1.13.4 COMPUTER AIDED DESIGN AND DRAFTING (CAD) DRAWINGS

a. Only personnel proficient in the preparation of CAD drawings shall be employed to modify the contract drawings or prepare additional new drawings. Additions and corrections to the contract drawings shall be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols shall be the same as the original line colors, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings. Additions and corrections to the contract drawings shall be accomplished using CAD files. The Contractor will be furnished "as-designed" drawings in AutoCAD Release 2009 or Microstation V8 format compatible with a Windows XP operating system. The electronic files will be supplied on compact disc, read-only memory (CD-ROM). The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings.
b. Prior to submittal of the first design submittal involving CAD drawings, the Contractor shall prepare one typical CAD drawing for the project and furnish, via ENG Form 4025, the electronic CAD drawing file for review and approval by the Contracting Officer. All Government comments involving changes to this single drawing shall be accomplished and resubmittal(s) made until the Government is satisfied that all CAD Standards are being followed and all subsequent drawings will also be in compliance with these Standards.
c. CAD colors shall be the "base" colors of red, green, and blue. Color code for changes shall be as follows:

   1. Deletions (red) - Deleted graphic items (lines) shall be colored red with red lettering in notes and leaders.
   2. Additions (Green) - Added items shall be drawn in green with green lettering in notes and leaders.
   3. Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes shall be in blue.

d. The Contract Drawing files shall be renamed in a manner related to the contract number (i.e., 98-C-10.DGN) as instructed in the Pre-Construction conference. Marked-up changes shall be made only to those renamed files. All changes shall be made on the layer/level as the original item. There shall be no deletions of existing lines; existing lines shall be over struck in red. Additions shall be in green with line weights the same as the drawing. Special notes shall be in blue on layer#63.
e. When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 5 mm 3/16 inch high. All other contract drawings shall be marked either "As-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. Original contract drawings shall be dated in the revision block.
f. After Government approval of all of the working as-built drawings for a phase of work, the Contractor shall prepare the final CAD as-built drawings for that phase of work and submit two sets of full size paper copy prints of these drawings for Government review, comparison with

approved red-line marked up drawings, and approval. The Government will promptly return one set of prints annotated with any necessary corrections to the CAD file(s) if corrections are required prior to approval. Within 20 days of substantial completion of all phases of work, the Contractor shall submit the final as-built drawing package for the entire project. The submittal shall consist of one set of electronic files on compact disc, read-only memory (CD-ROM), one set of full size paper prints and one set of the approved working as-built drawings. Data on the CD-ROM shall be organized per the instructions in Section 1335 and per the diagram in Section 1335a. They shall be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any transactions or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with the CAD system. Upon approval by the Government of the final as-built drawing package for the entire project, the Contractor shall provide the number of as-built copies noted in Paragraph 1.1 of this Section.

g. Paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit final as-built drawing files and marked prints as specified shall be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

1.13.5 PAYMENT

No separate payment will be made for as-built drawings required under this contract, and all costs accrued in connection with such drawings shall be considered a subsidiary obligation of the Contractor.

1.14 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. 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.

1.15 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 (NOV1991)-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 at the jobsite or from the Afghanistan Engineer District at Kabul, Afghanistan.

1.15.1 ACCIDENT PREVENTION PROGRAM

Within seven (7) days after NTP 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. 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 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. Copy of company policy statement of Accident Prevention and any other guidance as required by EM 385-1-1, Appendix A.

1.15.2 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.

1.15.3 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.
e. Comply with all requirements of Section 11 of 385-1-1 Safety Manual.

f. Submit a sketch of the proposed temporary power distribution system to the GDA as a part of the Accident Prevention Plan.

1.16 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.

1.17 OPERATION AND MAINTENANCE (O&M)

1.17.1 GENERAL

The requirements contained herein are in addition to all shop drawings submission requirements stated in other sections of the specifications. The Contractor shall include the provisions for all items required under this clause in all purchase orders and sub-contract agreements. Submittals required hereinafter will not relieve the Contractor of any responsibilities under the Warranty of Construction Provisions of this contract or under the various Guarantee Clauses of the Technical Provisions.

1.17.2 SUBMITTALS

The Contractor shall submit all items requiring submission of O&M data under this and other sections of these specifications in accordance with Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD of the specifications.

1.17.3 OPERATION AND MAINTENANCE (O&M) DATA

The Contractor shall furnish operation and maintenance manuals for all facilities constructed under this contract. The manuals shall be loose leaf, indexed and shall consist of manufacturer's brochures, manufacturer's operation and maintenance manuals, service and repair manuals, catalogs, service bulletins, instruction charts, diagrams, other information as necessary to support the operation and maintenance of the end items of equipment, assemblies and systems. Each type of facility (housing, barracks, mosque, etc.) shall be covered by a separate manual (or manuals) consisting of all data pertaining to the equipment and/or systems within that facility. Identical equipment within a single major system shall require only one submittal of data. The Contractor shall furnish all O&M manuals to the Contracting Officer not less than thirty (30) calendar days prior to contract completion. If the Contractor fails to furnish all O&M manuals to the Contracting Officer as specified herein, the Contracting Officer will deduct from the final contract payment an amount representing the lesser of 1% of the total contract cost or $50,000. Required number of submittals (number of sets) shall be as specified in Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD.

1.17.4 SUPPLEMENTAL SUBMITTALS OF DATA

After initial submittal of O&M manuals and until final acceptance of all equipment, the Contractor shall prepare and deliver to the Contracting Officer supplemental technical data as previously described for all changes, modifications, revisions and substitutions to equipment and components. For equipment or systems introduced into the contract under change order, or modified by change order, supplemental data shall be furnished within forty-five (45) calendar days after issuance of the change order. The supplemental data furnished shall be properly prepared and identified for insertion into the O&M manuals.

1.17.5 FRAMED INSTRUCTIONS FOR SYSTEMS

Approved wiring and control diagrams showing the complete layout of the entire system, including equipment, piping, valves and control sequence, framed under glass or in approved laminated plastic, shall be posted, where applicable, in all mechanical equipment rooms. In addition, detailed operating instructions explaining safe starting and stopping procedures for all systems shall be prepared in typed form along with the inspections required to insure normal safe operations. The instructions shall be framed as specified above for the wiring and control diagrams and posted beside the diagram. Proposed diagrams, instructions, and other sheets shall be submitted for approval prior to posting. Operating instructions shall be posted before acceptance testing of the systems and verified during acceptance testing.

1.17.6 ADDITIONAL SUBMITTALS/RE-SUBMITTALS

The Contracting Officer reserves the right to determine whether the above specified information, as furnished by the Contractor, is adequate and complete and to require such additional submittals by the Contractor as necessary to insure that adequate information has been furnished to provide the satisfactory operation and maintenance of the various items of equipment and to fulfill the intent of the specifications. Additional submittals or resubmittals supplementing incorrect or incomplete data shall be made within thirty (30) calendar days after receiving notice by the Contracting Officer. All costs arising from these resubmissions shall be borne by the Contractor.

1.18 INSTRUCTIONS AND TRAINING FOR OPERATION AND MAINTENANCE

1.18.1 GENERAL

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
Mechanical Systems	10 Days
Electrical Systems	10 Days

1.18.2 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 period 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.

1.18.3 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 videotapes 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.

1.18.4 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 thirty (30) calendar days after receipt of 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 outline of training outline in sufficient detail to provide a broad indication of 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.

1.18.5 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 60 calendar days after award of this contract. The plan will be reviewed and coordinated with the content of the O&M manuals.

1.18.6 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 five (5) sets of O&M Manuals required by the Contractor per Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD 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. Resubmittals shall be made within twenty (20) days of notice from the Contracting Officer.

1.18.7 ATTENDANCE ROSTER/TAC FORM 356

The Contractor shall develop an attendance roster or a similar document indicating each student’s 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 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 cannot 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.

1.19 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 at all times. Prior to acceptance, the Contractor shall submit the complete register to the Contracting Officer.

1.20 TIME EXTENSIONS

1.20.1 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 contract 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.

Balkh Province- Mazir-e-Sharif

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
12	08	01	00	00	00	00	00	00	01	03	08	33

1.20.2 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.

1.20.3 OTHER DELAYS

Construction delays due to full or partial base closures due to incidents such as demonstrations, civil unrest and outright attacks will be examined on an individual basis for consideration of time extensions.

1.21 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, performance characteristics, 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.

1.22 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.

1.22.1 CONTRACTOR'S RESPONSIBILITIES

The following items are the sole responsibility of the Contractor to investigate, estimate as to cost, and assume the risk, as normally encountered by Contractors. The Contractor shall be responsible for determining the effect of the following on his own cost of performance of the contract and for including sufficient amount in the contract price:

a. Official language and type of accounts required to satisfy the officials of the Local Government.
b. Entry and exit visas, residence permits, and residence laws applicable to aliens. This includes any special requirements of the Host Government, including those required by local Labor Offices, which the Contractor may have to fulfill before an application for a regular block of visas will be accepted.
c. Passports, health and immunization certificates, and quarantine clearance.
d. Compliance with local labor and insurance laws, including payment of employer's share of contribution, collecting balance from employee and paying into insurance funds.
e. Strikes, demonstrations and work stoppage.
f. Collection through withholding and payment to local Government, of any Host Country income tax on employees subject to tax.
g. Arranging to perform work in the Host Country, to import personnel, to employ non-indigenous labor, to receive payments and to remove such funds from the country.
h. Operating under local laws, practices, customs and controls, and with local unions, in connection with hiring and firing, mandatory wage scales, vacation pay, severance pay, overtime, holiday pay, 7th day of rest, legal notice or pay in lieu thereof for dismissal of employees, slowdown and curtailed schedules during religious holidays and ratio of local labor employed in comparison to others.
i. Possibility of claims in local bureaus, litigation in local courts, or attachment of local bank accounts.
j. Compliance with workmen's compensation laws and contributions into funds. Provisions of necessary medical service for Contractor employees.
k. Special license required by the local Government for setting up and operating any manufacturing plant in the Host Country, e.g. concrete batching, precast concrete, concrete blocks, etc.
l. Sales within the host country of Contractor-owned materials, and equipment.
m. Special licenses for physicians, mechanics, tradesmen, drivers, etc.
n. Identification and/or registration with local police of imported personnel.
o. Stamp tax on documents, payments and payrolls.
p. Base passes for permanent staff, day laborers, motor vehicles, etc.

q. Compliance with all customs and import rules, regulations and restrictions, including, but not limited to, local purchase requirements.

1.23 EMPLOYEE ACCESS TO PROJECT SITE

1.23.1 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.

1.23.1.1 PREPARATION OF IDENTIFICATION BADGES

The Contractor shall be required to prepare a written application inclusive color photographs and provide all materials and labor necessary to prepare an identification badge, laminated in plastic, containing the employee's name, badge number, color photo, height and weight, the name of the Contractor's organization and for requiring each employee engaged on the work to display this identification as directed by the Contracting Officer. The Contractor shall submit each application and draft badge through the Contracting Officer to the Base Security Office. A minimum of thirty-five workdays shall be allowed for Government review and certification of badges. The Base Security Office will certify each draft badge by signature, stamp, seal or any combination thereof. Upon certification by the Base Security Office, the badges will be returned to the Contractor for final preparation, lamination, and issuance. Badges shall not be taken out of country during periods of travel or absence. During such periods, the Contractor may be permitted to issue temporary identification badges.

1.23.1.2 EMPLOYEE BACKGROUND AND HISTORICAL INFORMATION

The Contractor shall be required to prepare and maintain personal background and historical information forms on each employee. These forms may be reviewed by the Base Security Office. The required information shall include but not necessarily be limited to the following:

a. Full name.
b. Place and date of birth.
c. Three (3) current color photographs.
d. Copy of Citizenship/Nationality identification.
e. Copy of Passport.
f. Copy of drivers license.
g. Police Background Check.
h. Work History.
i. Personal background information.
j. Copy of Work Permit and/or Visa.
k. Permanent home of record and in-country address.
l. Other information mandated by local law, the Base Security Regulations or that may be required to coordinate and process the necessary documentation with the government offices responsible for the approval.
m. Registration, insurance company, policy number and expiration date for each vehicle.

1.23.2 IDENTIFICATION OF CONTRACTOR VEHICLES

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.

1.23.3 SECURITY PLAN

The Contractor shall submit to the Contracting Officer a security plan as required in Contract Section 01040.

1.24 RADIO TRANSMITTER RESTRICTIONS

To preclude accidental actuation of sensitive electronic equipment, the Contractor shall not use radio-transmitting equipment without prior approval of the Contracting Officer.

1.25 PUBLIC RELEASE OF INFORMATION

1.25.1 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.

1.25.2 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.

1.26 CONSTRUCTION PROJECT SIGN

The contactor shall fabricate and display at least one sign to identify the project site as a Government of the Islamic Republic of Afghanistan sponsored project associated with the Ministry of Defense. The Ministry of Defense logo and text furnished in the Attachment should be substituted for the Ministry of Interior logo and text on the example sign layout. The project title in Text Group 6 shall read “Camp Shaheen (MeS) WWTP”. The sign shall measure at least 1.8 x 1.2 meters as shown in Attachment. The sign shall be fixed to posts with a sufficient number of bolts to ensure that the sign will not be damaged by weather or vandalism. A minimum of three posts will be utilized. If lumber is used for support posts, the minimum dimension of the lumber vertical posts and bracing will be 10 cm x 10cm. The post will set in field-prepared site-grade concrete. No rebar (reinforcement) and no form work are required for concrete. At any point during construction if deemed necessary by the COR the sign shall be repaired or replaced. Exact placement at the project site shall be coordinated with the COR.

The black, green and red colors on the left side of the sign shall be the Pantone colors listed below:

Black: Pantone Process Black PC
Red: Pantone 485 PC
Green: Pantone 370 PC

Sign panels shall be fabricated from 19mm thick High Density Overlay (HDO) plywood or 2-mm thick sheet metal primed and painted (exterior paint) with lumber or metal uprights and bracing (see the “pdf” Attachment). The sign will be primed and two-coat painted. The sign shall be placed in a location that is visible to pedestrians and/or vehicles passing the project site. Sign face and graphics shall be non-reflective vinyl film prepared on a white adhesive backing or enamel-based exterior type paint. All logos shall be aligned left with typography center text. Dari translations shall be substituted with Pashtun in areas where the language is more predominant/appropriate. If the Text Group T6 (which is the Project Title taken from the Contract) does not make it clear to the public viewing the sign what the project purpose is, succinct wording shall be added to Text Group T2 to make this clear (for example, “Hospital Wastewater Treatment Facility Expansion” or “20 KM paved road” or other project summary), to be submitted and approved by the COR.

1.27 ATTACHMENTS

TAC FORM 61 - Accident Prevention Program Hazard Analysis

TAC FORM 356 - Operation and Maintenance Training Validation Certificate

Construction Project Sign Dimensions

Mounting Diagram

Ministry Logo

2. SPECIAL CONTRACT REQUIREMENTS

2.1 APPLICATION OF US CRIMINAL JURISDICTION

Reference DODI 5525.11. The contractor is directed to provide all of its personnel working under this contract, and to require all of its subcontractors to provide their personnel, with written notification that - with the exception of nationals of Afghanistan and those ordinarily resident in Afghanistan - contractor and subcontractor personnel, and the dependents of contractor and subcontractor personnel who are residing with such personnel, may be subject to US criminal jurisdiction as provided for in the Military Extraterritorial Jurisdiction Act, 18 USC 3261-3267; see Section 3267(1)(A)(iii)(I) and (2)(A)(iii). A copy of the notice ***shall be furnished to the contracting officer upon award of the contract***, along with a certification by an authorized company representative attesting to the provision of the notification to contractor personnel.

2.2 ATTACKS FROM HOSTILE ENTITIES

This contract is firm fixed-price. Costs incurred in the performance of project execution that arise from the attacks of hostile entities, such as costs arising from damage to or destruction of contractor equipment and facilities, and damage to or destruction of the project prior to Government acceptance, are the sole responsibility of the contractor. The Government

makes no guarantee to provide the contractor with security, and bears no obligation to reimburse the contractor for costs arising from the attacks of hostile entities. When appropriate, the Contracting Officer may provide the contractor with an equitable adjustment with respect to time – but not cost – in accordance with clause 52.249-10; see 52.249-10(b)(1)(i) and (2).

2.3 INSTALLATION ACCESS AND BADGING

This contract is firm fixed-price. It is the responsibility of the contractor to be knowledgeable of and to abide by any and all applicable installation access procedures and requirements, to include any and all badging procedures and requirements, that may be necessary for contractor access to the project site. Such procedures and requirements may change over the course of contract performance; it is the responsibility of the contractor to plan accordingly in order to meet its existing obligations under this contract. The US Army Corps of Engineers, Afghanistan Engineer District, neither controls nor is responsible for any such installation access procedures, requirements or changes thereto.

2.4 CUSTOMS CLEARANCE

Reference clauses 52.229-6 and 52.225-13. This contract is firm fixed-price. It is the responsibility of the contractor to be knowledgeable of and to abide by any and all applicable customs clearance procedures and requirements that may be necessary for the transportation of supplies and equipment into Afghanistan. Such procedures and requirements may change over the course of contract performance; it is the responsibility of the contractor to plan accordingly in order to meet its existing obligations under this contract. The US Army Corps of Engineers, Afghanistan Engineer District, neither controls nor is responsible for any such customs clearance procedures, requirements or changes thereto.

2.4.1 CUSTOMS PROCEDURES

Background: Every contractor/carrier importing goods into Afghanistan or exporting goods out of the country must comply with national customs regulations and procedures administered by the Afghanistan Customs Department (ACD) of the Ministry of Finance, in compliance with Afghan law. Contractors performing contracts in Afghanistan for the Department of Defense (DoD), including the U.S. Army Corps of Engineers, in support of Operation Enduring Freedom (OEF), may be entitled to certain exemptions from the payment of customs tariffs and duties on goods and materiel imported into Afghanistan for use at DoD construction projects within the country, and on export of materiel from Afghanistan after completion of a project.

Obtaining import tax exemptions and clearances for the release of construction goods and materiel through ACD is often time consuming. Early planning and realistic delivery timelines are essential to prevent avoidable project delays related to customs issues. This section provides general guidance and a list of customs procedures and documents that you may be required to fulfill or provide. Please note that this guidance is provided to alert contractors from the outset that the Afghan customs process is complex and time-consuming, and to *strongly encourage* early planning. The steps listed below are provided for informational purposes only and cannot be regarded as definitive because the ACD’s procedures and requirements may change at any time.

ANY DEVIATIONS FROM THE PROCESS DESCRIBED HEREIN SHALL NOT FORM THE BASIS FOR A REQUEST FOR EQUITABLE ADJUSTMENT.

General Requirements: USACE contractors must designate an authorized employee of the company as the customs point of contact (POC), responsible for handling customs clearance issues, and must advise the USACE's Customs Coordinator by e-mail of the name and contact information for the authorized customs POC. This individual must hand-deliver all required documentation between the USACE's Customs Coordinator at Qalaa House and the US Embassy, the Afghan Ministry of Foreign Affairs, and the Customs Department of the Afghan Ministry of Finance in order to obtain required stamps and signatures.

To initiate the customs clearance process, the following steps are necessary as of the time of publication of this solicitation, but cannot be regarded as definitive:

1) Prepare a Contractor's Letter of Introduction for the Afghanistan Customs Department. The Letter of Introduction should first be emailed to the USACE Customs Coordinator at Qalaa House, Kabul Afghanistan.

2) The following hard copy *original* documents should be delivered to the USACE's Customs Coordinator at Qalaa House prior to the movement of goods into or out of Afghanistan:

   a) A completed Tax Exemption Form ("Muaffi Nama"), purchased from the Afghan Customs Department and written in the Dari language.

   b) A Bill of Lading (for cargo transiting via ship and motor carrier), Airway Bill (for cargo arriving via air) or CMR (for cargo that has only traveled overland).

   c) An Invoice in US Dollars only. If the goods were purchased elsewhere and invoiced in a different currency, the equivalent U.S. Dollar amount must be clearly shown.

   d) A Customs Clearance Request. See Section 01060b

   e) A Packing List if the complete cargo manifest is not listed on the invoice.

   f) A Certificate of Origin for cargo coming through Islam Qalat and Heart.

The USACE Customs Coordinator will check the documents to ensure that they are complete, accurate, and ready for signature.

Once all stamps and signatures are obtained on the documents listed under paragraph 2, the Afghanistan Customs Department will send them to the applicable customs clearing house and the shipment can be released for border crossing and final delivery.

Note: When a contractor imports vehicles or equipment for use by the US Government, the items can only remain in country until the contracted project is complete. At the termination of the contract, the vehicles or equipment must be exported following procedures similar to those outlined above, or the original exempted duties must be paid to the Ministry of Finance if the vehicles or equipment remain in Afghanistan.

It is the sole responsibility of the contractor to know of and abide by all Afghan customs clearance procedures and requirements applicable to the importation of supplies and equipment into Afghanistan, and to make accurate and truthful representations on all customs documents. Please recognize that Afghan customs procedures and requirements may change over the period of contract performance. The US Army Corps of Engineers, Afghanistan Engineer District, therefore provides the information in this section for general guidance purposes only, and advises you that responsibility for customs compliance, and awareness of changing customs procedures, remains your responsibility.

Any contractor or shipping agency that violates Afghan customs procedures may be subject to legal action, including but not limited to revocation of contract, forfeiture of goods and enforced collection of fines and customs fees due the Afghan Government. All contractors and suppliers that import goods tax and duty free are subject to warehouse and storage facility inspections by USACE representatives to confirm that customs manifests are accurate and that abuse of the US Government’s tax-exempt status has not occurred.

2.5 TRAVEL WARNINGS

The contractor shall provide all personnel working under this contract, and shall require subcontractors to provide their personnel, with a written notification advising such personnel to be aware of US State Department Travel Warnings with respect to Afghanistan, available at http://travel.state.gov, in the event they wish to consider bringing their dependants into Afghanistan. A copy of the notice ***shall be furnished to the contracting officer upon award of the contract***, along with a certification by an authorized company representative attesting to the provision of the notification to contractor personnel. At no time, subject to the written approval of the contracting officer, may the contractor allow such dependants, or any other unauthorized individuals, to be present on the project site grounds, whether in transit or otherwise.

2.6 DRUG-FREE WORKFORCE

Documentation of the contractor’s drug-free workforce program as required by clause 252.223-7004(b) ***shall be furnished to the contracting officer upon award of the contract.***

2.7 COMBATING TRAFFICKING IN PERSONS, COMMERCIAL SEX ACTS, FORCED LABOR

A copy of the employee notification statement as required by clause 52.222-50 Alt 1 ***shall be furnished to the contracting officer upon award of the contract***, along with a certification by an authorized company representative attesting to the provision of the notification to contractor personnel.

2.8 PROMPT PAYMENT OF SUBCONTRACTORS

In accordance with 52.232.5 (b)(1)(v,), the contractor shall furnish documentation with each progress payment which indicates that all sub-contractors and suppliers have been paid with funds from the most recent progress payment. In order for the progress payment request to be considered complete, the contractor shall:

- submit a listing of all subcontractors, the total amount paid to each subcontractor under the contract and the dates and methods of such payments; and
- provide copies of payrolls for each subcontractor working under this contract.

2.9 SUBCONTRACTORS CLAUSE REQUIREMENT

In accordance with 52.232.27, the contractor shall include in each subcontract, a payment clause that obligates each subcontractor to pay their subcontractors for satisfactory performance of work not later than 7 days from the date they receive payment for work under this contract.

2.10 DEFENSE BASE ACT

In accordance with FAR 52.228-3 “Workers Compensation Insurance” (Defense Base Act) the offeror is required to provide, prior to commencing work under this contract, such workers’ compensation insurance or security as the Defense Base Act (“DBA”) (42 U.S.C.1651 et seq.) requires and to continue to maintain it until performance is complete. The amount listed by the offeror on this Contract Line Item (CLIN) is the estimated DBA insurance premium (estimated payroll of the offeror and its subcontractors times the applicable rate(s)). The DBA insurance premium amount varies with payroll and the nature of services and will, therefore, be taken into account during price evaluation of offers. The actual amount paid by the government under that CLIN will be based on the amount of the Rutherford invoice, stamped “paid” and submitted by the offeror after contract award. In the event of recalculation of the premium by CNA based on actual payroll amounts, the contracting officer will adjust this CLIN by contract modification to reflect the actual premium amounts paid. Failure to fully comply with the Defense Base Act requirements may result in termination for default in accordance with FAR 52.249-10 Default (Fixed-Price Construction).

2.11 SUBMISSION OF DEFENSE BASE ACT CLAIMS

The offeror’s Safety Officer shall, in addition to any other duties required to be performed under this contract, do the following:

- Make timely Defense Base Act insurance claims on behalf of each employee who is injured or killed in the course of their employment under this contract; and

- Make monthly written reports to the Contracting Officer, Administrative Contracting Officer, and the Agency Safety and / or Occupational Health Manger, providing the name(s) of each such injured or deceased employee, the circumstances surrounding each injury or death, the dates of each injury or death, the date the insurance claim was made on behalf of each employee(s), and the current status of each claim.

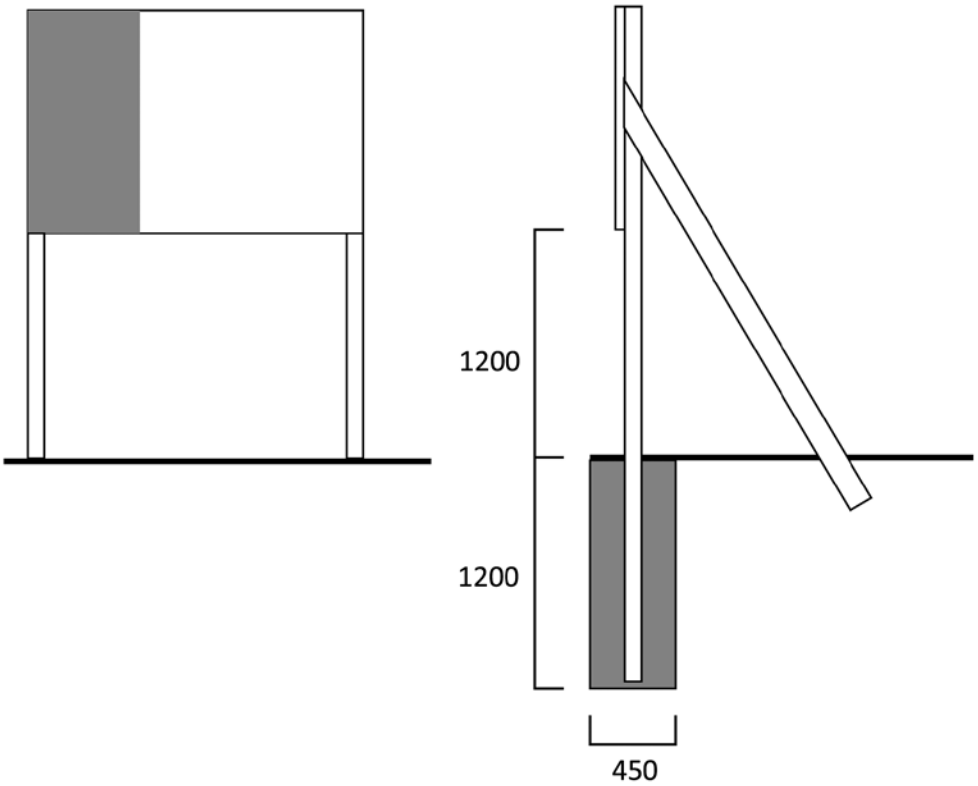
The Agency Safety and / or Occupational Health Manger POC will be provided at the pre-construction meeting.

-- END OF SECTION --

Construction Project Sign Dimensions (mm)

T1:	Text Group 1	Typeface: 150mm Large Standard Dari Font Color: White
T2:	Text Group 2	Typeface: 150mm Large Standard Dari Font Color: Black
T3:	Text Group 3	75mm Small Standard Dari Font Color: Black
T4:	Text Group 4	35mm Helvetica Bold, all capital letters Color: Light Yellow, matching GIROA logo
T5:	Text Group 5	35mm Helvetica Bold Color: Green, Pantone 370 PC
T6:	Text Group 6	45mm Helvetica Bold Color: Green, Pantone 370 PC

Mounting Diagram



Ministry of Defense

Government of the Islamic Republic of Afghanistan

ACTIVITY HAZARD ANALYSIS

ID No.	**FEATURE OF WORK:**	
Contract No.	**Project:**	**Location:**
Date:	**Activity:**	**Estimated Start Date:**
PRINCIPAL STEPS	**POTENTIAL SAFETY/HEALTH HAZARDS**	**RECOMMENDED CONTROLS**
Identify the principal steps involved and the sequence of work activities.	***Analyze each principal step for potential hazards.***	***Develop specific controls to eliminate or reduce each hazard to an acceptable level of risk.***
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
List equipment to be used in the work activity.	***List inspection requirements for the work activity.***	***List training requirements, include hazard communication.***
Prepared by: Contractor's competent/qualified person(s) (Signature & Date)		
- AHA Accepted as Part of project Accident Prevention Plan; or **- This AHA has been reviewed by the designated AED COR and is acceptable for use on this project. This acceptance is predicated on satisfactory implementation in the field by the contractor and will be rescinded if the contractor fails to enforce the controls identified in this document and/or the requirements identified in EM385-1-1. This AHA will be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).**		**Name, COR (Signature & Date)**

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 _____

TAC Form 356
NOV 1999

Clearance Request Requirements Checklist
(Requirements as of 24 May 2010)

For use by all U.S. Army Corps of Engineers (USACE)/ Afghanistan Engineer District (AED) Contractors:
For questions, contact Nesar Asdaq at nesar_asdaq@yahoo.com; cell: (0093) 0700-276-349 or Customs Coordinator at DLL-CETAN-CAB@usace.army.mil.
Please make sure your set of documents contains the following prior to submitting to USACE/AED for Customs Clearance Process:
ALL DOCUMENTS DELIVERED TO AED-N QALAA HOUSE MUST BE ORIGINALS!

No	Item Name	Details
1	Cover Letter	To be on Company Letterhead; for more details please refer to Annex A (Sample Cover Letter Format)
2	Original Bill of Lading/CMR/Air Waybill ***(Verified copy of original is not acceptable)***	This document should include the following information in **English Language**: A. Document Number B. Date C. Consignee: (USACE, c/o Contractor Name & Address in Afghanistan) D. Contract # and Project Name (e.g W917PM……ANA Garrison…..) E. Route and Final Destination F. Container Number (if applicable) G. Truck Number (if applicable) H. Number of Pieces I. Description of Goods: 1) (if the goods are Vehicles/Loader/Excavators …etc) info should include: a) Engine # b) Chassis # c) Model d) Color e) Country of Origin f) Type/Brand 2) For non-mobile Machines like Generators only **Serial #** and **Brand or Type** is sufficient
3	Original Invoice ***(Verified copy of original is not acceptable)***	This document should include the following information in **English Language**: A. Document Number B. Date C. Consignee: (USACE, c/o Contractor Name & Address in Afghanistan) D. Contract # and Project Name (e.g W917PM……ANA Garrison…..) E. Container Number (if applicable) F. Description of Goods: 1) (if the goods are Vehicles/Loader/Excavators …etc) info should include: a) Engine # b) Chassis # c) Model d) Color e) Country of Origin f) Type/Brand 2) For non-mobile Machines like Generators only **Serial #, Brand or Type** is sufficient G. Currency in **USD** Only **(other currencies will not be accepted)** H. Invoice to be Signed & Stamped by Supplier
4	Packing List	To specify contents of Invoice (not required if invoice lists all items)
5	Certificate of Origin *(if applicable)*	Required only if cargo arrives in Afghanistan via Herat or Islam Qalah.
6	Exemption Form (MUAFFI NAMA)	To be obtained from Ministry of Finance (MOF) Revenue Department, and completed in the Dari Language

Note: For shipments coming through Pakistan – Karachi Port, we require two copies of the full set of documents in addition to the original documents: one copy for our office record and one copy for US Consulate Karachi– Pakistan. For shipments coming through Mazar e Sharif and Herat, only one copy for our office records suffices.

Sample Format for Letter of Introduction

TO: U. S. Army Corps of Engineers, Afghanistan Engineer District (AED)

ATTN: [name of POC]

FROM: Prime Contractor *(Authorized Person)*

SUBJECT: Customs Clearance Request for U. S. Military Equipment

Request your assistance in obtaining release of the following items, as we require their immediate shipment to Afghanistan for use in support of Operation Enduring Freedom (OEF).

Company:	Full Name and Address
Sub Contractor *(if applicable)*	Full Name and Address
Contract No & Task Order No.:	W912ER……., W917PM……..
Project Description:	i.e ANA Garrison Nangarhar, ANP Border Police Kandahar….etc
Shipping Route:	i.e Austria, Karachi – Pakistan, Torkham – Kabul or Turkey, Azerbijan, Turkmenistan, Herat …etc

Bill of Lading Details	Number Date	
	1234….	MM DD YY

Container Number:	TOLU4938862, TRLU5949846, TRLU9220744, AMCU4500861 etc…
Number of Pieces:	4 Containers
Contents:	Steel Pipe, Cement, Door, Window…etc *(if Vehicles or Generators, please refer to item (2-I or 3-F of Checklist**)*
Final Destination:	Kabul or Name of respective Province Afghanistan

Invoice Details	Number	Date	Amount	Currency
	123	MM DD YY	100,000.00	USD

Authorized Employee of Company responsible for Customs Clearance:	Name of Company's Employee
Authorized Shipping Agent:	Name and Address of Shipping Agent

Your cooperation in facilitating the clearance of said items from Afghan Custom's authorities and onward transportation to final destination is appreciated.

**If the contractor is importing its own equipment (e.g., vehicles, generators, etc.) for use on the contracted project, this statement is added: "The mentioned Equipment and Accessories are contractor-owned and are temporarily imported to Afghanistan for the contract period of _____ to _____. At the conclusion of the contract the said items will be removed from Afthanistan, or the original duties will be paid to the Afghanistan Customs Department, Ministry of Finance by the contractor.

Regards,

Name and Title of Authorized Person
Signature
Date
Stamp of Company

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

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

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 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 a CD-ROM may be used instead of E-Mail (see Paragraph DATA SUBMISSION VIA CD-ROM). 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 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”.

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 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 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 --

SECTION 01321

NETWORK ANALYSIS SCHEDULE

PART 1 GENERAL

1.1 DESCRIPTION

The network analysis schedule (NAS) shall consist of a cost loaded Critical Path Method (CPM) schedule and associated reports. The scheduling of all design, procurement and construction shall be the responsibility of the Contractor. All design, procurement and construction activities will be integrated in a single schedule. The schedule will start at NTP Acknowledged and end at Contract Completion. The schedule may extend beyond Contract Completion, for activities such as demobilization, with the approval of the Contracting Officer. The contractual period of performance will be shown as a hammock under Contract Milestones.

The approved NAS constitutes the baseline schedule and represents the contractor’s plan for executing the project. The schedule will be updated monthly to show current status. The monthly updates will be used to measure work progress, aid in the evaluation of requests for time extensions, and to provide the basis of all progress payments. All progress payment amounts will equal the earned values calculated in the monthly NAS updates.

For consistency, when scheduling software terminology is used in this specification, the terms in Oracle’s Primavera scheduling programs are used. Primavera Project Planner, P3, Primavera P6, and Primavera Contractor are registered trademarks or service marks of Oracle. Adobe and Acrobat are registered trademarks of Adobe Systems Incorporated.

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 will be submitted with Transmittal Form (ENG Form 4025) in accordance with Section 01335 SUBMITTAL PROCEDURES FOR DESIGN-BUILD PROJECT:

Preconstruction Submittals
- Scheduler Qualifications; G RE
- Project Execution Plan, G RE
- Activity Code Dictionary; G RE
- Baseline Network Analysis Schedule; G RE

With Pay Requests
- Monthly Network Analysis Schedule Updates; G RE

Closeout Submittals
- As-Built Schedule; G RE

1.3 SCHEDULE ACCEPTANCE

Review comments made by the Government on the Contractor's schedules will not relieve the Contractor from compliance with the requirements of the Contract Documents. The Contractor is responsible for scheduling, sequencing, and prosecuting the Work to comply with the requirements of the Contract Documents. The Government will review the schedule for compliance with the

contract (including contractual milestones and scope), cost loading and cost distribution, schedule organization and activity coding, logic, durations, and general conformance with established scheduling concepts and acceptable industry standards.

1.3.1 Schedule Acceptance Prior to Start of Work

The Baseline NAS described in paragraph 1.7.2 Baseline Network Analysis Schedule must be accepted by the Government before the Contractor will be allowed to request progress payments except for DBA as noted below in 1.3.2.

1.3.2 Acceptance

a. After the Baseline NAS is accepted by the Contracting Officer, it will be used by the Contractor for planning, organizing, and directing the work, reporting progress, and to support pay requests. The schedule will be updated monthly by the Contractor to reflect the current status of the work and will be submitted with the progress pay request. Processing pay requests is conditional upon receipt and acceptance of the Baseline NAS and accurate updated schedules accompanying the pay requests. Only DBA insurance will be paid prior to acceptance of the Baseline NAS.

b. The Baseline NAS and subsequent schedule updates will be considered to be the Contractor's certification that the submitted schedule meets all of the requirements of the Contract Documents, represents the Contractor work plan, accurately reflects the work that has been accomplished, and the sequence in which it was performed.

1.4 SOFTWARE

The scheduling software that will be utilized by the Government on this project will be either Oracle’s Primavera P3 or Primavera P6. Notwithstanding any other provisions in the contract, schedules submitted for this project must be prepared using one of these programs. The program selected by the contractor will be used for the duration of the contract. The Contractor shall provide electronic files saved in compressed backup format (.prx or .xer) with all schedule submittals. If P6 is used, the contractor must provide the version number. Submission of data from another software system where data conversion techniques or software is used to import into Primavera's scheduling software is not acceptable and will be cause for rejection of the submitted schedule.

1.5 QUALIFICATIONS

The Contractor shall assign a Scheduler based in Afghanistan who will be responsible for the development, preparation, and maintenance of an accurate, computerized Network Analysis Schedule. The Scheduler shall perform on-site coordination, attend project meetings, prepare reports and perform updates as required to support the project. The Scheduler shall have previously developed, created and maintained computerized schedules for at least two projects similar in size and complexity to this contract. A resume outlining the qualifications of the Scheduler shall be submitted for acceptance to the Contracting Officer. If at a later date, the Contracting Officer considers the Contractor's Scheduler to be incompetent or objectionable, the Contractor will propose a new Scheduler who meets the qualification requirements. Payments will not be processed until an acceptable Scheduler is assigned.

1.6 SCHEDULE FORMAT

1.6.1 STRUCTURE

The NAS shall consist of a cost loaded CPM network displayed as time scaled bar charts supported by specified tabular and graphical reports. Sample standard reports are included in Appendix 01321a. The NAS will show the order and interdependence of activities and the sequence in which the work is planned to be accomplished. The basic concept of the network will be followed to show how the start and/or finish of a given activity is dependent on the execution of preceding activities and how it restrains the succeeding activities. Activity durations shall not be resource driven; activities shall not have date constraints, and shall start and finish according to network logic. Diagrams shall be organized with a four or five level work breakdown structure, sorted by Early Start and Early Finish Dates and will show a continuous flow from left to right. With the exception of the NTP Acknowledged and Contract Completion milestones, every activity must have predecessor and successor ties and every finish must have a successor. Activities with only start-to-start successor relationships will not be allowed. Activities in an accepted schedule may not be renamed or renumbered. Critical activities will be shown in red. Critical activities are defined as having zero or less days of Total Float. Near critical activities will be defined as having Total Float in the range of 1 to 14 calendar days. Barcharts will be submitted formatted for 11X17 sheets.

The following information will be shown for each activity:

a. Activity ID
b. Activity Description
c. Original Duration in Work Days
d. Remaining duration (schedule update reports only)
e. Early Start Date
f. Early Finish Date
g. Total Float
h. Budgeted Cost
i. Baseline Start Variance (schedule update reports only)
j. Baseline Finish Variance (schedule update reports only)

1.6.2 ACTIVITY PROPERTIES AND LEVEL OF DETAIL

Numbering shall be assigned so that, in general, predecessor activity numbers are smaller numerically than the successor activity numbers. Skip numbering shall be used on the network to allow insertion of additional activities for contract modifications and logic changes. All activities in RMS are sorted by activity ID.

Government Activities. All government activities shall be clearly identified in the schedule. Government activities include, but are not limited to; Government approved submittal reviews, Government conducted inspections/tests, environmental permit approvals, utility outages, Notice(s) to Proceed (including Notices to Proceed for each Fast-Track Phase as indicated in other sections of this specification and as directed by the Contracting Officer) and delivery of Government Furnished Material/Equipment. Show activities indicating Government furnished materials and equipment utilizing delivery dates indicated in "FAR 52.245-2, Government Property (Fixed-Price Contracts)". Government activities will be driven by a 7-day calendar, i.e. one with no non-work days.

Construction Quality Management (CQM) Activities. All activities will have a Definable Feature of Work (FOW) as identified in the Contractor's Quality Control Plan. The FOW will be entered in the FOW activity code as defined in the SDEF specification.

1.6.2.1 ACTIVITY BANDS

The schedule will use the following (phases=PHAS) as the first level of organization:

a. Milestones. This band contains the contract milestones. If the contractor includes other project milestones, contract milestones and project milestones will be shown as separate bands below MILESTONES.
b. Pre-Construction. Included in this band are pre-construction meetings and submittals. Pre-construction submittals will be shown as a separate band under PRE-CONSTRUCTION.
c. Design. This band contains activities related to site investigation, surveys and design including, but not limited to Design Notice to Proceed, Contractor's design by design phase, application for and receipt of required permits, Contractor's constructability reviews, submittal of design packages to Government, Government's design review periods, specified design meetings, transition periods prior to Construction Notice to Proceed, (including Notice to Proceed for each Fast-Track Phased Design as indicated in Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD PROJECT and as directed by the Contracting Officer). The Government review period shall be from the time the design is received by the Government to the time it is sent back to the Contractor, in calendar days. Design activities will be linked to their associated Submittal, Procurement, and/or Construction activities. If the Government's review of any submittal requires resubmission or does not clear the design for construction, a new series of Design Activities will be inserted into the schedule. The predecessor for the new design preparation activity will be the original approval activity and the successor will be the beginning of the next design phase.
d. Procurement. This band contains tasks related to the procurement of installed material or equipment including but not limited to material submittal preparation, submittal and approval, fabrication, delivery, extra stock, special tools, O&M manuals, notification of Government Furnished Material/Equipment delivery requirement. As a minimum, separate procurement activities will be provided for every specification section. Submittal approval activities shall be logically tied to associated procurement, delivery, and/or construction activities. If the contractor requires payment upon delivery for materials or equipment, i.e. “stored materials”, a one day activity must succeed the delivery activity. The activity description should be “Stored Materials: name of materials or equipment”. The activity will carry the documented cost of the materials or equipment and will be statused as actual only after review and approval of the supporting documentation by the COR. Payment for stored materials if allowed by the contract is subject to approval by the Contracting Officer and must be requested in writing prior to submittal of the baseline schedule. If the Government's action on any submittal is "Disapproved" or "Revise and Resubmit", a new series of Submittal Activities will be inserted into the schedule. Predecessor for the new submittal preparation activity will be the original approval activity and the successor will be the fabrication/deliver activity for the equipment or material.

e. Construction. This band will have as many subordinate bands as are required to provide a logical organization of construction work. These bands will contain all construction activities including but not limited to mobilization, demobilization; installation of temporary facilities tradesman; testing and inspection of installed work; start-up and testing of equipment; commissioning of building and related systems; scheduling of specified manufacturer's representatives. No construction activity shall have a duration greater than 20 working days. Construction activities will be driven by calendars that reflect all scheduled non-work days, i.e. Fridays, official Afghan holidays and severe weather days as listed in section 01060 of the contract.
f. Contract Closeout. This band will have two or more subordinate bands to provide a logical organization of the closeout work. These bands will contain all closeout activities including but not limited to Punch Out Inspection, Pre-Final Inspection, Final Acceptance Inspection, final clean-up. as-builts, O&M manuals and training.

1.6.2.2 PROJECT MILESTONES

The NAS will include milestones for the start of the project; any contract required interim start and completion dates, contract completion date and other significant milestones. Only Contract Milestones will be recognized by the Government.

a. NTP Acknowledged: The schedule shall start no earlier than the NTP Acknowledged Date. NTP Acknowledged will be shown as a start milestone with a start-no-earlier-than constraint date equal to the date shown in RMS.
b. Contract Complete: The last activity in the schedule will be the Contract Complete milestone. This milestone will have finish-no-later-than constraint date equal to the Contract Required Completion date in RMS.

1.6.2.3 MANDATORY ACTIVITIES

The following activities, and the procurement activities described in 1.6.2.1d, when applicable, shall be listed as separate activities:

a. Submission, review and approval of the demining plan and required demining activities through receipt of the certificate.
b. Submission and approval of the accident prevention plan.
c. Submission and approval of the security plan.
d. Submission and approval of the contractor quality control plan
e. Submission and approval of the design quality control plan
f. Submission and approval of the area use plan.
g. Mobilization
h. Demobilization
i. Submission, review and acceptance of design packages and all related activities required to support design.
j. Submission and approval of mechanical/electrical layout drawings.
k. Submission and approval of O & M manuals.
l. Submission and approval of as-built drawings.
m. Submission and approval of 1354 data and installed equipment lists.
n. Submission and approval of testing and air balance (TAB).
o. Submission of TAB specialist design review report. Submission and approval of fire protection specialist.
p. Submission and approval of testing and balancing of HVAC plus commissioning plans and data.

q. Air and water balance dates.
r. HVAC commissioning dates.
s. Controls testing plan.
t. Controls testing.
u. Performance Verification testing.
v. Other systems testing, if required.
w. Pre-final inspection.
x. Correction of punch list from pre-final inspection.
y. Final inspection.

1.6.2.4 ACTIVITY NUMBER (ID) AND DESCRIPTION

a. Activity Numbers: Activity numbers will consist of up to 10 alphanumeric characters beginning with a letter and ending with a number. Only letters and numbers will be used. Activities must be numbered in ascending order from start to finish of the project.
b. Activity ID Codes: The Contractor shall submit the alphanumeric coding scheme for Activity Numbering that shall be used throughout the project. Activity ID Codes may be used to create a work breakdown structure (WBS). Four Activity ID fields are allowed in P3; user defined fields may be used in P6. The coding dictionary shall include the value and description of each code. Once accepted, the coding scheme will be used for the duration of the project. PHAS and AREA are the top two levels of codes.
c. Activity Description: Each activity shall have a narrative description consisting of a Location (e.g.; Building 1, 3rd floor, northeast quadrant, basement – abbreviate as necessary), Verb (e.g.; form, pour, excavate), and Object (e.g.; slab, footing, under floor plumbing).

1.6.2.5 ACTIVITY CODE DICTIONARY AND VALUES

The Contractor shall use the activity coding structure defined in USACE Regulation ER 1-1-11 Standard Data Exchange Format (SDEF) Appendix 01321a. The use of this exact structure is mandatory, even if some fields are not used. The SDEF fields may be used only for the purpose for which they are intended. The characters remaining after the SDEF codes are limited to eight in Primavera P3. These activity codes may be used to replace or supplement the Activity ID Codes. The codes will have values assigned that will allow the scheduling program to sort, select, group and organize the activities in the schedule.

Activity codes are used to:

1. Group and summarize project activities in a hierarchical structure, in the same way as a work breakdown structure (WBS), to facilitate updating and analysis of the schedule.
2. Group and summarize activities and related costs by CLIN and Bid Item
3. Select and sort activities to create ad hoc views and reports

1.6.2.6 COST AND RESOURCE LOADING

a. Cost Loading Activities:
   - Payment for design work will be made after a design submittal is approved. The cost of the design submittal will be applied to a one day “Design Approved” task after the AED approval activity.

- Payment for mobilization and demobilization shall be paid according to the approved CLIN amount for these items. Unless specified otherwise in the contract, then the amount shall be split 60 percent for mobilization and 40 percent for demobilization and each of these costs applied to these separate cost loaded activities.
- The cost of installed materials and equipment will be included in the appropriate construction activities except as allowed by the contract and where the Contracting Officer agrees in advance to payment for stored materials.
- If payment is allowed by the Contracting Officer for stored materials, the cost of the stored materials will be applied to a one day "Stored Materials Accepted" activity after the delivery activity.
- Unless assigned a CLIN, indirect costs such as management, supervision, security, overhead, G&A and profit will be included in each activity budget. The total of all cost loaded activities shall equal the value of the contract.
- Cost shall be rounded to zero decimal places if the contract and CLIN costs are in whole dollars. Cost shall be assigned to activities as a resource as described in the QCS requirements for SDEF file transfer.
- Hammocks (summary bars) will not be cost loaded.
- CLINs and resources will not be entered for activities with no budget.

b. Cost Loading Milestones: Milestone activities may not be cost loaded. A one day task should be used in instead of a cost loaded milestone such as Design Approved or Stored Materials Accepted.
c. Contract Line Item Number (CLIN): As described in Cost Loading, cost shall be assigned to every task type activity. Every activity shall also be assigned to a CLIN. All cost and earned value reports will be grouped by Project and CLIN with sub groups as appropriate. Group totals will be shown for Project and CLIN.
d. Key Quantities: Key quantities will be included as a resource for all cost loaded construction activities. Resource units of measure and cost per unit will be set up in the resources table. Key quantity resources will be non-driving
e. Labor Resource Loading: As part of the Baseline Schedule development each construction activity shall have an estimate of the number of workers per day by trade, hours per day by trade and total expected hours used by trade during the execution of the activity. If no workers are required for an activity, then the activity shall be identified as using zero workers per day. All labor resources loaded into the schedule shall be non-driving and will not be used to calculate activity cost or duration. Resource leveling shall not be used. Actual labor resource expended on an activity will be recorded in the monthly updated schedules and will coincide with entries made in the Daily Reports.

1.6.2.7 CALENDARS

Three calendars will be used in preparing the schedule:

1. 7 day week, no weekends or holidays, and no weather (7 Day Calendar) This calendar is used for any activity whose duration is measured in consecutive calendar days. These activities are mainly in the design and procurement phases. Examples are AED design review, fabricate & deliver.
2. 6 day week, with non work weekend days, and public holidays, no weather (Standard Calendar)

This calendar is used for construction activities which are not affected by severe weather conditions. Examples are all interior work and above ground structural work which is not temperature sensitive such as structural steel erection. Some activities may require interior heating in cold weather for example, painting and plastering.

3. 6 day week with public holidays and severe weather days as listed in Section 01060 Special Clauses (Weather Calendar)
   This calendar is used for construction activities which cannot or will not be performed in severe weather conditions (such precipitation, high or low temperature, wind), such as earthwork, excavation, compaction, concrete work, exterior plastering.

If the site is shut down for any reason, for example severe weather or adverse security conditions, the shut down periods will be shown as non-work days on Calendars 2 and 3. Site shutdowns will be documented in the EWP (paragraph 1.7.3b).

Although the use of additional calendars is not recommended, the contractor may submit other calendars for AED approval.

Afghan Public Holidays
All calendars except Calendar 1 must show official Afghan holidays as non-work days. The dates for 2011 are listed below. The dates of Muslim holidays regress 11 days every year. This rule may be used to estimate the holiday dates for future years.

2011

1.	Feb.15	Liberation Day
2.	Feb.15	The Prophet’s Birthday*
3.	Mar.21	Nauruz (Afghan New Year)
4.	Apr.18	Liberation Day
5.	Apr.28	Victory Day
6.	May 1	Labor Day
7.	Aug.1	Start of Ramadan – approximate*
8.	Aug.19	Independence Day
9.	Aug.30	Eid al Fitr (End of Ramadan)*
10.	Sep.1	Eid al Fitr Holiday*
11.	Sep.2	Eid al Fitr Holiday*
12.	Nov.6	Eid al Adha (Feast of the Sacrifice)*
13.	Nov.7	Eid al Adha Holiday*
14.	Nov.8	Eid al Adha Holiday*
15.	Nov.9	Eid al Adha Holiday*
16.	Dec.27	Ashura*

Notes:

Holidays marked ** are observed according to the Muslim calendar. Dates are tentative. The calendar should be adjusted as required to reflect official announcements for each calendar year within the project schedule.

The month of Ramadan is not included in the construction calendar as non-working time. It should be borne in mind, however, that during this month productivity and availability of manpower tend to be lower than normal. This should be taken into consideration when scheduling work during this period.

1.6.2.8 SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS

Activity Constraints: Date constraints other than those required by the contract will not be allowed unless accepted by the Contracting Officer. The contractor will identify any constraints proposed and provide an explanation for the purpose of the constraint in the Narrative Report.
Lags: Lags will not be used in place of activities in the logic. For example concrete curing time must be shown as an activity, not as a lag between the activities Pour Concrete and Remove Formwork. Negative lags must not be used. The contractor will identify all lags and provide an explanation for the purpose of the lag in the Narrative Report.

Actual Dates: Actual start and finish dates shall not be automatically updated by default mechanisms that may be included in the scheduling software. Actual Start and Actual Finish dates on the CPM schedule must match the dates in the Daily QC Report. These reports will be the basis for updating actual dates in the schedule.

Percent Complete: The reported percent complete of an activity will be based on the quantity of acceptable work in place.
Actual Hours: The schedule will be updated with actual labor hours as reported in the Daily QC Reports.

Software Settings for Primavera P3: Use the P3 defaults for settings which are not otherwise specified. Settings may only be changed with the contracting officer’s approval.

Project Overview:
- Set decimal places to zero if all CLIN values are in whole dollars
- Set Project Start to NTP Acknowledged Date
- Set Project Must Finish By to Contract Required Completion date

Schedule/Level Calculation Options:
- Automatic scheduling and leveling – off
- When scheduling activities apply – retained logic
- Calculate start-to-start lag from – early start
- Schedule durations – contiguous
- Show open ends as - noncritical
- Calculate total float as – finish float

Autocost Rules:
- Uncheck Link Remaining Duration and Schedule Percent Complete
- Check Freeze Resource Units per time period

Summarization:
- Default calendar is 1 (7-day calendar)
- Weighting factor for calculating percent complete is by cost

Critical Activities: Critical activities are activities which have zero or negative total float. The critical path is as calculated by the software longest path.

Format:

Bars: Activities will be shown as bars with no start and end points. Relationship lines will not be shown unless required for a specific report. Activity descriptions will be shown to the right of the bar. Target bars will be shown as a thin black bar above the current schedule. Progress will be shown based on percent complete.

Timescale: The timescale will show calendar dates with the minimum unit being weeks.

Vertical Sight Lines: The major and minor vertical sight lines will generally be months and weeks, respectively. For short term reports such as the 3-week look ahead, the increments will be week and day.

Fonts: The default font will be Arial 10.

Dates: The date format will be ddMMMyy. For example, 12JAN10.

Activity type: The default activity type is "Task".

Activity Number Increment: The initial activity number increment will be 10 to allow inserting activities in sequential order.

Store Period Performance: Upon completion of each monthly update, period performance must be stored in order to preserve historical cost distribution.

Software Settings for Primavera P6: Use the P6 defaults for settings unless otherwise stated for P3 above. Settings may only be changed with the contracting officer’s approval.

Out-of-Sequence Progress: Activities that have posted progress without all preceding logic being satisfied (Out-of-Sequence Progress) will be not be allowed. The Contractor shall make logic corrections to reflect the as-built construction sequence.

1.6.2.9 FILE NAME

Each schedule submitted must have a unique name. The schedule ID will consist of four alpha-numeric characters.

- The first character is assigned by the contractor to uniquely identify a USACE contract. It may be a letter from A to Z. The numbers 0 to 9 may be used if the contractor needs to identify more than 26 USACE contracts.
- The second character is B (for Baseline or C for Current update).
- For a baseline schedule the third character is the baseline number and the fourth character is the submittal number. For example, the second submittal of the initial baseline would be 12.
- For a current update the third and fourth characters are the update sequence number from 01 to 99.
- Example baseline schedule ID: AB12 for contract A, initial baseline, second submittal
- Example current update: AC12 for contract A, current update No.12

1.6.3 REQUIRED REPORTS

The following reports will included with the specified schedule submittals. A PDF of each report will be included on the CD submitted by the Contractor. Barchart reports will be saved as layouts. Tabular and graphical reports will be saved as report specifications. All redundant layouts, report specifications and filter specification will be deleted from the project before it is transmitted.

BASELINE SCHEDULE

a. Project Schedule Report. This is a barchart showing all activities organized by WBS and sorted by early start and early finish.
b. Cost Report. This is a barchart showing budget totals by CLIN.
c. Critical Path Report. This is a barchart showing activities on the longest path. The report layout will be the same as the Project Schedule Report.

UPDATE SCHEDULE

These reports will be submitted with the monthly pay request.
a. Project Schedule Report. This is a barchart showing all activities organized by WBS and sorted by early start and early finish. This report will display the baseline and current update on separate bars.
b. 3 Week Look Ahead. This is a barchart showing activities in continuing or scheduled to start or finish in the three week period after the data date.
c. Earned Value Report. This is a barchart listing all activities which have an earned value. The report will be organized by CLIN and WBS, sorted by early start and early finish.
d. Critical Path Report. This is a barchart showing activities on the longest path. The report layout will be the same as the Project Schedule Report.
e. Other Reports – Reports necessary to monitor and evaluate the project shall be provided by the contractor as requested by the COR.

1.7 SUBMISSION AND ACCEPTANCE

1.7.1 PRELIMINARY MEETING

Before the contractor begins preparation of the initial Baseline Network Analysis Schedule, the Contracting Officer, the Contractor and the AED scheduling consultant shall participate in a preliminary meeting to discuss the proposed schedule and the requirements of this section.

1.7.2 BASELINE NETWORK ANALYSIS SCHEDULE

Once review comments are resolved and the Contracting Officer has accepted the Baseline Network

Analysis Schedule, the contractor shall furnish the following within 5 calendar days:

a. Two copies of the reports listed in the paragraph entitled "Required Reports".
b. Two copies of the Cost Loading S-Curve and Histogram indicating the cost loading based upon both early and late dates.
c. Two sets of CDs containing an electronic file of the project schedule along with a PDF print copy and required reports shall be provided for the initial submission and every periodic project update. A permanent label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Baseline, Update, Recovery, Change, etc.), full contract

number, Project Name used to identify project in scheduling software, contract name & location, data status date, diskette number with total number of diskettes in set, software name and version used to run the schedule, and the name and telephone number of person responsible for the schedule.

d. The schedule reports shall include a footer which shows the contractor name, contract number, contract title, project ID and data date. A sample footer will be provided at the preliminary meeting.

1.7.3 PROJECT EXECUTION PLAN

a. Initial Work Plan

The purpose of the Initial Work Plan (IWP) is to ensure that the contractor understands the scope of work and demonstrates that the project has been properly planned to be executed within the period of performance. The IWP is prepared and submitted with the baseline schedule. It supplements and explains the baseline schedule.

The IWP must conform to the following outline:

- Introduction
  - Scope of work
  - Period of performance
  - Location
  - Climate and topography
- Management Plan
  - Non-manual (management and supervision) staffing
  - Mobilization and demobilization
  - Security: on-site and transportation
  - Logistics
- Engineering and Design
  - Performed by whom and where
  - Design submittals
  - Constraints on procurement
  - Constraints on construction
  - Partial releases for construction, if required
- Procurement
  - Materials submittals
  - Long lead or critical materials and equipment: sources and lead times
  - Constraints on design and construction
- Subcontracting
  - Subcontracting plan
  - Subcontractor resources
- Construction
  - General sequence of construction
  - Schedule allowances for Ramadan, holidays and weather (defer work to favorable weather; methods for cold weather concrete, etc.)
  - Critical constraints on construction

- Labor and equipment constraints
- Construction methods: for example machine excavation vs. hand excavation, pre-fabricated steel vs. on-site fabrication, in-situ vs. precast concrete
- Productivity calculations used for the work durations for all major trades
- Materials testing and quality control

b. Execution Work Plan

The Execution Work Plan (EWP) is an update of the IWP incorporating any issues which could affect performance of the work. The EWP must be revised if there is a significant change in scope or site conditions, or if there is a delay in the schedule. As part of the contract closeout, the EWP will be revised to document how the work was executed.

1.7.4 MONTHLY NETWORK ANALYSIS UPDATES

The Contractor and Government representatives will meet monthly to review and agree on the status of each activity after which the contractor shall update the project schedule with the agreed on percentages for each activity progressed during the update period. The purpose of the meeting is to determine progress payment amounts for each activity, allow all parties to evaluate project status at the data date, provide a complete and accurate update of procurement and construction progress, create an historical record of the project and forecast contract completion based upon current status. The contractor is responsible to gather all supporting documentation, present the update data for the schedule and record the meeting minutes. All progress payment amounts will be derived from and tied to the cost-loaded schedule activities. Submit at monthly intervals a report of the actual construction progress by updating the required reports and the time scaled bar charts. Meeting to update the schedule and the submission of an error free, acceptable updated schedule to the Government is a condition precedent to the processing of the Contractor's pay request. As a minimum, the following actions will be accomplished during the meeting:

a. Identify activities started and completed during the previous period and enter the Actual Start and Actual Finish dates. It will be understood that Actual Start is defined as the date that work begins on an activity with the intent to pursue the work represented by the activity to substantial completion, and Actual Finish is defined as the date that the activity's work is substantially complete to the point that its successor activity(s) may begin. Actual dates must agree with the daily reports.
b. Show estimated duration (in workdays) to complete each activity started but not completed (remaining duration). Forecast finish dates may not be on the data date.
c. Show forecast start dates. Forecast start dates may not be on the data date.
d. Update the percent of work complete for activities which are in progress or have been completed.
e. Reflect changes in the network diagram. All changes (i.e., remaining duration changes, logic changes, new logic, conformed change orders, new activities, changes due to Conformed Modifications, changes in work sequence, entry of as-built relationship logic, etc.) shall be recorded

and a note added to the activity log field. The log shall include as a minimum, the date and reason for the change, and description of the change. All changes to the schedule shall be clearly identified and explained in the monthly narrative report.

f. A complete update of the project schedule containing all approved progress, revisions, and adjustments shall be submitted by the10th of each month to allow adequate time for review and for the contractor to perform any necessary revisions prior to submittal of the updated schedule with the monthly pay request. The progress reported on the updated schedule shall be consistent with and in support of the information reported on the pay request. Processing of the monthly pay request shall be dependent upon the accompanying receipt of an acceptable progress schedule.

g. The Narrative Report will include:
   - Progress made in each area of the project
   - Changes in the following: activities, original durations, logic interdependencies, milestones, planned sequence of operations, critical path, and resource and loading
   - Pending items and their status including permits, change orders, and time extensions
   - Status of Contract Completion Date and interim milestones
   - Current and anticipated delays (describe cause of the delay and corrective action(s))
   - Discussion of the critical path
   - Description of current and future schedule problem areas
   - Forecast of expected progress in each area of the project for upcoming reporting period or the following 30 calendar days. Each entry in the narrative report will cite the respective Activity ID and Activity Description.

h. Submit two copies of the reports listed in the paragraph entitled "Required Tabular Reports".

i. Submit two hard copies of the network diagrams and two sets of data disks.

j. Submit two copies of the Update Meeting minutes.

1.7.5 RECOVERY PLAN

In the event the contractor falls 20 or more work days behind schedule then the contractor will be required to submit a recovery plan (schedule and a detailed narrative) describing the steps that will be taken to recover the lost time and return the critical path of the project to at least zero days total float. The contractor shall submit the recovery plan within 7 calendar days of submitting a periodic schedule update that indicates the contractor is 20 or more work days behind schedule. The detailed narrative shall be an update of the Execution Work Plan and will provide a full explanation of the recovery schedule.

1.7.6 QCS INTERFACE

Data from Primavera P3 and P6 can, and should be, transferred to QCS using SDEF. Eliminating manual entry of this data into QCS will reduce errors, ensure that data in QCS is keyed to the correct schedule activities and eliminate the cost of data entry. Refer to ER-11-1-1 and the Exchanging Data chapter in the QCS User Manual.

1.7.7 AS-BUILT SCHEDULE

As a condition for the release of retention and making final payment, the Contractor shall submit an "As-Built Schedule", which is the last schedule update. The As-Built Schedule shall reflect the exact manner in which the project was actually constructed (including actual start and finish dates, activities, sequences, and logic) and shall be certified by the Contractor's Project Manager and Construction Scheduler as being a true reflection of the way the project was actually constructed. If more than one person filled the position(s) during the course of the project, each person will provide certification for the period of time they were responsible.

1.8 CONTRACT MODIFICATION

When a contract modification is required, the contractor shall submit proposed revisions to the network with a fragnet and a cost proposal for each proposed change. A narrative and all supporting documentation shall be included with the fragnet and cost proposal. All modifications shall be incorporated into the network analysis system as separately identifiable activities broken down and inserted appropriately on the first update following issuance of a directive to proceed with the change. Submit two copies of the Total Float Report, Log Report and a copy of the proposed Time Impact Analysis on disk, with the cost proposal no later than 14 days after the incident (if a delay issue) or after receiving written direction to proceed. Unless the Contracting Officer requests otherwise, only conformed contract modification fragnets will be added into the subsequent monthly updates. All revisions to the baseline schedule that are necessary to further refine the schedule so that the changed work activities can be logically tied to the schedule shall be made. Financial data shall not be incorporated into the schedule until the Contracting Officer signs the contract modification.

1.8.1 Time Impact Analysis:

The Time Impact Analysis method shall be used by the Contracting Officer and the Contractor in determining if a time extension or reduction to the contract milestone date(s) is justified. The Contractor shall provide a Time Impact Analysis to the Contracting Officer for any proposed contract change or as support for a Value Engineering Proposal, Variance Request, Claim or Request for Equitable Adjustment by the Contractor. The Time Impact Analysis schedule must be submitted on disk and a printed /plotted hardcopy. A narrative and all supporting documentation shall be included with the fragnet and cost proposal.

a. The Contractor shall submit a Time Impact Analysis illustrating the influence of each change or delay on the Contract Completion Date or milestones. Unless the Contracting Officer requests an interim update to the schedule, the current monthly updated schedule accepted by the Government shall be used to display the impacts of the change. Unless requested by the Contracting Officer, no other non-conformed changes will be incorporated into the schedule being used to justify the change impact.
b. Each Time Impact Analysis shall include a Fragmentary Network (fragnet) demonstrating how the contractor proposes to incorporate the impact into the project schedule. A fragnet is defined as the sequence of new activities and/or activity revisions, logic relationships and resource changes that are proposed to be added to the existing schedule to demonstrate the influence of impacts to the schedule. The fragnet shall

identify the predecessors to the new activities and demonstrate the impacts to successor activities. The Contractor shall provide a hardcopy printout of the fragnet activities and relationships being added and also insert the fragnet into the most current, accepted Monthly Network Analysis Update, run the schedule calculations and submit the impacted schedule with the proposal, claim, etc. Include a narrative report describing the effects of new activities and relationships to interim and contract completion dates, with each Time Impact Analysis. Submit tie extension requests with a Time Impact Analysis and three hardcopies of the fragnet, impacted schedule (with fragnet loaded), Total Float Report, Narrative Report and Log Report.

c. Following the Contractor's receipt of a contract modification on a Standard Form 30 signed by the Government; all changes in the fragnet used to determine impacts, shall be incorporated into the schedule. Changes will occur during the next monthly schedule update meeting.

1.8.2 NO RESERVATION-OF-RIGHTS

All direct costs, indirect costs, and time extensions will be negotiated and made full, equitable and final at the time of modification issuance.

1.9 CHANGES TO THE NETWORK ANALYSIS SCHEDULE

If changes in the method of operating and scheduling are desired, the Contracting Officer shall be notified in writing stating the reasons for the change. If the Contracting Officer considers these changes to be of a valid nature, the Contractor may be required to revise and submit for acceptance, without additional costs to the Government, the network diagrams and required reports. A change may be considered of a major nature if the estimated time required or actually used for an activity or the network logic has varied from the original plan to a degree that there is a reasonable doubt as to the effect on the contract completion date(s). Changes that affect activities with adequate float time shall be considered a major change when their cumulative effect would extend the contract completion date.

1.10 FLOAT

Use of float suppression techniques, such as; preferential sequencing (arranging critical path through activities more susceptible to Government caused delay), unjustifiable relationship lags, zero total or free float constraints, extended activity times, or imposing constraint dates other than as required by the contract, shall be cause for rejection of the project schedule or its updates. The use of Resource Leveling (or similar software features) used for the purpose of artificially adjusting activity durations to consume float and influence the critical path is expressly prohibited.

1.10.1 DEFINITION OF FLOAT

Free Float is the time the start of an activity can be delayed without delaying the start of a successor activity. Total Float is the time finish of activity can be delayed without delaying the project completion date. Project Float is the length of time between the Contractor's Forecast Early Completion and the Contract Required Completion.

1.10.2 OWNERSHIP OF FLOAT

Float available in the schedule, at any time shall not be considered for the exclusive use of either the Government or the Contractor. During the course of the project, any positive float generated due to the efficiencies of either party is not for the sole use of the party generating the float; rather it is a shared commodity to be reasonably used by either party. Efficiencies gained as a result of favorable weather within a calendar month, where the number of days of normally anticipated weather is less than expected, will also contribute to the reserve of float. A schedule showing work completing in less time than the contract time, and accepted by the Government, will be considered to have Project Float. Project Float will be a resource available to both the Government and the Contractor. No time extensions will be granted nor delay damages paid unless a delay occurs which impacts the project's critical path, consumes all available float or contingency time, and extends the work beyond the Contract Required Completion Date.

1.10.3 NEGATIVE FLOAT

Negative float will not be a basis for requesting time extensions. Any extension of time will be addressed in accordance with the paragraphs entitled "CONTRACT MODIFICATION". Scheduled completion date(s) that extend beyond the contract or phase completion date(s) may be used in computations for assessment of payment withholdings. The use of this computation is not to be construed as a means of acceleration.

1.11 3 WEEK LOOK AHEAD SCHEDULE

The 3-Week Look Ahead Schedule provides a focus on the day-to-day planning and execution of near term work. This schedule is filtered from the NAS and shows activities which fall in the period extending from one week before the data date to three weeks after the data date. This schedule will use the standard barchart format described under Current Schedule Update. Two bars will be shown to allow comparison of the current week update with the previous week’s schedule. The report will, formatted for printing on 8 ½ by 11 sheets. A pdf of the 3-week schedule shall be emailed to the Contracting Officer at least 3 work hours prior to the start of the weekly coordination meeting.

1.12 WEEKLY COORDINATION MEETING

A coordination meeting will be held each week to discuss the near term work as shown on the 3-Week Look Ahead schedule. The contractor will present an overview of the previous week's work, the current week's work, and the work planned for the following two weeks. Items which should be discussed are changes in the 3-week schedule. Issues which affect execution of the work such as coordination, procurement, labor and equipment. The Contractor will take meeting minutes. All meeting minute entries will be keyed to the schedule activity numbers) being addressed. Within one day of the meeting, the Contractor will provide a draft copy of the meeting minutes to the Contracting Officer for review and comment. Final copies of the minutes containing the comments provided by the Contracting Officer will be issued within 3 days of the meeting.

1.13 CORRESPONDENCE AND TEST REPORTS

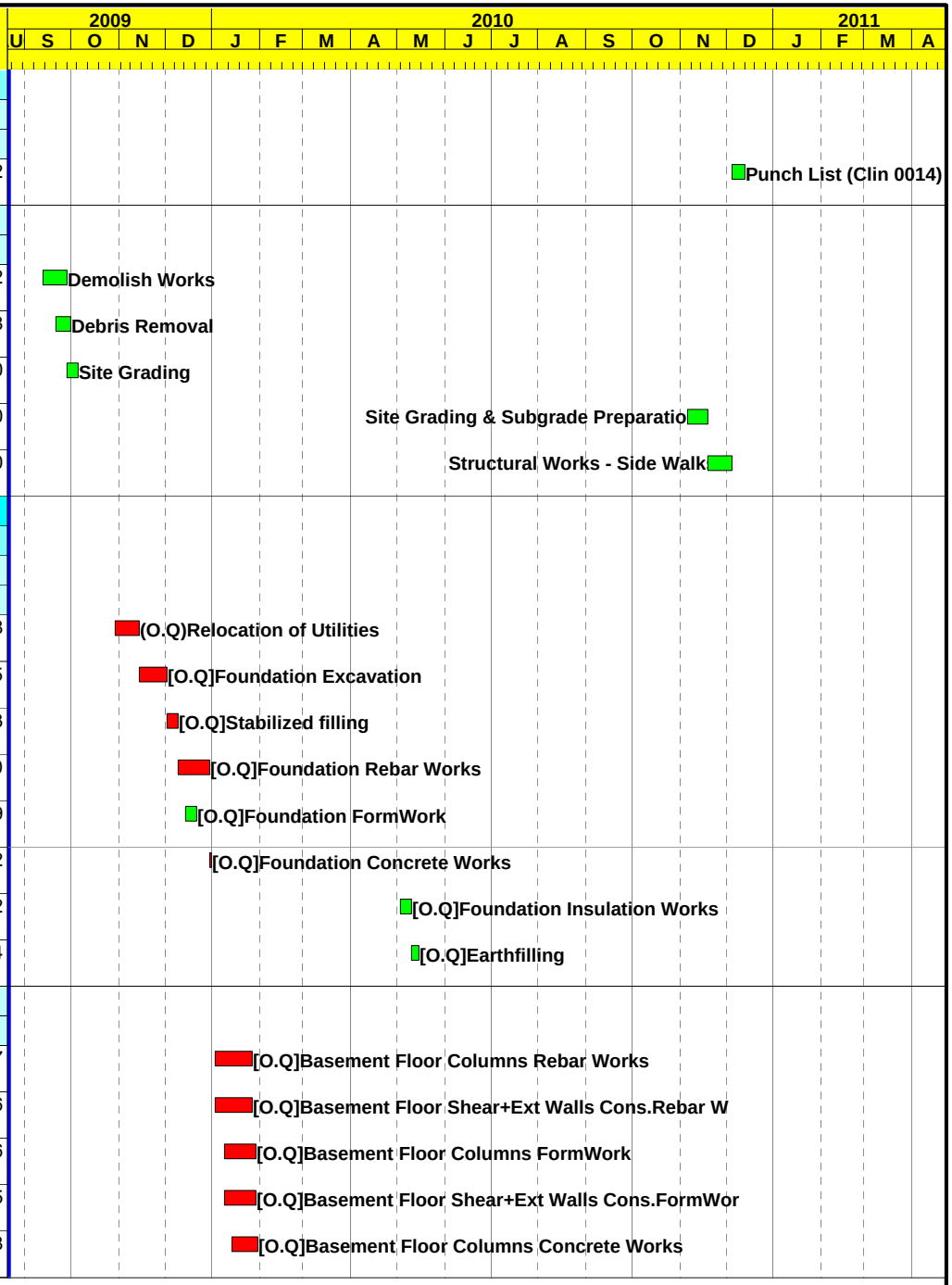
All correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs, etc.) and test reports (e.g., concrete, soil compaction, weld, pressure, etc.) shall reference the Schedule Activity Number(s) that are being addressed.

-- End of Section --

SECTION 01321a

ATTACHMENT TO 01321

Activity ID	Activity Description	Orig Dur	Start	Finish	Total Float	Budgeted Cost
Punchlists & Inspections						
009160	Punch List (Clin 0014)	8	05DEC10	12DEC10	103	1,362
005710	Demolish Works	15	13SEP09	27SEP09	9	17,062
005720	Debris Removal	10	21SEP09	30SEP09	9	12,188
005730	Site Grading	7	29SEP09	05OCT09	9	19,500
009140	Site Grading & Subgrade Preparation	14	06NOV10	19NOV10	95	8,170
009150	Structural Works - Side Walks	15	20NOV10	04DEC10	95	17,700
Buildings						
UOQ Building						
Foundations						
Basement						
000605	(O.Q)Relocation of Utilities	15	30OCT09	13NOV09	0	31,438
000610	[O.Q]Foundation Excavation	15	14NOV09	02DEC09	0	101,665
000620	[O.Q]Stabilized filling	7	03DEC09	09DEC09	0	23,423
000740	[O.Q]Foundation Rebar Works	20	10DEC09	29DEC09	0	120,650
000750	[O.Q]Foundation FormWork	7	15DEC09	21DEC09	8	46,079
000760	[O.Q]Foundation Concrete Works	1	30DEC09	30DEC09	0	58,922
000770	[O.Q]Foundation Insulation Works	7	04MAY10	10MAY10	3	92,592
000630	[O.Q]Earthfilling	5	11MAY10	15MAY10	29	15,234
Superstructure						
Basement						
000780	[O.Q]Basement Floor Columns Rebar Works	20	03JAN10	26JAN10	0	42,087
000810	[O.Q]Basement Floor Shear+Ext Walls Cons.Rebar W	20	03JAN10	26JAN10	0	56,116
000790	[O.Q]Basement Floor Columns FormWork	18	09JAN10	29JAN10	0	56,116
000820	[O.Q]Basement Floor Shear+Ext Walls Cons.FormWor	18	09JAN10	29JAN10	0	70,145
000800	[O.Q]Basement Floor Columns Concrete Works	15	14JAN10	30JAN10	0	28,058



Start Date	21AUG09
Finish Date	23APR11
Data Date	21AUG09
Run Date	23FEB10 16:53

Current
Progress Bar
Critical Activity

NB13

XYZ Company

Sheet 11 of 39

W917-PM-09-C-0999
Sample Project for Section 01321

Baseline Schedule

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Start	Finish	Total Float	Budgeted Cost
W917-PM-09-C-0999						
Total		611	21AUG09	23APR11	0	26,926,173
+ Mobilization/Demobilization						
		611	21AUG09	23APR11	0	650,001
+ Design Costs						
		590	21AUG09	02APR11	0	907,500
Unaccompanied Officer's Quarters						
Subtotal		570	21AUG09	13MAR11	0	10,587,992
+ Procurement						
		349	21AUG09	04AUG10	186	0
Construction						
Buildings						
UOQ Building						
Foundations						
Basement						
000605	(O.Q)Relocation of Utilities	15	30OCT09	13NOV09	0	31,438
000610	[O.Q]Foundation Excavation	15	14NOV09	02DEC09	0	101,665
000620	[O.Q]Stabilized filling	7	03DEC09	09DEC09	0	23,423
000740	[O.Q]Foundation Rebar Works	20	10DEC09	29DEC09	0	120,650
000750	[O.Q]Foundation FormWork	7	15DEC09	21DEC09	8	46,079
000760	[O.Q]Foundation Concrete Works	1	30DEC09	30DEC09	0	58,922
000770	[O.Q]Foundation Insulation Works	7	04MAY10	10MAY10	3	92,592
000630	[O.Q]Earthfilling	5	11MAY10	15MAY10	29	15,234
Superstructure						
Basement						
000780	[O.Q]Basement Floor Columns Rebar Works	20	03JAN10	26JAN10	0	42,087
000810	[O.Q]Basement Floor Shear+Ext Walls	20	03JAN10	26JAN10	0	56,116
000790	[O.Q]Basement Floor Columns FormWork	18	09JAN10	29JAN10	0	56,116
000820	[O.Q]Basement Floor Shear+Ext Walls	18	09JAN10	29JAN10	0	70,145
000800	[O.Q]Basement Floor Columns Concrete	15	14JAN10	30JAN10	0	28,058

Start Date	21AUG09
Finish Date	23APR11
Data Date	21AUG09
Run Date	23FEB10 17:11

Current
Progress Bar
Critical Activity

NB13

XYZ Company

Sheet 1 of 39

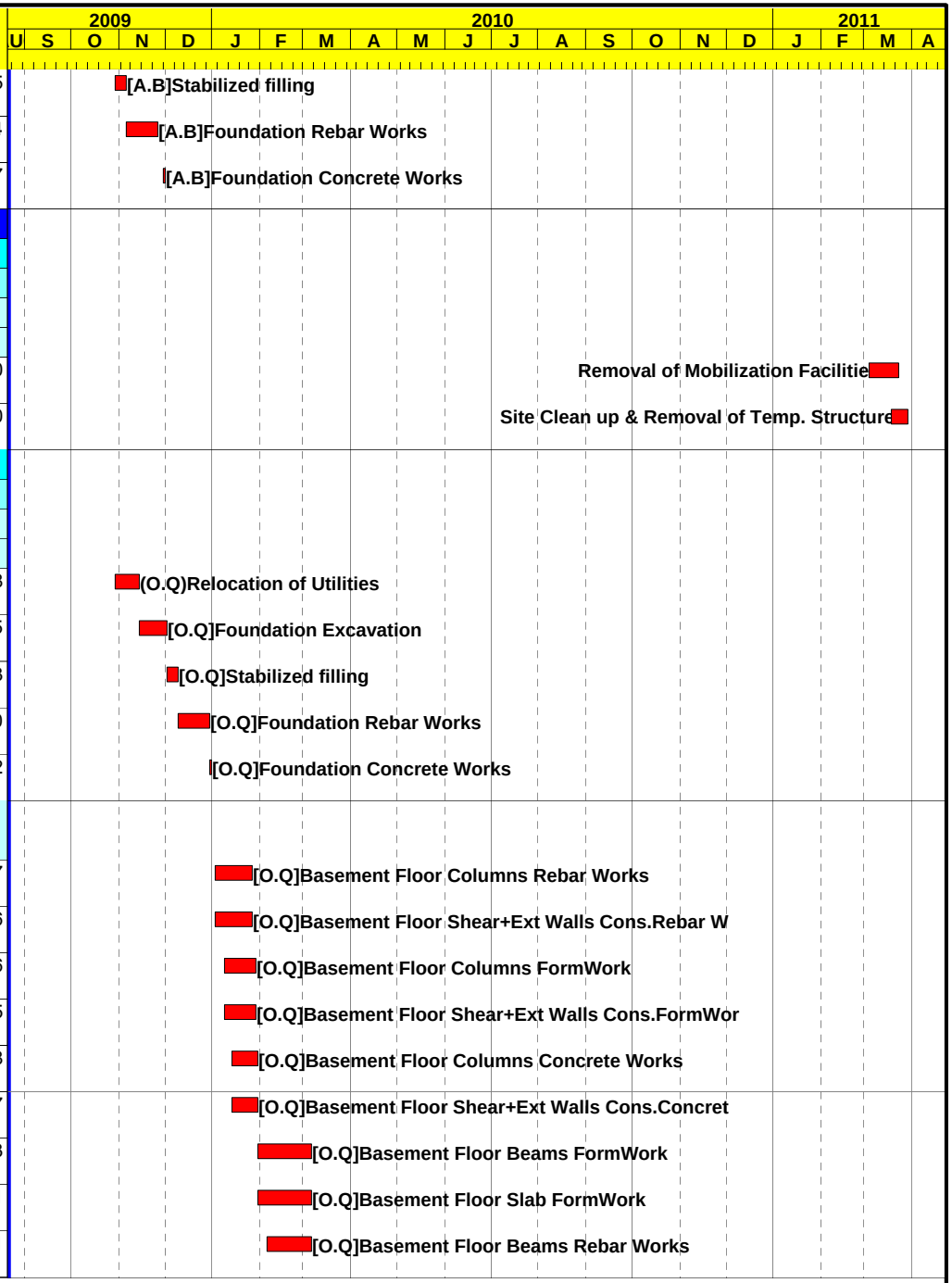
W917-PM-09-C-0999
Sample Project for Section 01321

Cost Report by CLIN

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Start	Finish	Total Float	Budgeted Cost
002720	[A.B]Stabilized filling	7	30OCT09	05NOV09	0	33,195
002840	[A.B]Foundation Rebar Works	20	06NOV09	25NOV09	0	126,914
002860	[A.B]Foundation Concrete Works	1	30NOV09	30NOV09	0	50,457
Construction						
Mob/Demob						
Demobilization						
000280	Removal of Mobilization Facilities	20	04MAR11	23MAR11	0	48,000
000290	Site Clean up & Removal of Temp. Structures	10	19MAR11	28MAR11	0	18,500
Buildings						
UOQ Building						
Foundations						
Basement						
000605	(O.Q)Relocation of Utilities	15	30OCT09	13NOV09	0	31,438
000610	[O.Q]Foundation Excavation	15	14NOV09	02DEC09	0	101,665
000620	[O.Q]Stabilized filling	7	03DEC09	09DEC09	0	23,423
000740	[O.Q]Foundation Rebar Works	20	10DEC09	29DEC09	0	120,650
000760	[O.Q]Foundation Concrete Works	1	30DEC09	30DEC09	0	58,922
Superstructure						
Basement						
000780	[O.Q]Basement Floor Columns Rebar Works	20	03JAN10	26JAN10	0	42,087
000810	[O.Q]Basement Floor Shear+Ext Walls Cons.Rebar W	20	03JAN10	26JAN10	0	56,116
000790	[O.Q]Basement Floor Columns FormWork	18	09JAN10	29JAN10	0	56,116
000820	[O.Q]Basement Floor Shear+Ext Walls Cons.FormWor	18	09JAN10	29JAN10	0	70,145
000800	[O.Q]Basement Floor Columns Concrete Works	15	14JAN10	30JAN10	0	28,058
000830	[O.Q]Basement Floor Shear+Ext Walls Cons.Concret	15	14JAN10	30JAN10	0	42,087
000840	[O.Q]Basement Floor Beams FormWork	30	31JAN10	05MAR10	0	44,893
000870	[O.Q]Basement Floor Slab FormWork	30	31JAN10	05MAR10	0	72,951
000850	[O.Q]Basement Floor Beams Rebar Works	26	06FEB10	06MAR10	0	39,281



Start Date	21AUG09
Finish Date	23APR11
Data Date	21AUG09
Run Date	23FEB10 17:15

Current
Progress Bar
Critical Activity

NB13

XYZ Company

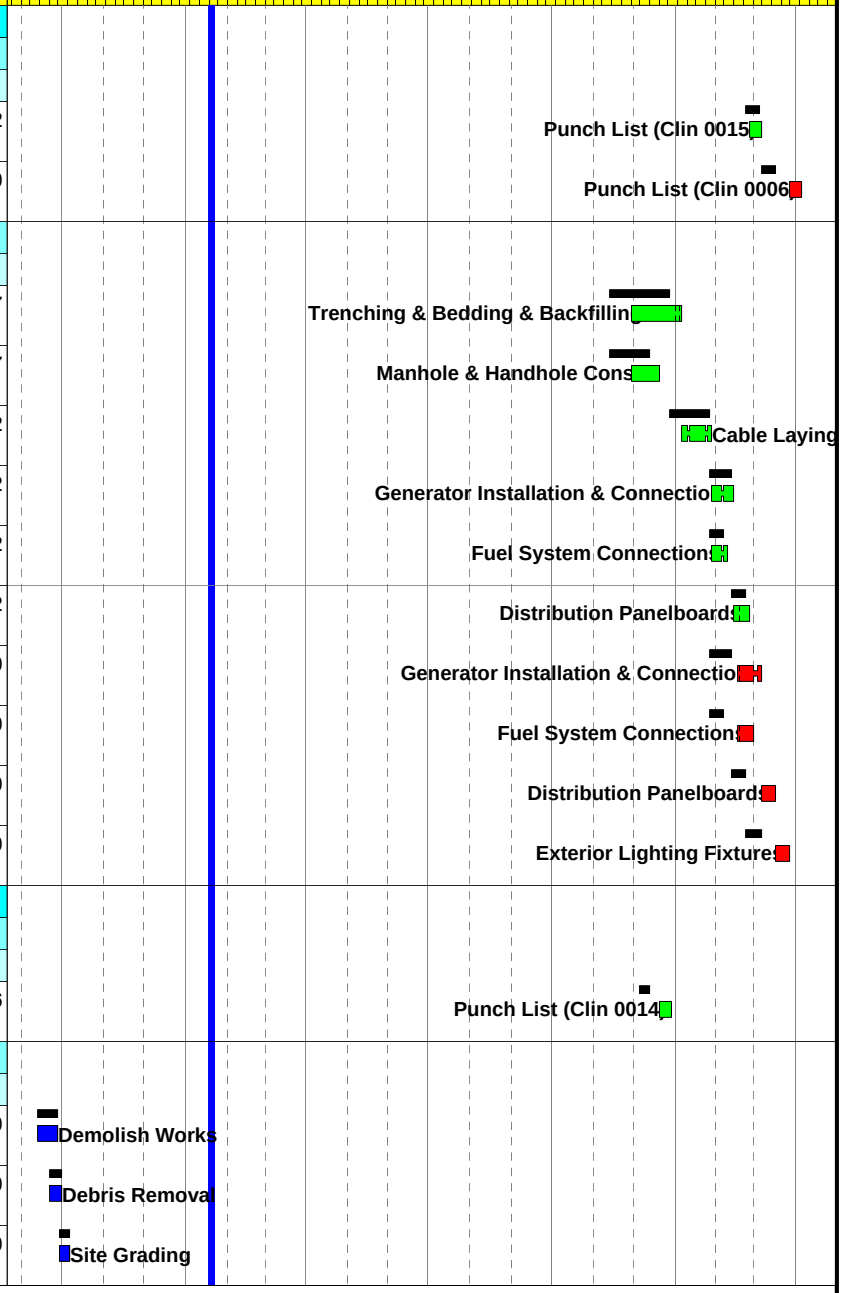
W917-PM-09-C-0999
Sample Project for Section 01321

Critical Path Report

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Rem Dur	Start	Finish	% Comp	Total Float	BL Var Start	BL Var Finish
Power									
Punchlists & Inspections									
009270	Punch List (Clin 0015)	10	10	25FEB11	06MAR11	0	20	-2	-2
005210	Punch List (Clin 0006)	10	10	27MAR11	05APR11	0	-10	-20	-20
005140	Trenching & Bedding & Backfilling	35	35	30NOV10	05JAN11	0	8	-17	-7
005200	Manhole & Handhole Cons.	20	20	30NOV10	19DEC10	0	23	-17	-7
005150	Cable Laying	20	20	06JAN11	28JAN11	0	8	-7	-2
009240	Generator Installation & Connection	15	15	29JAN11	13FEB11	0	18	-2	-2
009260	Fuel System Connections	10	10	29JAN11	08FEB11	0	23	-2	-2
009250	Distribution Panelboards	10	10	14FEB11	24FEB11	0	18	-2	-2
005160	Generator Installation & Connection	15	15	17FEB11	06MAR11	0	-10	-20	-20
005170	Fuel System Connections	10	10	17FEB11	27FEB11	0	-5	-20	-20
005180	Distribution Panelboards	10	10	07MAR11	16MAR11	0	-10	-20	-20
005190	Exterior Lighting Fixtures	10	10	17MAR11	26MAR11	0	-10	-20	-20
Punchlists & Inspections									
009160	Punch List (Clin 0014)	8	8	21DEC10	28DEC10	0	87	-16	-16
005710	Demolish Works	15	0	13SEP09A	27SEP09A	100		0	0
005720	Debris Removal	10	0	21SEP09A	30SEP09A	100		0	0
005730	Site Grading	7	0	29SEP09A	05OCT09A	100		0	0



Start Date	21AUG09
Finish Date	01JUN11
Data Date	20JAN10
Run Date	23FEB10 17:27

Baseline
Current
Progress Bar
Critical Activity

NC02

Sheet 12 of 46

XYZ Company

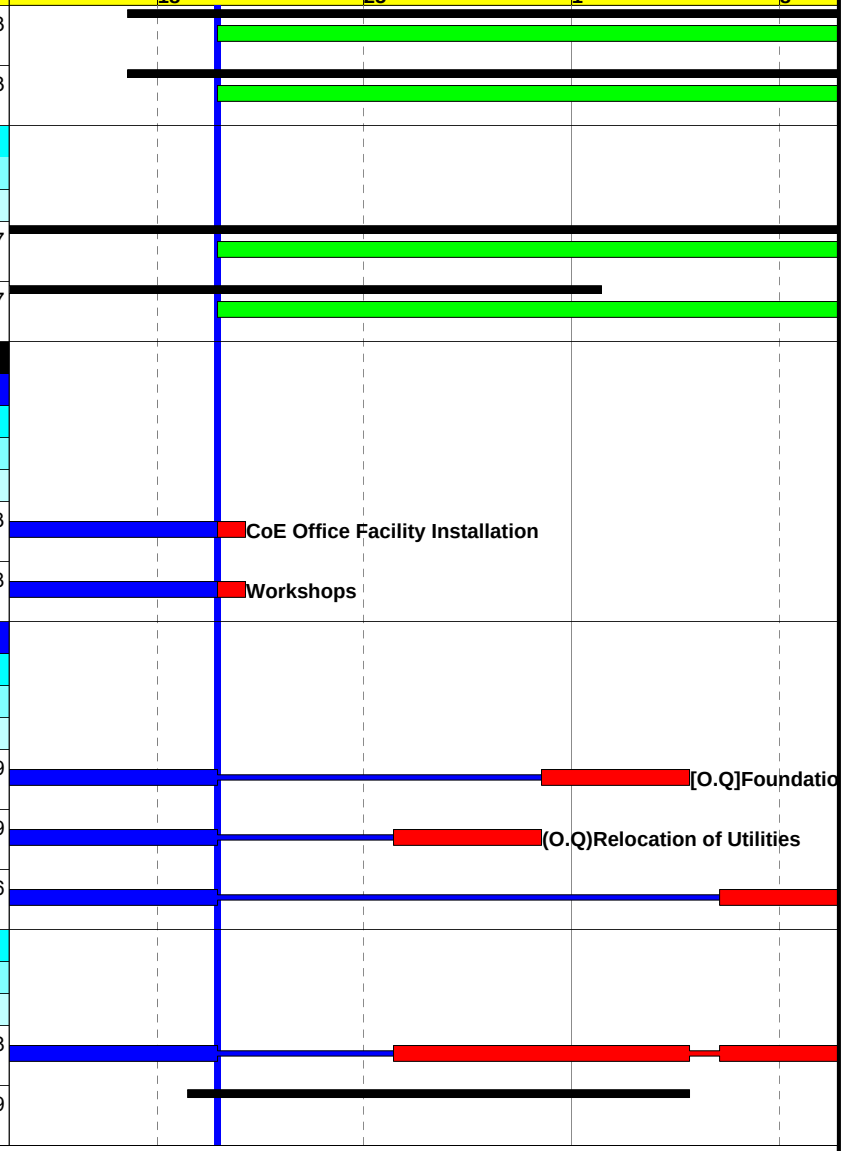
W917PM-09-C-0999

Project Schedule

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Rem Dur	Start	Finish	% Comp	Total Float	BL Var Start	BL Var Finish
007895	[V.M]Vinyl & Carpeting Material Procurement and	90	90	20JAN10	19APR10	0	321	-3	-3
007885	[V.M]Ceramic & Terrazo Material Procurement and	60	60	20JAN10	20MAR10	0	336	-3	-3
004910	Building Inf.Sys. Material Transmittals Submissi	45	45	20JAN10	05MAR10	0	8	-17	-17
005810	IDS Transmittals Submission	30	30	20JAN10	18FEB10	0	148	-17	-17
Construction									
Mob/Demob									
Mobilization									
000250	CoE Office Facility Installation	10	1	26NOV09A	20JAN10	85	-42	-92	-133
000270	Workshops	7	1	29NOV09A	20JAN10	90	-39	-92	-138
Buildings									
UOQ Building									
Foundations									
Basement									
000610	[O.Q]Foundation Excavation	15	5	14NOV09A	04FEB10	50	-39	0	-59
000605	(O.Q)Relocation of Utilities	15	5	30NOV09A	30JAN10	60	-39	-27	-69
000620	[O.Q]Stabilized filling	7	4	10JAN10A	09FEB10	40	-39	-36	-56
Admin-SS Building									
Superstructure									
Basement									
002920	[A.B]Basement Floor Shear+Ext Walls Cons.FormWor	18	15	08JAN10A	10FEB10	50	-35	-26	-38
002960	[A.B]Basement Floor Beams Concrete Works	15	15	10FEB10	25FEB10	0	-17	-19	-19



Start Date	21AUG09
Finish Date	01JUN11
Data Date	20JAN10
Run Date	23FEB10 17:41

Baseline
Current
Progress Bar
Critical Activity

NC02

Sheet 4 of 4

XYZ Company

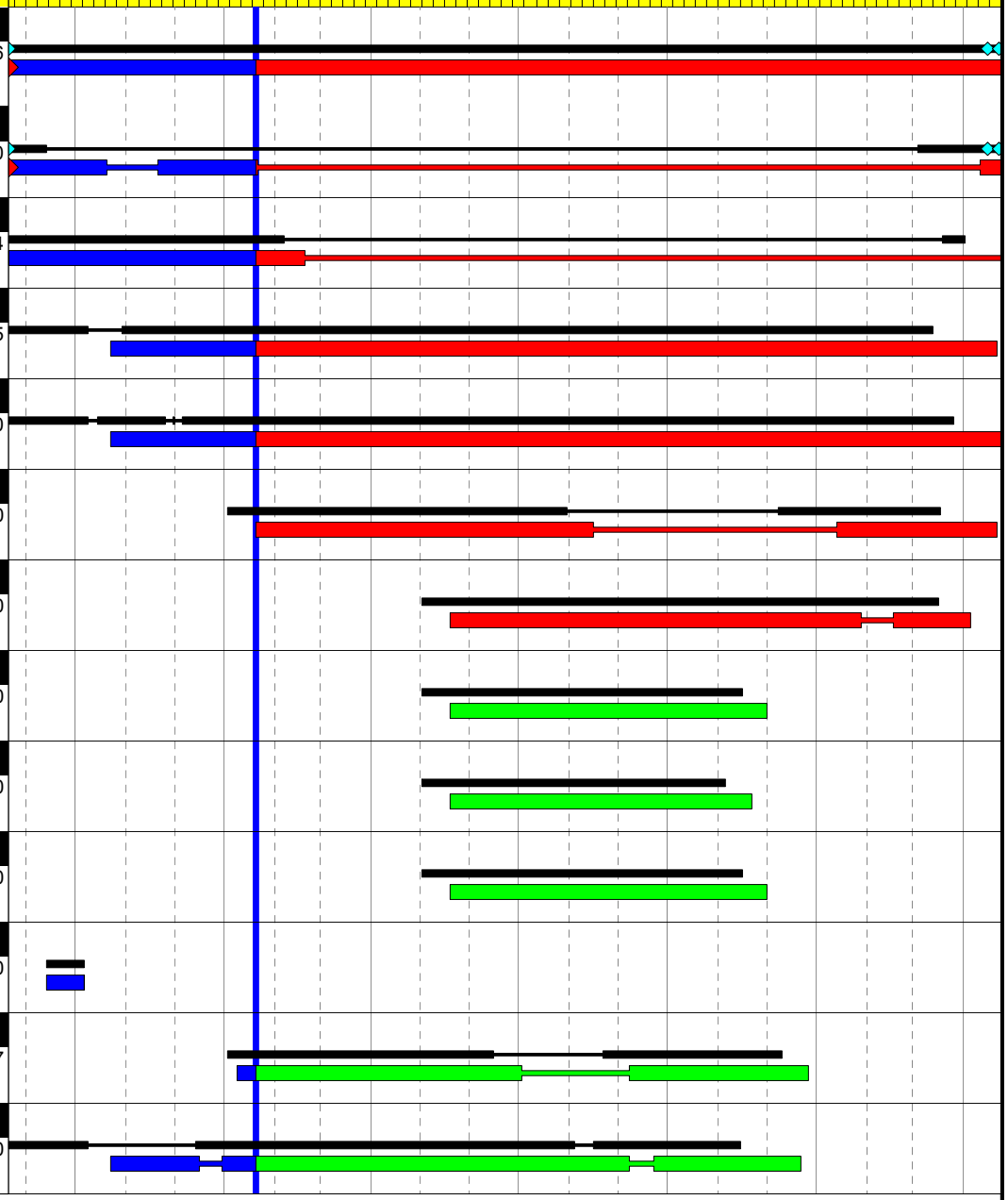
W917PM-09-C-0999

3-Week Look Ahead Report

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Activity ID	Activity Description	Budgeted Cost	% Comp	Earned value cost (BCWP)
NC02 W917PM-09-C-0999				
Total		26,926,172	8	2,204,696
+ 0001 Mobilization/Demobilization				
		650,000	87	564,480
+ 0002 Design Costs				
		907,500	88	797,834
+ 0003 Unaccompanied Officer's Quarters				
		10,587,992	1	117,125
+ 0004 Administrative Support Facilities				
		9,598,809	7	649,550
+ 0005 Building Information Systems				
		774,308	0	0
+ 0006 Electrical Distribution Systems				
		1,506,103	0	0
+ 0007 Water Distribution System				
		80,885	0	0
+ 0008 Sewer Collection System				
		82,279	0	0
+ 0009 Storm Drainage System				
		53,538	0	0
+ 0010 Site Improvements and Demolition				
		48,750	100	48,750
+ 0011 Information Distribution Systems				
		176,765	15	26,957
+ 0012 Dining Facility-OPTION				
		874,962	0	0



Start Date	21AUG09
Finish Date	01JUN11
Data Date	20JAN10
Run Date	23FEB10 17:55

Baseline
Current
Progress Bar
Critical Activity

NC02

Sheet 1 of 2

XYZ Company

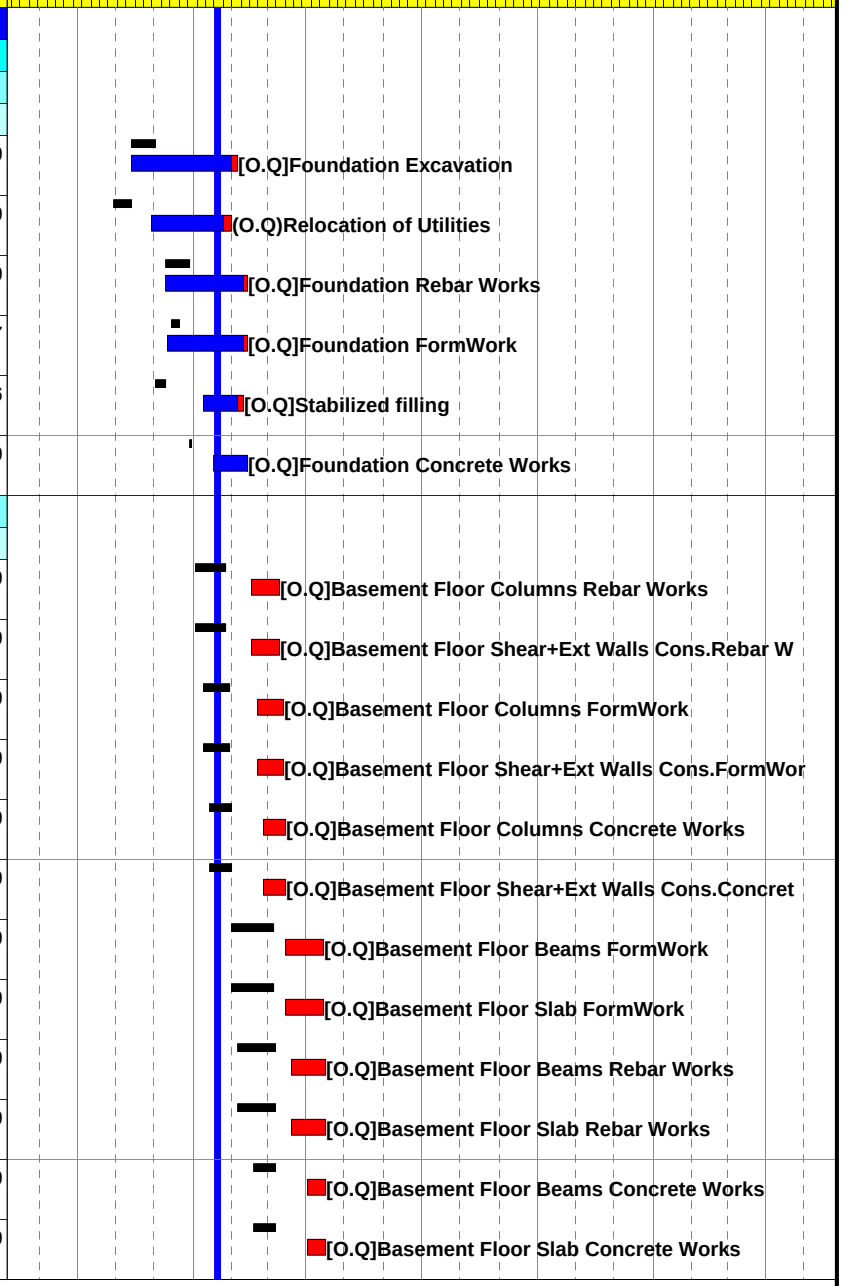
W917PM-09-C-0999

Earned Value Report

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Rem Dur	Start	Finish	% Comp	Total Float	BL Var Start	BL Var Finish
Buildings									
UOQ Building									
Foundations									
Basement									
000610	[O.Q]Foundation Excavation	15	5	14NOV09A	04FEB10	50	-39	0	-59
000605	(O.Q)Relocation of Utilities	15	5	30NOV09A	30JAN10	60	-39	-27	-69
000740	[O.Q]Foundation Rebar Works	20	3	10DEC09A	12FEB10	20	-39	0	-39
000750	[O.Q]Foundation FormWork	7	3	12DEC09A	12FEB10	20	-39	3	-47
000620	[O.Q]Stabilized filling	7	4	10JAN10A	09FEB10	40	-39	-36	-56
000760	[O.Q]Foundation Concrete Works	1	1	17JAN10A	13FEB10	8	-39	-15	-39
Superstructure									
Basement									
000780	[O.Q]Basement Floor Columns Rebar Works	20	20	16FEB10	10MAR10	0	-39	-39	-39
000810	[O.Q]Basement Floor Shear+Ext Walls Cons.Rebar W	20	20	16FEB10	10MAR10	0	-39	-39	-39
000790	[O.Q]Basement Floor Columns FormWork	18	18	22FEB10	13MAR10	0	-39	-39	-39
000820	[O.Q]Basement Floor Shear+Ext Walls Cons.FormWor	18	18	22FEB10	13MAR10	0	-39	-39	-39
000800	[O.Q]Basement Floor Columns Concrete Works	15	15	26FEB10	14MAR10	0	-39	-39	-39
000830	[O.Q]Basement Floor Shear+Ext Walls Cons.Concret	15	15	26FEB10	14MAR10	0	-39	-39	-39
000840	[O.Q]Basement Floor Beams FormWork	30	30	15MAR10	14APR10	0	-39	-39	-39
000870	[O.Q]Basement Floor Slab FormWork	30	30	15MAR10	14APR10	0	-39	-39	-39
000850	[O.Q]Basement Floor Beams Rebar Works	26	26	20MAR10	15APR10	0	-39	-39	-39
000880	[O.Q]Basement Floor Slab Rebar Works	26	26	20MAR10	15APR10	0	-39	-39	-39
000860	[O.Q]Basement Floor Beams Concrete Works	15	15	02APR10	16APR10	0	-39	-39	-39
000890	[O.Q]Basement Floor Slab Concrete Works	15	15	02APR10	16APR10	0	-39	-39	-39



Start Date	21AUG09
Finish Date	01JUN11
Data Date	20JAN10
Run Date	23FEB10 17:46

Baseline
Current
Progress Bar
Critical Activity

NC02

Sheet 2 of 5

XYZ Company

W917PM-09-C-0999

Critical Path Report

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

CEMP-CE Regulation No. 1-1-11	Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000	ER 1-1-11 15 Jun 95
	Administration PROGRESS, SCHEDULES, AND NETWORK ANALYSIS SYSTEMS	
	Distribution Restriction Statement Approved for public release; distribution is unlimited.	

DEPARTMENT OF THE ARMY ER 1-1-11
CEMP-CE U.S. Army Corps of Engineers
CECW-OC Washington, D.C. 20314-1000

Regulation
ER 1-1-11 15 June 1995

Administration
PROGRESS, SCHEDULES, AND NETWORK ANALYSIS SYSTEMS

1. Purpose. This regulation states the policy on the use of any of the various schedule management methods. The basic regulation provides general policy relative to the use of the various systems (bar charts, network analysis etc.) as well as administration of contract provisions. If this ER conflicts with the Federal Acquisition Regulations or any of its supplements, they shall govern over the ER.

2. Applicability. This regulation is applicable to all USACE commands.

3. References.

a. FAR 52.236-15.

b. DOD FAR Supplement 236.273

c. EP 415-1-4

d. CEGS 01310

4. Policy. Obtaining quality construction on time and within budget is a primary goal of the U.S. Army Corps of Engineers. In order to manage the time specified for the accomplishment of a project, a schedule is required on construction contracts by references 3.a. & 3.b. The contractor is responsible for scheduling the work and progress so that the contract completion date is met. The Administrative Contracting Officers (ACO) monitors the contractor's schedule to assure compliance. If a schedule is not provided, the Contracting Officer may withold progress payments per paragraph (a) of reference 3.a. If actual progress fails to meet the schedule, the Contracting Officer shall take appropriate actions to assure compliance with the progress of the work. Therefore, the schedule is vital to effective construction management by the contractor and the Government. Reference 3.d. allows the District Technical Staff to choose the type of contract schedule during the design phase. Bar charts can be used to manage simple jobs. When by its nature a construction project or other effort is complex with many interrelated activities, a network schedule may be the most effective tool for analyzing progress, projecting completion, and

This regulation supersedes ER 1-1-11, dated 15 March 1990.

calculating payment commensurate with actual progress. The determination of applicability of network scheduling is the responsibility of the Contracting Officer. When determined to be applicable, network schedules must be carefully specified, updated regularly, and used effectively. Standard data exchange format shall be used to monitor a contractor's schedule when the contractor and the Government operate on different programs.

5. Description of the System. A network schedule requires first a logic diagram graphically depicting the sequence and interdependence of the work. It can be drawn in either the precedence or arrow diagram format, but it must accurately represent the intended work sequence and indicate actual constraints. Details of diagramming techniques are contained in Reference 3.c. Network Analysis System Guide. Once the logic diagram is made, an analysis is required which calculates early and late start and finish dates for the activities as well as the spare time or float available to accomplish the activity. Resource data such as cost and responsibility may be entered for activities also. Once calculated, these results can be ordered in different arrangements or sorts and compiled into specific reports for management purposes. Actual progress must be entered once work commences. Based on this progress, revised start and finish dates, and progress payment can be calculated.

6. Use of the System.

a. Network Analysis System (NAS), being a management control tool, may be applied to many aspects of the work by the Corps of Engineers. It can be employed profitably in the management of in-house operations such as engineering and design, and life cycle project management. A comprehensive life cycle analysis of a major civil works project should include, but not be limited to, activities for preparation of design memos and environmental impact statements, real estate planning and acquisition, preparation of plans and specifications, reservoir clearing, advertising and/or negotiation for construction, relocation and recreation contracts. Annual funding forecasts can be derived from early and late finish sorts of the analysis if costs have been assigned to each activity. Analysis can be used to set construction time prior to advertisement or select alternative contracting methods when user requirements preclude the use of sealed bidding.

b. Construction schedules after contract award should be contractor prepared in order to involve the contractor in the actual planning. Updates of actual progress should also have contractor participation as well as Government concurrence since

the resultant analysis will project early or late contract accomplishment and progress payment due. Changes to the work and occurrences which impact progress must be entered in the schedule logic in order to keep the schedule up to date, to reflect actual job progress, to determine where the contractor must accelerate to regain the schedule when behind due to his/her own actions, and to determine the impact and effect of Government actions on the contractor in order to provide equitable adjustments to the contract time as required.

7. Contract Administration.

a. When the Contracting Officer has determined that NAS will be specified for use on a construction contract, the provision of the specifications must be carefully edited for the specific job. Reference 3.d. CEGS 01310, contains numerous notes indicating where such editing can be done. This editing is not only permissible, but is also mandatory.

b. The contractor should submit his/her NAS within the time required by the specifications. The schedule must be verified as being logical and the completion dates attainable. Failure to enforce this requirement is highly detrimental to project management. Partial payments cannot be processed until an acceptable NAS schedule has been submitted. The Contracting Officer may not allow work to start nor make partial payments until an acceptable schedule (interim or final) is received and approved. Once approved, the schedule must be maintained up to date with regard to job progress and changes. Failure to maintain job progress is fatal to effective schedule management.

c. Reference 3.d. is a guide specification for a contractor prepared NAS. This provision serves as an example of the authorization of reference 3b. Specific contract requirements will dictate how this provision is edited.

d. Appendix A contains the Standard Data Exchange Format specification. This format should be specified and used to transfer contract schedule data between different contractor and Government NAS programs.

8. Implementation. NAS can be a valuable tool in both Corps life cycle project management and contract administration. NAS schedule data can be used to project contract completion, schedule Government actions, incorporate changes and occurrences during execution of the contract, analyze their effect on the contract completion, and arrive at equitable adjustments. The following actions should be implemented to assure effective management by use of NAS where it is selected and specified:

ER 1-1-11
15 Jun 95

a. Assure that appropriate Government personnel at all levels are adequately trained in the use of NAS. Basic training is available through the HQUSACE Construction Training Program.

b. Carefully edit CEGS 01310 to fit job requirements. When necessary, transfer of data should be accomplished by inclusion of a technical provision for standard data exchange format when the contractor and the Government use different programs. The Government should not dictate a proprietary system.

c. After receipt, promptly and carefully review the submission of the NAS. A conference type review with the contractor is effective. Verify the schedule logic, contract conformance, and approve or disapprove the schedule promptly.

d. Enforce all contract clauses and provisions for submission, updating, reporting, and payments, and insist upon the ACO's approval of all input data prior to updating. Failure to maintain an accurately updated schedule will undermine all attempts to manage the schedule properly.

e. Include submittals, approvals, etc in the schedule.

f. At the time notice-to-proceed is given for a change order, promptly incorporate the logic changes in the network. Analysis of the effect of changes on the schedule will provide the basis for equitable time extensions of the contract.

g. When work is delayed by causes beyond the contractor's control, the contractor is obligated to notify the ACO within 10 days of the beginning of the delay. The ACO is then obligated to ascertain the facts, establish the extent of the delay, and extend the contract time when justified. These determinations can be made only if the schedule is accurately updated.

h. Avoid specifying proprietary computer programs. Contractors should be encouraged to prepare their own analysis in lieu of hiring consultants to plan and update their schedules.

FOR THE COMMANDER:

James D. Craig

1 Appendix
APP A - Standard Data Exchange Format specification

JAMES D. CRAIG
Colonel, Corps of Engineers
Chief of Staff

4

STANDARD DATA EXCHANGE FORMAT SPECIFICATION

PART 1- GENERAL

1. Application of This Provision: The Standard Data Exchange Format (SDEF) provides a non-proprietary protocol to exchange project planning and progress data between scheduling systems.

2. File Type and Format: The data file shall consist of a 132 character, freed format, "ASCII" file. Text shall be left-justified and numbers shall be right-justified in each field. Data records must conform, exactly, to the sequence, column position, maximum length, mandatory values, and field definitions described below to comply with the SDEF. Unless specifically stated, all numbers shall be whole numbers. Fields containing numbers shall not be zero filled. All data columns shall be separated by a single blank column. The file shall not contain blank lines.

3. Usage Notes: Where appropriate, notes regarding proper usage of systems to support the SDEF have been included in brackets ([ ]). These notes are included to assist users in creating SDEF-compatible files, given the variety of software systems that support the SDEF.

4. Recommended Systems: Several systems have been tested to determine the accuracy of importing and exporting SDEF files. For information on the current list of recommended systems, please contact Mr. Stan Green at HQUSACE, (202) 761-0206. Although the currently listed system have been tested other systems may also be acceptable provided those systems correctly import and export SDEF files.

5. SDEF Checker Program: A program that checks whether a file meets the SDEF is available free of charge. A copy of this program may be obtained by written request to: U.S. Army Corps of Engineers, ATTN: Mr. Bill East (CECER-FFA), P.O. Box 9005, Champaign, IL 61826-90005. A description of the SDEF Checker is also available on the Internet and CivilNet.

PART 2- SDEF SPECIFICATION

6. SDEF Organization: The SDEF shall consist of the following records provided in the exact sequence shown below:

ER 1-1-11
15 Jun 95

Paragraph Reference	Record Description	Remarks
6.a	Volume Record	Mandatory First Line of File
6.b	Project Record	Mandatory Second Line of File
6.c	Calendar Record(s)	Mandatory One Record Minimum
6.d	Holiday Record(s)	Mandatory if Holidays Used
6.e	Activity Record(s)	Mandatory Records
6.f	Precedence Record(s)	Mandatory for Precedence
6.g	Unit Cost Record(s)	Mandatory for Unit Costs
6.h	Progress Record(s)	Mandatory Records
6.i	File End Record	Mandatory Last Line of Disk/File

6.a. Volume Record: The Volume Record shall be used to control the transfer of data that may not fit on a single disk. The first line in every file used to store SDEF data shall be the Volume Record. The Volume Record shall sequentially identify the number of the data transfer disk(s). The Volume Record shall have the following format:

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1 - 4	4	VOLM	Fixed	Filled
DISK NUMBER	6 - 7	2	√	Number	Right Justified

6.a.(l) The RECORD IDENTIFIER is the first four characters of this record. The required value for this field shall be "VOLM". The VOLM record must appear on the first line of the SDEF data file.

6.a.(2) The DISK NUMBER field shall identify the number of the data disk used to store the data exchange information. If all data may be contained on a single disk, this field shall contain the value of "l". If more disks are required, then the second disk shall contain the value "2", the third disk shall be designated with a "3", and so on. Identifcation of the last data disk is accomplished in the Reject End Record.

6.b. Project Record: The Project Identifier Record shall contain general project information. Because more than one SDEF file may be required for data transfer between large projects, the PROJ record shall be the second line of the first SDEF file transferred. The PROJ record shall contain information in the following format:

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1- 4	4	PROJ	Fixed	Filled
DATA DATE	6- 12	7	√	ddmmmyy	Filled
PROJECT IDENTIFIER	14-17	4	√	Alpha.	Left Justified
PROJECT NAME	19-66	48	√	Alpha.	Left Justified
CONTRACTOR NAME	68-103	36	√	Alpha.	Left Justified
ARROW OR PRECEDENCE	105-105	1	A,P	Fixed	Filled
CONTRACT NUMBER	107-112	6	√	Alpha.	Left Justified
PROJECT START	114-120	7	√	ddmmmyy	Filled
PROJECT END	122-128	7	√	ddmmmyy	Filled

6.b.(1) The RECORD IDENTIFIER is the first four characters of this record. The required value for this field shall be "PROJ". This record shall contain the general project information and indicates which scheduling method shall be used.

6.b.(2) The DATA DATE is the date of the schedule calculation. The abbreviation "ddmmmyy" refers to a date format that shall translate a date into two numbers for the day, three letters for the month, and two numbers for the year. For example, March 1, 1999 shall be translated into OlMar99. This same convention for date formats shall be used throughout the entire data format. To ensure that dates are translated consistently, the following abbreviations shall be used for the three character month code:

Abbreviation	Month
JAN	January
FEB	February
MAR	March
APR	April
MAY	May
JUN	June
JUL	July
AUG	August
SEP	September
OCT	October
NOV	November
DEC	December

6.b.(3) The PROJECT IDENTIFIER is a maximum four character abbreviation for the schedule. These four characters shall be used to uniquely identify the project and specific update as agreed upon by Contractor and Contracting Officer. When utilizing scheduling software these four characters shall be used to select the project. Software manufacturers shall provide information to users to ensure that data importing programs do not automatically overwrite other schedules with the same PROJECT IDENTIFIER.

6.b.(4) The PROJECT NAME field shall contain the name and location of the project edited to fit the space provided. The data appearing here shall appear on scheduling software reports. The abbreviation "Alpha." refers to an "Alphanumeric" field value and shall be used throughout the remainder of this specification.

6.b.(5) The CONTRACTOR NAME field shall contain the Construction Contractor's name, edited to fit the space provided.

6.b.(6) The ARROW OR PRECEDENCE field shall indicate which method shall be used for calculation of the schedule. The value "A" shall signify the Arrow Diagramming Method. The value "P" shall signify the Precedence Diagramming Method. The ACTIVITY ID field of the Activity Record shall be interpreted differently depending on the value of this field. The Precedence Record shall be required if the value of this field is "P". [Usage note: software systems may not support both arrow and precedence diagramming. It is recommended that the selection of the type of network be based on the capabilities of the software used by project partners.]

6.b.(7) The CONTRACT NUMBER field shall contain the contract number for the project. For example, the construction contract number DACA85-89-C-0001 shall be entered into this field as "890001".

6.b.(8) The PROJECT START field shall contain the date that the Contractor acknowledges the Notice to Proceed (NTP). [Usage note: Software systems may use a project start date to constrain the first activity of a network. To ensure consistent scheduling calculations across products, it is recommended that the first activity in the schedule contain an EARLY START constraint and a software system's PROJECT START date only be used to report on the project's start date.]

6.b.(9) The PROJECT END field shall contain the date that the Contractor plans to complete the work as approved by the Contracting Officer. [Usage note: software systems may use a project end date to constrain the last activity of a network. To ensure consistent scheduling calculations across products, it is recommended that the last activity in the schedule contain an EARLY START constraint and a software system's PROJECT END date only be used to report on the project's end date.]

6.c. Calendar Record: The Calendar Record(s) shall follow the Project Identifier Record in the first disk of data transferred. A minimum of one Calendar Record shall be required for all data exchange activity files. The format for the Calendar Record shall be as follows:

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1 - 4	4	CLDR	Fixed	Filled
CALENDAR CODE	6 - 6	1	√	Alpha.	Filled
WORKDAYS	8 - 14	7	SMTWTFS	Fixed	Filled
CALENDAR DESCRIPTION	16-45	30	√	Alpha.	Left Justified

6.c.(1) The RECORD IDENTIFIER shall always begin with "CLDR" to identify it as a Calendar Record. Each Calendar Record used shall have this identification in the first four columns. [Usage note: Systems contain a variety of calendar options. It is recommended that the least common denominator of calendar features between the systems be used as the basis for creating the SDEF file for a given project.]

6.c.(2) The CALENDAR CODE shall be used in the activity records to signify that this calendar is associated with the activity. [Usage note: Some systems do not allow for alphanumeric CALENDAR CODES, but only allow positive integers from 1 to 9. It is recommended that only positive integers be used for the CALENDAR CODE field to support the widest variety of scheduling systems.]

6.c.(3) The WORKDAYS field shall contain the work-week pattern selected with "Y", for Yes, and "N", for No. The first character shall be Sunday and the last character Saturday. An example of a typical five (5) day work-week would be NYYYYYN. A seven (7) day work-week would be YYYYYYY.

6.c.(4) The CALENDAR DESCRIPTION shall be used to briefly describe the calendar used.

6.d. Holiday Record: The Holiday Record(s) shall follow the Calendar Record(s) in the first disk of data transferred. There may be calendars without any holidays designated or several Holiday Records for each Calendar Record(s). The format for the Holiday Record shall be as follows:

ER 1-1-11
15 Jun 95

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1 - 4	4	HOLI	Fixed	Filled
CALENDAR CODE	6 - 6	1	√	Alpha.	Filled
HOLIDAY DATE	8 - 14	7	√	ddmmmyy	Filled
HOLIDAY DATE	16-22	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	24-30	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	32-38	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	40-46	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	48-54	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	56-62	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	64-70	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	72-78	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	80-86	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	88-94	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	96-102	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	104-110	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	112-118	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	120-126	7	-	ddmmmyy	May be Filled

6.d.(1) The RECORD IDENTIFIER shall always begin with "HOLI". Each Holiday Record used shall have this identification in the first four columns.

6.d.(2) The CALENDAR CODE indicates which work-week calendar the holidays shall be applied to. More than one HOLI record may be used for a given CALENDAR CODE.

6.d.(3) The HOLIDAY DATE shall contain the date of each individual non-work day.

6.e. Activity Records: Activity Records shall follow any Holiday Record(s). If there are no Holiday Record(s), then the Activity Records shall follow the Calendar Record(s). There shall be one Activity Record for every activity in the network. Each activity shall have one record in the following format:

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1-4	4	ACTV	Fixed	Filled
ACTIVITY ID	6-15	10	√	Integer	See Comment Below
ACTIVITY DESCR.	17-46	30	√	Alpha.	Left Justified
ACTIVITY DURATION	48-50	3	√	Integer	Right Justified
CONSTRAINT DATE	52-58	7		ddmmmyy	May be Filled
CONSTRAINT TYPE	60-61	2		ES or LF	May be Filled
CALENDAR CODE	63-63	1	√	Alpha.	Filled
HAMMOCK CODE	65-65	1	Y, blank	Fixed	May be Filled
WORKERS PER DAY	67-69	3		Integer	Right Justified
RESPONSIBILITY CODE	71-74	4		Alpha.	Left Justified
WORK AREA CODE	76-79	4		Alpha.	Left Justified
MOD OR CLAIM NO.	81-86	6		Alpha.	Left Justified
BID ITEM	88-93	6		Alpha.	Left Justified
PHASE OF WORK	95-96	2		Alpha.	Left Justified
CATEGORY OF WORK	98-98	1		Alpha.	May be Filled
FEATURE OF WORK	100-128	30		Alpha.	Left Justified

6.e.(1) The RECORD IDENTIFIER for each activity description record must begin with the four character "ACTV" code. This field shall be used for both the Arrow Diagram Method (ADM) and Precedence Diagram Method (PDM),

6.e.(2) The ACTIVITY ID consists of coding that shall differ, depending on whether the ADM or PDM method was selected in the Project Record. If the ADM method was selected then the field shall be interpreted as two right-justified fields of five (5) integers each. If the PDM method was selected the field shall be interpreted as one (1) right-justified field of ten (10) integers each. The maximum activity number allowed under this arrangement is 99999 for ADM and 9999999999 for the PDM method. [Usage note: Many systems allow alphanumeric ACTIVITY IDs. While the SDEF does not strictly, allow the use of alphanumeric values, users may agree to use the ACTIVITY ID field to exchange alphanumeric data. It is recommended that the ACTIVITY ID be restricted to integers when one or more of the systems being used for scheduling allows only integer ACTIVITY ID values.]

6.e.(3) The ACTIVITY DESCRIPTION shall be a maximum of 30 characters. Descriptions must be limited to the space provided.

6.e.(4) The ACTIVITY DURATION contains the estimated original duration for the activity on the schedule. The duration shall be based upon the work-week designated by the activity's related calendar.

6.e.(5) The CONSTRAINT DATE field shall be used to identify a date that the scheduling system may use to modify float calculations. If there is a date in this field, then there must be a valid entry in the CONSTRAINT TYPE field.

6.e.(6) The CONSTRAINT TYPE field shall be used to identify the way that the scheduling system shall use the CONSTRAINT DATE to modify schedule float calculations. If there is a value in this field, then there must be a valid entry in the CONSTRAINT DATE field. The valid values for the CONSTRAINT TYPE are as follows:

Code	Definition
ES	The CONSTRAINT DATE shall replace an activity's early start date, if the early start date is prior to the CONSTRAINT DATE.
LF	The CONSTRAINT DATE shall replace an activity's late finish date, if the late finish date is after the CONSTRAINT DATE.

[Usage note: Systems provide a wide variety of constraint types that may not be supported by other systems. It is recommended that constraint types be restricted to the values above regardless of the capabilities of the various systems being used for scheduling.]

6.e.(7) The CALENDAR CODE relates this activity to an appropriate work-week calendar. The ACTIVITY DURATION must be based on the valid work-week referenced by this CALENDAR CODE field.

6.e.(8) The HAMMOCK CODE indicates that a particular activity does not have its own independent duration, but takes its start dates from the start date of the preceding activity (or node) and takes its finish dates from the finish dates of its succeeding activity (or node). If the value of the HAMMOCK CODE field is "Y", then the activity is a hammmock activity.

6.e.(9) The WORKERS PER DAY shall contain the average number of workers expected to work on the activity each day the activity is in progress. If this code is required by project scheduling specifications, values for this data will be right justified. Activities without workers per day shall have a value of "0".

6.e.(10) The RESPONSIBILITY CODE shall identify the subcontractors or major trade involved with completing the work for the activity. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(11) The WORK AREA CODE shall identify the location of the activity within the project. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(12) The MOD OR CLAIM NUMBER shall uniquely identify activities that are added or changed on a construction contract modification, or activities that justify any claimed time extensions. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(13) The BID ITEM shall identify the bid item number associated with each activity. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(14) The PHASE OF WORK shall identify the timing of a specific activity within the entire project. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(15) The CATEGORY OF WORK shall identify the general type of work performed by every activity. If this code is required by project scheduling specifications, value for this data will be placed in the field.

6.e.(16) The FEATURE OF WORK shall identify a very broad designation of the general type of work that is being accomplished by the activity. If this code is required by project scheduling specifications, value for this data will be left justified. [Usage note: Many systems require that FEATURE OF WORK values be placed in several activity code fields. It is recommended that users review SDEF documentation to determine the correct way to use a given software system to produce the FEATURE OF WORK code.]

6.f. Precedence Record: The Precedence Record(s) shall follow the Activity Records if a Precedence Diagram Method schedule (PDM) is identified in the ARROW OR PRECEDENCE field of the Project Record. The Precedence Record has the following format:

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1 - 4	4	PRED	Fixed	Filled
ACTIVITY ID	6-15	10	√	Integer	See Comment Below
PRECEDING ACTIVITY	17 -26	10	√	Integer	See Comment Below
PREDECESSOR TYPE	28-28	1	√	S, F, C	Filled
LAG DURATION	30-33	4	√	Integer	Right Justified

6.f.(1) The RECORD IDENTIFIER shall begin with the four characters "PRED" in the first four columns of the record.

6.f.(2) The ACTIVITY ID identifies the activity whose predecessor shall be specified in this record.

6.f.(3) The PRECEDING ACTIVITY number is the number of an activity that precedes the activity noted in the ACTIVITY ID field.

6.f.(4) The PREDECESSOR TYPE field indicates the type of relation that exists between the chosen pair of activities. Valid PREDECESSOR TYPE fields areas follows:

ER1-1-11
15 Jun 95

Code	Definition
S	Start-to-Start relation
F	Finish-to-Finish relation
C	Finish-to-Start relation

[Usage note: Some systems provide additional predecessor types that may not be supported by all other systems. It is recommended that predecessor types be restricted to the values above regardless of the capabilities of the various systems being used for scheduling.]

6.f.(5) The LAG DURATION field contains the number of days delay between the preceding and current activity. [Usage note: Some systems allow negative values for the LAG DURATION. Because these values are not supported by all other systems, it is recommended that values be restricted to zero and positive integers.]

6.g. Unit Cost Record: The Unit Cost Record shall follow all Precedence Records. If the schedule utilizes the Arrow Diagram Method, then the Unit Cost Record shall follow any Activity records. There shall be one Unit Cost Record for every activity that is not a lump sum activity. [Usage note: (1) It is recommended that users who wish to exchange unit cost data contact SDEF vendor representatives to determine the ability of the software system to import/export unit cost information. (2) If the software being used by each member of the project team supports unit cost data then users may wish to conduct a trial run of the SDEF data exchange with a two or three-activity network to ensure that unit cost data transfers as expected. If problems are found please consult vendor representatives for resolution prior to exchange of full project schedules. (3) Unit cost record data does not, in most systems, result in the correct values being placed in the ACTIVITY COST and COST TO DATE fields of the Progress (PROG) Record. Users must, at this time, manually transfer the data from the Unit Cost Record to the Progress Record.

The fields for this record shall take the following format:

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1 - 4	4	UNIT	Fixed	Filled
ACTIVITY ID	6-15	10	√	Integer	See Comment Below
TOTAL QTY	17-29	13	√	Format 8.4	Right Justified
COST PER UNIT	31-43	13	√	Format 8.4	Right Justified
QTY TO DATE	45-57	13	√	Format 8.4	Right Justified
UNIT OF MEASURE	59-61	3	√	Alpha.	Left Justified

6.g.(1) The RECORD IDENTIFIER shall be identified with the four characters 'UNIT" placed in the first four columns of the record.

6.g.(2) The ACTIVITY ID for each activity shall match the format described in the activity record. Each activity may have only one Unit Cost Record.

6.g.(3) The TOTAL QTY is the total amount of material to be used in this activity. This number consists of eight digits, one decimal point and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed this field shall still contain a ".0000" in columns 25-29. [Usage note: Many systems support a different format for this value that does not include as many decimal places. It is recommended that users determine their requirements for significant digits based on the lowest common denominator of the software systems being used for a given project.]

6.g.(4) The COST PER UNIT is the cost, in dollars and cents, for each unit to be used in this activity. This number consists of eight digits, one decimal point, and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed this field shall still contain a ".0000" in columns 39-43. [Usage note: Many systems support a different format for this value that does not include as many decimal places. It is recommended that users determine their requirements for significant digits based on the lowest common denominator of the software systems being used for a given project.]

6.g.(5) The QTY TO DATE is the quantity of material installed in this activity up to the data date. This number consists of eight digits, one decimal point, and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed this field shall still contain a ".0000" in columns 53-57. [Usage note: Many systems support a different format for this value that does not include as many decimal places. It is recommended that users determine their requirements for significant digits based on the lowest common denominator of the software systems being used for a given project.]

6.g.(6) The UNIT OF MEASURE is an abbreviation that may be used to describe the units being measured for this activity. Valid values for this field are any meaningful English or metric unit, except "LS" for Lump Sum. Lump Sum activities are not to have Unit Cost Records.

6.h. Progress Record: Progress Record(s) shall follow all Unit Cost Record(s). If there are no Unit Cost Record(s), then the Progress Record(s) shall follow all Precedence Records. If the schedule utilizes the Arrow Diagram Method, then the Progress Record shall follow any Activity Records. One Progress Record is required for every activity in the Activity Record. The fields for this Record shall be provided in the following format:

ER1-1-11
15 Jun 95

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1-4	4	PROG	Fixed	Filled
ACTIVITY ID	6-5	10	√	Integer	See Comment Below
ACTUAL START DATE	17-23	7	√	ddmmmyy	Filled if Started
ACTUAL FINISH DATE	25-31	7	√	ddmmmyy	Filled if Finished
REMAINING DURATION	33-35	3	√	Integer	Right Justified
ACTIVITY COST	37-48	12	√	Format 9.2	Right Justified
COST TO DATE	50-61	12	√	Format 9.2	Right Justitied
STORED MATERIAL	63-74	12	√	Format 9.2	Right Justified
EARLY START DATE	76-82	7	√	ddmmmyy	Filled if Not Started
EARLY FINISH DATE	84-90	7	√	ddmmmyy	Filled if Not Finished
LATE START DATE	92-98	7	√	ddmmmyy	Filled if Not Started
LATE FINISH DATE	100-1067		√	ddmmmyy	Filled if Not Finished
FLOAT SIGN	108-1081		+, -	Fixed	Filled if Not Finished
TOTAL FLOAT	110-1123		√	Integer	R. Just. if Not Finished

6.h.(1) The RECORD IDENTIFIER shall begin with the four characters "PROG" in the first four columns of the record.

6.h.(2) The ACTIVITY ID for each activity for which progress has been posted shall match the format described in the Activity Record.

6.h.(3) An ACTUAL START DATE is required for all in-progress activities. The ACTUAL START DATE shall be the same as, or later than, the PROJECT START date contained in the Project Record. The ACTUAL START DATE shall also be the same as, or prior to, the DATA DATE contained in the Project Record. If there is an ACTUAL START DATE for an activity that there must also be a REMAINING DURATION, and the values for the EARLY START DATE and LATE START DATE are blank. [Usage note: Some systems allow default values for ACTUAL START DATE if the date is not entered by the user. Because the failure to include a start date for activities may result in different schedule calculations, it is recommended that the ACTUAL START DATE be required for all activities in progress.]

6.h.(4) An ACTUAL FINISH DATE is required for all completed activities. If the REMAINING DURATION of an activity is zero, then there must be an ACTUAL FINISH DATE. If there is an ACTUAL FINISH DATE, then values for the EARLY START DATE, LATE START DATE, EARLY FINISH DATE, LATE FINISH DATE, FLOAT SIGN, and TOTAL FLOAT shall be blank. [Usage note: Some systems allow default values for ACTUAL FINISH DATE if the date is not entered by the user. Because the failure to include a finish date for activities may result in different schedule calculations, it is recommended that the ACTUAL FINISH DATE be required for all activities in progress.]

6.h.(5)AREMAININ G DURATION is required for all activities. Activities that have not started shall have a remaining duration equal to their original duration. Activities completed based on time, shall have a zero (0) REMAINING DURATION. [Usage note: Systems have a variety of "short-cut" methods to determine the REMAINING DURATION value. It is recommended that users actually consider the time required to complete the remaining work on a given task, rather than allow a system to calculate the remaining duration based on the amount of work that has already been accomplished.]

6.h.(6) The ACTIVITY COST contains the estimated earned value of the work to be accomplished in the activity. An example of a number in this format is "1111111 11.11". If decimal places are not needed this field shall still contain a ".00" in the last three columns of this field. [Usage note: Users should inquire of software vendors if the user needs to add a zero in the data field to produce the default value "0.00".]

6.h.(7) The COST TO DATE contains the earned value for the activity. If there is an ACTUAL START DATE, then there must also be some value for COST TO DATE. An example of a number in this format is "111111111.11". If decimal places are not needed, this field shall still contain a ".00" in the last three columns of this field. The COST TO DATE is not tied to REMAINING DURATION. For example, if the REMAINING DURATION is "0", the COST TO DATE may only be 95% of the ACTIVITY COST. This difference may be used to reflect 5% retainage for punch list items. [Usage note: Systems implement cost information in different ways. It is recommended that users carefully review SDEF documentation and test results to determine how to ensure that SDEF data is exported correctly.]

6.h.(8) The STORED MATERIAL field contains the value of the material that the Contractor has paid for and is on site or in secure storage areas that is a portion of the COST TO DATE. An example of a number in this format is "111111111.11". If decimal places are not needed, this field shall still contain a ".00" in the last three columns of this field. [Usage note: Systems implement the stored materials field in a variety of ways. Many systems do not enforce STORED MATERIAL + COST TO DATE < ACTIVITY COST. To avoid potential confusion between systems, it is recommended that new activities be added to a schedule to reflect the cost of large equipment procurement rather than use the STORED MATERIALS field.]

6.h.(9) The EARLY START DATE indicates the earliest date possible that an activity can start as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an ACTUAL START DATE, then this field shall be blank.

6.h.(10) The EARLY FINISH DATE indicates the earliest date possible that an activity can finish as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an ACTUAL FINISH DATE, then this field shall be blank.

6.h.(11) The LATE START DATE indicates the latest date that an activity can begin as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an ACTUAL START DATE, then this field shall be blank.

6.h.(12) The LATE FINISH DATE indicates the latest date that an activity can finish as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an ACTUAL FINISH DATE, then this field shall be blank.

6.h.(13) The FLOAT SIGN indicates whether the float time calculated using a CPM scheduling system or other Contracting Officer approved planning method, is positive or negative in nature. If the progress record for an activity contains an ACTUAL FINISH DATE, then this field shall be blank. In the case of zero float this field shall be blank.

6.h.(14) The TOTAL FLOAT indicates the total float time. In the Precedence Diagram Method (PDM), the total float is the difference between the early and late start or finish dates. In the Arrow Diagram Method (ADM), the total float is equal to the late event time at the end of the activity, minus the sum of the early event time at the start of the activity plus the duration of the activity.

6.i. Project End Record: The Project End Record shall be used to identify that the data file is completed. If the ASCII End of File character is encountered, then data import programs shall use that character to infer that the data continues on the next disk. The user shall then be prompted for the next disk number, based on the VOLM record data. The Project End Record shall be the last record of the entire data file, and shall have the following format:

Description	Column Position	Max. Len.	Req. Value	Type	Notes
RECORD IDENTIFIER	1-3	3	END	Fixed	Filled

6.i.(1) The RECORD IDENTIFIER for the Project End Record shall be "END". Data contained in the data exchange file that occurs after this record shall not be used.

SDEF Activity Codes

Code	Max Length	Description	Remarks
WRKP	3	Workers per day	Number
RESP	4	Responsibility	GOVT = AED, PRIM = Prime Contractor, any 4 characters for subcontractors
AREA	4	Area	WBS Level 2
MODF	6	MOD or Claim #	
BIDI	6	Bid Item	CLIN or sub-CLIN to conform with cost breakdown in Contract Section 00010
PHAS	2	Phase	WBS Level 1
CATW	1	Category of work	
FOW	30	Feature of work	FOW1 & FOW2 & FOW3 in Primavera P3
USER DEFINED (total of 8 characters are available in P3):			
LVL3	2	WBS Level 3	Mandatory
LVL4	1	WBS Level 4	Mandatory.
			End of mandatory activity codes
LVL5	1	WBS Level 5	
CLIN	2	CLIN	May be used to summarize costs by CLIN if BIDI is sub-CLINs. Last 2 characters of CLIN.

NOTES:

Schedules must be organized with a WBS created in the activity code dictionary, not the software WBS. Generally, four levels are sufficient for effective schedule organization. Additional codes may be created if required.

WBS Level	Activity Code
1	PHAS
2	AREA
3	LVL3
4	LVL4

Standard Activity Codes - WBS

PHAS	AREA	LVL3	LVL4	LVL5
01 Milestones				
	0101 Contract Milestones			
	0102 Project Milestones			
02 Pre-construction				
	0201 Pre-construction Meetings			
	0202 Pre-construction Submittals			
	0203 DBA Insurance			
03 Design				
	0301 10% Design Submittal			
	0302 35% Design Submittal			
	0303 65% Design Submittal			
	0304 99% Design Submittal			
	0305 100% Design Submittal			
04 Procurement				
	0401 Civil/Structural			
	0402 Architectural			
	0403 Electrical			
	0404 Mechanical			
	0405 Plumbing			
05 Construction				
	0501 Mob/Demob			
		01 Mobilizaton		
		02 Demobilizaton		
	0502 Sitework			
		03 Site Preparation		
		04 Site Drainage System		
		05 Force Protection		
			1 Perimeter Wall	
			2 ECP #1	
			3 ECP #2	
			4 Guardshack #1	
			5 Guardshack #2	
			6 Guard Tower # 1	
			7 Guard Tower # 2	
			8 Guard Tower # 3	
			9 Guard Tower # 4	
			A Guard Tower # 5	
	0503 Utilities			
		0A Water		
			B Water Treatment	
			C Water Distribution	
		0B Sewer		
			D Sewage Collection	
			E Sewage Treatment	
		0C Power		
			F Power Generation	
				A Generator #1
				B Generator #2
			G Power Distribution	
	0504 Buildings	0D Building 1		
			H Foundations	0 Basement
			I Superstructure & Close-in	1 1st Floor
			J Architectural - Exterior	2 2nd Floor
			K Architectural - Interior	3 3rd Floor
			L Electrical	4 Roof
			M Mechanical	
			N Plumbing	
			O Fire Protection System	
			P Communications	
			Q Inspections, Punchlists	
	0505 Other Construction			
06 Contract Close-out				
	0601 Close-out Inspections			
	0602 As-Built Drawings			
	0603 O&M Manuals & Training			
	0604 Demobilization			

NOTE:
Activity codes in bold italic are required codes. All other codes are suitable for a typical building project but may be changed to suit the scope of work.

SECTION 01335

SUBMITTAL PROCEDURES FOR DESIGN-BUILD PROJECTS

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.

NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS)

Unified Master Reference List (UMRL) National Institute of Building Sciences

1090 Vermont Avenue, NW, Suite 700
Washington, DC 20005-4905
Email: nibs@nibs.org
FAX: (202) 289-1092
Tele: (202) 289-7800

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 field investigations, calculations, design analysis, drawings and specifications.

In addition, for every Design Submittal, the Contractor shall submit all non-administrative modifications issued for the Contract as part of the Design Submittal package to enable AED to validate that these modifications have been incorporated into this design submittal.

The Contractor shall clearly label and date all Design Submittals to reflect the current design stage and date of submission to the Government to avoid confusion between current and previous submittals. The Design-Build or Site Adapt Contractor shall not begin construction work until the Government has reviewed the Contractor's concept, intermediate and final designs and has cleared them 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 or Site Adapt Contractor.

The sole responsibility of ensuring that the design submittals comply with contract documents remains with the Contractor, in accordance with this section of the contract. The Government retains the right to comment on the design at any design stage, and the lack of Government comments at a given review cannot be used as a basis for the Contractor to fail to address the

Government's comments on subsequent reviews, regardless of design stage. Furthermore, approval of incomplete designs will not relieve the Contractor of the responsibility for any error which may exist, and which may require rework or other appropriate adjustment to the contract terms, as determined at the sole discretion of the Government. It is the sole responsibility of the Design-Build or Site Adapt 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 Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract. 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.

As a minimum, design submittals shall be submitted at the following intervals:

Concept design - 35%

General design - 65%

Final design review - 99%

Cleared For Construction review - 100%

1.2.1.1 CONCEPT DESIGN (35%)

The review of this submittal is primarily to ensure that the Contractor has taken an inventory of the existing conditions at each proposed site, has established the most desirable functional relationships between the various project elements, has provided the technical solution as 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. As a minimum, the following documents shall be submitted:

It is crucial that the submittal is complete and includes all components noted below and any other pertinent information not listed which the Contractor requires to enable construction to begin as soon as possible. For work shown but incomplete and still under design, the Contractor should clearly indicate on the ENG Form 4025 what is being submitted for review and approval. As a minimum, for each Contract project location the submittal shall contain:

a. Geotechnical Report, indicating appropriate information for various site characteristics, soil parameters as determined by certified lab tests, allowable soil bearing capacities, correlation with foundation design parameters, and any changes in foundation design of structures furnished in the Contract; estimated settlement for building foundation loads; and all other project feature changes due to the Geotechnical Report conclusions.

b. Complete design analysis, plans and specifications for any contract feature(s) that the Contractor would like Partial Clearance for Construction on once the 35% Design Submittal has been approved, including project components with long ordering, fabrication and delivery times. Other preliminary drawings, specifications and design analysis of work features that are intended for

submittal/approval at the 65% Design Submittal, or later, stage shall be included such that a thorough and complete understanding of this work can be accomplished as part of the 35% review. Specifications for contract features proceeding after approval of this Design Submittal shall include those Construction Submittal items requiring Government Approval (GA).

c. Outline of all Construction Specification Sections to be used and those Specification items requiring Government Approval (GA).

d. Results of the site topographic survey (in accordance with Paragraph 3.9.6.3 through 3.9.6.5 of this Section) which shall include highlighting of significant features (wadis, adjacent properties and structures, roads, etc.) to provide a detailed, overall understanding of the project site and surrounding area; demolition plan for existing site features; complete grading and drainage plan with existing grades, proposed grades, and building finished floor elevations based on Contract technical requirements; geotechnical report;

e. Any necessary adaptations of the Concept Plan and detailed design drawings furnished with this Contract that might be required due to actual site constraints, to include: water supply/storage location and distribution layout plan; wastewater collection or treatment location and tie-in to all required buildings; electrical generation and distribution plan; connection of existing roads with ECP location(s); and any other changes required due to adjacent property or existing topography. This would also include proposed changes to any furnished detailed drawings if site conditions or other requirements mandate revisions.

f. Preliminary cross sections of roads and sidewalks, showing all essential dimensions, materials, layers, and proposed fore and back slopes of adjacent drainage features.

g. All preliminary sketches of site storm drainage structures, including calculations in the design analysis for sizing and sloping of pipe runs and ditches. Provide cross sections of drainage structures such as ditches and culverts.

h. Remaining features of work shown on 35% design complete Plans.

1.2.1.2 GENERAL DESIGN REVIEW (65%):

The review of this submittal is primarily to insure that the contract documents and design analysis are proceeding in a timely manner and that the Contract requirements and design criteria are being correctly understood and adhered to. The submittal shall consist of the following:

a. Complete design analysis, geotechnical report, plans and specifications for any contract feature(s) that the Contractor would like Partial Clearance for Construction on once the 65% Design Submittal has been approved, including list of those Construction Submittal items requiring Government Approval (GA).

b. Marked up specifications shall be provided as part of the 65% design submittal. Specifications shall comply with UFGS 2004 format.

c. For all other work, provide Draft Construction Specifications complete - all anticipated sections, edited to include only applicable requirements.

d. Construction Drawings complete for all work to be completed until the 99% Final Design Review Submittal is provided, with all past Design Review comments incorporated. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.

e. Geotechnical Report

For work shown but incomplete and still under design, the Contractor should clearly indicate on the ENG Form 4025 what is being submitted for review and approval.

f. Wastewater Treatment Plant

The Contractor shall perform all design work required to provide a fully functional wastewater treatment system for the project at 65% submittal. The design may include but is not limited to:

1. Wastewater treatment plant site plan. The plan shall identify required setbacks, buried utilities (other than sewer) and potential points of connection to the existing electrical distribution system (existing on the compound). The set back requirements for the wastewater treatment plant site shown on a drawing to identify the buildable footprint. Setback requirements shall be obtained from applicable technical criteria listed in Section 01015.

2. Prepare a summary of basis of design report to include the following:

(a) Summary of design average daily loading for the wastewater treatment plant based on the design equivalent population (See Section 01010) to be used as the basis for wastewater loading. Provide the design peak hourly flow rates for the lift station, flow conveyance facilities including head works of the plant, and effluent outfall system. The anticipated waste loading in terms of biochemical oxygen demand (BOD_5) and total suspended solids (TSS) loading shall be shown for the plant.

(b) Treatment train diagram that includes process modules: lift station pumping and flow metering, headwork processes (e.g. grit, trash and scum removal), equalization chamber, primary treatment processes (e.g. sedimentation and aeration), secondary treatment process including aeration and secondary clarification, sludge and scum recirculation systems, effluent chlorination and outfall system, sludge holding/digestion and disposal. All process component tankage shall be above ground tank. The biological treatment process shall be activated sludge as described in the AED Design Requirements – Package Wastewater Treatment Plants and Lagoons. The general dimensions shall be shown for each module shall be specified based on the design capacity requirements of each module. The lift station pumps, wet well, hatches, and pump controls, inlet bar screen, distribution weirs and pipe sizes, pump capacity and power requirements, the aeration

equipment (diffusers, piping, and blower), and froth control equipment requirements shall be stated. Actual oxygen transfer rates used in the sizing of aeration equipment based on site elevation and high summer temperature range (see Mechanical) shall be shown. Return ratio ranges for sludge recirculation shall be estimated. Provide pipe and pump capacities on sludge recycling and wasting and calculated sludge storage and disposal volumes required.

(c) Catalogue information for the proposed lift station and treatment plant equipment. Include information on manufactured steel tanks. Information shall include material standards for field welding of tanks, piping, valves, pumps, pump control equipment, bolts, gaskets, electrical enclosures, central systems control panels, motors and generators, aerators, air piping, blowers, bar screens, handrails, access ladders and service walkway gratings. Provide an access ladder anti-climb gate a minimum of 4 feet above the ladder base to secure the plan from unauthorized entry. Include product coating and lining, and cathodic protection specifications for applicable equipment.

(d) Sludge Handling Summary of disposal options and recommendation of the preferred disposal option. The proposed sludge disposal equipment/process requirements shall be shown on the plan drawings.

(e) Startup and commissioning plan. Plan shall include, but not be limited to O&M planned activities, sampling protocols, and operator training.

1.2.1.3 FINAL DESIGN REVIEW (99%):

The review of this submittal is primarily to insure that the contract documents and design analysis are nearing completion and that the Contract requirements and design criteria are being correctly understood and adhered to. The submittal shall consist of the following:

a. Design Analysis (including geotechnical report) complete with all prior comments incorporated.

b. Geotechnical Report

c. Draft Construction Specifications complete - all anticipated sections, edited to include only applicable requirements.

d. Construction Drawings complete with all 65% comments incorporated. 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 all past design reviews. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.

1.2.1.4 “CLEARED FOR CONSTRUCTION” SUBMITTAL (100%):

The review of this submittal is to insure that the design is in accordance with all Contract requirements and any directions provided the Contractor during the design process. The only effort remaining between the Final Design Review Submittal and the "Cleared For Construction" Design Review

Submittal is the incorporation of all Government review comments. The Contractor shall submit the following documents for this review:

a. Design Analysis, only if changes have occurred since 99% Design Submittal. 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.

b. Construction Specifications, complete.

c. Construction Drawings, complete.

Once the design documents have been "Cleared for Construction" by the Contracting Officer, the Contractor shall clearly identify each document by annotating it as "Cleared for Construction."

1.2.2 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. 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. 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. 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. 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. 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, in accordance with Section 01780A, CLOSEOUT SUBMITTALS, Paragraphs 1.1 and 1.2, which lists all requirements associated with submission of editable CAD format As-Builts required as part of this contract. 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.

1.2.3 USE OF DRCHECKS$_{SM}$ FOR DESIGN SUBMITTAL COMMENT AND RESPONSE

1.2.3.1 DRCHECKS$_{SM}$ WEB LINK

All AED Design Submittal review comments will be documented using the standard design review tool for the U.S. Army Corps of Engineers, a web-based application called “DrChecks$_{SM}$”. The web link to DrChecks$_{SM}$ is:

https://www.projnet.org/projnet/binKornHome/index.cfm

1.2.3.2 DRCHECKS$_{SM}$ VENDOR IDENTIFICATION AND TUTORIAL

Upon notification of award, the contractor shall immediately coordinate with the Chief, Engineering Branch, AED to acquire a vendor identification and a brief tutorial on the use of DrChecks$_{SM}$. The contractor is responsible for providing their own DrChecks$_{SM}$ Administrator within their own design staff personnel to access and accomplish actions within DrChecks$_{SM}$.

1.2.3.3 NOTIFICATION OF DRCHECKS$_{SM}$ FILE ACCESS

The Afghanistan Engineer District will complete a review at every Design Submittal stage for conformance with the technical requirements of the Contract and document all comments in DrChecks$_{SM}$. At completion of the review, a notification will be issued to the Contractor by the Contracting Officer’s representative that the particular DrChecks$_{SM}$ file will be opened to the Contractor. Until this time, the Contractor is not able to view any AED comments for that particular Design Submittal.

1.2.3.4 FURTHER CONTRACTOR INFORMATION AFTER DRCHECKS$_{SM}$ REVIEWS

See Paragraph 3.7.4, Government Review, for further procedures and requirements associated with Design Submittal reviews.

1.2.4 CONSTRUCTION SUBMITTALS

1.2.4.1 CONTRACTOR FURNISHED GOVERNMENT APPROVED CONSTRUCTION SUBMITTALS (GA)

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

In addition, GA construction submittals are required for the following:

a. CIVIL FEATURES

TESTING RESULTS: Data will include information on the locations and depths of all viable water supply sources at the site(s) involved and a water quantity and water quality analysis for each source from the Ministry of Public Health or other certified testing firm.

b. MECHANICAL FEATURES

EQUIPMENT SUBMITTALS: Manufacturer's standard catalog data, installation, Operation and Maintenance (O&M) manuals and construction details for water wells, water tanks, control valves, pipe insulation, water pumps, air handling units, condensers, variable air volume (VAV) boxes.

TESTING RESULTS: For water tanks, water pumps (including instrumentation), water piping, sprinkler systems, and oxygen systems, submit six (6) copies of each test containing the following information in bound letter-size booklets:

1) The date the tests were performed. 2) A list of equipment used, with calibration certifications. 3) A copy of measurements taken. 4) The parameters to be verified. 5) The condition specified for the parameter. 6) The inspection results, signed, dated, and certified by the installer. The certification shall state that required procedures were accomplished, that the procedures were conducted in compliance the plans and specifications. 7) A description of adjustments performed.

Individual reports shall be provided for storage tank tests, piping tests, system performance tests, high level alarm test, and the system leak tests. Drawings shall be folded blue lines, with the title block visible.

c. ELECTRICAL FEATURES

PRODUCT DATA and SHOP DRAWINGS: generators (and its auxiliaries), load bank, transformers, substations, panels/switchboards/motor control centers, lightning protection, receptacles, circuit breakers.

DESIGN DATA: lightning protection and grounding.

TEST DATA: Lightning protection and grounding.

d. ARCHITECTURAL FEATURES

PRODUCT DATA/CATALOGUE CUTS/SHOP DRAWINGS/SCHEDULES: Specialty doors and frames (fire rated, sound rated, bullet resistant, security, overhead rolling); door hardware; windows; metal roofing (including fasteners, flashing, and accessories); building insulation; fire-rated and water-resistant gypsum board; and other specialty products (bullet resistant glazing/panels).

COLOR BOARD: Architectural finishes

PRODUCT DATA/CATALOGUE CUTS/INSTALLATION INSTRUCTIONS: Exterior Insulation and Finish System (EIFS)

SHOP DRAWINGS: Casework/Cabinetry

1.2.4.2 FOR INFORMATION ONLY CONSTRUCTION SUBMITTALS (FIO)

All submittals not requiring Designer of Record or Government approval will be for information only. These construction submittals shall be checked, stamped, signed and dated by the 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 FIO submittals. These submittals will be used for

information purposes. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the 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.

1.2.4.3 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.

1.2.4.4 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.

1.2.4.5 INCOMPLETE DESIGN

The Design-Build Contractor shall not use construction submittals as a means to supplant and/or supplement an incomplete design effort.

1.3 SUBMITTAL CERTIFICATION

The 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 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 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 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 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 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 Design and 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. Approval will not relieve the Contractor of the responsibility for any error which may exist, as it is the sole responsibility of the 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.

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

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

1.3.5 UNTIMELY AND UNACCEPTABLE SUBMITTALS

If the Contractor fails to submit submittals in a timely fashion, 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 Contractor.

1.3.6 STAMPS

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

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. However, the local language of host country shall be added to project As-Built drawings.

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 SITE LAYOUT

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

EXAMPLE: Masonry openings shall be a U.S. module to suit a standard U.S. door. The dimensions of the opening shall be given in SI units. Metric dimensions for site plans shall be in meters and fraction thereof. Dimensions for all other drawings shall be in millimeters using hard metric designations (example: 12 meters = 12 000). Hard metric is defined as utilizing standard metric products and the use of measurements in increments of fifty (50) and one hundred (100) millimeters.

1.5.1.2 GEO-REFERENCE

All site plans shall be geo-referenced 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 Contractor is allowed partial or total invoice payment for materials shipped from the Continental United States (CONUS), and/or stored at the site, the 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.

2. 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.

2.1 PROJECT NARRATIVE

The Project Narrative shall be a bound set and shall contain the contract Request For Proposal (RFP) Sections 01010 and 01015 (and any additional RFP sections that are appropriate). The RFP Section 01010 and 01015 shall be the latest version. Any subsequent changes to the RFP shall be clearly marked and highlighted with explanation for the changes. The Project Narrative shall also contain the general description of the project and a discussion of the design approach and design features for the project.

2.2 DESIGN ANALYSIS

2.2.1 SUBMITTAL

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. 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, shall be submitted. Specific requirements for the design analysis, listed by submittal phase, are noted in Paragraph 1.2.1.

2.2.2 FORMAT

Format of design analysis shall closely match the standard format referenced within the RFP.

2.3 DESIGN CALCULATIONS

All design calculations shall be presented such that they are easily understood, correlated with RFP requirements (Section 1010 and 1015 criteria; codes; all other applicable or pertinent criteria) and all final conclusions clearly documented and summarized. The Design Submittal must include complete information (Soil Report, percolation test results, concrete design strengths, steel material properties, electrical loads, heat gain/loss assumptions, etc.) necessary to support all design calculations in order to easily and efficiently verify the accuracy of this information and the resulting project components shown in plans and specifications.

2.3.1 SUBMITTAL

When design calculations are voluminous, they shall be bound separately from the narrative part of the design analysis. Design calculations will include a title page, table of contents, and be indexed (tabbed) to separate distinct parts of the various analysis and design actions being accomplished to support plan drawings submitted. They shall be presented in a clear, consistent and legible format in order to quickly understand the analysis and design accomplished. Presentation shall be such that a person unfamiliar with the project features and associated analysis and design can quickly understand the overall design process and procedures, review the information in conjunction with the given set of plans and specifications, and verify the suitability of all information submitted.

All design calculations shall explain the source of loading conditions with assumptions and conclusions explained. The analysis and design methods shall also be explained, including assumptions, theories and formulae. Include applicable diagrams that are clearly explained and correlated with related computations, whether computer or hand generated. The design calculations shall include a complete and comprehensive list of the criteria (and date or version of the criteria) that the design/analysis will be compared to (codes, Corps of Engineers Engineering Regulations, Engineering Manuals, AED Design Requirements Documents, etc.). Within the separable elements of design calculations, the engineer shall cite the specific code or reference paragraph or section as appropriate to indicate conformance to requirements.

At the beginning of each project component design section, present a summary of all load conditions and combinations required per applicable code or Corps of Engineers manual or regulation. Then clearly identify the particular load case governing the design and clearly show how the particular analysis, construction materials to be used, and the specific design meet the governing load combination.

Calculation sheets shall carry the names or initials of the engineer and the checker and the dates of calculations and checking. No portion of the calculations shall be computed and checked by the same person.

2.3.2 COMPUTER ANALYSIS

Provide a clear summary of all computer outputs and highlight in the outputs information used in the analysis and design accomplished elsewhere in the calculations.

If a computerized analysis or design program is used (either commercial software packages or unique, designer-written computer analysis/design tools), the computations shall provide clear reference to the software program and version being used and an explanation of the validity of the particular program to the given application (where has the program been used before, what input and output does the program provide, is the program a recognized Corps of Engineers or industry standard). If the program is proprietary to the Contractor (not recognized by the Corps of Engineers or industry), the Contractor shall provide a sample hand calculation to verify the results of one set of data generated by the computer program.

State exactly the computation performed by the computer. Include applicable diagrams, adequately identified. Provide all necessary explanations of the computer printout format, symbols, and abbreviations. Use adequate and consistent notation. Provide sufficient information to permit manual checks of the results.

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.

When the computer output is large, it shall be divided into volumes at logical division points. All final computer results used in design shall be separated from the total pages of computer output that might be included in the design calculations for ease of review.

2.4 SPECIFICATIONS

Specifications shall be prepared in accordance with the UFGS (Uniform Facilities Guide Specifications) format. The Contractor-prepared specifications shall include as a minimum, all applicable specification sections referenced by the UFGS. Where the UFGS 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 in the UFGS format.

2.4.1 USE OF UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

UFGS (Unified Facilities Guide Specifications) are required for this 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.

2.4.2 QUALITY CONTROL AND TESTING

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

2.4.3 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.

2.4.4 INDUSTRY STANDARDS

2.4.4.1 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 Contractor shall be by specific issue; the revision letter, date or other specific identification shall be included.

2.5 DRAWINGS

2.5.1 COMPUTER ASSISTED DESIGN AND DRAFTING (CAD)

Computer Assisted Design and Drafting (CAD) is required for all Afghanistan Engineer District-North contracts. Only personnel proficient in the preparation of CAD drawings shall be employed to modify the contract drawings or prepare new drawings. The CAD deliverables shall meet the requirements of the A/E/C CAD Standards (V 3.0 or newer). The A/E/C CAD Standards may be

downloaded at the CAD/BIM Technology Center at the following link: https://cadbim.usace.army.mil/default.aspx?p=s&t=13&i=4 or the AED-N website http://www.aed.usace.army.mil/engineeringtop2010.asp under the "Government Provided CAD Files" link.

. The Contractor shall furnish all softcopy design submittals (and As-Builts) using software applications in either DWG format (Auto Desk, AutoCad Release 2009 or newer) or DGN format (Bentley Systems, MicroStation, version 8.0 or newer). Use of unregistered or student copies of software applications to prepare design drawings **IS NOT PERMITTED**. In addition, the Contractor is required to submit the softcopy design submittals in PDF (Adobe Acrobat) format.

CD media submitted containing the softcopy design submittals shall be organized per the instructions below and the diagram in Section 1335a:

CD Title:

Project Name and Location:
Project Number:
Submittal Number:
Date:
Contractor Name, Address, Telephone Number and email

Folders and Folder Contents/Structure:

Main Folder Name	Subfolders, Files and File Format	Description
Administrative	Multiple PDF files	Files shall include the contract, task order, approved modifications, approved BCDs, approved variations and non-administrative modifications (do not provide time extensions, COR appointments, and Requests for Information/responses, etc).
Design Analysis	One pdf file with identical contents as the printed document of the submittal.	All data, discussion, calculations and information presented in the printed Design analysis.
Specifications	One folder specifications in word format. One folder with specifications in pdf format.	All specification sections including table of contents edited as appropriate for the submittal stage of the project[2].
Geotechnical Report	One file in pdf format	All data, graphs, charts and tables generated during the geotechnical investigation.
PDF Drawings	One Binder of pdf files.	PDF Drawings. Files will be saved in a Binder and organized in the same order

		as indicated on the sheet index
CAD Drawings	DGN or DWG files organized in the following folders. Each folder shall contain only drawings pertaining to that discipline. General (Cover Sheet/ Index of Drawings, Vicinity Maps) Civil Architectural Structural Mechanical Plumbing Electrical Telecommunications	CAD Drawings. All referenced files are to be attached without drive or directories and placed in the same folder it is referencing. Do not save or use paths. Do not use live nesting when attaching reference files.

Notes:
1. The administrative folder shall provide documents submitted by the contractor and received from the COR related to the contract. These documents shall include Requests for Information related to design issues, Variation Requests, Modifications to the Contract. In addition, the folder shall contain a copy of the signed contract, relevant task orders and change orders.
2. DO NOT INCLUDE standard drawings or specifications provided to the contractor as part of the RFP or as part of the contract.

2.5.2 DRAWINGS

Drawings shall be prepared in the English language with metric (SI) units of measure. All drawings and details of the working drawings shall be labeled and cross-referenced, thoroughly checked and coordinated with other engineering disciplines. At the final design submittal (100%) the Contractor shall have incorporated all design review comments generated by previous design review(s), have completed all of the constructability and coordination comments, 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. Prior to submitting the 100% Final Design drawings, the Contractor shall follow the procedures as described in Section 3 of the AED Design Requirements for CAD Design Guide.

2.5.3 DRAWING SIZE BORDER SHEETS

All drawings shall be prepared in size "A1" border sheets (594mm by 841mm). Hardcopy design submissions may be printed on half size drawing sheets (“A3”, 297 mm by 420 mm) for purposes of saving paper and for ease of review. If drawings are not readable in the half size reduction, the Contractor shall submit all drawings in A1 border sheets. All final contract drawing sets (As-Builts) shall be submitted on A1 border sheets. Drawing sheets shall be trimmed to specified size if necessary.

2.5.4 SEQUENCE OF DESIGN DRAWINGS

Referencing the A/E/C CAD Standard the sequence of drawings shall follow the sequence as shown below:

Discipline

1. General
2. Hazardous Materials
3. Survey/Mapping
4. Geotechnical
5. Civil
6. Landscape
7. Structural
8. Architectural
9. Interiors
10. Equipment
11. Fire Protection
12. Plumbing
13. Process
14. Mechanical
15. Electrical
16. Telecommunications
17. Resource
18. Other Disciplines
19. Sub-Contractor/Shop Drawings
20. Operations

2.5.5 DRAWING FOLDER STRUCTURE

CAD files shall be organized in folder names as described in Paragraph 2.6.4. For multi-building projects, a folder of each building type shall be created and the applicable folders shown in each building type folder.

2.5.6 DRAWING SHEET ASSEMBLY

CAD files will be organized in what is described as “**Option 1a**” (page 9 in the A/E/C CAD Standards Drawing Sheet Assembly manual), normally referred to as “Model Space and Paper Space” in Autodesk Autocad applications and “Design Model and Sheet Model” in Bentley Microstation applications. All files will be drawn consistently in the same manner using this option throughout the entire project.

2.5.7 MODEL FILES

Model files represent the building's physical layout and components such as floor plans, elevations and details. Model files shall be drawn to full size (1:1) in metric units in the default model view. Floor Plan Model files represent one floor. Example: do not use one model drawing file to draw several floor plan drawings with several border files. (One paperspace layout per plotted sheet.) Model files being referenced into another shall have insertion coordinates (x,y,z) of 0,0,0 in model space. The exception for model files with insertion coordinates other than 0,0,0 shall be the civil site plans (using Georeferencing and real-world coordinates.) Dimensioning shall be in millimeters unless noted otherwise, drawn associatively, and not be "forced". Example: if a wall is drawn 1:1 as 150 mm but the dimensioned number is modified to 200, this is unacceptable.

2.5.8 BORDER SHEET FILES

Border sheet files are referenced into drawing files (in PaperSpace) for plotting and viewing purposes. Every border sheet file has a drawing area, Title Block information and sheet trim border. The Afghanistan Engineer District – North uses a common Title Block sheet border for each project. The project Title Block sheet border with "sheet independent" data is referenced into each drawing. When a drawing file is created, "sheet dependent" Title Block data, such as the Sheet Identification and Title, is added to the specific drawing file and located in PaperSpacewhere the Title Block is referenced and viewed. AED-N Title Block drawings may be downloaded at : http://www.aed.usace.army.mil/engineeringtop2010.asp under the "Government Provided CAD Files" link.

2.5.9 LAYER/LEVEL NAMES

Layer or level files names shall follow the guidelines of the A/E/C CAD Standards V4.0. For AutoCAD, [discipline].dwt (drawing template files) shall be used to import the proper layers that will be inclusive of the correct line type, color, and line thickness of the respective layer. Templates to be used are found on the CAD/BIM Technology Center at the following link: https://cadbim.usace.army.mil/default.aspx?p=s&t=13&i=4, or at AED-N's website: http://www.aed.usace.army.mil/engineeringtop2010.asp under the "Government Provided CAD Files" link.

2.5.10 DRAWING FILE NAMING CONVENTION

The sheet identifier will consist of the discipline designator, the sheet type designator and the sheet sequence number as referenced in the A/E/C CAD Standards V4.0.

2.5.11 SHEET IDENTIFICATION BLOCK

The sheet identifier will follow the format of the border sheet file. This will consist of the discipline designator, the sheet type designator and the sheet sequence number as referenced in the A/E/C CAD Standards Manual.

2.5.12 DRAWING SCALES

The scales indicated on the following list shall be the guide in determining the scale for all drawings. Bar scales on drawings are preferred as printed

copies may lose their plotted scale through generational copying. The Contractor may, at its option, make exceptions to the scales indicated, if approved in writing by the Contracting Officer.

TYPICAL DRAWING SCALES	
DRAWING TYPE	METRIC
SITE PLAN	1:200
	1:400
	1:500
	1:600
	1:700
	1:1000
	1:2000
	1:5000
	1:6000
	1:10000
	1:20000
FLOOR PLAN	1:50
	1:100
ROOF PLAN	1:200
EXTERIOR ELEVATIONS	1:100
	1:200
INTERIOR ELEVATIONS	1:50
	1:100
CROSS SECTIONS	1:50
	1:100
	1:200
WALL SECTIONS	1:20
STAIR DETAILS	1:10
DETAILS	1:5

2.5.13 SYMBOLS, LINE STYLES, & PATTERNS

Approved symbols, line styles, and patterns shall be in accordance with AEC CAD Standards V 3.0 or newer (see Appendix D of the A/E/C CAD Standards). The approved symbols, line styles, and patterns associated with AutoCAD software maybe downloaded at the following link:

https://tsc.wes.army.mil/products/standards/aec/aecstdsym.asp

2.5.14 PLOTTER PREPARED ORIGINAL DRAWINGS AND PDF FILES

Design files shall be developed in anticipation of plotting on a monochrome, vector plotter. Line density shall be equivalent to that produced by black India ink: half tone plots are only acceptable where the half-tone color setting of RGB (red, green blue) settings equal a value of 153 . (Please refer to the A/E/C CAD Standards). **Drawings plotted in color are not acceptable.** Manual changes to plotted originals are not acceptable. A separate Adobe PDF file shall be made of each drawing file oriented in "Landscape". Each PDF drawing file shall then be compiled into one "binder" PDF file for each set of drawings Following the order of the Sheet Index.

2.5.15 TITLE AND REVISION BLOCK

Only AED-N Title and Revision Blocks are allowed. These are available at AED-N's website for download at: http://www.aed.usace.army.mil/engineeringtop2010.asp under the "Government Provided CAD Files" link.

2.5.16 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 first drawing.

2.5.17 LOCATION/COLUMN 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

2.5.18 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 overall plan (key plan) shall be placed on one sheet at a smaller scale to accommodate entire building/site. Key plans shall be used not only to relate large scale plans to total floor plans but also to relate individual buildings to large complexes of buildings. This key plan with match lines shall be referenced on all segmented drawings and shall be placed in a convenient location to indicate the relative location of the represented plan area by crosshatching.

2.5.19 SPECIFICATIONS PLACED ON THE DRAWINGS

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

2.5.20 REVISIONS

Drawing revisions shall be prepared only on the original CAD files. A revision history (located in the Title Block) is required on all sheets.

2.5.21 BINDING

All volumes of drawing prints shall be firmly bound and shall have covers of heavier bond than the drawing sheets. If posts are used to fasten sheets together, the drilled holes on the bond edges of the sheets shall be on 8-1/2-inch centers.

2.5.22 GOVERNMENT PROVIDED FILES

All CAD related files provided by the Government to the Contractor (AutoCad and MicroStation Afghanistan Engineering District-North Title Block and Cover/Index sheet files, AutoCAD template files) may be downloaded through the following Afghanistan Engineering District-North website:

http://www.aed.usace.army.mil/engineeringtop2010.asp under the “Government Provided CAD Files” link.

If Contractor is unable to access this site, a CD will be provided upon request to the Project Manager.

3. GENERAL

3.1 DESIGN CONCEPT COORDINATION MEETING

Shortly after Notice To Proceed (NTP) the Government or contractor may suggest meeting(s) to review the Design Submittal process or discuss various aspects of the contract to enable prompt and efficient initiation of contract actions. Meeting(s) will be held to assure attention is focused on key project requirements (necessary contractor design and Government review that is required to provide Construction Clearance), to discuss features and items of work that need to be submitted early due to long lead time items, or discuss other concepts/ideas that will help accelerate the contract work. Other Design Coordination meetings may be requested throughout the contract period if Government review of various contractor Design Submittals indicate poor design and plan or specification quality in order to clearly explain the changes and improvements required of the contractor, assure understanding of Government comments, code references and required investigations and calculations, to move forward with acceptable design and satisfactory plans and specifications.

3.1.1 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 REGISTER

3.2.1 DESIGN SUBMITTALS

The Contractor shall submit as part of his Project Schedule Design Submittal milestone dates. The Contractor shall post all actual dates of submittal actions (including clearance for construction) as they occur.

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 Design and construction submittals shall be shown on this register. The submittal register shall be the controlling document and will be used to control all 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 submit as required 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

Adequate time (a minimum of fourteen (14) full calendar days exclusive of mailing time) shall be allowed for Government review and comment in DrChecks$_{SM}$. If the Contractor fails to submit design submittals in a timely fashion, 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 CONSTRUCTION SUBMITTALS

Contractor furnished Government Approved Construction Submittals (GA) for items noted in Paragraph 1.2.4 of this Section, or others as required by the COR, shall be submitted to the Area or Resident Office, per directions given at the Pre-Construction meeting. Adequate time (a minimum of fourteen (14) full calendar days exclusive of mailing time) shall be allowed for AED review and comment.

3.5.3 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 fourteen (14) full 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 fashion, 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.

3.6 SUBMITTAL PROCEDURE

3.6.1 DESIGN SUBMITTALS

3.6.1.1 AFGHANISTAN ENGINEER DISTRICT (AED)

One (1) half-size hard copy and two (2) soft copies on CD-ROM (electronic version) of all design submittals (calculations, reports of field tests, design analysis, plans, specifications, etc) shall be transmitted to the Government at the following address, by means of ENG Form 4025:

AFGHANISTAN ENGINEER DISTRICT NORTH (AEN)

(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
Attention: Chief, Engineering Branch

The Contractor shall scan the soft copy (electronic version) of each Design Submittal using most up-to-date version of recognized Industry-standard anti-virus software (Symantec, Norton, etc.) to insure that no viruses are contained in it prior to acceptance by AED. The label shall indicate it has been scanned for viruses and the anti-virus software and version clearly indicated.

3.6.1.2 RESIDENT/AREA ENGINEER OFFICE

Complete design submittals shall be provided to the Area and/or Resident Engineer Office such that these are received **at the same time** as the Contractor provides them to the address noted in Paragraph 3.6.1.1. At the Pre-Construction meeting, the Contractor will be furnished the Area and/or

Resident Office addresses to which these submittals shall be provided and the specific number of hard copies (full and half sizes) and soft copies (CD-ROM) required by the Area and/or Resident Office as per Paragraph 3.6.1.1, soft copies are to be properly labeled and checked for viruses by the Contractor prior to delivery.

3.6.1.3 EDITABLE CAD FORMAT AS-BUILTS

This is a Site-adapt 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. See Section 01780A CLOSEOUT SUBMITTALS, Paragraphs 1.1 and 1.2, for all requirements associated with submission of editable CAD format As-Builts required as part of this contract.

3.6.2 POST DESIGN CONSTRUCTION SUBMITTALS

One (1) copy of all post design construction submittals shall be transmitted to:

AFGHANISTAN ENGINEER DISTRICT NORTH (AEN)

(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
Attention: Chief, Engineering Branch

3.6.3 SUBMITTAL NUMBERING SYSTEM

Instructions 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:

Section	01015	"Technical Requirements"
Section	01335	“Design Submittals”
Section	02831	"Chain-Link Fence"
Section	02710	"Sub-drainage System"
Section	03300	"Concrete For Building Construction"
Section	04200	"Masonry"

3.6.3.2 NUMBERING PROCEDURES FOR TRANSMITTAL ON ENG FORM 4025

Each Specification Section will have various requirements for submittals (design information, product data, test reports, procedures, etc.) to the Government for Approval (GA) or For Information Only (FIO). Items from different Sections cannot be submitted on the same ENG Form 4025. When furnishing one or more items from the same Section at a given time, a single ENG Form 4025 can be used to identify and submit these items. Block ‘b” of the 4025 entitled “DESCRIPTION OF ITEM SUBMITTED” should provide an accurate and unique description of each item being proposed by the Contractor. Item numbers (block “a” of the 4025 entitled “ITEM NO.”) will be automatically generated in QCS for each ENG Form 4025. QCS will track and automatically generate the “ITEM NO.” for all following ENG Form 4025s for the same Section number. To illustrate, a transmittal for the 35% Design Submittal required by Section 01335 might have the following Items:

ITEM NO. 1 Topographic Information

ITEM NO. 2 Geotechnical Report

ITEM NO. 3 Foundation Design

ITEM NO. 4 35% Plans

ITEM NO. 5 Outline of Construction Specifications to be used

If this was the first submittal furnished by the Contractor for Section 01335, then a Transmittal Number of 01335-1 would be generated using QCS. As new transmittals are generated in QCS, the last digit of the transmittal is increased incrementally, as follows:

Transmittal No. 01335-2

Transmittal No. 01335-3

Transmittal No. 01335-4

and so forth. The first transmittal submitted from each Specification Section will be “-1”, in other words, there will never be a “Transmittal No. 01335-0”.

The above illustration is true for all other Specification Sections included in the Request for Proposal or in the Construction Specifications compiled by the Contractor in the prosecution of work under the RFP.

3.6.3.3 RESUBMITTALS

Should the Contractor be required to resubmit any transmittal due to one or more items on that transmittal being Coded “C” (Cleared for Construction, except as noted in attached comments, Resubmission Required) or “E” (NOT Cleared for Construction, see attached comments, Resubmission Required) by the Government, QCS will be used to generate the same transmittal number followed by the number "-1" for the first resubmittal, "-2" for the second resubmittal, "-3" for the third resubmittal, etc.

As an example, assume the 65% Design Submittal is provided to the Government as Transmittal 01335-9. Due to omissions or errors in that Submittal which result in a Code “E” being given, then the subsequent 65% Design Resubmittal #1 would be “Transmittal 01335-9.1”. Should a resubmittal again be necessary, it would be Design Resubmittal #2 and would be submitted as “Transmittal 01335-9.2”.

The purpose of this system is to avoid deviations from the Submittal Register and to track submittals in both RMS and DrChecks$_{SM}$. It should be noted that a new transmittal number following the above system CANNOT be generated in QCS unless the prior transmittal has been given a Code If the Contractor is having difficulty generating the correct transmittal number, contact the COR to resolve the matter.

The Contractor use the above nomenclature and date of submission to the Government for Plan Cover Sheets; title blocks for all drawings; all Specification Cover Sheets; all specification pages; all Design Analysis Cover Sheets and associated pages; and similar labeling for all other documents included in the submittal.

See the attachment titled “1335a-Attachments-AED.pdf” (Figures 1-4) for required Title Block Required Annotations drawing guidance.

3.6.4 VARIATIONS

If Design 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 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 Contractor or may be directed by the Contracting Officer as necessary to progress the work. The Contractor shall prepare minutes of all conferences and shall furnish two copies to the Contracting Officer within seven (7) days after the conference.

3.7.2 INDEPENDENT DESIGN REVIEW

The Contractor shall have someone other than the Designer or Design Team perform an Independent Technical Review of all specifications, drawings, design analysis, calculations, and other required data prior to submission to the Government. This review shall insure the professional quality, technical accuracy, and the coordination of all design analysis, drawings and specifications, and other services furnished under this contract have been accomplished. 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 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. Upon completion of this review, the 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

The Contractor shall thoroughly review each submittal prior to submission to the Contracting Officer to assure it is complete, correct and unified. 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. The Contractor will give evidence of such review of all items in each submittal ENG Form 4025, by annotating Column “g” (titled “For Contractor Use Code”) of this Form with the letter “A,” meaning the Contractor has reviewed it and is indicating it is “Approved as Submitted”. Design submittals submitted to the Contracting Officer without evidence of the above requirements or 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.

3.7.4 GOVERNMENT REVIEW

a. Within 14 days after 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 monthly. After receipt, the Government will be allowed fourteen (14) full days to review and comment on all Design Submittals, except as noted below. This time period starts on the next full day after delivery of the Design Submittal to the Government.

b. If a design submittal is deficient (errors on ENG Form 4025, incorrect drawing title block information, missing or incomplete features required in the Submittal, etc.), it will be returned immediately without further review for correction and resubmission. The review time will begin when the corrected submittal is received. The Contractor may be liable for liquidated damages owed to the Government for returned design submittals due to deficiencies.

c. The contractor shall not begin construction work until the Government has reviewed the Contractor's Design Submittal and 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.

d. Upon completion of the review the Contractor will be notified by the Contracting Officer Representative that the DrChecks$_{SM}$ file is open for viewing and response to AED comments. The Contracting Officer will indicate whether the Design Submittal, or portions thereof, 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

C – Cleared for Construction, except as noted in attached comments, Re-submission required

E - NOT Cleared for Construction, see attached comments,

Re-submission required

FX – Receipt acknowledged, does not comply as noted with contract requirements.

These codes shall NOT be used by the Contractor.

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

a. The Contractor shall review each comment, furnish a complete response in DrChecks$_{SM}$ as to how the comment will be addressed in the Design Analysis, Plans and Specifications, or other Design Submittal stipulations required in this Contract. The Contractor will then incorporate each comment into the design submittal along with other work required at the next Design Submittal stage. 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. 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 contract administration process.

b. 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.

c. The Contractor is cautioned that if he believes the action required by any comment exceeds the requirements of this contract, he should flag the comment in DrChecks$_{SM}$ as a scope change, and notify the COR in writing immediately.

d. 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. Submittal date revisions must be made in writing at least five (5) days prior to the submittal.

3.7.4.2 CONFERENCES

As necessary, conferences will be conducted between the Contractor and the Government to resolve review comments.

A review conference may be held at the completion of AED review and subsequent Contractor response for each design submittal. 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.

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 Contractor shall be responsible for the correction of incomplete design data, omissions, and design discrepancies which become apparent during construction. The 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 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 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. 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.

3.8.2 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.

3.8.3 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.

3.8.4 NOTICE-TO-PROCEED 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.

3.8.5 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.

3.8.6 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 CONDUCT OF WORK

3.9.1 PERFORMANCE

Perform the work diligently and aggressively, and promptly advise the Contracting Officer of all significant developments.

3.9.2 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.

3.9.3 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.

3.9.4 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 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 Contractor will be required to conform his design to the same at his own time and expense.

3.9.5 CONFLICTS

Any conflicts, ambiguities, questions or problems encountered by the Contractor in following the criteria shall be immediately submitted in writing to the Contracting Officer with the Contractor's recommendations. Prior to submission to the Government the 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.

3.9.6 DESIGN PRIORITIES

The design of this project shall consider the remote location and harsh environment of this project 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.

3.9.6.1 CONSTRUCTION LIFE SPAN LEVELS

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.

3.9.6.2 OPERABILITY

Systems including but not necessarily limited to mechanical, electrical, communications, etc., must be simple to operate and easy to maintain.

3.9.6.3 STANDARDIZATION

Use of standardized materials, products, equipment, and systems is necessary to minimize the requirements for replacement parts, storage facilities, and service requirements.

3.9.6.4 TOPOGRAPHIC SURVEYS, EASEMENTS, AND UTILITIES

Unless otherwise stated in the contract, the Contractor will be responsible for detailed topographic mapping, available easements, and utility information for the project.

3.9.6.5 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. Provide three (3) concrete survey monuments at the survey site. All of the control points established at the site shall be plotted at the appropriate coordinate point and shall be identified by name or number, and adjusted elevations. 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.

3.9.6.6 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.

3.9.6.7 GEOTECHNICAL INVESTIGATION

Unless otherwise stated in the contract, the Contractor will be responsible for Geotechnical investigation, including subsurface explorations, sampling, field and laboratory testing, and water studies where applicable.

3.9.6.8 CATHODIC PROTECTION AND EARTH RESISTANCE

Unless otherwise stated in the contract, the 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.

3.9.6.9 WATER SUPPLY AND QUALITY DATA

Unless otherwise stated in the contract, the Contractor will be responsible for obtaining all water supply and water quality data. This data will

include information on the locations and depths of all viable water supply sources at the site(s) involved and a water quantity and water quality analysis for each source.

3.9.6.10 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.

3.9.6.11 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 material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from AED.

3.9.6.12 EXISTING CONSTRUCTION

Asbestos containing materials (ACM) presently included in existing construction to be rehabilitated or otherwise modified as a result of this project shall be removed and a non-asbestos containing material substituted in lieu thereof.

3.9.6.13 SUSPECTED ASBESTOS CONTAINING MATERIALS

All such structures and systems shall be inspected to determine the presence or probable presence of ACM. When ACM is suspected, a documented survey will be performed. The survey will be developed into an abatement design and will be made a part of the design documents. In the event no other material is available which will perform the required function or the use of a substitute material would be cost prohibitive due to initial cost and tear-out of existing construction, a waiver for the retention of the asbestos containing material must be obtained from the Contracting Officer.

3.10 VALUE METHODOLOGY/VALUE ENGINEERING

The 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.

3.10.1 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 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 Contractor certain latitude, choice of and

flexibility to propose in its accepted contract offer a choice of design, technical approach, design solution, construction approach 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.

3.10.2 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 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.

3.11 ATTACHMENTS

The following attachments form an integral part of this specification:

ENG FORM 4025R, Mar 95 - Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificate of Compliance (2 pages)

ENG FORM 4288-R. Mar 95 - Submittal Register

Figure 1 – AED Title Block

Figure 2 - AED Management Block

Figure 3 - AED Issue Block & Required Notations

Figure 4 - Border Sheet Size

-- End of Section --

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	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: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		CHECK ONE: THIS TRANSMITTAL IS FOR ☐ FIO ☐ GOV'T. APPROVAL

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* *b.*	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction no. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT: SPEC. PARA. NO. *e.*	CONTRACT REFERENCE DOCUMENT: DRAWING SHEET NO. *f.*	FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruction No. 6)* *h.*	FOR CE USE CODE *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.** _____ NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	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 *(Specify)*

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)

SUBMITTAL REGISTER

(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION

CONTRACTOR

SPECIFICATION SECTION

ACTIVITY NO a.	TRANS-MITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	CLASSIFICATION: INFORMATION ONLY o.	GOVERNMENT APPROVED p.	REVIEWER q.	CONTRACTOR SCHEDULE DATES: SUBMIT r.	APPROVAL NEEDED BY s.	MATERIAL NEEDED BY t.	CONTRACTOR ACTION: CODE u.	DATE v.	SUBMIT TO GOVERN-MENT w.	GOVERNMENT ACTION: CODE x.	DATE y.	REMARKS z.

ENG FORM 4288-R, MAR 95 EDITION OF SEP 93 IS OBSOLETE. PAGE 1 OF ____ PAGES (Proponent: CEMP-CE)

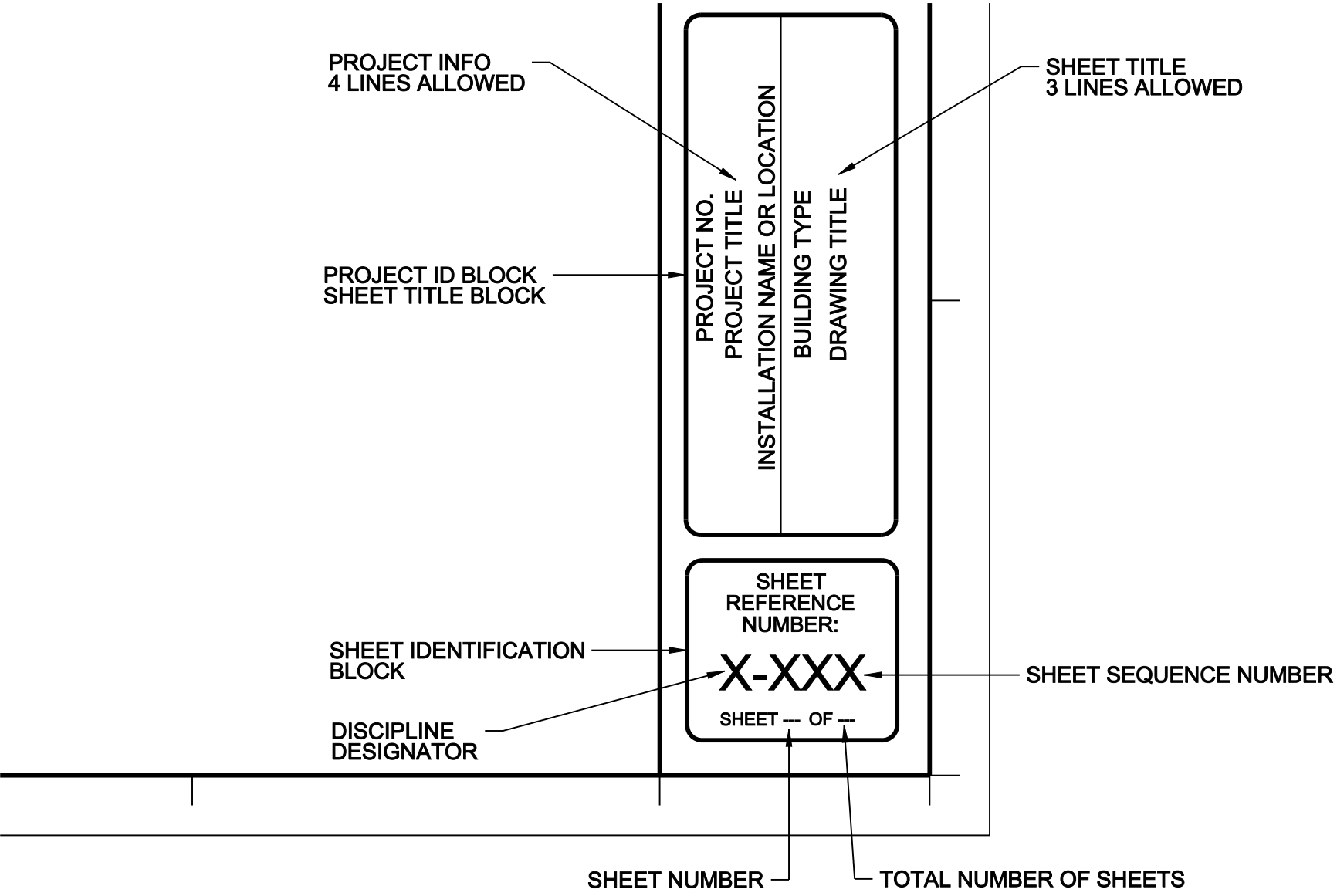


FIGURE 1 - AED TITLE BLOCK

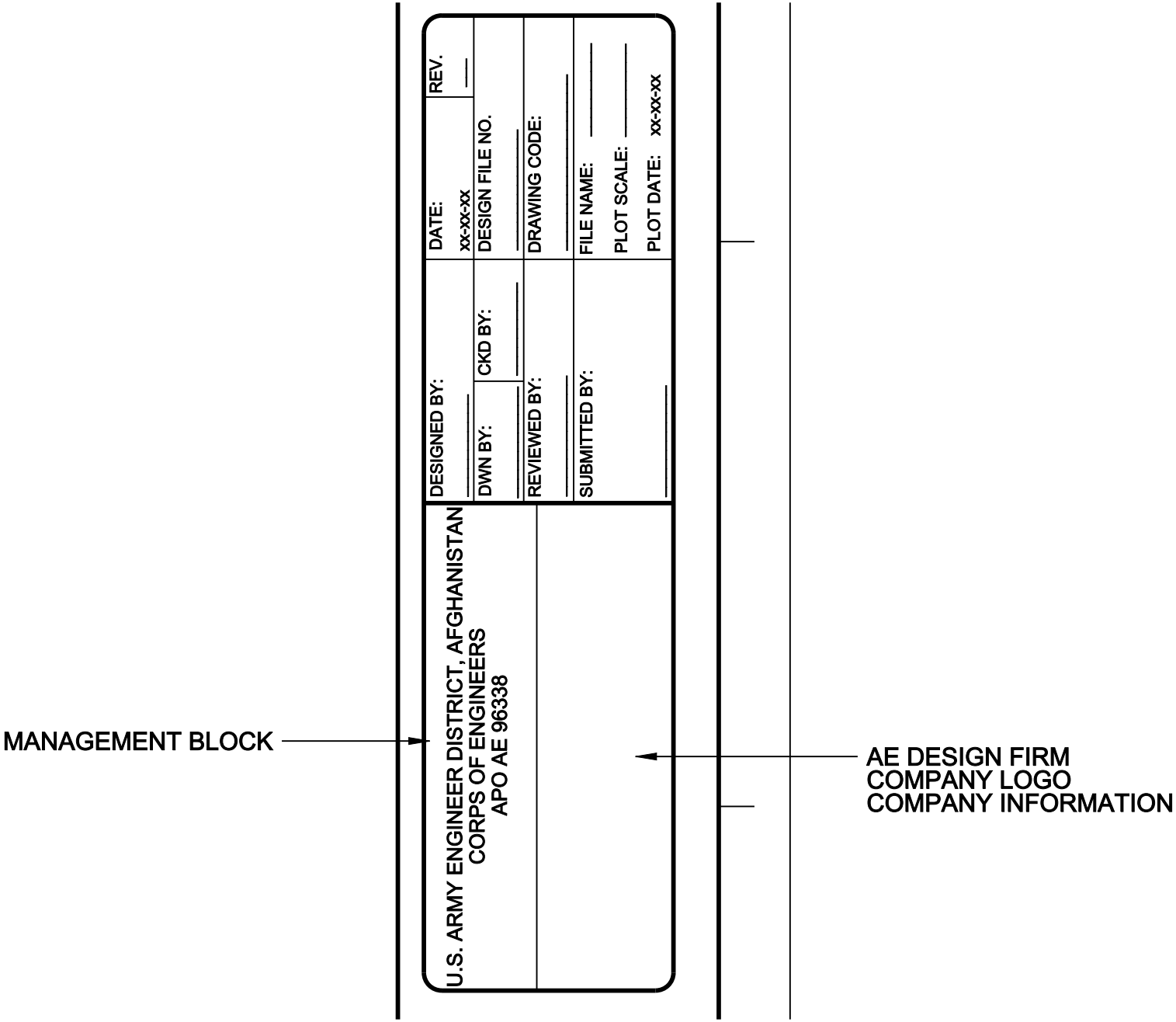


FIGURE 2 - AED MANAGEMENT BLOCK

ANA Camp Shaheen (MeS) Wastewater Treatment Plant (WWTP)
Mazar-E-Sharif, Afghanistan

H

DESIGNER IDENTIFICATION BLOCK (DO NOT ALTER)

US ARMY CORPS
OF ENGINEERS
AFGHANISTAN
ENGINEER DISTRICT

ISSUE BLOCK

SYMBOL	DESCRIPTION	APPR.	DATE
	AS-BUILT SUBMITTAL		DATE
	100% DESIGN SUBMITTAL		DATE
	99% DESIGN RESUBMITTAL		DATE
	99% DESIGN SUBMITTAL		DATE
	65% DESIGN RESUBMITTAL		DATE
	65% DESIGN SUBMITTAL		DATE
	35% DESIGN SUBMITTAL		DATE
SYMBOL	DESCRIPTION	APPR.	DATE
1	AMENDMENT P0001		1 AUG 07
2	MOD POOO2		
3	MOD P0003		
4	REVISED AS-BUILT		

FIGURE 3 - AED ISSUE BLOCK
& REQUIRED NOTATIONS

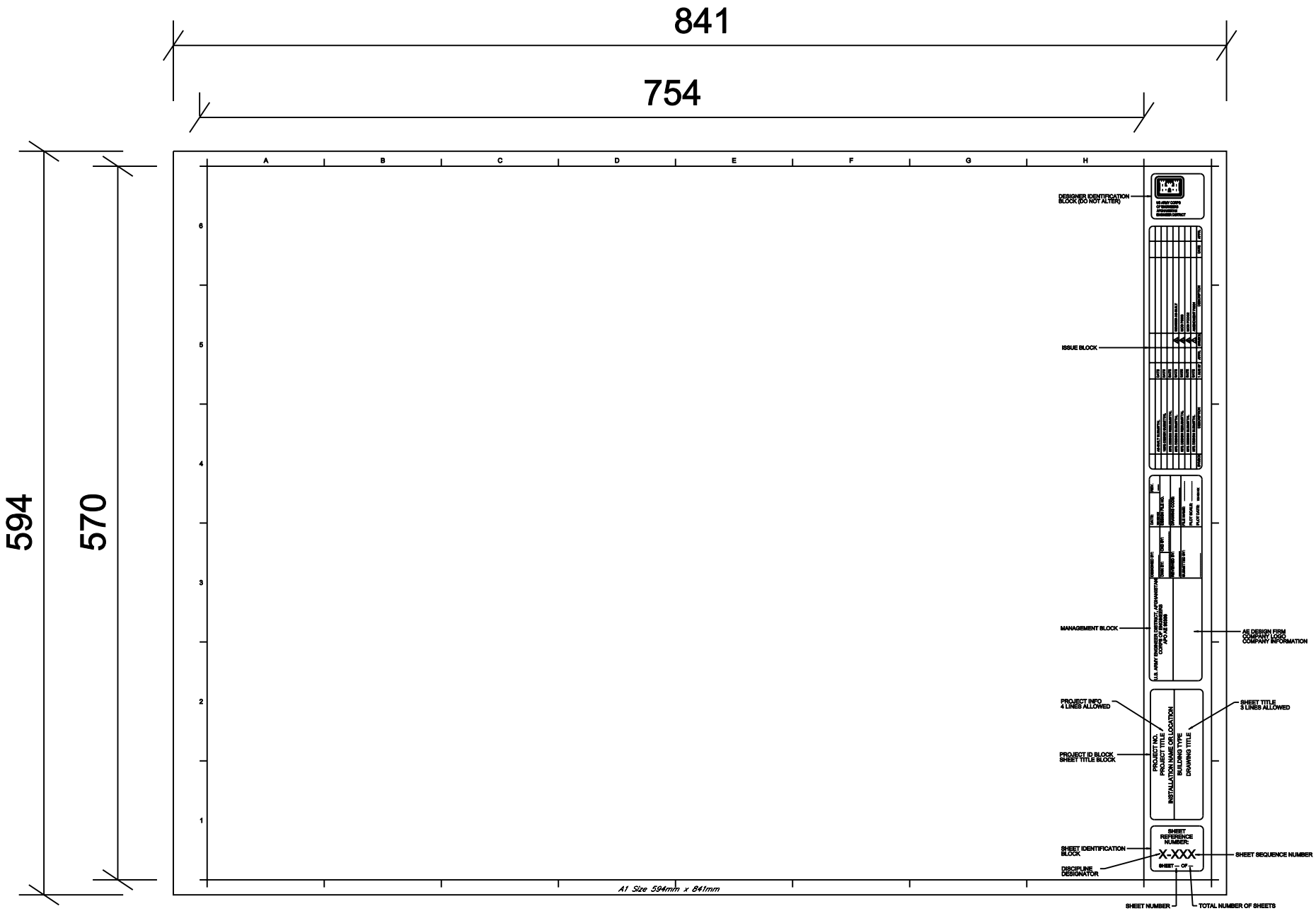
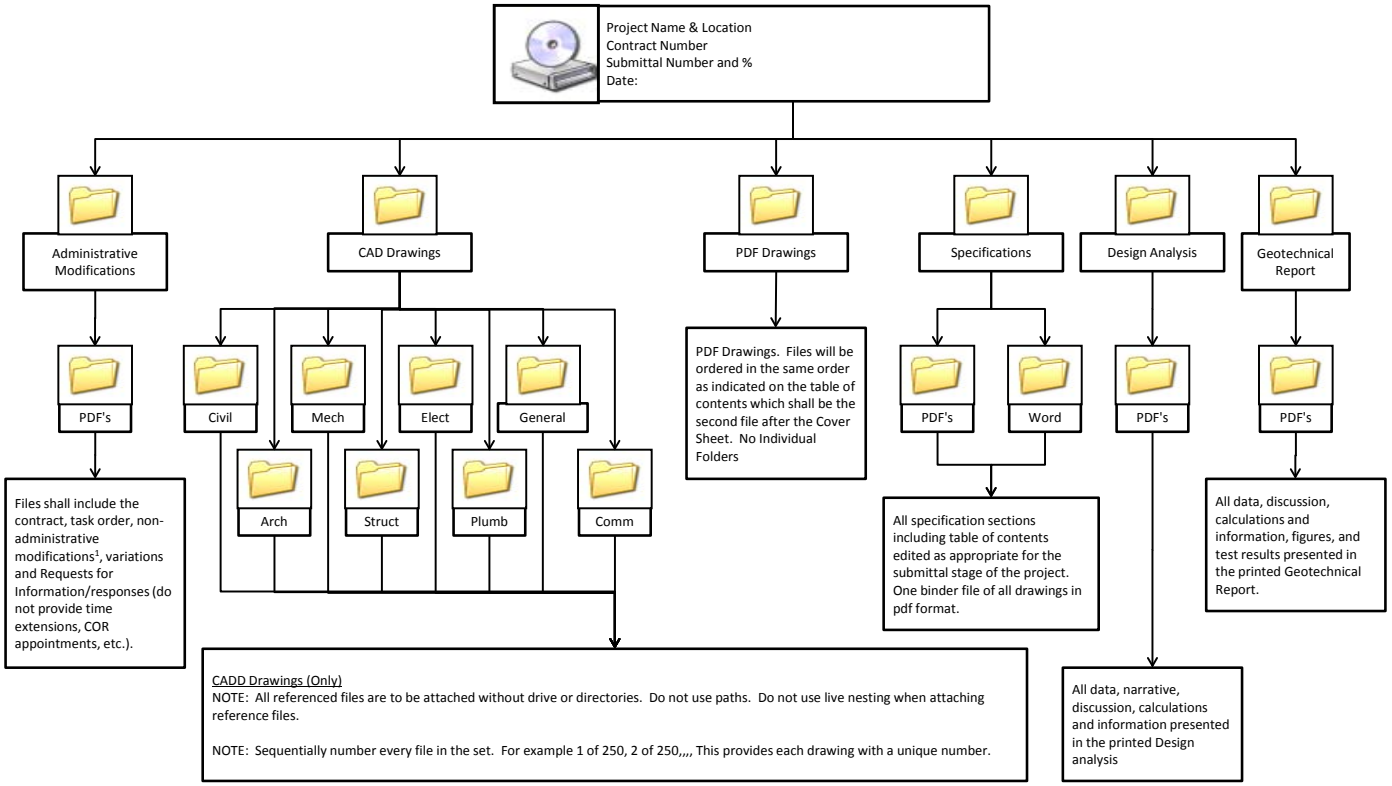


FIGURE 4 - BORDER SHEET SIZE

ANA Camp Shaheen (MeS) Wastewater Treatment Plant (WWTP)
Mazar-E-Sharif, Afghanistan



ANA Camp Shaheen (MeS) Wastewater Treatment Plant (WWTP)
Mazar-E-Sharif, Afghanistan

SUBMITTAL REGISTER

TITLE AND LOCATION:

Solicitation No.

CONTRACTOR:

CONTRACT:

Activity No.	Transmittal No.	Section Number	Paragraph Number	Description of Submittal	TYPE OF SUBMITTAL											Classification		Reviewing Office					Contractor Scheduled Dates			Contr Actions		Govt Actions		Remarks
					01-PRECON SUBMITTALS	02-SHOP DRAWINGS	03-PRODUCT DATA	04-SAMPLES	05-DESIGN DATA	06-TEST REPORTS	07-CERTIFICATES	08-MFRS INSTRUCTIONS	09-MFRS FIELD REPORT	10-O&M DATA	11-CLOSEOUT SUBMITTALS	Information Only	Government Approved	DO-District Office	AO-Area Office	RO-Resident Office	PO-Project Office	AE-Architect /Engineer	Submit	Approval Needed By	Material Needed By	Action Code	Date of Action	Action Code	Date of Action	
		01010	1.4	Construction Quality Management Course	X												X			X										
		01010	3.1	Demining Plan (if required)	X												X	X												
		01010	3.1	Demining Certificate	X												X	X												
		01010	1.6	Electrician Qualifications							X						X			X										
		01010	1.7	Plumbing Qualifications							X						X			X										
		01010	1.8	Sheetmetal Worker Qualifications							X						X			X										
		01010	2	Right of Entry Coordinate Data	X												X	X												
		01040	3.1	Securtiy Plan	X												X			X										
		01060	1.2	Area Use Plan	X												X			X										
		01335	1.2.1.1	Preliminary Design Reports - 10%					X								X	X												
		01335	1.2.1.2	Site-Adapt General Design Review - 65%					X								X	X												
		01335	1.2.1.3	Final Site-Adapt Design Review - 90%					X								X	X												
		01335	1.2.1.4	Cleared For Construction Review - 100%					X								X	X												
		01321	1.1	Initial Schedule	X												X			X										
		01355	1.7	Environmental Protection Plan	X												X			X										
		01451	2.3	Quality Control Plan Design	X												X			X										
		01451	2.3	Quality Control Plan Construction	X												X			X										
		01525	1.2	Accident Prevention Plan	X												X	X												
		01525	1.2	Activity Hazard Analysis	X												X			X										
		01525	1.2	Confined Space Entry Permit (If Needed)							X						X	X												
		01770	1.2.2	Hardware Schedule											X		X	X												
		01770	1.2.2	Final Architectural O&M Manuals											X		X	X												
		01770	1.2.2	Final Fire Detection & Alarm O&M Manuals											X		X	X												
		01770	1.2.2	Final Mechanical Systems O&M Manuals											X		X	X												
		01770	1.2.2	Generator O&M Manuals											X		X	X												
		01770	1.2.2	Diesel Fuel Tank and Fuel Pump O&M Manuals																										
		01770	1.2.2	Wood Windows O&M Manuals											X		X	X												
		01770	1.2.2	Final Electrical Systems O&M Manuals											X		X	X												
		01770	1.2.2	Submersible and Hand Pumping Units O&M Manuals											X		X	X												
		01770	1.2.2	Chlorine-Feeding Machine O&M Manual											X		X	X												
		01770	1.2.2	Propane Stove O&M Manuals											X		X	X												
		01770	1.2.2	Key Bitting											X		X	X												

SUBMITTAL REGISTER

TITLE AND LOCATION:

Solicitation No.

CONTRACTOR:

CONTRACT:

Activity No.	Transmittal No.	Section Number	Paragraph Number	Description of Submittal	TYPE OF SUBMITTAL: 01-PRECON SUBMITTALS	02-SHOP DRAWINGS	03-PRODUCT DATA	04-SAMPLES	05-DESIGN DATA	06-TEST REPORTS	07-CERTIFICATES	08-MFRS INSTRUCTIONS	09-MFRS FIELD REPORT	10-O&M DATA	11-CLOSEOUT SUBMITTALS	Classification: Information Only	Government Approved	Reviewing Office: DO-District Office	AO-Area Office	RO-Resident Office	PO-Project Office	AE-Architect /Engineer	Contractor Scheduled Dates: Submit	Approval Needed By	Material Needed By	Contr Actions: Action Code	Date of Action	Govt Actions: Action Code	Date of Action	Remarks
		01770	1.5	Training Plan											X		X	X												
		01770	1.7	Spare Parts											X		X	X												
		01780	1.2.1	As-Built Drawings											X		X	X												
		01780	1.2.2	As-Built Record of Equipment and Materials											X		X	X												
		01780	1.3	Warranty Management Plan											X		X	X												
		01780	1.3.4	Warranty Tags											X		X	X												
		01780	1.5	Final Cleaning											X		X	X												

SECTION 01355

ENVIRONMENTAL PROTECTION (ANSF Version)

1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ISLAMIC REPUBLIC OF AFGHANISTAN

Official Gazette No. 912 Environmental Law (2007)

U.S. DEPARTMENT OF DEFENSE (DoD)

DoD 4715.05-G Overseas Environmental Baseline Guidance Document (OEBGD) (2007)

U.S. ARMY (DA)

AR 200-1 Environmental Protection and Enhancement (2007)

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 Safety and Health Requirements Manual (2009)

1.2 DEFINITIONS

1.2.1 ENVIRONMENTAL POLLUTION AND DAMAGE

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 ENVIRONMENTAL PROTECTION

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 CONTRACTOR GENERATED HAZARDOUS WASTE

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and fuel/oils/lubricants.

1.2.4 LAND APPLICATION FOR DISCHARGE WATER

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the waters of Afghanistan shall occur.

1.2.5 SURFACE DISCHARGE

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or waters of Afghanistan would require a permit to discharge water from the project.

1.2.6 HAZARDOUS MATERIAL (HM)

A useful product that requires special management because it has hazardous characteristics (ignitability, corrosivity, reactivity, or toxicity) that could pose dangers to human health or the environment. A HM becomes a Hazardous Waste when it can no longer be used for its intended purpose.

1.2.7 HAZARDOUS WASTE (HW)

A discarded material with properties that could pose dangers to human health or the environment. A HW either exhibits a hazardous characteristic or is specifically listed as a HW by the EPA or by the State.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. Environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable Afghanistan environmental laws and regulations. The Contractor shall be responsible for delays resulting from failure to comply with environmental laws and regulations.

For the purpose of this specification, environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the utility of the environment for aesthetic, cultural, and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, land, and includes management of visual esthetics, noise, solid waste, and erosion from stormwater, as well as pollutants.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by all subcontractors, suppliers, and vendors.

1.5 ABBREVIATIONS AND ACRONYMS

BACT	Best Available Control Technology
BMP	Best Management Practice
COR	Contracting Officer's Representative
ECO	Environmental Compliance Officer
HM	Hazardous Material HW Hazardous Waste
HW	Hazardous Waste
HWT	Hazardous Waste Technician
KO	Contracting Officer
PPE	Personal Protective Equipment
USACE	US Army Corps of Engineers

1.6 LAWS AND REGULATIONS

The Contractor shall comply with all applicable Afghanistan environmental, natural and cultural resources, and historic preservation laws and regulations.

1.7 SUBMITTALS

1.7.1 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental, natural and cultural resources, and historic preservation issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1.1 COMPLIANCE

No requirement in this Section shall be construed as relieving the Contractor of any applicable Afghanistan environmental, natural and cultural resources, and historic preservation protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting, for approval, any additional requirements to be included in the Environmental Protection Plan.

1.7.1.2 CONTENTS

The environmental protection plan shall include, but shall not be limited to, the following:

1. Name(s) of the on-site Environmental Manager who is responsible for ensuring adherence to the Environmental Protection Plan and monitoring and documenting environmental procedures.
2. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are effective.
3. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.
4. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.
5. Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a hazardous material. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

    a. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

b. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.
c. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.
d. The methods and procedures to be used for expeditious contaminant cleanup.

6. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.
7. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
8. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site and identifies the intended actions to prevent introduction of such materials into the air, water, or ground. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.
9. A hazardous waste plan that: identifies potentially hazardous waste that may be generated by the project.
10. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, decontamination water, hydrostatic test water, and water used in flushing of lines.
11. A historical, archaeological, cultural resources, and biological resources plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, and biological resources known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, and biological resources not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

1.8 PROTECTION FEATURES

Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with environmental, natural and cultural resources, and historic preservation laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions.

2 PRODUCTS (NOT USED)

3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental, natural and cultural resources, and historic preservation permits and commitments required by Afghanistan environmental, natural and cultural resources, and historic preservation laws and regulations.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 WORK AREA LIMITS

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 LANDSCAPE

Trees, shrubs, vines, grasses, land forms and other landscape features indicated to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 EROSION AND SEDIMENT CONTROLS

The Contractor shall be responsible for providing erosion and sediment control measures. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality is not degraded as a result of the Contractor's construction activities. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) as indicated on the drawings. BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps,

inlet and outfall protection, diversion channels, and sedimentation basins. Any temporary measures shall be removed after the area has been stabilized.

3.2.4 CONTRACTOR FACILITIES AND WORK AREAS

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.2.5 TREE PROTECTION

All costs associated with tree protection requirements required by specifications and drawings are the full responsibility of the Contractor. The Contractor shall exercise care when excavating trenches in the vicinity of trees.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor.

3.3.1 COFFERDAMS, DIVERSIONS, AND DEWATERING OPERATIONS

Construction operations for dewatering, removal of cofferdams, and tailrace excavation shall be controlled at all times to maintain compliance designated uses of the surface water body.

3.3.2 STREAM CROSSINGS

Stream crossings (wet or dry) shall allow movement of materials or equipment without blocking the natural flow of water, if water became present.

3.4 AIR RESOURCES

3.4.1 PARTICULATES

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

3.4.2 ODORS

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard.

3.4.3 SOUND INTRUSIONS

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise.

3.4.4 Burning

All areas within facility perimeter fence line are designated as no burn areas.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5.1 CHEMICALS AND CHEMICAL WASTES

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed at an appropriate disposal site.

3.5.2 CONTRACTOR HAZARDOUS MATERIAL / GENERATED HAZARDOUS WASTES / EXCESS HAZARDOUS MATERIALS

The Contractor shall, at a minimum, manage and store hazardous material and waste in an area designed and operated to provide appropriate segregation for different waste streams, including those that are chemically incompatible. Each area will have warning signs appropriate for the waste being accumulated at that site. Facilities or areas shall provide adequate ventilation, containment, and protection from the elements. Provide warning signs, limit access to the facility, and lock it when it is unattended. Contractor vehicles are not considered a proper storage facility. No HM or HW shall be stored in vehicles overnight or for any length of time. The Contractor shall take sufficient measures to prevent spillage or leakage of hazardous and toxic materials during dispensing or storage. The Contractor shall protect HM and HW from the weather by placing it in a safe covered location. The Contractor shall be responsible for storage, describing, packaging, labeling, and marking hazardous waste and hazardous material. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility.

3.5.3 FUEL AND LUBRICANTS

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation.

3.5.4 WASTE WATER

Disposal of waste water shall be as specified below.

a. Waste water from construction activities shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off site, unless on-site disposal is approved by the Contracting Officers Representative.
b. Water generated from the flushing of lines after decontamination or decontamination in conjunction with hydrostatic testing or only hydrostatic testing shall be discharged into the sanitary sewer with prior approval and/or notification to the Waste Water Treatment Plant's Operator.

3.6 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden,

bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Afghanistan regulations.

3.8 MAINTENANCE OF POLLUTION CONTROL

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.9 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area restored to its original condition.

-- End of Section --

SECTION 01415

METRIC MEASUREMENTS

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

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 the11th 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.

3. USE OF MEASUREMENTS IN SPECIFICATIONS

Measurements in 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.

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.

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 15-5/8inches)).

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).

3.4 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.

3.5 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 --

SPECIFICATION SECTION 01451

CONTRACTOR QUALITY CONTROL

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. All associated costs are included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

2. EXECUTION

2.1 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 organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, 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.

2.2 CQM TRAINING REQUIREMENTS

Before construction begins, the Contractor’s Quality Control Manager is required to have completed the U.S. Army Corps of Engineers (USACE) Construction Quality Management (CQM) course, or equivalent. The Champion

Technical Training Center (CTTC) in Jalalabad and Kabul, Afghanistan provides a course that satisfies the requirement. Courses are offered at regular intervals. For enrollment and course information contact WWW.CTTC-AF.ORG. Alternative CQM courses, other than those mentioned above, must be approved by the Quality Assurance Branch.

The contractor's quality control plan, as defined in USACE Guide Specification 01451 (or 01 45 04.00 10), entitled "Contractor Quality Control", must include "The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function." For the QC Manager, qualifications must include a certificate demonstrating completion of an approved CQM course.

2.3 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.

2.3.1 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, offsite 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 test, 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 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 features under a particular section. This list will be agreed upon during the coordination meeting.

2.3.2 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 product 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 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 an 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.

2.3.3 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.

2.3.4 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 calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

2.4 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 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.

2.5 QUALITY CONTROL ORGANIZATION

2.5.1 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 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.

2.5.2 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 manager.

2.5.3 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 course is periodically offered by the government, and inquiries as to the next course offering may be directed to the local construction field office.

2.5.4 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.

2.6 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.

2.7 CONTROL

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:

2.7.1 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 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.

2.7.2 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 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 beginning 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.

2.7.3 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.

2.7.4 ADDITIONAL PREPARATORY AND INITIAL PHASES

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.

2.8 TESTS

2.8.1 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.

2.9 COMPLETION INSPECTION

2.9.1 PUNCH-OUT INSPECTION

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 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.

2.9.2 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.

2.9.3 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 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 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".

2.10 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:

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 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 report shall be prepared and submitted for every 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.

2.11 SAMPLE FORMS

In accordance with Specification 01312 QUALITY CONTROL SYSTEM, the contractor shall use the forms produced by and printed from QCS. Samples of any forms required to meet the requirements of this section which are not produced by that system shall be included in the contractors Quality Control Plan.

2.12 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 --

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

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 Afghanistan District and;

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
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
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(2008) 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

1.1 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, District Safety Office

Activity Hazard Analysis (AHA); G, District Safety Office

Crane Critical Lift Plan; G, District Safety Office

Proof of qualification for Crane Operators; G, District Safety Office

UXO/Demining Safety Work Plan; G, District Safety Office

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

Regulatory Citations and Violations

SD-07 Certificates

Confined Space Entry Permit

Contractor Safety Self-Evaluation Checklist; G, District Safety Office

UXO/Demining Clearance Certificate; G, District Safety Office

Submit one copy of each permit/certificate attached to each Daily Quality Control Report.

Certification of UXO clearance. Where excavations are to be performed in areas known or suspected to contain explosives, unexploded munitions, or military ordnance, surface and subsurface clearance by qualified explosive ordnance disposal (EOD) personnel shall be accomplished prior to excavation work. Clearance certificates must be forwarded to the AED-N UXO QA Safety specialist, prior to the start of construction. If the site does not have an associated clearance certificate, the site will require an UXO/mine clearance conducted to meet the certification of UXO clearance requirements EM 385-1-1 section 25.A.01.m.

Before initiation of work at the job site, all Accident Prevention Plans, Demining plans, and any other safety related plans shall be reviewed by the AED-N Safety Office.

1.2 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 through 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.

1.3 DRUG PREVENTION PROGRAM

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 employees 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.

1.4 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.

1.5 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.5.1 PERSONNEL QUALIFICATIONS

1.5.1.1 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. The SSHO shall meet the following requirements: A minimum of 1 year safety work on similar projects; 30-hour OSHA construction safety class or equivalent within the last 3 years. SSHO must be fluent in English and the local language for communication with the GDA. Competent person training as needed.

1.5.1.2 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. Assess hazardous conditions including atmospheric hazards in confined space and adjacent spaces and specify the necessary protection and precautions to be taken;

d. Determine ventilation requirements for confined space entries and operations;

e. Assess hazards associated with hot work in confined and adjacent space and determine fire watch requirements; and,

f. Maintain records required.

1.5.1.3 CRANE OPERATORS

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16.B.

1.5.2 PERSONNEL DUTIES

1.5.2.1 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. Be on site at all times while work is being performed.

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.

1.5.3 MEETINGS

1.5.3.1 PRECONSTRUCTION CONFERENCE

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.

1.5.3.2 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.

1.6 TRAINING

1.6.1 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.

1.6.2 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.

1.6.3 TRAINING ON ACTIVITY HAZARD ANALYSIS (AHA)

Prior to beginning a new phase, training will be provided to all affected

1.7 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. An AED Minimum Basic Outline for Contractor APP Template is provided at the end of this section. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum 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.

In addition to following the requirements defined by EM 385-1-1, the Contractor shall submit for approval as part of the APP a DBA Insurance Plan describing how the requirements in Technical Specification Section 01060 Special Contract Requirements paragraph 2.11 will be met including: (1) properly and promptly submit an injury claim within seven days of the incident, (2) provide Resident/Area Engineer with copies of submitted claim, (3) gather contact information of workers and their family, (4) follow-up on the claim's status, (5) provide weekly claims report status to the Resident/Area Engineer, (6) provide prompt payment to an injured worker, or the family of a deceased worker, and (7) provide Resident/Area Engineer confirmation that payment has been provided from DBA Insurance provider.

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, SSHO 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.

1.7.1 EM 385-1-1 CONTENTS

In addition to the requirements outlines 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 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 34, 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.H. and the following:

(1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of EM 385-1-1, Section 16.T.

(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).

1.8 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 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.

1.9 DISPLAY OF SAFETY INFORMATION

Within 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.

1.10 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project. Maintain applicable equipment manufacturer's manuals.

1.11 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.

1.12 REPORTS

1.12.1 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 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

1.12.2 ACCIDENT NOTIFICATION

Notify the Contracting Officer as soon as practical, but not later than eight 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.). For all Fatal accidents the contractor will preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted. Notification to DBA insurance provider per Section 01060 is required also within 8 hours. Copies of these reports shall be furnished to the Contracting Officer.

1.12.3 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.

1.12.4 CRANE REPORTS

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix I and as specified herein with Daily Reports of Inspections.

1.13 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.

2. EXECUTION

2.1 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.13 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.

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.

2.1.1 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.

2.1.2 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 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.

2.1.3 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-isocynates, 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.

2.1.4 UNFORESEEN HAZARDOUS MATERIAL

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 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."

2.2 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.

2.2.1 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.B.

2.2.2 FALL PROTECTION EQUIPMENT

The Contractor shall enforce use of the fall protection equipment designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is on a surface1.8 m(6 feet) or more above lower levels. Fall protection systems such as guardrails, personnel fall arrest system, safety nets, etc., are required when working within 1.8m (6 feet) of any leading edge. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, Elevating Work Platforms/Scissors Lifts: Scissors lifts shall be equipped with standard guardrails. In addition to the guardrail provided, if the scissor lift is equipped with a manufactured anchorage, a restraint system shall be used in addition to guardrails. Lanyards used with the restraint system shall be sufficiently short to prohibit workers from climbing out of, or being ejected from, the platform.

2.2.2.1 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 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.

2.2.3 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.

2.2.4 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. Exiting horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

2.2.5 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 2.

2.2.6 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.

2.2.7 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).

2.3 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 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 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.

2.4 EQUIPMENT

2.4.1 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.

2.4.2 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 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.

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.

2.5 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. All excavations shall conform with the requirements of Section 25 of EM 385-1-1.

2.5.1 UTILITY LOCATIONS

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.

2.5.2 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.

2.5.3 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.

2.5.4 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.

2.6 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.

2.7 ELECTRICAL

2.7.1 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. Energized work may never be performed without prior authorization. An energized work permit

shall be submitted to GDA for acceptance in acceptance in accordance with 385-1-1, Section 11.A02.c. 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.

2.7.2 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.

2.8 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 34 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. 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. Ventilation shall conform with the requirements of Section 06.G of 385-1-1.

c. Ensure the use of rescue and retrieval devices in confined spaces greater than 1.5 m (5 feet) in depth. Conform to Section 34 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 34 of USACE EM 385-1-1.

f. Daily Entry Permit. Post the permit in a conspicuous place close to the confined space entrance.

2.9 CRYSTALLINE SILICA

Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica, shall comply with USACE EM 385-1-1, Appendix 06.H. 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.

2.10 DEMOLITION

2.10.1 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.

2.10.2 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.

2.10.3 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

2.11 HOUSEKEEPING

2.11.1 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 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.

-- END OF SECTION --

ATTACHMENT 01525a

AED NORTH ACCIDENT PREVENTION PLAN MINIMUM BASIC OUTLINE

AED NORTH ACCIDENT PREVENTION PLAN
MINIMUM BASIC OUTLINE

Instructions

A. The prime contractor will type-in the information called for or put a checkmark in the appropriate box or boxes. A checkmark will signify a) Prime's selection from a list of items, b) Prime agrees with the corresponding information, c) Prime agrees to follow the requirement(s) listed herein and those contained in EM 385-1-1 dated 15 September 2008, and d) Prime agrees to develop written plans based on the requirements listed herein when required by this accident prevention plan.

B. The plan must consist of the following 10 sections:

1. Signature Sheet 2. Background Information 3. Statement of Safety and Health Policy 4. Responsibilities and Lines of Authority 5. Subcontractors and Suppliers	6. Training 7. Safety and Health Inspections 8. Accident Reporting 9. Plans (Programs, Procedures) 10. Risk Management Processes (AHA – Activity Hazard Analysis)

C. In addition to completing each section listed above several sections require certain supporting documents (resumes, certificates of training, organization chart, specific plans (crane lift plan medical support plan, etc.). The supporting documents and plans must be attached / inserted in the appendices listed below.

Appendix	Title	Required Contents
A	Background Information	Area Map
B	Statement of Health Policy	Copy of signed company Safety Policy
C	Responsibilities and Lines of Authority	Resumes and Certificates of 30 hour Construction Safety Course for SSHO/Safety Manager
D	Responsibilities and Lines of Authority	1. Names / proof of competency / qualification (Resumes and certificates) for persons listed in Section 4.c.; 2. Organization Chart (with names) for Key Corporate and Project personnel; 3. Incentive Program.
E	Training	Trained Personnel Listing
F	Plans	Layout Plan
G	Plans	Emergency Response Plan
H	Plans	As Applicable
I	AHAs	AHA form for each feature of work

1. SIGNATURE SHEET

a. Plan preparer (Safety manager, site safety and health officer (SSHO), or quality control representative will fill this role)**.**

Name:	**Title:**
Phone no.:	**Date:**
Signature:	

b. Plan approval (Company owner or Company / corporate officer authorized to obligate the company)**.**

Name:	**Title:**
Phone no.:	**Date:**
Signature:	

c. Plan concurrence (e.g., Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional, project QC).

Name:	**Title:**
Phone no.:	**Date:**
Signature:	

2. BACKGROUND INFORMATION

Prime Contractor:
Project name:
Contractor:
Contract no.:

a. Project description and location. Prime contractor will provide a brief description of the project to include its location.

b. ☐ A map of the project site general location and site plan – Insert in Appendix A.

c. Phases of work / Definable Features of Work. (**Examples:** Grading, excavation, formwork & shoring, steel erection, etc). NOTE: Section 10 requires an AHA for each of these phases

3. STATEMENT OF SAFETY AND HEALTH POLICY

3. ☐ **STATEMENT OF SAFETY AND HEALTH POLICY. Provide a copy of the current corporate/company Safety and Health Policy Statement.** The policy should include a detailed commitment to providing a safe and healthful workplace for all employees. The Contractor's written safety program goals, objectives, and accident experience goals for this contract shall also be incorporated. The prime contractor and his subcontractor(s) and supplier(s), and visitor(s), will comply with the policies set forth in EM 385-1-1 'Safety and Health Requirements Manual' dated 15 September 2008. Attach a copy of Company's Safety Policy at Appendix B.

a. ☐ **Company goal.** Prime contractor will provide a safe and healthful worksite that is free from recognized or anticipated hazards that could cause serious injury or death. We will strive for a zero accident rate and demand zero tolerance for unsafe acts, the workers who perpetrate them, and persons in positions of leadership who condone such actions.

4. RESPONSIBILITIES AND LINES OF AUTHORITY

a. ☐ Resumes. Prime contractor will provide resumes and training certificates for all safety personnel at Appendix C. At a minimum, the SSHO will have completed the OSHA 30 hour training and have one year experience.

b. ☐ Accountability for personnel responsible for safety.

Company owner will:

- Accept responsibility and accountability for the safety program.
- Provide leadership and guidance to supervisory personnel for the acceptance, maintenance, and enforcement of the safety program.
- Provide the necessary resources to maintain a safe and healthful project site.
- Conduct or attend monthly supervisory safety meetings.

Company owner name/phone no.

Project manager (superintendent) will:

- Implement the safety and health program at the project site.
- Conduct periodic project site inspections to verify accident prevention plan (APP) and EM 385-1-1 compliance.
- Review and act upon site safety and health inspection reports.
- Prepare man-hour reports, if applicable.
- Have authority to make spot corrections or stop work for safety purposes.
- Conduct or attend monthly supervisory safety meetings.
- Generate and/or sign ENG Form 3394 when required.

Project manager name/phone no.

Safety manager will:

- Accept administrative and oversight responsibility for the project site safety program.
- Provide technical guidance and support to the project manager, SSHO, supervisors, and foremen on safety and health issues.
- Conduct periodic worksite visits to verify APP and EM 385-1-1 compliance.
- Prepare and/or approve Activity Hazard Analysis.
- Report observations and findings to the company owner.
- Purchase personal protective equipment (PPE) and safety supplies as necessary.
- Have authority to make spot corrections or stop work for safety purposes.
- Conduct or attend monthly supervisory safety meetings.
- Generate and/or sign ENG Form 3394 when required.

Safety manager name/phone no.

Site safety and health officer will:

- Be on site at all times when work is performed.
- Conduct frequent worksite inspections to verify APP and EM 385-1-1 compliance.
- Maintain deficiency tracking system.
- Conduct or supervise on-site safety training.
- Investigate accidents and incidents as necessary.
- Purchase PPE and safety supplies as necessary.
- Have authority to make spot corrections or stop work for safety purposes.
- Conduct weekly employee safety meetings and attend monthly supervisory safety meetings.
- Generate and/or sign ENG Form 3394 when required.

Site safety and health officer name/phone no.

Supervisors (foremen) will:

- Cover appropriate activity hazard analysis before work begins.
- Conduct periodic project site inspections to verify APP and EM 385-1-1 compliance.
- Assist SSHO with accident and incident investigations.
- Have authority to make spot corrections or stop work for safety purposes.
- Conduct daily safety meetings with specific work crews.
- Conduct weekly employee safety meetings and attend monthly supervisory safety meetings.
- Generate and/or sign ENG Form 3394.

Workers will:

- Wear required PPE for each task.
- Inspect electrical cords daily before use.
- Inspect in-use hand and power tools daily before work begins. Guards will NOT be removed from tools equipped with guards.
- Inspect in-use machinery and mechanized equipment daily before work begins.
- Maintain good housekeeping at the worksite.
- Report accidents and incidents immediately to supervisor.
- Have authority to make spot corrections or stop work for safety purposes.
- Attend employee safety meetings.

c. ☐ **Competent/Qualified Persons.**

- Provide the names and proof of competency/qualification of Competent/Qualified personnel. The District SOHO will review the qualifications for acceptance. Provide information at Appendix D.
- No work shall be performed unless the designated competent/qualified person is present on the job site.
- The Competent/Qualified person shall assist with the preparation of AHAs for their areas of expertise.

d. ☐ **Lines of authority.** Provide Prime contractor lines of authority chart at Appendix D.

e. ☐ **Incentive program.** Prime contractor will provide their incentive program, if any, at Appendix D.

f. ☐ **Check the box if prime contractor will provide his own non-compliance program. If not, prime will put a check mark in paragraph's g and h.**

g. ☐ **Worker non-compliance with safety requirements.** The commission of unsafe acts will not be tolerated at the project site. In the event this type behavior occurs the following disciplinary actions will be taken:

- **First offense.** The offending party will be verbally warned and asked to correct the unsafe act (mentoring will take place if necessary - action will be noted in the daily report).
- **Second offense.** The offending party will be issued a written reprimand (action will be noted in the daily report).
- **Third offense.** The offending party will be removed from the worksite (action will be noted in the daily report).

h. ☐ **Supervisor non-compliance with safety requirements.** The condoning of unsafe acts at the worksite will not be tolerated. In the event this type behavior occurs the prime contractor will ensure disciplinary actions commensurate with the violation are taken.

5. SUBCONTRACTORS AND SUPPLIERS

a. ☐Check the box if there aren't any subcontractors or suppliers working the site.

b. Identification of subcontractors and suppliers. Prime contractor will list subcontractors and suppliers, if known, and their phone numbers.

Co:	**Ph:**
Co:	**Ph:**
Co:	**Ph:**
Co:	**Ph:**

c. ☐ Means for controlling subcontractors and suppliers. Prime contractor will meet with subcontractors and suppliers before work begins, and periodically thereafter, to coordinate activities and schedules, and to resolve any safety issues that may arise.

d. ☐ Subcontractor and supplier safety responsibilities. Subcontractors and suppliers will adhere to the requirements of the prime contractor's APP. Prime contractor will have subcontractors and suppliers sign the accident prevention plan signifying their understanding of, and compliance with, its provisions.

SUBCONTRACTOR AND SUPPLIER ACCEPTANCE OF ACCIDENT PREVENTION PLAN

Name:	**Date:**
Signature:	

Name:	**Date:**
Signature:	

Name:	**Date:**
Signature:	

Name:	**Date:**
Signature:	

Name:	**Date:**
Signature:	

6. TRAINING

a. ☐ **Safety indoctrination subjects.** Employees shall be provided with safety and health indoctrination training prior to the start of work as well as continuous safety and health training to enable them to perform their work in a safe manner. **All training, meetings, and indoctrinations shall be documented in writing by date, attendee signature/name, content, and trainer.**

- Personal protective equipment requirements for project site.
- Job hazards and the means to control/eliminate those hazards, including activity hazard analyses.
- Weekly (employees) and monthly (supervisors) safety meetings.
- Location of portable fire extinguishers.
- Location of first-aid kits.
- Identification of first-aid/CPR qualified personnel (if applicable).
- Location of emergency phone numbers.
- Location of the nearest on-site/off-site medical facility.
- Emergency plans for fires/spills.
- Accident notification and reporting procedures.
- Procedures for reporting and correcting unsafe conditions or practices.
- Current project site safety issues.

Other safety indoctrination subjects:

b. Additional training applicable to the project. **T**he prime contractor will provide employee names working the job along with their years of 'on-the-job' experience in **Appendix E**.

☐ Abrasive blasting**.**

☐ Blasting**.**

☐ Compressed gas cylinders.

☐ Concrete/masonry.

☐ Crane hand signals

☐ Elevating work platforms.

☐ Emergency response (fires/spills).

☐ Formwork/shoring.

☐ Hand/power tools.

☐ Hazard communication.

☐ Lockout/Tagout

☐ Motor/all-terrain vehicles.

☐ Pneumatic tools.

☐ Portable fire extinguishers

☐ Powered industrial trucks

☐ Pressurized equipment/systems

☐ Rotating work platform

☐ Safe lifting techniques

☐ Steel erection

☐ Vehicle-mounted elevating platforms.

☐ Wearing/maintaining PPE.

☐ Welding/cutting**.**

Other training and certifications.

c. Weekly employee safety meetings.

☐ Project manager, safety manager, site safety and health officer, or supervisor will conduct employee safety meetings.

☐ Prime contractor and subcontractor workers will attend employee safety meetings.

Day and time of employee safety meetings is listed below:

Day:	**Time:**
Day:	**Time:**

☐ Meetings will be documented with facilitator and attendee names, date, and subjects discussed.

d. Monthly supervisory safety meetings.

☐ Company owner, safety manager; or project manager will conduct supervisory safety meetings.

☐ Prime contractor and subcontractor supervisors will attend supervisory safety meetings.

Day and time of supervisory safety meeting is listed below:

Day:	**Time:**
Day:	**Time:**

☐ Meetings will be documented with facilitator and attendee names, date, and subjects discussed.

7. SAFETY AND HEALTH INSPECTION

a. ☐ Project site safety inspections.

- Company safety manager (periodically).
- Project manager (periodically).
- Supervisors and foremen (periodically).
- Site safety and health officer (SSHO) (frequently).
- Quality control representative (daily).
- Employees will conduct project site inspections of electrical cords, in-use hand and power tools, and in-use machinery/mechanized equipment (daily).

b. ☐ Inspector qualifications. Prime contractor will provide inspector qualifications for safety manager, SSHO, and quality control representative.

c. ☐ Deficiency log. A deficiency log will be generated after inspections using the criteria listed below. Follow-up inspections will be performed to ensure identified deficiencies have been corrected.

- Date deficiency identified.
- Description of deficiency.
- Name of person responsible for correcting deficiency.
- Projected resolution date.
- Date actually resolved.

d. External inspections. Are external inspections or certifications required? ☐ Yes ☐ No

If yes please explain.

8. ACCIDENT REPORTING

a. ☐ **Exposure data.** Man-hours worked will be reported input into the QCS system by the 25th of every month. If QCS is not used, an approved form may be used and submitted.

b. ☐ **Accident notification.** Prime contractor will report accidents and incidents as soon as they happen to the contracting officer's representative (COR). The COR, in turn, will notify the AED Safety Office according to the notification information below. **For accidents and incidents that require immediate notification the prime contractor will seal-off the site and await for the AED board of investigation team.**

Immediate notification (telephonically).

- Fatality.
- Permanent total disability.
- Permanent partial disability.
- Three or more persons admitted to a hospital.
- Property damage of $200,000 damage or more.

For all other accidents below, report as soon as possible but not more than 24-hours following the accident (telephonically and/or email).

- Lost time (**Note:** Lost time is defined as any loss of time away from work beyond the day or shift on which it occurred).
- Property damage not less than $2,000 but no greater than $200,000.
- Treatment of medical injuries not resulting in lost time.

c. ☐ **Accident recording.** Prime contractor will coordinate with the COR on forwarding the appropriate documents to the AED Safety Office.

Reportable accident and incident requirements. All accidents and incidents to include occupational injuries and illnesses that result in medical treatment with no lost time, and property damage of less than $2,000, will be documented in an email and sent to the AED Safety Office within 24 hours.

Recordable accident and incident requirements. All accidents and incidents to include occupational injuries and illnesses that result in lost time (measured in days) or property damage of $2,000 or more will be documented on ENG Form 3394 'U.S. Army Corps of Engineers Accident Investigation Report' dated March 1999 and submitted to the AED Safety Office within five (5) days of the occurrence.

9. PLANS (PROGRAMS, PROCEDURES)

A. LAYOUT PLAN – MUST INSERT IN APPENDIX F.

B. EMERGENCY RESPONSE PLAN – SEE APPENDIX G.

C. MEDICAL SUPPORT.

a. General requirements.

☐ An effective means of communication (hard-wired, cellular, or two-way radio and tested in the area of use for functionality) with emergency response source access will be provided along with transportation for injured workers.

☐ Telephone numbers of medical facilities, physicians, and ambulances will be conspicuously posted (at a minimum these numbers will be posted near project-office telephones).

☐ A map showing the best route to the nearest medical facility will be conspicuously posted.

Medical Facility Name:
Address:
Phone Number(s):
Distance to the nearest Medical Facility:

b. Type of medical support. Mark one box to indicate the number of employees anticipated on site (less than 100; 99 to 300; or more than 300).

☐ **Less than 100 persons employed on any one shift.** On sites with less than 100 workers, and where neither a first-aid station nor infirmary is available, prime contractor will provided a first-aid kit for every 25 persons. These kits will have latex gloves and a CPR shield.

Location of first-aid kits.

☐ **Trained first-aid/CPR employees.** Prime contractor will have at least two employees on each shift trained to administer first-aid/CPR when a medical facility or physician is not accessible within five minutes of an injury to a group of two or more employees. Provide training certificates or copy of certification card.

Employee Name:	Certification expiration date:
Employee Name:	Certification expiration date:

☐ **More than 99 but less than 300 persons employed on any one shift.** On sites with more than 99 but less than 300 workers the prime contractor will establish and equip, as directed by a licensed physician, a first-aid station. Identification signs and directional markers will be used to denote the station's location. Emergency lighting will be provided and a first-aid attendant will be on duty at all hours when work is in progress.

☐ **300 or more persons employed on any one shift.** On sites with 300 or more workers the prime contractor will establish and equip, as directed by a licensed physician, an infirmary. Identification signs and directional markers will be used to denote the infirmary's location and emergency lighting will be provided.

Infirmaries will provide reasonably quiet conditions with some privacy, lighting, climate control, adequate toilet facilities, hot and cold water, drainage, and electrical outlets. Walls and ceilings will be finished with two coasts of white paint, windows and doors screened, and the floors made of impervious construction.

A properly-equipped emergency vehicle, helicopter, or mobile first-aid unit will be provided during work hours (the emergency vehicle will not be used for any other purpose). A registered nurse, licensed physician's assistant, certified emergency medical technician, or a licensed practical nurse (approval by a licensed physician) will be assigned on a full-time basis to each work site.

D. PERSONAL PROTECTIVE EQUIPMENT (PPE).

a. General Requirements.

☐ Prime contractor will conduct hazard assessments to find out the type(s) of PPE required.

☐ Prime contractor will ensure workers know how to put on, adjust, wear, remove, and use PPE. PPE will be inspected before each use, maintained in a serviceable and sanitary condition, and stored so the integrity of the equipment is protected. This training will be documented with the name of the facilitator/attendees, date, and subjects taught.

☐ Damaged and defective equipment will not be used but rather marked 'out-of-service' and removed from the project site.

b. PPE used on the project site.

☐ Minimum required clothing.
☐ Hard hat.
☐ Safety glasses/goggles.
☐ Face shield.
☐ Ear plugs/muffs.
☐ Work gloves.
☐ Welding gloves.
☐ Steel-toed/hard-soled shoes.
☐ Welding helmet.
☐ Welding goggles.
☐ Welding hand-held shields.
☐ Full-body harness w/lanyard(s).
☐ Reflective vest.
☐ Dust mask.
☐ Half-face/full-face respirator.
☐ Life ring.
☐
☐

Other PPE used on the project site.

<u>E. OTHER PLANS:</u> Must check if "YES" or NA (not applicable) for all listed plans. If you check "YES" then you must mark the box in section E.1 and insert your company plan at Appendix H when a written plan is required.

PLAN NAME	YES	NA	PLAN NAME	YES	NA
Plan for prevention of alcohol and drug abuse (01.C.02)			Contingency plan for severe weather (19.A.03);		
Site sanitation plan (Section 02)			Float Plan (19.F.04);		
Access and haul road plan (4.B)			Site-Specific Fall Protection & Prevention Plan (21.C);		
Respiratory protection plan (05.G)			Demolition plan (to include engineering survey) (23.A.01);		
Health hazard control program (06.A)			Excavation/trenching plan (25.A.01);		
Hazard communication program (06.B.01)			Emergency rescue (tunneling) (26.A.);		
Lead abatement plan (06.B.05 & specifications);			Underground construction fire prevention and protection plan (26.D.01);		
Asbestos abatement plan (06.B.05 & specifications);			Compressed air plan (26.I.01);		
Safety Program (06.E.03.a);			Formwork and shoring erection and removal plans (27.C);		
Abrasive blasting (06.H.01);			PreCast Concrete Plan (27.D);		
Heat/Cold Stress Monitoring Plan (06.I.02)			Lift slab plans (27.E);		
Crystalline Silica Monitoring Plan (Assessment) (06.M) ;			Steel erection plan (27.F.01);		
Night operations lighting plan (07.A.08);			Site Safety and Health Plan for HTRW work (28.B);		
Fire Prevention Plan (09.A);			Blasting Safety Plan (29.A.01);		
Wild Land Fire Management Plan (09.K);			Diving plan (30.A.13);		
Hazardous energy control plan (12.A.01);			Confined space Program (34.A).		
Critical lift Plan (16.H);					

☐ **Temporary facilities/layout plan (Section 4.A.01).**
☐ **NA.**
*****Written Company plan required**

☐ **Emergency response plans for fires/spills (Section 01.E.01).**
☐ **NA.**
*****Written Company plan required.**

- Discuss escape procedures and routes.
- Designate critical project site operations and discuss how the operations will be protected.
- Discuss employee accountability procedures following an evacuation.
- Discuss employee roles in emergencies to include responsibilities and equipment used.
- Discuss the location of emergency contact information to include reporting procedures.

☐ **Plan for Prevention of Alcohol and Drug Abuse (Section 01.C.02).**
☐ **NA.**
*****Written Company plan required**

☐ **Site sanitation plan (Section 02.A).**
☐ **NA.**
No written plan required.

- An adequate supply of drinking water (cool water during hot weather) will be provided.
- Portable drinking-water dispensers will have a tap – water will not be dipped. Dispensers will be clearly marked as "Drinking Water" and will be capable of being closed. Use of a common cup will be prohibited unless sanitized between uses.
- When sanitary sewers are not available porta-johns will be provided.
- Washing facilities will have running water, soap, and an individual means of drying (hand sanitizer will be used when running water is not practical).
- No food or beverage will be stored or consumed in a toilet room or in any area that is exposed to a toxic material.
- An adequate number of waste receptacles will be provided. Receptacles will have covers that fit tightly, be emptied at least daily, and be maintained in a sanitary condition.

☐ **Access and haul roads plan (Section 04.B).**
☐ **NA.**
*****Written Company plan required.**

- Discuss equipment to be used on the road, traffic density, and the hours of operation.
- Discuss road layout and widths, horizontal and vertical curve data, and sight distances.
- Discuss sign and signalperson requirements, road markings, and traffic-control devices.
- Discuss how drainage will be controlled.

- Outline contact between vehicles and the public to include implementing safety controls at each one of these places.
- Discuss the maintenance needed to keep the roads hard, smooth, and as dust-free as possible.

☐ **Respiratory protection plan (Section 05.G).**
☐ **NA.**
*****Written Company plan required.**

- Discuss the use of dust masks to protect workers from large particulate matter.
- Discuss the use of half-faced respirators to protect workers from small particulate matter to include fumes, mists, and aerosols.
- Discuss sealing a half-face respirator properly.
- Discuss cleaning a half-faced respirator properly
- Discuss inspecting and storing a half-face respirator properly.

☐ **Health hazard and control plan (Section 06.A).**
☐ **NA.**
*****An activity hazard analysis (AHA) will be completed for each applicable area.**

- Discuss hazardous substances.
- Discuss hot substances (heating devices and melting kettles).
- Discuss harmful plants, animals, and insects.
- Discuss ionizing radiation.
- Discuss the use of lasers.
- Discuss ventilation and exhaust systems.

☐ **Hazard communication plan (Section 06.B.01).**
☐ **NA.**
*****Written Company plan required.**

- A current inventory of project site hazardous chemicals will be prepared.
- Material safety data sheets for hazardous substances will be kept at the project site.
- Containers will be labeled with the type of hazardous substance they contain.
- Workers will be notified about new substances that are brought onto the worksite to include the hazards associated with them.

☐ **Lead Abatement Plan (Section 06.B.05).**
☐ **NA.**
*****Written Company plan required.**

☐ **Asbestos Abatement Plan (Section 06.B.05).**
☐ **NA.**
*****Written Company plan required.**

☐ **Confined space plan (Section 34.A.).**
☐ **NA.**
*****Written Company plan required.**

- Discuss responsibilities of attendants, entrants, and entry supervisors.
- Train workers how testing and monitoring equipment is used.
- Discuss the type of ventilating equipment needed to obtain acceptable entry conditions.
- Discuss the type of communication equipment to be used.
- Discuss the PPE to be used when engineering and/or administrative controls fail to protect workers adequately.
- Discuss the lighting equipment to be used.
- Discuss the equipment to be used for entrant ingress and egress.
- Discuss rescue procedures to include required equipment and emergency phone numbers.

☐ **Hazardous energy control plan (Section 12.A.12).**
☐ **NA.**
*****Written Company plan required.**

- Discuss why the lock out/tag out procedure is being used.
- Communicate and coordinate the lockout/tagout procedure with the workers being affected by the procedure and the government's designated authority.
- Discuss the procedural steps in place for shutting down, isolating, blocking, and securing systems to control the release of hazardous energy to include the person(s) responsible for performing this task.
- Discuss the procedural steps in place for placing, removing, and transferring lockout/tagout devices to include the person(s) responsible for performing this task.
- Discuss the procedural steps in place for placing and removing locks and/or tags to include the person(s) responsible for performing this task.
- Discuss the procedures for testing the effectiveness of isolating hazardous energy to include lockout/tagout.
- Discuss emergency scenarios that could arise during the lockout/tagout procedure to include the actions to be taken for safely responding to an emergency.
- Discuss the procedure for transferring removal authority from one person to another.

☐ **Critical lift plan (Section 16.H.02).**
☐ **NA.**
*****Written Company plan required.**

- Designate a crane operator, lift supervisor, and rigger (and state their qualifications).
- Describe ground conditions and outrigger and crawler track requirements.
- Discuss crane position, height of the lift, load radius, and boom angle and length for the entire range of the lift.

- Discuss the size and weight of the load to include any crane and rigging components that add to the weight.
- Discuss the rigging plan to include lift points, hardware requirements, and procedures.
- Discuss coordination of the lift and how individual players will communicate with each other.
- Discuss tandem and tailing-crane lift procedures, if applicable.
- Describe environmental conditions which, when in effect, will stop the lift.

☐ **Demolition plan (Section 23.A.01).**
☐ **NA.**
*****Written Company plan required.**

- A demolition plan based on engineering, lead, and asbestos surveys will be prepared.
- Utilities and other service lines will be shut-off, capped, or otherwise controlled outside the building line.
- Service lines will be temporarily relocated and protected if utilities are maintained.
- If hazardous building materials and chemicals, flammable materials, explosives, gases, or other dangerous substances have been used in building construction, pipes, tanks, or other equipment on the property they will be controlled or eliminated before demolition begins.
- Glass fragmentation will be controlled.
- Mechanical equipment will not be used on floors or other working surfaces unless the floors and surfaces are of sufficient strength to support the loads.
- Chute openings will be protected by a guardrail 42” in height. When debris is dropped through floor openings without chutes, the openings and the area onto which the material is dropped will be enclosed with barricades not less than 42” in height and not less than 6’ back from the protected edge of the opening above. Signs warning of the fall-material hazard will be posted at each side of the debris opening at each floor.
- No wall section more than 6’ in height will stand without lateral bracing unless the wall was designed and constructed to stand without this support and its condition is determined safe enough to be self-supporting.
- Workers will not be allowed in the area directly underneath floor arches when they’re being removed. The area will be barricaded to prevent access and signed to warn of the hazard.
- Steel construction will be dismantled column-by-column and tier-by-tier (columns may be in two-story lengths).

☐ **Compressed air and gas systems plan (Section 20.B).**
☐ **NA.**
No written plan required.

- Compressors and related equipment will be located so safe access is provided to all parts of the equipment for operation, maintenance, and repairs.
- Air hose, pipes, valves, filters, and other fittings will be pressure-rated by the manufacturer and not exceeded. Defective hose will be removed from service.
- Hose will not be laid over walkways, steps, ladders, and scaffolds to create a tripping hazard.
- Compressed air will not be used to blow dirt from the hands, face, or clothing.
- A speed governor independent of the unloaders will be installed on air compressors except those driven electrical induction or electrical synchronized motors.
- Piping will be equipped with traps or other means for removing liquid from the lines.
- Air receivers will be installed so that all drains, hand holes, and manholes are accessible.

☐ **Formwork/shoring (Section 27.C.02.b).**
☐ **NA.**
*****Written Company plan required.**

- Formwork, shoring, and bracing will be erected and maintained to safety support all vertical and lateral loads that might be applied until such loads can be supported by the structure.
- Sills will be sound, rigid, and capable of carrying the maximum intended load.
- Base plates, shore heads, extension devices, or adjustment screws will be in firm contact with the sill and form material and, as applicable, will be snug against the posts.
- Diagonal bracing will be provided in vertical and horizontal planes to provide stiffness and to prevent buckling of the individual members.
- Forms and shores (except those on slab or grade and slip forms) will not be removed until the concrete has gained sufficient strength to support its weight and all superimposed loads.

☐ **Lift-Slab Operations (Jacking plan) (Section 27.E).**
☐ **NA.**
*****Written Company plan required.**

- Manufacturer's rated capacity will be legibly marked on all jacks and not exceeded.
- Jacks will be designed and installed so they won't continue to lift when overloaded.
- Jacks will have a positive stop to prevent over-travel.
- Base of the jack will be blocked or cribbed. If there's a possibility of slippage a wood block will be placed between the jack's metal cap and the load.
- Maximum number of manually-controlled jacks on one slab will be limited to 14.
- During lifting all point of the slab support will be kept within ½" of that needed to maintain the slab in a level position.
- No one will be permitted under the slab during jacking operations.

☐ **Personal Fall Protection Program (Section 21.C.01).**
☐ **NA.**
*****Written plan required.**

- Workers will be protected by guardrail, personal fall protection, safety nets, catch platforms, or temporary floors in the following situations: Worker can fall 6' or more; on access ways or work platforms over water, machinery, or dangerous operations; on runways where workers can fall 4' or more; and on all exposed sides of stairways and ladder-floor openings.
- Top rails, mid rails, and toe boards will be able to withstand outward and downward forces of 200, 150, and 50 lbs., respectively.
- Wire rope can be used as a top or mid rail under the following conditions: When the posts are spaced no farther than 8"; deflection of the rope under 200 lbs. of force is less than 3"; and the rope if flagged for visibility. Synthetic and natural-fiber rope will not be used.
- Paneling and screening will be in place from the mid rail to the toe board when material is piled higher than the toe board.
- Personal fall protection will consist of a full-body harness (not chest-wait units or body belts), lifeline, and anchorage point.

- Two lanyards will be used when vertical movement is required and when a horizontal lifeline is inappropriate.
- Anchorages capable of supporting 5,000 lbs. per worker will be independent of anchorages used to support or suspend platforms. Lifelines will not be attached to guardrails or hoists but rather to the structure.
- Floor holes will be covered completely and securely. If the cover to an open hole is missing the hole will be barricaded with a guardrail. Workers laboring by wall openings 6' or more above a lower level will be protected by a guardrail or personal fall protection.
- Roofers will be protected by the following forms of fall protection: Guardrails; personal fall protection; a warning line 6' from the roof's edge, or a safety-monitoring system.
- Excavations will be guarded when they are 6' or more in depth and not readily seen because of plant growth or other visual barriers.

☐ **Steel Erection Plan (Section 27.F).**
☐ **NA.**
*****Written Company plan required.**

☐ **Night operations lighting plan (Section 7.A.08).**
☐ **NA.**
*****Written Company plan required.**

☐ **Fire Prevention Plan (Section 09.A).**
☐ **NA.**
*****Written Company plan required.**

- Discuss the major worksite fire hazards to include potential ignition sources.
- Describe the types of fire-suppression systems to be used (portable fire extinguishers, ect.).
- Discuss employee responsibilities for maintaining the fire-prevention equipment and systems.
- Discuss employee responsibilities for controlling fuel-source hazards.
- Discuss housekeeping procedures to include the removal of waste materials.

☐ **Excavations (Section 25.A).**
☐ **NA.**

*****Written Company plan and AHA required for excavations or trenches greater than 5 ft (1.5 m) in depth. For excavations or trenches less than 5 ft (1.5 m) in depth, An AHA is required but plan is optional.**

- Workers will not labor in excavations in which there is accumulated water or where water is accumulating until the water hazard is controlled.
- Shoring will be used for unstable soil or depths greater than 5' unless benching, lay-back, or another acceptable plan can be implemented.
- In excavations less than 20' in depth the maximum slope will be 34 degrees measured from horizontal (1 1/2' horizontal to 1' vertical).
- Excavations will not go below adjacent structures unless they are underpinned or determined safe by a registered professional engineer.
- Excavated material will be placed a minimum of 2' from the excavation's edge.

- Stairs, ramps, or ladders will be provided to workers who are required to enter excavations greater than 4' in depth. This equipment will be located so no more than 25' of lateral travel is required to escape the excavation.
- Ladders will extend 3' past the excavation's edge.
- Personal access ramps will be 4' wide with guardrails while equipment ramps will be 12' wide with curbs of 8" X 8" timbers or equivalent.
- Protection for excavations exposed to the public will meet guardrail requirements while protection against vehicles will be able to withstand the impact forces with traffic.
- Excavations 6' or more in depth, or where workers are routinely exposed to a hazard (impalement or hazardous material), will have a barricade no closer to the edge than 6' with a warning (tape, flags, act.) located 3-4' above the ground.
- Excavations less than 6' in depth will have a barricade no closer than 6"/no farther than 6'.

☐ **Scaffolds (Section 21.J.01, 21.J.02 on page 509 and 22.A and 22.B).**
☐ **NA.**
No written plan required (included as part of the Fall Protection Plan).

- Scaffolds will be level and plumb and erected with base plates upon mudsills or other adequate foundation. Rolling scaffolds will have wheels locked and/or outriggers secured in place.
- Work near overhead power lines will not commence until a survey is made to ascertain a safe clearance distance from the lines. Scaffolds will not be erected or used near power lines until the lines are insulated, de-energized, or rendered safe.
- Scaffolds and their components will be capable of supporting four times the maximum anticipated load. If a scaffold's height is more than four times the minimum base dimension (to include the width added by outriggers) it will be secured to the wall or structure.
- Guardrails will be installed on open sides and ends.
- Platforms will be a minimum of 18" in width and extend over their end supports by at least 6" but no more than 12" unless cleated or restrained by hooks or equivalent means. Platforms will overlap over supports by a minimum of 12" unless nailed together or restrained from movement.
- Platform area will be fully-planked with no greater than 1" gaps between adjacent platforms, and platforms and uprights.
- Scaffold access will be from ladders (bottom rung no greater than 24" in height), stair towers, ramps, and walkways but not from cross-braces.
- If a worker can fall 6' or more to a lower level they will be protected by a guardrail or a full-body harness with lifeline and anchorage point.

☐ **Machinery/mechanized equipment (Section 18.G).**
☐ **NA.**
No written plan required.

- Before machinery and mechanized equipment is placed into service it will be inspected and certified as safe by a competent person.
- Front-end loaders, bulldozers, backhoes, cranes, and similar equipment will have at least one dry chemical or CO2 portable fire extinguisher on-board with a minimum rating of 5-B:C.
- Self-propelled construction equipment will have a reverse signal alarm.

- Belts, gears, chains, shafts, pulleys, drums, and other rotating and moving equipment parts will be guarded when exposed to contact by persons or when they otherwise create a hazard.
- Crane will operate at least 10' away from overhead power lines.
- An operating manual, log book, load chart, and document detailing operating limits in windy or cold weather conditions will be in the cab when the crane is operating.
- Crane will be within one degree of level and outriggers fully-extended when in use. Wheels will be off the ground at every setting.
- Crane outrigger floats will be securely attached. Float blocking will be of sufficient size and stability to support the total area. Blocking will not be performed under the outrigger beams.
- Crane's rear swing radius will be barricaded.
- Riding on or standing under loads is prohibited.

☐ **Electrical (Section 11).**
☐ **NA.**

*****A sketch of proposed temporary power distribution system shall be submitted. No written plan required.**

- Electrical work shall be performed by Qualified Personnel with verifiable credentials.
- An AHA and written work procedures must be prepared for unusual or complicated work activities or any activity identified by the Qualified Person.
- Work activity adjacent to energized overhead power lines will not be initiated until a survey has been made to ascertain the safe clearance distance from the lines.
- Whenever possible, all circuits and equipment will be de-energized before work is started and personnel protected by lockout/tagout and clearance procedures, and grounding.
- Live parts of wiring or equipment will be guarded.
- Transformer banks and high-voltage equipment will be protected against unauthorized access and those entrances not under constant observation will be kept locked. Metallic enclosures will be grounded and signs warning of high voltage and prohibiting unauthorized entrance posted.
- Flexible cords will be inspected by the user daily. Cord sets used on construction sites or in damp locations will contain an equipment ground wire and have a plug attached.
- Flexible cords will be protected from damage caused by vehicles, foot traffic, sharp corners, and pinching. Cords passing through holes will be protected by suitable means.
- Flexible cords will only be used in continuous lengths. Cords No. 12 or larger may be used with a splice if the splice is made by a qualified electrician, the insulation is equal to the cord being spliced, and the wire connections are soldered. No wire nuts will be used.
- Flexible cords and cables will not be secured by staples or hung from nails or bare wire.
- Enclosures containing over-current protective devices will be provided with lockable, close-fitting doors. Circuit-breakers, switches, fuse panels, and motor controllers located out-of-doors or in wet locations will be contained in weatherproof enclosures or cabinets. When receptacles are used in wet locations they will be contained in a weatherproof enclosure the integrity of which is not affected when a plug is inserted.
- All electrical circuits will be grounded.
- Portable and semi-portable electrical tools and equipment will be grounded by a multi-conductor cord having a polarized plug with a grounding conductor. Double-insulated tools do not have to be grounded.
- Grounding rods with pipe electrodes will be used in 8' lengths and driven to full depth.
- Temporary lights will not be suspended by their electric wire unless designed for suspension.

- Bulbs attached to temporary lighting strings and extension cords will be protected by guards. Empty light sockets (broken bulbs, ect.) will be immediately filled.
- All receptacle outlets that provide temporary electrical power during construction or demolition shall have GFCI protection.

10. RISK MANAGEMENT PROCESS (AHA – ACTIVITY HAZARD ANALYSIS)

For each major phase/activity of work an Activity Hazard Analysis shall be provided detailing project-specific work sequences, the specific anticipated hazards, control measures to be implemented to eliminate or reduce each hazard, the equipment to be used, inspection requirements, and required training.

Work shall not begin until the AHA for the work activity has been accepted by the COR or Safety Office and discussed with all engaged in the activity including the contractor and subcontractor(s) .

The names of the Competent/Qualified Person(s) required for a particular activity shall be identified and included in the AHA.

The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified personnel.

Attach AHAs for the first three features of work to Appendix I.

ACTIVITY HAZARD ANALYSIS

ID No.	**FEATURE OF WORK:**	
Contract No.	**Project:**	**Location:**
Date:	**Activity:**	**Estimated Start Date:**
PRINCIPAL STEPS	**POTENTIAL SAFETY/HEALTH HAZARDS**	**RECOMMENDED CONTROLS**
Identify the principal steps involved and the sequence of work activities.	***Analyze each principal step for potential hazards.***	***Develop specific controls to eliminate or reduce each hazard to an acceptable level of risk.***
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
List equipment to be used in the work activity.	***List inspection requirements for the work activity.***	***List training requirements, include hazard communication.***
Prepared by: Contractor's competent/qualified person(s) (Signature & Date)		
☐ **- AHA Accepted as Part of project Accident Prevention Plan; or** ☐ **- This AHA has been reviewed by the designated AED COR and is acceptable for use on this project. This acceptance is predicated on satisfactory implementation in the field by the contractor and will be rescinded if the contractor fails to enforce the controls identified in this document and/or the requirements identified in EM385-1-1. This AHA will be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).**		**Name, COR (Signature & Date)**

APPENDIX A

SITE MAP

APPENDIX B.

STATEMENT OF SAFETY AND HEALTH POLICY

APPENDIX C.

RESPONSIBILITIES AND LINES OF AUTHORITY

Resumes and Training Certificates Of Safety Personnel

APPENDIX D.

RESPONSIBILITIES AND LINES OF AUTHORITY

1. Proof of competency / qualification (Resumes and certificates) for Competent/Qualified persons listed below.

2. Organization Chart (with names) for Key Corporate and Project personnel.

3. Corporate/Company Incentive Program and/or Worker Non-Compliance Program (if not using generic option).

Confined space.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Cranes/derricks.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Electrical.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Excavations.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Explosive-actuated tools.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Fall Protection.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Machinery/mechanized equipment.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Respiratory Protection

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Rigging

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

Scaffolding.

Name:	**Training:**
Name:	**Training:**
Name:	**Training:**

APPENDIX E.

TRAINING

SPECIFIC WORKER TRAINING

Abrasive blasting.

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Blasting.

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Compressed gas cylinders.

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Concrete/Masonry

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Crane Hand Signals

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Elevating Work Platforms

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Emergency Response

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Formwork/Shoring

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Hand/Power Tools

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Hazard Communication

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Hazardous Waste

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Lockout/tagout.

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Motor/all-terrain vehicles

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Pneumatic tools

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Portable Fire Extinguishers

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Powered Industrial Trucks

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Pressurized Equipment/systems

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Rotating Work Platform

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Safe Lifting Techniques

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Steel Erection

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Vehicle-Mounted Elevating Platforms

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Wearing/Maintaining PPE

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

Welding/cutting

Name:	**Years of Experience:**
Name:	**Years of Experience:**
Name:	**Years of Experience:**

APPENDIX F.

LAYOUT PLAN

APPENDIX G.

EMERGENCY RESPONSE PLAN

APPENDIX H.

REQUIRED WRITTEN PLANS

APPENDIX I.

RISK MANAGEMENT PROCESSES (AHA – ACTIVITY HAZARD ANALYSIS)

ACTIVITY HAZARD ANALYSIS

ID No.	**FEATURE OF WORK:**	
Contract No.	**Project:**	**Location:**
Date:	**Activity:**	**Estimated Start Date:**
PRINCIPAL STEPS	**POTENTIAL SAFETY/HEALTH HAZARDS**	**RECOMMENDED CONTROLS**
Identify the principal steps involved and the sequence of work activities.	***Analyze each principal step for potential hazards.***	***Develop specific controls to eliminate or reduce each hazard to an acceptable level of risk.***
EQUIPMENT TO BE USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
List equipment to be used in the work activity.	***List inspection requirements for the work activity.***	***List training requirements, include hazard communication.***
Prepared by: Contractor's competent/qualified person(s) (Signature & Date)		
☐ - **AHA Accepted as Part of project Accident Prevention Plan; or** ☐ - **This AHA has been reviewed by the designated AED COR and is acceptable for use on this project. This acceptance is predicated on satisfactory implementation in the field by the contractor and will be rescinded if the contractor fails to enforce the controls identified in this document and/or the requirements identified in EM385-1-1. This AHA will be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).**		**Name, COR (Signature & Date)**

SPECIFICATION SECTION 01770

CLOSEOUT PROCEDURES

1. GENERAL

1.1 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 Section 01335 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data

Equipment/Product Warranty List; G

Submit Data Package 1 in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

As-Built Drawings; G

Record Of Materials; G

Equipment/Product Warranty Tag; G

1.2 PROJECT RECORD DOCUMENTS

1.2.1 AS-BUILT DRAWINGS

As built drawings shall be submitted in accordance with Section 01780A CLOSEOUT SUBMITTALS

1.2.2 AS-BUILT RECORD OF MATERIALS

Furnish a record of materials.

Where several manufacturers' brands, types, or classes of the item listed have been used in the project, designate specific areas where each item was used. Designations shall be keyed to the areas and spaces depicted on the contract drawing. Furnish the record of materials used in the following format:

MATERIALS DESIGNATION	SPECIFICATION	MANUFACTURER	MATERIALS USED (MANUFACTURER'S DESIGNATION)	WHERE USED

1.3 EQUIPMENT/PRODUCT WARRANTIES

1.3.1 EQUIPMENT/PRODUCT WARRANTY LIST

The Contractor shall develop a warranty management plan which shall contain information relevant to the clause Warranty of Construction. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase shall be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Approved information shall be assembled in a binder and shall be turned over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. A joint 4 month and 9 month warranty inspection shall be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

c. A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.
5. Warranties and terms of warranty. This shall include one-year overall warranty of construction. Items which have extended warranties shall be indicated with separate warranty expiration dates.
6. Cross-reference to warranty certificates as applicable.
7. Starting point and duration of warranty period.
8. Summary of maintenance procedures required to continue the warranty in force.
9. Cross-reference to specific pertinent Operation and Maintenance manuals.

10. Organization, names and phone numbers of persons to call for warranty service.

11. Typical response time and repair time expected for various warranted equipment.

d. The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

e. Procedure and status of tagging of all equipment covered by extended warranties.

f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.3.2 PERFORMANCE OF WARRANTY WORK

In the event the Contractor fails to commence and diligently pursue any construction warranty work required, the Contracting Officer will have the work performed by others, and after completion of the work, will charge the remaining construction warranty funds of expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

Following oral or written notification of required construction warranty repair work, the Contractor shall respond in a timely manner. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Contracting Officer to proceed against the Contractor.

1.3.3 PRE-WARRANTY CONFERENCE

Prior to contract completion, and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor shall furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, shall be continuously available, and shall be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.3.4 WARRANTY TAGS

At the time of installation, each warranted item shall be tagged with a durable, oil and water resistant tag approved by the Contracting Officer. Each tag shall be attached with a copper wire and shall be sprayed with a silicone waterproof coating. The date of acceptance and the QC signature

shall remain blank until project is accepted for beneficial occupancy. The tag shall show the following information.

a. Type of product/material_____

b. Model number_____

c. Serial number_____

d. Contract number_____

e. Warranty period _____ from _____ to_____

f. Inspector's signature_____

g. Construction Contractor_____

Address_____

Telephone number_____

h. Warranty contact_____

Address_____

Telephone number_____

i. Warranty response time priority code_____

j. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

1.4 MECHANICAL TESTING AND BALANCING

All contract requirements for testing/adjusting/balancing shall be fully completed, including all testing, prior to contract completion date. The time required to complete all testing/adjusting/balancing is included in the allotted calendar days for completion.

1.5 FINAL CLEANING

The premises shall be left broom clean. Stains, foreign substances, and temporary labels shall be removed from surfaces. Carpet and soft surfaces shall be vacuumed. Equipment and fixtures shall be cleaned to a sanitary condition. Filters of operating equipment shall be replaced. Debris shall be removed from roofs, drainage systems, gutters, and downspouts. Paved areas shall be swept and landscaped areas shall be raked clean. The site shall have waste, surplus materials, and rubbish removed. The project area shall have temporary structures, barricades, project signs, and construction facilities removed. A list of completed clean-up items shall be submitted on the day of final inspection.

-- END OF SECTION --

SECTION 01780A

CLOSEOUT SUBMITTALS

1. GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. 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 Section 01335 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

As-Built Drawings

Drawings showing final as-built conditions of the project. The final CAD as-built drawings shall consist of **two sets** of electronic CAD drawing files in the specified format (see the AED CAD Design Requirements: CAD Design Guide), and **two half-size and two full-size paper copies** of the approved as-built drawings..

SD-03 Product Data

As-Built Record of Equipment and Materials

Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

Warranty Management Plan

One set of the warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. The Contractor shall furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.

Warranty Tags

Two record copies of the warranty tags showing the layout and design.

Final Cleaning

Two copies of the listing of completed final clean-up items.

1.2 PROJECT RECORD DOCUMENTS

1.2.1 AS-BUILT DRAWINGS

This paragraph covers as-built drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files," "working

as-built drawings" and "final as-built drawings" refer to contract drawings which are revised to be used for final as-built drawings.

1.2.1.1 GOVERNMENT FURNISHED MATERIALS

One set of electronic CAD files in the specified software and format revised to reflect all bid amendments will be provided by the Government at the preconstruction conference for projects requiring CAD file as-built drawings.

1.2.1.2 WORKING AS-BUILT AND FINAL AS-BUILT DRAWINGS

a. The Contractor shall revise 2 sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project. These working as-built marked drawings shall be kept current on a weekly basis and at least one set shall be available on the jobsite at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. Final as-built drawings shall be prepared after the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project). The working as-built marked prints and final as-built drawings will be jointly reviewed for accuracy and completeness by the Contracting Officer and the Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the working and final as-built drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the as-built drawings. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of updated drawings. In addition, if the Contractor fails to provide the final as-built drawings within thirty (30) calendar days after contract completion, the Contracting Officer will deduct from the final contract payment an amount representing the lesser of 1% of the total contract cost or $50,000. The working and final as-built drawings shall show, but shall not be limited to, the following information:

b. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Valves, splice boxes and similar appurtenances shall be located by dimensioning along the utility run from a reference point. The average depth below the surface of each run shall also be recorded.

c. The location and dimensions of any changes within the building structure.

d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or 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, invert elevations and grades of drainage installed or affected as part of the project construction.

g. Changes or modifications which result from the final inspection.

h. Where contract drawings or specifications present options, only the option selected for construction shall be shown on the final as-built prints.

i. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, the Contractor shall furnish a contour map of the final borrow pit/spoil area elevations.

j. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.

k. Modifications (change order price shall include the Contractor's cost to change working and final as-built drawings to reflect modifications) and compliance with the following procedures.

1. Directions in the modification for posting descriptive changes shall be followed.
2. A Modification Circle shall be placed at the location of each deletion.
3. For new details or sections which are added to a drawing, a Modification Circle shall be placed by the detail or section title.
4. For minor changes, a Modification Circle shall be placed by the area changed on the drawing (each location).
5. For major changes to a drawing, a Modification Circle shall be placed by the title of the affected plan, section, or detail at each location.
6. For changes to schedules or drawings, a Modification Circle shall be placed either by the schedule heading or by the change in the schedule.
7. The Modification Circle size shall be 12.7 mm 1/2 inch diameter unless the area where the circle is to be placed is crowded. Smaller size circle shall be used for crowded areas.

1.2.1.3 DRAWING PREPARATION

The as-built drawings shall be modified as may be necessary to correctly show the features of the project as it has been constructed by bringing the

contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints shall be neat, legible and accurate. These drawings are part of the permanent records of this project and shall be returned to the Contracting Officer after approval by the Government. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

1.2.1.4 COMPUTER AIDED DESIGN AND DRAFTING (CAD) DRAWINGS

a. Only personnel proficient in the preparation of CAD drawings shall be employed to modify the contract drawings or prepare additional new drawings. Additions and corrections to the contract drawings shall be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols shall be the same as the original line colors, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings. Additions and corrections to the contract drawings shall be accomplished using CAD files. The Contractor will be furnished "as-designed" drawings in AutoCAD Release 2007 or Microstation V8 format compatible with a Windows XP operating system. The electronic files will be supplied on compact disc, read-only memory (CD-ROM). The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings.

b. Prior to submittal of the first design submittal involving CAD drawings, the Contractor shall prepare one typical CAD drawing for the project and furnish, via ENG Form 4025, the electronic CAD drawing file for review and approval by the Contracting Officer. All Government comments involving changes to this single drawing shall be accomplished and resubmittal(s) made until the Government is satisfied that all CAD Standards are being followed and all subsequent drawings will also be in compliance with these Standards.

c. CAD colors shall be the "base" colors of red, green, and blue. Color code for changes shall be as follows:

1. Deletions (red) - Deleted graphic items (lines) shall be colored red with red lettering in notes and leaders.
2. Additions (Green) - Added items shall be drawn in green with green lettering in notes and leaders.
3. Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes shall be in blue.

d. The Contract Drawing files shall be renamed in a manner related to the contract number (i.e., 98-C-10.DGN) as instructed in the Pre-Construction conference. Marked-up changes shall be made only to those renamed files. All changes shall be made on the layer/level as the original item. There shall be no deletions of existing lines; existing lines shall be over struck in red. Additions shall be in green with line

weights the same as the drawing. Special notes shall be in blue on layer#63.

e. When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 5 mm 3/16 inch high. All other contract drawings shall be marked either "As-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

f. After Government approval of all of the working as-built drawings for a phase of work, the Contractor shall prepare the final CAD as-built drawings for that phase of work and submit two sets of full size paper copy prints of these drawings for Government review, comparison with approved red-line marked up drawings, and approval. The Government will promptly return one set of prints annotated with any necessary corrections to the CAD file(s) if corrections are required prior to approval. Within 20 days of substantial completion of all phases of work, the Contractor shall submit the final as-built drawing package for the entire project. The submittal shall consist of one set of electronic files on compact disc, read-only memory (CD-ROM), one set of full size paper prints and one set of the approved working as-built drawings. They shall be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any transactions or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with the CAD system. Upon approval by the Government of the final as-built drawing package for the entire project, the Contractor shall provide the number of as-built copies noted in Paragraph 1.1 of this Section.

g. Paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit final as-built drawing files and marked prints as specified shall be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

1.2.1.5 PAYMENT

No separate payment will be made for as-built drawings required under this contract, and all costs accrued in connection with such drawings shall be considered a subsidiary obligation of the Contractor.

1.2.2 AS-BUILT RECORD OF EQUIPMENT AND MATERIALS

The Contractor shall furnish one copy of preliminary record of equipment and materials used on the project 15 days prior to final inspection. This preliminary submittal will be reviewed and returned 2 days after final inspection with Government comments. Two sets of final record of equipment and materials shall be submitted 10 days after final inspection. The designations

shall be keyed to the related area depicted on the contract drawings. The record shall list the following data:

RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA

Description	Specification Section	Manufacturer and Catalog, Model, and Serial Number	Composition and Size	Where Used

1.2.3 FINAL APPROVED SHOP DRAWINGS

The Contractor shall furnish final approved project shop drawings 30 days after transfer of the completed facility.

1.2.4 CONSTRUCTION CONTRACT SPECIFICATIONS

The Contractor shall furnish final as-built construction contract specifications, including modifications thereto, 30 days after transfer of the completed facility.

1.2.5 REAL PROPERTY EQUIPMENT

The Contractor shall furnish a list of installed equipment furnished under this contract. The list shall include all information usually listed on manufacturer's name plate. The "EQUIPMENT-IN-PLACE LIST" shall include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, manufacturer's catalog, and warranty. A draft list shall be furnished at time of transfer. The final list shall be furnished 30 days after transfer of the completed facility.

1.3 WARRANTY MANAGEMENT

1.3.1 WARRANTY MANAGEMENT PLAN

The Contractor shall develop a warranty management plan which shall contain information relevant to the clause Warranty of Construction. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase shall be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Approved information shall be assembled in a binder and shall be turned over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. A joint 4 month and 9 month warranty inspection shall be conducted, measured from time of

acceptance, by the Contractor, Contracting Officer and the Customer Representative. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

c. A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.
5. Warranties and terms of warranty. This shall include one-year overall warranty of construction. Items which have extended warranties shall be indicated with separate warranty expiration dates.
6. Cross-reference to warranty certificates as applicable.
7. Starting point and duration of warranty period.
8. Summary of maintenance procedures required to continue the warranty in force.
9. Cross-reference to specific pertinent Operation and Maintenance manuals.
10. Organization, names and phone numbers of persons to call for warranty service.
11. Typical response time and repair time expected for various warranted equipment.

d. The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

e. Procedure and status of tagging of all equipment covered by extended warranties.

f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.3.2 PRE-WARRANTY CONFERENCE

Prior to contract completion, and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be

established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor shall furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, shall be continuously available, and shall be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.3.3 CONTRACTOR'S RESPONSE TO CONSTRUCTION WARRANTY SERVICE REQUIREMENTS

Following oral or written notification by the Contracting Officer, the Contractor shall respond to construction warranty service requirements in accordance with the "Construction Warranty Service Priority List" and the three categories of priorities listed below. The Contractor shall submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframes specified, the Government will perform the work and backcharge the construction warranty payment item established.

a. First Priority Code 1. Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

b. Second Priority Code 2. Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

c. Third Priority Code 3. All other work to be initiated within 3 work days and work continuously to completion or relief.

d. The "Construction Warranty Service Priority List" is as follows:

Code 1-Air Conditioning Systems
1) Recreational support.
2) Air conditioning leak in part of building, if causing damage.
3) Air conditioning system not cooling properly.

Code 1-Doors
1) Overhead doors not operational, causing a security, fire, or safety problem.
2) Interior, exterior personnel doors or hardware, not functioning properly, causing a security, fire, or safety problem.

Code 3-Doors
1) Overhead doors not operational.
2) Interior/exterior personnel doors or hardware not functioning properly.

Code 1-Electrical
1) Power failure (entire area or any building operational after

1600 hours).
2) Security lights
3) Smoke detectors

Code 2-Electrical
1) Power failure (no power to a room or part of building).
2) Receptacle and lights (in a room or part of building).

Code 3-
Electrical
Street
lights.

Code 1-Gas
1) Leaks and breaks.
2) No gas to family housing unit or cantonment area.

Code 1-Heat
1) Area power failure affecting heat.
2) Heater in unit not working.

Code 2-Kitchen Equipment
1) Dishwasher not operating properly.
2) All other equipment hampering preparation of a meal.

Code 1-Plumbing
1) Hot water heater failure.
2) Leaking water supply pipes.

Code 2-Plumbing
1) Flush valves not operating properly.
2) Fixture drain, supply line to commode, or any water pipe leaking.
3) Commode leaking at base.

Code 3 –Plumbing
Leaky faucets.

Code 3-Interior
1) Floors damaged.
2) Paint chipping or peeling.
3) Casework.

Code 1-Roof Leaks
Temporary repairs will be made where major damage to property is
occurring.

Code 2-Roof Leaks
Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

Code 2-Water (Exterior)
No water to facility.

Code 2-Water (Hot)

No hot water in portion of building listed.

Code 3-All other work not listed above.

1.3.4 WARRANTY TAGS

At the time of installation, each warranted item shall be tagged with a durable, oil and water resistant tag approved by the Contracting Officer. Each tag shall be attached with a copper wire and shall be sprayed with a silicone waterproof coating. The date of acceptance and the QC signature shall remain blank until project is accepted for beneficial occupancy. The tag shall show the following information.

a. Type of product/material_____.

b. Model number_____.

c. Serial number_____.

d. Contract number_____.

e. Warranty period_____from_____to_____.

f. Inspector's signature_____.

g. Construction Contractor_____. Address_____. Telephone number_____.

h. Warranty contact_____. Address_____. Telephone number_____.

i. Warranty response time priority code_____.

j. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

1.4 MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Prior to final inspection and transfer of the completed facility; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems shall be submitted to and approved by the Contracting Officer as specified inapplicable technical specification sections.

1.5 OPERATION AND MAINTENANCE MANUALS

Three (3) copies of all Operation and Maintenance (O&M) manuals shall be submitted 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

Attn: Chief, Engineering Branch

Operation manuals and maintenance manuals shall be provided in a common volume, complete, clearly differentiated and separately indexed.

1.6 FINAL CLEANING

The premises shall be left broom clean. Stains, foreign substances, and temporary labels shall be removed from surfaces. Carpet and soft surfaces shall be vacuumed. Equipment and fixtures shall be cleaned to a sanitary condition. Filters of operating equipment shall be replaced. Debris shall be removed from roofs, drainage systems, gutters, and downspouts. Paved areas shall be swept and landscaped areas shall be raked clean. The site shall have waste, surplus materials, and rubbish removed. The project area shall have temporary structures, barricades, project signs, and construction facilities removed. A list of completed clean-up items shall be submitted on the day of final inspection.

-- END OF SECTION -

SECTION 01781

OPERATION AND MAINTENANCE DATA

1. GENERAL

1.1 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01335 SUBMITTAL PROCEDURES.

1.1.1 PACKAGE QUALITY

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.1.2 PACKAGE CONTENT

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission.

1.1.3 CHANGES TO SUBMITTALS

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.2 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

1.2.1 OPERATING INSTRUCTIONS

Include specific instructions, procedures, and illustrations for the following phases of operation:

1.2.1.1 SAFETY PRECAUTIONS

List personnel hazards and equipment or product safety precautions for all operating conditions.

1.2.1.2 OPERATOR PRESTART

Include procedures required to set up and prepare each system for use.

1.2.1.3 STARTUP, SHUTDOWN, AND POST-SHUTDOWN PROCEDURES

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.2.1.4 NORMAL OPERATIONS

Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.

1.2.1.5 EMERGENCY OPERATIONS

Include Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of all utility systems including required valve positions, valve locations and zones or portions of systems controlled.

1.2.1.6 OPERATOR SERVICE REQUIREMENTS

Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gage readings.

1.2.1.7 ENVIRONMENTAL CONDITIONS

Include a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.2.2 PREVENTIVE MAINTENANCE

Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair.

1.2.2.1 LUBRICATION DATA

Include preventative maintenance lubrication data, in addition to instructions for lubrication provided under paragraph titled "Operator Service Requirements":

a. A table showing recommended lubricants for specific temperature ranges and applications.

b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.

c. A Lubrication Schedule showing service interval frequency.

1.2.2.2 PREVENTIVE MAINTENANCE PLAN AND SCHEDULE

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.2.3 CORRECTIVE MAINTENANCE (REPAIR)

Include manufacturer's recommended procedures and instructions for correcting problems and making repairs.

1.2.3.1 TROUBLESHOOTING GUIDES AND DIAGNOSTIC TECHNIQUES

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.2.3.2 WIRING DIAGRAMS AND CONTROL DIAGRAMS

Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

1.2.3.3 MAINTENANCE AND REPAIR PROCEDURES

Include instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

1.2.3.4 REMOVAL AND REPLACEMENT INSTRUCTIONS

Include step-by-step procedures and a list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.

1.2.4 CORRECTIVE MAINTENANCE WORK-HOURS

Include manufacturer's projection of corrective maintenance work-hours including requirements by type of craft. Corrective maintenance that requires completion or participation of the equipment manufacturer shall be identified and tabulated separately.

1.2.5 APPENDICES

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.2.6 PARTS IDENTIFICATION

Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as typically shown in a master parts catalog

1.2.6.1 WARRANTY INFORMATION

List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for primary components such as the compressor of air conditioning system.

1.2.6.2 PERSONNEL TRAINING REQUIREMENTS

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

1.2.6.3 TESTING EQUIPMENT AND SPECIAL TOOL INFORMATION

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.2.6.4 CONTRACTOR INFORMATION

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

2. EXECUTION

2.1 TRAINING

Unless provided for elsewhere, the Contractor shall provide operational and maintenance training for all systems furnished under this contract in accordance with this section. The training shall not take place until the operation and maintenance manuals are submitted and approved.

Training will be given to personnel responsible for the operation and maintenance of the system at the installation. Orient training to the specific system being installed under this contract. Use operation and maintenance manual as the primary instructional aid in contractor provided activity personnel training. Manuals shall be delivered for each trainee with two additional sets delivered for archiving at the project site. Submit a training course schedule, syllabus, and training materials 14 days prior to the start of training. Obtain approval of the training course before beginning that phase of training. Furnish a qualified instructor approved by the system manufacturer to conduct training for the specific system.

Training manuals shall include an agenda, defined objectives and a detailed description of the subject matter for each lesson. Furnish audio-visual equipment and all other training materials and supplies. A training day is defined as 8 hours of classroom or lab instruction, including two 15 minute breaks and excluding lunch time, Monday through Friday, during the daytime shift in effect at the training facility. For guidance, the Contractor should assume the attendees will have a high school education.

The Contractor shall videotape the training session on VHS tapes and provide the tapes to the Government.

-- END OF SECTION --