

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. W917PM-07-R-0089	2. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 10-Jul-2007	PAGE OF PAGES 1 OF 255
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IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.
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7. ISSUED BY AFGHANISTAN ENGINEER DISTRICT US ARMY CORPS OF ENGINEERS KABUL APO AE 09356	CODE W917PM	8. ADDRESS OFFER TO <i>(If Other Than Item 7)</i> CODE
TEL:	FAX:	See Item 7
TEL:	FAX:	TEL:
TEL:	FAX:	FAX:

9. FOR INFORMATION CALL:	A. NAME HAMILTON BATISTA	B. TELEPHONE NO. <i>(Include area code) (NO COLLECT CALLS)</i>
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SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

ANA Khair Kot, Paktika Province, Afghanistan

The project consists of a design/build complete facility at the Afghan National Army Brigade site at Paktika (Khair Kot), Afghanistan. The project is defined as the design, material, labor, and equipment to construct the following as a minimum: all structures (type and dimensions as defined in the drawings), production water wells, water storage tanks, permanent utilities to a defined termination point, temporary utilities, site grading, site drainage and runoff grading and contouring, access road, temporary fencing, and other supporting infrastructures. The Contractor shall provide all site drainage features and appurtenances as described in the text or identified on the sketches and as required to for site grading and drainage.

Magnitude of Construction: \$25,000,000.00 to \$100,000,000.00

Pre Proposal Conference: 17 July 2007 at 9:30 p.m.

US Army Corps of Engineers, House 1, Street 1, West Wazir Akbar Khan (behind Aman High School), Kabul, Afghanistan.

11. The Contractor shall begin performance within 7 calendar days and complete it within 240 calendar days after receiving award, notice to proceed. This performance period is mandatory, negotiable. *(See Section 00800 _____.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? <i>(If "YES," indicate within how many calendar days after award in Item 12B.)</i>	12B. CALENDAR DAYS
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 3 copies to perform the work required are due at the place specified in Item 8 by 05:00 PM (hour) local time 09 Aug 2007 (date). If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee is, is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)*(Construction, Alteration, or Repair)***OFFER (Must be fully completed by offeror)**14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*15. TELEPHONE NO. *(Include area code)*16. REMITTANCE ADDRESS *(Include only if different than Item 14)***See Item 14**

CODE

FACILITY CODE

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS

SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS*(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)*

AMENDMENT NO.

DATE

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*

20B. SIGNATURE

20C. OFFER DATE

AWARD (To be completed by Government)

21. ITEMS ACCEPTED:

22. AMOUNT

23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)***ITEM**

25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO

 10 U.S.C. 2304(c) 41 U.S.C. 253(c)

26. ADMINISTERED BY

CODE

27. PAYMENT WILL BE MADE BY:

CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _____ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.

29. AWARD *(Contractor is not required to sign this document.)*

Your offer on this solicitation, is hereby accepted as to the items listed. This award commutes the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*31A. NAME OF CONTRACTING OFFICER *(Type or print)*

30B. SIGNATURE

30C. DATE

TEL:

EMAIL:

31B. UNITED STATES OF AMERICA BY

31C. AWARD DATE

TABLE OF CONTENTS

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
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BID SCHEDULE

SECTION 00010

PROPOSAL SCHEDULE

The Contractor shall provide a price for all items, including those labeled, "Optional Items." The Government will evaluate the Contractor's entire proposal to determine which CLINs represent the best value to the Government.

No.	Description Qty	Unit	Unit Price	Total Amount
1.	Base Proposal			
	0001 Design Program			
	0001A Design Costs (Including Site Master Plan):	Sum	Job xxx	\$ _____
	Sub-Total Design only			\$ _____
	0002 Site Development			
	0002A Grading, Perimeter Wall, Mobilization, Sum (Complete Site Storm Water Management):	Sum	Job xxx	\$ _____
	0002B Sewage Treatment & Sewer System Sum (3 Infantry Battalion Sewer System)	Sum	Job xxx	\$ _____
	0002C Power Plant & Distribution System Sum (3 Infantry Battalions power)	Sum	Job xxx	\$ _____
	0002D Water Well, Storage & Distribution Sum (3 Infantry Battalion Water System)	Sum	Job xxx	\$ _____
	Sub-Total Site Development only			\$ _____

0003 Base Buildings (Infantry Battalions & DFAC Construction)

0003A K Span Facilities -18-Barracks Bldgs, 3-Toilet Bldgs.
 3-Storage Bldgs,1-DFAC Bldg, 3- Ammo Storage Bldgs, 3-POL Bldgs.
 & 3-motorpool: Sum Job xxx \$ _____

0003B Embedded Trainer Facilities, Interpreter Facilities: Sum Job xxx \$ _____

0003C USACE Special Facilities Sum Job xxx \$ _____

Sub-Total Buildings only \$ _____

TOTAL BASE PROPOSAL ITEMS

\$ _____
 (total of all above costs - includes design and construction)

0004 Optional BOQ and Training Buildings and Site Development

0004A Grading and Storm Water Management Sum Job xxx \$ _____

0004B Sewer System Sum Job xxx \$ _____

0004C Power & Distribution System Sum Job xxx \$ _____

0004D Water Distribution System Sum Job xxx \$ _____

0004E K Span Facilities- 4-BOQ Bldgs., 1-Training Bldg.:
 Sum Job xxx \$ _____

Total BOQ and Training Option Sum Job xxx \$ _____

0005 Optional CS Battalion Buildings and Site Development

0005A Grading and Storm Water Management Sum Job xxx \$ _____

0005B Sewer System Sum Job xxx \$ _____

0005C Power & Distribution System Sum Job xxx \$ _____

0005D Water Distribution System Sum Job xxx \$ _____

0005E K Span Facilities- 4-Barracks Bldgs., 1-Toilet Bldg.,
 1-Storage Bldg.: Sum Job xxx \$ _____

0005F 1- Battalion HQ, 1-Maintenance Bldg. 1- Ammo Supply Bldg.
 1-POL Bldg. & Motorpool Sum Job xxx \$ _____

Total CS Battalion Option	Sum	Job	xxx	\$ _____
0006 Optional CSS Battalion Buildings and Site Development				
0006A Grading and Storm Water Management	Sum	Job	xxx	\$ _____
0006B Sewer System	Sum	Job	xxx	\$ _____
0006C Power & Distribution System	Sum	Job	xxx	\$ _____
0006D Water Distribution System \$ _____	Sum	Job	xxx	
0006E K Span Facilities- 3-Barracks Bldgs., 1-Toilet Bldg.: Sum		Job	xxx	\$ _____
0006F 1- Battalion HQ, 1- Maintenance Bldg, 1- Ammo Supply Bldg, 1-Storage Bldg, 1-POL Bldg, & Motorpool	Sum	Job	xxx	\$ _____
Total CSS Battalion Option	Sum	Job	xxx	\$ _____
0007 Optional Brigade HQ and Garrison HQ Buildings and Site Development				
0007A Grading and Storm Water Management	Sum	Job	xxx	\$ _____
0007B Sewer System	Sum	Job	xxx	\$ _____
0007C Power & Distribution System	Sum	Job	xxx	\$ _____
0007D Water Distribution System	Sum	Job	xxx	\$ _____
0007E K-Span- 3 Barracks Bldgs, 1-Toilet Bldg.: Sum		Job	xxx	\$ _____
0007F 1-Brigade HQ, 1- Garrison HQ, 1-Clinic, 1-POL Storage, 1-Ammo Supply Point, 1 Entry Station, 1-Communication Building, 1- Firehouse, 1-Garrison Maintenance Building and 4- Motorpools	Sum	Job	xxx	\$ _____
Total Brigade and Garrison HQ Option	Sum	Job	xxx	\$ _____
0008 Optional Infantry Battalion- 3 Battalion HQs, 3 INF BN Motorpools, 18- Barracks Interior Walls, Power Distribution Construction:				
	Sum	Job	xxx	\$ _____
0009 Optional Road Network:	Sum	Job	xxx	\$ _____
0010 Optional Power, Dist. & DPW Center:	Sum	Job	xxx	\$ _____
0011 Optional Power, Dist. & Detention Center:		Sum	Job	xxx \$ _____
0012 Optional Power, Dist & Community Center:	Sum	Job	xxx	\$ _____

PROPOSAL SCHEDULE NOTES

1. Offeror shall submit prices on all items.
2. Only one contract for the entire schedule will be awarded under this solicitation. This project will be awarded as a firm fixed price contract. This project will be awarded as a lump sum contract. This Proposal Schedule is an accounting tool for allocating funds to applicable budget.
3. All costs associated with this project i.e., security, insurance etc.,) shall be included in the line items in the bidding schedule.
4. **EXERCISE OF OPTIONAL BID ITEMS:** Optional bid items may, at the option of the Government, be exercised at any time within 120 calendar days after notice to proceed.

5. Six Percent Limitation for Design. Reference FAR 36.606-70 Statutory fee limitation (6 % of the construct cost).

(c) The following are examples of services that, for the purpose of this section only, are not considered an integral part of the preparation of designs, plans, drawings, and specifications, and may be excluded from the A-E fee when determining compliance with the statute.

- (i) Initial site visits.
- (ii) Field, topographic, property, boundary, utility, and right-of-way surveys.
- (iii) Subsurface explorations and borings; soils and materials testing and resultant reports.
- (iv) Feasibility, functional, and economic studies.
- (v) Flow gaugings, model testing.
- (vi) Preparation or verification of as-built drawings.
- (vii) Preparation of general and development criteria.
- (viii) Preparation of general and feature design memoranda.

(ix) The services of consultants, where not specifically applied to the preparation of designs, plans, drawings or specifications.

(x) Preparation of environmental impact assessments, statements, and supporting data.

(xi) Construction phase services.

(xii) Models, renderings, or photographs.

(xiii) Reproduction of designs for review purposes.

(xiv) Travel and per diem allowances in connection with services that are not directly related to the preparation of designs, plans, drawings, or specifications.

END OF SECTION

INSTRUCTION TO OFFEROR

**SECTION 00100
Bidding Schedule/Instructions to Offerors
W917PM-07-R-0089**

PREPROPOSAL CONFERENCE WILL BE HELD **17 July 2007, 9:30 AM KABUL TIME.**

Offerors, who plan to participate, please email me at Stella.Lejeune@tac01.usace.army.mil, no later than **15 July 2007, 5:00PM KABUL TIME.**

Drawings will be posted on the FTP and AED web site. <ftp://ftp.usace.army.mil/pub/aed/> or <http://www.aed.usace.army.mil/>

Estimated cost range of this project is between **\$25,000,000.00 and \$100,000,000.00.**

NOTICE: Return Section 00600, "Representations and Certifications" and requested information from Sections 00010 "Solicitation Contract Form" and 00100 "Bidding Schedule/Instructions to Bidders", with your proposal. All amendments, if any, must be acknowledged and returned with the proposals. If you do not return these sections you will be considered **Non-Responsive.**

Request for information must be directed to the person listed in Item 9 of the 1442. Inquiries and request that are directed to any other person may not be relayed to the proper person and therefore, may not be answered. Please email all questions to Stella.LeJeune@tac01.usace.army.mil.

All proposals must be delivered to: **U.S. Army Corps of Engineers, House #1 Street #1, West Wazir Akbar Khan (Behind Amani High School), Kabul, Afghanistan, Attn: Stella LeJeune, prior to 5:00pm, Kabul Time, 9 August 2007, for receipt of proposals.** Due to heightened security conditions, access to the building is controlled by security. Your packages will be opened and checked at the gate by the security guards. **Electronic proposals will not be accepted.**

Section 100 – 52.222-23

Section 600 – 52.222-22

Section 700 – 52.222-21, 26, 27, 29, 35, 36, 37

“Only applicable if contractor recruits personnel within the US.”

252.247-7024 “Only applicable if contractor gave a negative response to 252.247-7022.”

52.204-3, 52.232-38, 52.204-6, 252.204-7001, 52.232-34

“Only applicable to contractors that are not to be registered in the CCR database.”

52.232-33, 252.204-7004

“Only applicable to contractors that are to be registered in the CCR database.”

252.229-7000, 252.229-7001

“Only applicable if contractor is a foreign concern.”

Section 00100 - Bidding Schedule/Instructions to Bidders

CLAUSES INCORPORATED BY REFERENCE

52.204-6	Data Universal Numbering System (DUNS) Number	OCT 2003
52.214-34	Submission Of Offers In The English Language	APR 1991
52.214-35	Submission Of Offers In U.S. Currency	APR 1991
52.215-1	Instructions to Offerors--Competitive Acquisition	JAN 2004
52.217-5	Evaluation Of Options	JUL 1990
52.236-28	Preparation of Proposals--Construction	OCT 1997
252.204-7001	Commercial And Government Entity (CAGE) Code Reporting	AUG 1999

CLAUSES INCORPORATED BY FULL TEXT

52.214-5000 APPARENT CLERICAL MISTAKES (MAR 1995)--EFARS

(a) For the purpose of initial evaluations of bids, the following will be utilized in the resolving arithmetic discrepancies found on the face of bidding schedule as submitted by the bidder:

- (1) Obviously misplaced decimal points will be corrected;
- (2) Discrepancy between unit price and extended price, the unit price will govern;
- (3) Apparent errors in extension of unit prices will be corrected;
- (4) Apparent errors in addition of lump-sum and extended prices will be corrected.

(b) For the purpose of bid evaluation, the government will proceed on the assumption that the bidder intends his bid to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.

(c) These correction procedures shall not be used to resolve any ambiguity concerning which bid is low.

(End of statement)

CLAUSES INCORPORATED BY FULL TEXT

52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)

(a) Exceptions from cost or pricing data. (1) In lieu of submitting cost or pricing data, offerors may submit a written request for exception by submitting the information described in the following subparagraphs. The Contracting Officer may require additional supporting information, but only to the extent necessary to determine whether an exception should be granted, and whether the price is fair and reasonable.

(i) Identification of the law or regulation establishing the price offered. If the price is controlled under law by periodic rulings, reviews, or similar actions of a governmental body, attach a copy of the controlling document, unless it was previously submitted to the contracting office.

(ii) Commercial item exception. For a commercial item exception, the offeror shall submit, at a minimum, information on prices at which the same item or similar items have previously been sold in the commercial market that is adequate for evaluating the reasonableness of the price for this acquisition. Such information may include--

(A) For catalog items, a copy of or identification of the catalog and its date, or the appropriate pages for the

offered items, or a statement that the catalog is on file in the buying office to which the proposal is being submitted. Provide a copy or describe current discount policies and price lists (published or unpublished), e.g., wholesale, original equipment manufacturer, or reseller. Also explain the basis of each offered price and its relationship to the established catalog price, including how the proposed price relates to the price of recent sales in quantities similar to the proposed quantities;

(B) For market-priced items, the source and date or period of the market quotation or other basis for market price, the base amount, and applicable discounts. In addition, describe the nature of the market;

(C) For items included on an active Federal Supply Service Multiple Award Schedule contract, proof that an exception has been granted for the schedule item.

(2) The offeror grants the Contracting Officer or an authorized representative the right to examine, at any time before award, books, records, documents, or other directly pertinent records to verify any request for an exception under this provision, and the reasonableness of price. For items priced using catalog or market prices, or law or regulation, access does not extend to cost or profit information or other data relevant solely to the offeror's determination of the prices to be offered in the catalog or marketplace.

(b) Requirements for cost or pricing data. If the offeror is not granted an exception from the requirement to submit cost or pricing data, the following applies:

(1) The offeror shall prepare and submit cost or pricing data and supporting attachments in accordance with Table 15-2 of FAR 15.408.

As soon as practicable after agreement on price, but before contract award (except for unpriced actions such as letter contracts), the offeror shall submit a Certificate of Current Cost or Pricing Data, as prescribed by FAR 15.406-2.

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a **Firm fixed Price** contract resulting from this solicitation.

(End of clause)

CLAUSES INCORPORATED BY FULL TEXT

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows: **“Please contact the Office of Federal Contract compliance Programs as appropriate.”**

These goals are applicable to all the Contractor's construction work performed in the covered area. If the

Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Afghanistan.

CLAUSES INCORPORATED BY FULL TEXT

52.233-2 SERVICE OF PROTEST (SEP 2006)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the Government Accountability Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from **U.S. Army Corps of Engineers, House #1, Street #1, West Wazir Akbar Khan (Behind Amani High School), Kabul, Afghanistan.**

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995) – ALTERNATE I (FEB 1995)

(a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3, Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) An organized site visit has been scheduled for--
NA

(c) Participants will meet at--
NA

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

<http://farsite.hill.af.mil>

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.252-5 AUTHORIZED DEVIATIONS IN PROVISIONS (APR 1984)

(a) The use in this solicitation of any Federal Acquisition Regulation (48 CFR Chapter 1) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the provision.

(b) The use in this solicitation of any Defense FAR supplement (48 CFR Chapter 2) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of provision)

**SECTION 00110
PROPOSAL PREPARATION
PART 1 - GENERAL**

A. PROPOSAL PREPARATION. Instructions for the preparation and organization of each proposal are included herein. The proposal submittal shall include **(a) one original and three copies of Volume I and (b) one original and two copies of Volume II.** The Volume II proposal shall be sealed in a single package separate from the Volume I and Volume II proposals and both packages shall be clearly marked. The proposal shall be submitted as required herein and elsewhere in the RFP. Volume I shall be typed, with numbered pages and sections tabbed. A cover sheet shall identify the offeror and the project and the second sheet shall be a table of contents. The Volume I proposal is limited to no more than 50 single-sided or 25 double-sided pages, printed on 8-1/2" x 11" sheets, not including the cover sheet, designs/sketches, table of contents and letters of recommendation / evaluations / related certificates. Do not use condensed print. Do not submit any extraneous materials with your proposal.

1. VOLUME I – MANAGEMENT-TECHNICAL PROPOSAL PREPARATION

1.1 Content. The Management/Technical proposal shall include the information as described below and shall be presented in the sequence listed.

1.1.1 Factor 1 - Past Evaluations/Performance. For the projects listed under Paragraph 1.1.2, Factor 2 - Experience, provide the following information (Attachment 1):

- Project Manager's (Point of Contact) name, telephone, email
- List the problems encountered and the corrective actions taken
- List of change orders and circumstances associated with them
- Construction time duration beyond the contract time and why.
- Construction cost in dollars beyond the contract amount and why.
- Safety record and accident report
- The offeror may also provide letters of recommendation, references, performance evaluations or other evidence of successful performance of the project.

The Source Selection Evaluation Board may attempt to contact the references provided in the list of projects. They may also contact Government personnel who have worked [Project Name] [Project Location] Section 00110 – Page 2 with the offerors. References comments may affect the scoring of proposals. It is important to verify that the points of contact listed are still available at the phone number and addresses provided and that they are individuals who have sufficient knowledge of the project and your performance to be able to offer meaningful comments.

In the event that an offeror does not have a record of past performance, a written explanation of the reasons why no record is available is requested. In the case of an offeror without a record of relevant past performance or for whom information on past

performance is not available, the offeror will not be evaluated favorably or unfavorably on past performance. A neutral rating with unknown risk will be assigned.

1.1.2 Factor 2 – Experience. Demonstrate the experience of the team, including sub-contractors, on projects similar to that described in this RFP which use the design-build process. Provide a list of no more than ten similar and relevant design-build projects underway or completed in the last **five** years that best demonstrates your experience. The list of projects shall include the following information (Attachment 2):

- Project name and location.
- Nature of firm's responsibility (design/build or design or construction).
- Project owner's name, address, telephone, email (to be contacted by the Government).
- Contractor a prime or sub-contractor for this project
- Project completion date (estimated if in progress)
- Construction cost
- Brief explanation that illustrates your design/build capabilities and relevant job experiences.

1.1.3 Factor 3 - Project Management

The Project Management Plan shall include the following (Attachment 3):

- The team structure described with an organizational chart (Attachment 4) to include:
 - Key design personnel names and their title
 - Key construction personnel and their title.
- The quality control process for both design work.
- The quality control process for construction work.
- The interaction process with the Corps of Engineers and the roles that the team members will have in dealing with;
 - Processes for resolving problems like modifications to the contract (design and construction).
 - Resolving potential design or construction delays

[Project Name] [Project Location] Section 00110 – Page 3

- Reviewing and approving submittals
- Attending progress meetings and facilitating contract completion and closeout.
- Process to control cost over runs while maintaining the project budget during design and construction.

1.1.4. Factor 4 – Personnel and Equipment Resources

1.1.4.1 - Personnel. Provide professional resume data on the following individuals who will be key personnel on the project team. Key personnel identified in this section should be senior working-level people who will be involved in design and construction on a day-to-day basis, as opposed to departmental level supervisors or executives. By identifying these personnel, the offeror makes a commitment that, barring unforeseen circumstances; they are the personnel who shall be assigned to the project. All key personnel shall have a minimum of **five** years of professional experience. (Attachment 5)

- Project Manager for design and for construction
- Quality Control Manager
- Project Architect
- Senior Structural Engineer
- Senior Civil Engineer
- Senior Mechanical Engineer
- Senior Electrical Engineer
- Fire Protection Engineer
- Construction Superintendent
- Construction Foreman (if different from above)

Information to be provided for key personnel should be limited to no more than **one page** per person and shall include: (Attachment 5)

- Name and title
- Project assignment
- Name of firm with which associated
- Years experience with this firm and with other firms
- Education degree(s), year, specialization
- Active registration, year first registered
- Other experience and qualifications relevant to the proposed project
- Provide the proposed use of Afghan contractors and labor in numbers or percentages.

1.1.4.2 – Equipment Resources. Provide equipment resources to be utilized for this project (i.e. offices, shops, warehouses, machinery, construction tools, vehicles, loaders, etc.) and other resources (i.e. cooperating companies supplying materials and/or services)

- HVAC
- Electrical
- Interior Construction
- Interior Finishes
- Relocation of equipment (as applicable)
- Site Improvements
- Commissioning
- Inspection & Acceptance

2. VOLUME II - COST/PRICE PROPOSAL PREPARATION

2.1 Proposal Schedule. Offerors shall provide a signed cover letter and complete the Proposal Schedule by filling out the pricing data blanks. An executable Proposal Schedule is included in Section 00010 herein. Overhead and profit shall be applied proportionally to each category and shall not be required to be shown separately. The proposal shall include allowances in the Cost/Price Proposal and shall schedule any contingency for weather delays for severe weather in accordance with weather requirements. All costs and prices shall be firm.

B. CLARIFICATIONS AND FINAL PROPOSAL REVISION:

1. General. Any conflicting criteria which cannot be resolved by the terms of this RFP shall be brought to the attention of the Government by the offeror as part of the written clarification requirement of the proposal. In the absence of such request for clarification, the offeror shall perform to the most beneficial criteria as determined by the Government.

2. Clarifications Prior to Proposal Due Date. In the event that clarifications are required prior to submitting the proposal, contact the individuals listed on the RFP letter. All RFP holders shall be advised of significant clarifications affecting the scope of the project.

3. Clarifications Submitted with Proposals. If clarifications remain at the time and date that proposals are due, written clarifications may be included in the proposal for consideration by the Government. Clarifications submitted with proposals shall clearly identify the understanding of the RFP documents and how this understanding is reflected in the cost proposal. Extensive qualifications, exclusions and exceptions in the form of clarifications may be considered by the Government to be non-responsive and may be grounds for rejection of the proposal.

4. Final Proposal Revision(s):

4.1 The Government intends to award a contract on the basis of the initial offers received without further discussions or negotiations. Offers should contain the offeror's best terms from a cost and management standpoint.

4.2 The Government may contact those firms whose proposals are within the competitive range and conduct discussions/negotiations concerning their proposal. Following resolution of the discussions/negotiations, offerors in the competitive range shall be given the opportunity to submit their Final Proposal Revision (otherwise known as 'Best and Final offer').

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

-- End of Section --

**SECTION 00120
PROPOSAL EVALUATION AND CONTRACT AWARD
PART 1 – GENERAL**

A. BASIS FOR AWARD. The Government intends to make one award for completion of the subject project. The award will be made to the offeror whose proposal represents the best overall value to the Government. Competing proposals shall be evaluated against the requirements of the solicitation in order to assess strengths, weaknesses and associated risks and deficiencies. The tradeoff process of evaluation between non-cost/price and cost/price aspects of the offerors' proposals will be used to determine those offers that may result in award of a contract. Implicit in the Government's evaluation and selection process is its willingness to accept other than the lowest priced offers.

B. PROPOSAL EVALUATION.

B.1 Proposals will be evaluated by a Source Selection Evaluation Board (SSEB). The SSEB will be composed of Corps of Engineers personnel and possibly a customer representative. The identity of SSEB members is confidential and members will not be available for contact or discussion prior to submission of proposals.

B.2 The Volume I (Management Technical) [and Volume II (Preliminary Design)] factors are listed in descending order of importance. Sub-factors under each factor are of equal importance. The factors and sub-factors will be evaluated and assigned merit ratings using the adjectives of excellent (E), good (G), satisfactory (S), marginal (M), and unsatisfactory (U). The non-pricing Volumes (I, Management-Technical and II, Preliminary Design) taken together have equal weight to the pricing factor (Volume II) in the evaluation and selection process.

B.3 Templates. Model templates are provided in this RFP as a possible format available to assist offerors in the preparation of their proposals. Use of the template format is not required. Sections 110 and 120 of this RFP govern and the templates do not supplant or substitute the requirements stated in these sections.

1. VOLUME 1 – MANAGEMENT-TECHNICAL PROPOSAL EVALUATION CRITERIA.

1.1 Content

1.1.1 Factor 1 – Past Evaluations/Performance. This factor may be evaluated by contacting references for **customer satisfaction** and review of **quality performance** evaluations or other information provided by the offeror or obtained by the Government. The evaluators will consider the **relevance** of the past performance information and the success achieved on past projects to determine the rating. In the event that an offeror does not have a record of past performance evaluations, a written explanation of the reasons why no record is available is requested. In the case of an offeror without a record of relevant past performance evaluations or for whom information on past performance is not available, the offeror will not be evaluated favorably or unfavorably on this factor. A neutral rating will be assigned.

Proposals with the most convincing evidence will receive the highest ratings.

1.1.2 Factor 2 - Experience. The Government will evaluate the relevant work experience of the contractor's company and designer, including subcontractors, on projects similar to that described in this RFP which use the design-build process. Contractor experience with similar relevant projects (type of construction, dollar value, design-build method, complexity) will receive a higher rating than those with dissimilar or non-relevant projects.

Proposals with the most convincing evidence will receive the highest ratings.

1.1.3 Factor 3 – Project Management Plan.

The Government will evaluate and rate the Project Management Plan which will include the contractor's and designer's key personnel professional qualifications and relevant work experience, the company's quality control procedures, their ability to team work (engineers, sub-contractors and the government), their ability to handle cost controls and managing construction time tables completion, their ability to resolve problems and describe their interactions with the Corps of Engineers. The Plan will also address how the offeror will adequately manage the project described in this RFP in light of any other ongoing projects and contractual commitments it may have within Afghanistan.

Offers which deviate from RFP specifications or requirements may be considered weak or deficient.

Proposals the most convincing evidence will receive the highest ratings.

1.1.4 Factor 4 – Personnel and Equipment Resources.

1.1.4.1 Personnel. The Government will evaluate the qualifications and experience of contractor's & designer's personnel for this project. Contractor personnel with experience with **similar relevant** projects (type of construction, dollar value, design-build method, complexity) will receive a higher rating than those with dissimilar or non-relevant project experience. Other personnel including the use of Afghan workers will be evaluated.

Proposals will also address how the offeror will have adequate personnel for the project described in this RFP in light of any other ongoing projects and contractual commitments it may have within Afghanistan.

Proposals with the most convincing evidence will receive the highest ratings.

1.1.4.2 Equipment Resources-The Government will evaluate the adequacy of the offeror's equipment resources to successfully complete the project.

Proposals will also address how the offeror will have adequate equipment for the project described in this RFP in light of any other ongoing projects and contractual commitments it may have within Afghanistan.

Proposals with the most convincing evidence will receive the highest ratings.

1.2 Format. Proposal will be evaluated based on adherence to format requirements of Section 00110, Proposal Preparation.

2. VOLUME II - COST/PRICE PROPOSAL PREPARATION. The Government will evaluate whether the Volume II cost/price proposals are complete and reasonable. The cost/price proposals will not be assigned adjective ratings but will be assigned a confidence/risk rating. The government will evaluate the proposed pricing and supporting information to determine the reasonableness and completeness of the proposed price.

C. METHOD OF PROPOSAL EVALUATION

C.1 Proposals will be reviewed to determine if they contain the required minimum procurement and technical data. Incomplete proposals may be eliminated. All forms shall be filled in and all requested data must be provided.

C.2 After the compliance review, the SSEB will begin evaluation and scoring the factors and sub-factors set forth herein. The Cost/Price proposal information will be evaluated (not scored) with regard to reasonable and complete pricing and associated risks.

C.3 If necessary, a competitive range may be determined. The competitive range will consist of all proposals which are considered to have a reasonable chance of being selected for award. However, the offeror is reminded that the Government intends to award without discussions and that their best offer should be provided with the initial proposal. After the determination of the competitive range, written and/or oral

discussions may be conducted with all offerors within the competitive range. Upon completion of written and/or oral discussions, Final Proposal Revision will be requested.

C.4 The Government may reject any or all proposals and waive minor informalities or minor irregularities in proposals.

D. SELECTION and AWARD. Award will be made to the offeror that, in the judgment of the Contracting Officer, provides the best combination of management and technical capability and reasonable cost. The Government reserves the right to make award to other than the lowest cost offeror, price and other factors considered under the provision of "best value" to the Government.

-- End of Section --

Section 00600 - Representations & Certifications

CLAUSES INCORPORATED BY REFERENCE

52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-11	Certification And Disclosure Regarding Payments To Influence Certain Federal Transactions	SEP 2005
52.222-38	Compliance With Veterans' Employment Reporting Requirements	DEC 2001
252.209-7001	Disclosure of Ownership or Control by the Government of a Terrorist Country	OCT 2006
252.225-7031	Secondary Arab Boycott Of Israel	JUN 2005
252.225-7042	Authorization to Perform	APR 2003

CLAUSES INCORPORATED BY FULL TEXT

52.203-2 CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985)

(a) The offeror certifies that --

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to --

(i) Those prices,

(ii) The intention to submit an offer, or

(iii) The methods of factors used to calculate the prices offered:

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory --

(1) Is the person in the offeror's organization responsible for determining the prices offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision _____ (insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization);

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision.

(c) If the offeror deletes or modifies subparagraph (a)(2) of this provision, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

(End of clause)

52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

Common parent, as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

Taxpayer Identification Number (TIN), as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

___ TIN:-----

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

___ Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

___ Sole proprietorship;

- Partnership;
- Corporate entity (not tax-exempt);
- Corporate entity (tax-exempt);
- Government entity (Federal, State, or local);
- Foreign government;
- International organization per 26 CFR 1.6049-4;
- Other-----

(f) Common parent.

Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

Name and TIN of common parent:

Name-----

TIN-----

(End of provision)

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2006)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is 236220

(2) The small business size standard is \$30.0 MIL

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b)(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (c) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (b) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

Paragraph (c) applies.

Paragraph (c) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(c) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at <http://orca.bpn.gov>. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications

currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change
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Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

52.209-5 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (DEC 2001)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that-

(i) The Offeror and/or any of its Principals-

(A) Are () are not () presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have () have not (), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are () are not () presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.

(ii) The Offeror has () has not (), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

This Certification Concerns a Matter Within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

52.222-22 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999)

The offeror represents that --

(a) () It has, () has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation;

(b) () It has, () has not, filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of provision)

52.230-1 COST ACCOUNTING STANDARDS NOTICES AND CERTIFICATION (JUN 2000)

Note: This notice does not apply to small businesses or foreign governments. This notice is in three parts, identified by Roman numerals I through III.

Offerors shall examine each part and provide the requested information in order to determine Cost Accounting Standards (CAS) requirements applicable to any resultant contract.

If the offeror is an educational institution, Part II does not apply unless the contemplated contract will be subject to full or modified CAS coverage pursuant to 48 CFR 9903.201-2(c)(5) or 9903.201-2(c)(6), respectively.

I. DISCLOSURE STATEMENT--COST ACCOUNTING PRACTICES AND CERTIFICATION

(a) Any contract in excess of \$500,000 resulting from this solicitation will be subject to the requirements of the Cost Accounting Standards Board (48 CFR Chapter 99), except for those contracts which are exempt as specified in 48 CFR 9903.201-1.

(b) Any offeror submitting a proposal which, if accepted, will result in a contract subject to the requirements of 48 CFR Chapter 99 must, as a condition of contracting, submit a Disclosure Statement as required by 48 CFR 9903.202. When required, the Disclosure Statement must be submitted as a part of the offeror's proposal under this solicitation unless the offeror has already submitted a Disclosure Statement disclosing the practices used in connection with the pricing of this proposal. If an applicable Disclosure Statement has already been submitted, the offeror may satisfy the requirement for submission by providing the information requested in paragraph (c) of Part I of this provision.

CAUTION: In the absence of specific regulations or agreement, a practice disclosed in a Disclosure Statement shall not, by virtue of such disclosure, be deemed to be a proper, approved, or agreed-to practice for pricing proposals or accumulating and reporting contract performance cost data.

(c) Check the appropriate box below:

(1) Certificate of Concurrent Submission of Disclosure Statement.

The offeror hereby certifies that, as a part of the offer, copies of the Disclosure Statement have been submitted as follows: (i) original and one copy to the cognizant Administrative Contracting Officer (ACO) or cognizant Federal agency official authorized to act in that capacity (Federal official), as applicable, and (ii) one copy to the cognizant Federal auditor.

(Disclosure must be on Form No. CASB DS-1 or CASB DS-2, as applicable. Forms may be obtained from the cognizant ACO or Federal official and/or from the loose-leaf version of the Federal Acquisition Regulation.)

Date of Disclosure Statement: _____ Name and Address of Cognizant ACO or Federal Official Where Filed: _____

The offeror further certifies that the practices used in estimating costs in pricing this proposal are consistent with the cost accounting practices disclosed in the Disclosure Statement.

(2) Certificate of Previously Submitted Disclosure Statement.

The offeror hereby certifies that the required Disclosure Statement was filed as follows:

Date of Disclosure Statement: _____ Name and Address of Cognizant ACO or Federal Official Where Filed: _____

The offeror further certifies that the practices used in estimating costs in pricing this proposal are consistent with the cost accounting practices disclosed in the applicable Disclosure Statement.

(3) Certificate of Monetary Exemption.

The offeror hereby certifies that the offeror, together with all divisions, subsidiaries, and affiliates under common control, did not receive net awards of negotiated prime contracts and subcontracts subject to CAS totaling more than \$50 million (of which at least one award exceeded \$1 million) in the cost accounting period immediately preceding the period in which this proposal was submitted. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Officer immediately.

(4) Certificate of Interim Exemption.

The offeror hereby certifies that (i) the offeror first exceeded the monetary exemption for disclosure, as defined in (3) of this subsection, in the cost accounting period immediately preceding the period in which this offer was submitted and (ii) in accordance with 48 CFR 9903.202-1, the offeror is not yet required to submit a Disclosure Statement. The offeror further certifies that if an award resulting from this proposal has not been made within 90 days after the end of that period, the offeror will immediately submit a revised certificate to the Contracting

Officer, in the form specified under subparagraph (c)(1) or (c)(2) of Part I of this provision, as appropriate, to verify submission of a completed Disclosure Statement.

CAUTION: Offerors currently required to disclose because they were awarded a CAS-covered prime contract or subcontract of \$50 million or more in the current cost accounting period may not claim this exemption (4). Further, the exemption applies only in connection with proposals submitted before expiration of the 90-day period following the cost accounting period in which the monetary exemption was exceeded.

II. COST ACCOUNTING STANDARDS--ELIGIBILITY FOR MODIFIED CONTRACT COVERAGE

If the offeror is eligible to use the modified provisions of 48 CFR 9903.201-2(b) and elects to do so, the offeror shall indicate by checking the box below. Checking the box below shall mean that the resultant contract is subject to the Disclosure and Consistency of Cost Accounting Practices clause in lieu of the Cost Accounting Standards clause.

The offeror hereby claims an exemption from the Cost Accounting Standards clause under the provisions of 48 CFR 9903.201-2(b) and certifies that the offeror is eligible for use of the Disclosure and Consistency of Cost Accounting Practices clause because during the cost accounting period immediately preceding the period in which this proposal was submitted, the offeror received less than \$50 million in awards of CAS-covered prime contracts and subcontracts. The offeror further certifies that if such status changes before an award resulting from this proposal, the offeror will advise the Contracting Officer immediately.

CAUTION: An offeror may not claim the above eligibility for modified contract coverage if this proposal is expected to result in the award of a CAS-covered contract of \$50 million or more or if, during its current cost accounting period, the offeror has been awarded a single CAS-covered prime contract or subcontract of \$25 million or more.

III. ADDITIONAL COST ACCOUNTING STANDARDS APPLICABLE TO EXISTING CONTRACTS

The offeror shall indicate below whether award of the contemplated contract would, in accordance with subparagraph (a)(3) of the Cost Accounting Standards clause, require a change in established cost accounting practices affecting existing contracts and subcontracts.

YES NO

(End of clause)

252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

____ (1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

____ (2) Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the

Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

Section 00700 - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2005
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.215-2	Audit and Records--Negotiation	JUN 1999
52.215-11	Price Reduction for Defective Cost or Pricing Data--Modifications	OCT 1997
52.215-13	Subcontractor Cost or Pricing Data--Modifications	OCT 1997
52.215-15	Pension Adjustments and Asset Reversions	OCT 2004
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions	JUL 2005
52.215-21	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data--Modifications	OCT 1997
52.217-7	Option For Increased Quantity-Separately Priced Line Item	MAR 1989
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	APR 2002
52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	SEP 2006
52.225-13	Restrictions on Certain Foreign Purchases	FEB 2006
52.225-14	Inconsistency Between English Version And Translation Of Contract	FEB 2000
52.227-4	Patent Indemnity-Construction Contracts	APR 1984
52.228-3	Worker's Compensation Insurance (Defense Base Act)	APR 1984
52.229-6	Taxes--Foreign Fixed-Price Contracts	JUN 2003
52.232-5	Payments under Fixed-Price Construction Contracts	SEP 2002
52.232-17	Interest	JUN 1996
52.232-18	Availability Of Funds	APR 1984
52.232-27	Prompt Payment for Construction Contracts	SEP 2005
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.232-38	Submission of Electronic Funds Transfer Information with Offer	MAY 1999
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52.236-2	Differing Site Conditions	APR 1984

52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13 Alt I	Accident Prevention (Nov 1991) - Alternate I	NOV 1991
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-17	Layout of Work	APR 1984
52.236-21 Alt I	Specifications and Drawings for Construction (Feb 97) - Alternate I	APR 1984
52.236-23	Responsibility of the Architect-Engineer Contractor	APR 1984
52.236-24	Work Oversight in Architect-Engineer Contracts	APR 1984
52.236-25	Requirements for Registration of Designers	JUN 2003
52.236-26	Preconstruction Conference	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-4	Changes	AUG 1987
52.243-6	Change Order Accounting	APR 1984
52.244-4	Subcontractors and Outside Associates and Consultants (Architect-Engineer Services)	AUG 1998
52.244-5	Competition In Subcontracting	DEC 1996
52.246-21	Warranty of Construction	MAR 1994
52.247-34	F.O.B. Destination	NOV 1991
52.247-63	Preference For U.S. Flag Air Carriers	JUN 2003
52.248-3	Value Engineering-Construction	SEP 2006
52.249-2 Alt I	Termination for Convenience of the Government (Fixed- Price) (May 2004) - Alternate I	SEP 1996
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense- Contract-Related Felonies	DEC 2004
252.204-7000	Disclosure Of Information	DEC 1991
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.215-7000	Pricing Adjustments	DEC 1991
252.215-7002	Cost Estimating System Requirements	DEC 2006
252.222-7002	Compliance With Local Labor Laws (Overseas)	JUN 1997
252.223-7002	Safety Precautions For Ammunition And Explosives	MAY 1994
252.223-7003	Changes In Place Of Performance--Ammunition And Explosives	DEC 1991
252.223-7004	Drug Free Work Force	SEP 1988
252.225-7005	Identification Of Expenditures In The United States	JUN 2005
252.225-7041	Correspondence in English	JUN 1997
252.227-7013	Rights in Technical Data--Noncommercial Items	NOV 1995
252.227-7022	Government Rights (Unlimited)	MAR 1979
252.227-7023	Drawings and Other Data to become Property of Government	MAR 1979
252.227-7030	Technical Data--Withholding Of Payment	MAR 2000
252.227-7033	Rights in Shop Drawings	APR 1966

252.231-7000	Supplemental Cost Principles	DEC 1991
252.232-7003	Electronic Submission of Payment Requests	MAY 2006
252.232-7008	Assignment of Claims (Overseas)	JUN 1997
252.232-7010	Levies on Contract Payments	DEC 2006
252.233-7001	Choice of Law (Overseas)	JUN 1997
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.236-7008	Contract Prices-Bidding Schedules	DEC 1991
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

CLAUSES INCORPORATED BY FULL TEXT

52.215-19 NOTIFICATION OF OWNERSHIP CHANGES (OCT 1997)

(a) The Contractor shall make the following notifications in writing:

(1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days.

(2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.

(b) The Contractor shall--

(1) Maintain current, accurate, and complete inventory records of assets and their costs;

(2) Provide the ACO or designated representative ready access to the records upon request;

(3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization, and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and

(4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

(End of clause)

52.222-29 NOTIFICATION OF VISA DENIAL (JIUN 2003)

It is a violation of Executive Order 11246 for a Contractor to refuse to employ any applicant or not to assign any person hired in the United States, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, or Wake Island, on the basis that the individual's race, color, religion, sex, or national origin is not compatible with the policies of the country where or for whom the work will be performed (41 CFR 60-1.10). The Contractor shall notify the U.S. Department of State, Assistant Secretary, Bureau of Political-Military Affairs (PM), 2201 C Street NW., Room 6212, Washington, DC 20520, and the U.S. Department of Labor, Deputy

Assistant Secretary for Federal Contract Compliance, when it has knowledge of any employee or potential employee being denied an entry visa to a country where this contract will be performed, and it believes the denial is attributable to the race, color, religion, sex, or national origin of the employee or potential employee.

(End of clause)

52.232-34 PAYMENT BY ELECTRONIC FUNDS TRANSFER—OTHER THAN CENTRAL CONTRACTOR REGISTRATION (MAY 1999)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT) except as provided in paragraph (a)(2) of this clause. As used in this clause, the term “EFT” refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend payment due dates until such time as the Government makes payment by EFT (but see paragraph (d) of this clause).

(b) Mandatory submission of Contractor's EFT information. (1) The Contractor is required to provide the Government with the information required to make payment by EFT (see paragraph (j) of this clause). The Contractor shall provide this information directly to the office designated in this contract, **U.S. Army Corps of Engineers, House #1, Street #1, West Wazir Akbar Khan (Behind Amani High School), Kabul, Afghanistan** to receive that information (hereafter: “designated office”) by “no later than 15 days prior to submission of the first request for payment”). If not otherwise specified in this contract, the payment office is the designated office for receipt of the Contractor's EFT information. If more than one designated office is named for the contract, the Contractor shall provide a separate notice to each office. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the designated office(s).

(2) If the Contractor provides EFT information applicable to multiple contracts, the Contractor shall specifically state the applicability of this EFT information in terms acceptable to the designated office. However, EFT information supplied to a designated office shall be applicable only to contracts that identify that designated office as the office to receive EFT information for that contract.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. (1) The Government is not required to make any payment under this contract until after receipt, by the designated office, of the correct EFT payment information from the Contractor. Until receipt of the correct EFT information, any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(2) If the EFT information changes after submission of correct EFT information, the Government shall begin using the changed EFT information no later than 30 days after its receipt by the designated office to the extent payment is made by EFT. However, the Contractor may request that no further payments be made until the updated EFT information is implemented by the payment office. If such suspension would result in a late payment under the prompt payment terms of this contract, the Contractor's request for suspension shall extend the due date for payment by the number of days of the suspension.

(e) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for--

(i) Making a correct payment;

(ii) Paying any prompt payment penalty due; and

(iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment and the provisions of paragraph (d) shall apply.

(f) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall provide the EFT information required by paragraph (j) of this clause to the designated office, and shall be paid by EFT in accordance with the terms of this clause. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(h) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information provided by the Contractor's financial agent.

(i) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address in the contract.

(j) EFT information. The Contractor shall provide the following information to the designated office. The Contractor may supply this data for this or multiple contracts (see paragraph (b) of this clause). The Contractor shall designate a single financial agent per contract capable of receiving and processing the EFT information using the EFT methods described in paragraph (c) of this clause.

(1) The contract number (or other procurement identification number).

(2) The Contractor's name and remittance address, as stated in the contract(s).

(3) The signature (manual or electronic, as appropriate), title, and telephone number of the Contractor official authorized to provide this information.

(4) The name, address, and 9-digit Routing Transit Number of the Contractor's financial agent.

(5) The Contractor's account number and the type of account (checking, saving, or lockbox).

(6) If applicable, the Fedwire Transfer System telegraphic abbreviation of the Contractor's financial agent.

(7) If applicable, the Contractor shall also provide the name, address, telegraphic abbreviation, and 9-digit Routing Transit Number of the correspondent financial institution receiving the wire transfer payment if the Contractor's financial agent is not directly on-line to the Fedwire Transfer System; and, therefore, not the receiver of the wire transfer payment.

(End of clause)

52.236-1 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least Twelve (12%) percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

(End of clause)

52.249-5000 BASIS FOR SETTLEMENT OF PROPOSALS

Actual costs will be used to determine equipment costs for a settlement proposal submitted on the total cost basis under FAR 49.206-2(b). In evaluating a terminations settlement proposal using the total cost basis, the following principles will be applied to determine allowable equipment costs:

(1) Actual costs for each piece of equipment, or groups of similar serial or series equipment, need not be available in the contractor's accounting records to determine total actual equipment costs.

(2) If equipment costs have been allocated to a contract using predetermined rates, those charges will be adjusted to actual costs.

(3) Recorded job costs adjusted for unallowable expenses will be used to determine equipment operating expenses.

(4) Ownership costs (depreciation) will be determined using the contractor's depreciation schedule (subject to the provisions of FAR 31.205-11).

(5) License, taxes, storage and insurance costs are normally recovered as an indirect expense and unless the contractor charges these costs directly to contracts, they will be recovered through the indirect expense rate.

(End of Clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://farsite.hill.af.mil>

(End of clause)

52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any Defense FAR supplement (48 CFR Chapter 2) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

252.204-7004 CENTRAL CONTRACTOR REGISTRATION (52.204-7) ALTERNATE A (NOV 2003)

(a) Definitions. As used in this clause--

“Central Contractor Registration (CCR) database” means the primary Government repository for contractor information required for the conduct of business with the Government.

“Commercial and Government Entity (CAGE) code” means--

(1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

(2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an “NCAGE code.”

“Data Universal Numbering System (DUNS) number” means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

“Data Universal Numbering System +4 (DUNS+4) number” means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

“Registered in the CCR database” means that--

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;

(2) The Contractor's CAGE code is in the CCR database; and

(3) The Government has validated all mandatory data fields and has marked the records "Active."

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS +4" followed by the DUNS or DUNS +4 number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number-

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at <http://www.dnb.com>; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company Physical Street Address, City, State, and Zip Code.

(iv) Company Mailing Address, City, State and Zip Code (if separate from physical).

(v) Company Telephone Number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the

CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(g)

(1)

(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12 of the FAR; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(h) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at <http://www.ccr.gov> or by calling 1-888-227-2423, or 269-961-5757.

(End of clause)

252.222-7006 COMBATING TRAFFICKING IN PERSONS (OCT 2006)

(a) Definitions. As used in this clause--

Coercion means--

(1) Threats of serious harm to or physical restraint against any person;

(2) Any scheme, plan, or pattern intended to cause a person to believe that failure to perform an act would result in serious harm to or physical restraint against any person; or

(3) The abuse or threatened abuse of the legal process.

Commercial sex act means any sex act on account of which anything of value is given to or received by any person.

Construction means construction, alteration, or repair (including dredging, excavating, and painting) of buildings, structures, or other real property. For purposes of this definition, the terms "buildings, structures, or other real property" include, but are not limited to, improvements of all types, such as bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, power lines, cemeteries, pumping stations, railways, airport

facilities, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, canals, and channels. Construction does not include the manufacture, production, furnishing, construction, alteration, repair, processing, or assembling of vessels, aircraft, or other kinds of personal property.

Debt bondage means the status or condition of a debtor arising from a pledge by the debtor of his or her personal services or of those of a person under his or her control as a security for debt, if the value of those services as reasonably assessed is not applied toward the liquidation of the debt or the length and nature of those services are not respectively limited and defined.

Employee means an employee of a contractor directly engaged in the performance of work under a Government contract, including all direct cost employees and any other contractor employee who has other than a minimal impact or involvement in contract performance.

Individual means a contractor that has no more than one employee including the contractor.

Involuntary servitude includes a condition of servitude induced by means of--

- (1) Any scheme, plan, or pattern intended to cause a person to believe that, if the person did not enter into or continue in such conditions, that person or another person would suffer serious harm or physical restraint; or
- (2) The abuse or threatened abuse of the legal process (22 U.S.C. 7102(5)).

Service contract means a contract that directly engages the time and effort of a contractor whose primary purpose is to perform an identifiable task rather than to furnish an end item of supply.

Service (other than commercial) means a service that does not meet the definition of commercial item in section 2.101 of the Federal Acquisition Regulation.

Severe forms of trafficking in persons means--

- (1) Sex trafficking in which a commercial sex act is induced by force, fraud, or coercion, or in which the person induced to perform such act has not attained 18 years of age; or
- (2) The recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

Sex trafficking means the recruitment, harboring, transportation, provision, or obtaining of a person for the purpose of a commercial sex act.

United States means the 50 States, the District of Columbia, and outlying areas.

(b) Policy. It is the policy of the Department of Defense (DoD) that trafficking in persons will not be facilitated in any way by the activities of DoD contractors or contractor personnel. DoD will not tolerate severe forms of trafficking in persons or use of forced labor by DoD contractors, DoD subcontractors, or DoD contractor or subcontractor personnel during the period of contract performance. Furthermore, DoD will not tolerate the procurement of commercial sex acts by DoD contractors, DoD subcontractors, or DoD contractor or subcontractor personnel, during the period of performance of service or construction contracts. As delineated in National Security Presidential Directive 22, the United States has adopted a zero tolerance policy regarding contractor personnel who engage in or support trafficking in persons.

(c) Contractor compliance.

(1) During the performance of this contract, the Contractor shall comply with the policy of DoD and shall not engage in or support severe forms of trafficking in persons or use forced labor. The Contractor is responsible for

knowing and adhering to United States Government zero-tolerance policy and all host nation laws and regulations relating to trafficking in persons and the use of forced labor.

(2) Additionally, if this contract is a service or construction contract, the Contractor shall not engage in or support the procurement of commercial sex acts during the performance of this contract and is responsible for knowing and adhering to United States Government policy and all host nation laws and regulations relating thereto.

(d) Contractor responsibilities for employee conduct--service or construction contracts. If this contract is a service or construction contract, the Contractor, if other than an individual, shall establish policies and procedures for ensuring that during the performance of this contract, its employees do not engage in or support severe forms of trafficking in persons, procure commercial sex acts, or use forced labor. At a minimum, the Contractor shall--

(1) Publish a statement notifying its employees of the United States Government policy described in paragraph (b) of this clause and specifying the actions that will be taken against employees for violations of this policy. Such actions may include, but are not limited to, removal from the contract, reduction in benefits, termination of employment, or removal from the host country;

(2) Establish an awareness program to inform employees regarding--

(i) The Contractor's policy of ensuring that employees do not engage in severe forms of trafficking in persons, procure commercial sex acts, or use forced labor;

(ii) The actions that will be taken against employees for violation of such policy; and

(iii) Laws, regulations, and directives that apply to conduct when performance of the contract is outside the United States, including--

(A) All host country Government laws and regulations relating to severe forms of trafficking in persons, procurement of commercial sex acts, and use of forced labor;

(B) All United States laws and regulations on severe forms of trafficking in persons, procurement of commercial sex acts, and use of forced labor that may apply to its employees' conduct in the host nation, including those laws for which jurisdiction is established by the Military Extraterritorial Jurisdiction Act of 2000 (18 U.S.C. 3261-3267) and 18 U.S.C. 3271, Trafficking in persons offenses committed by persons employed by or accompanying the Federal Government outside the United States; and

(C) Directives on trafficking in persons from the Combatant Commander, or the Combatant Commander's designated representative, that apply to contractor employees, such as general orders and military listings of "off-limits" local establishments; and

(3) Provide all employees directly engaged in performance of the contract with--

(i) Any necessary legal guidance and interpretations regarding combating trafficking in persons policies, laws, regulations, and directives applicable to performance in the host country; and

(ii) A copy of the statement required by paragraph (d)(1) of this clause. If this contract is for services (other than commercial), the Contractor shall obtain written agreement from the employee that the employee shall abide by the terms of the statement.

(e) Employee violations--notification and action. The Contractor shall--

(1) Inform the Contracting Officer immediately of any information it receives from any source (including host country law enforcement) that alleges a contractor or subcontractor employee has engaged in conduct that violates the policy in paragraph (b) of this clause. Notification to the Contracting Officer does not alleviate the Contractor's responsibility to comply with applicable host nation laws;

(2) In accordance with its own operating procedures and applicable policies, laws, regulations, and directives, take appropriate action, up to and including removal from the host nation or dismissal, against any of its employees who violate the policy in paragraph (b) of this clause; and

(3) Inform the Contracting Officer of any actions taken against employees pursuant to this clause.

(f) Remedies. In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraphs (c), (d), (e), or (g) of this clause may render the Contractor subject to--

(1) Required removal of a Contractor employee or employees from the performance of the contract;

(2) Required subcontractor termination;

(3) Suspension of contract payments;

(4) Loss of award fee, consistent with the award fee plan, for the performance period in which the Government determined Contractor non-compliance;

(5) Termination of the contract for default, in accordance with the Termination clause of this contract; or

(6) Suspension or debarment.

(g) Subcontracts.

(1)(i) The Contractor shall include the substance of this clause, including this paragraph (g), in all subcontracts performed outside the United States; and

(ii) If this contract is for services (other than commercial), the Contractor shall include the substance of this clause, including this paragraph (g), in all subcontracts performed in the United States for the acquisition of services (other than commercial).

(2) If this contract is a service or construction contract, the Contractor shall conduct periodic reviews of its service and construction subcontractors to verify compliance with their obligations pursuant to paragraph (d) of this clause.

(3) The Contractor shall--

(i) Immediately inform the Contracting Officer of any information it receives from any source (including host country law enforcement) that alleges a subcontractor has engaged in conduct that violates the policy in paragraph (b) of this clause. Notification to the Contracting Officer does not alleviate the Contractor's responsibility to comply with applicable host nation laws;

(ii) Take appropriate action, including termination of the subcontract, when the Contractor obtains sufficient evidence to determine that the subcontractor is in non-compliance with its contractual obligations pursuant to this clause; and

(iii) Inform the Contracting Officer of any actions taken against subcontractors pursuant to this clause.

(End of Clause)

252.225-7043 ANTITERRORISM/FORCE PROTECTION POLICY FOR DEFENSE CONTRACTORS
OUTSIDE THE UNITED STATES (MAR 2006)

(a) Definition. United States, as used in this clause, means, the 50 States, the District of Columbia, and outlying areas.

(b) Except as provided in paragraph (c) of this clause, the Contractor and its subcontractors, if performing or traveling outside the United States under this contract, shall--

(1) Affiliate with the Overseas Security Advisory Council, if the Contractor or subcontractor is a U.S. entity;

(2) Ensure that Contractor and subcontractor personnel who are U.S. nationals and are in-country on a non-transitory basis, register with the U.S. Embassy, and that Contractor and subcontractor personnel who are third country nationals comply with any security related requirements of the Embassy of their nationality;

(3) Provide, to Contractor and subcontractor personnel, antiterrorism/force protection awareness information commensurate with that which the Department of Defense (DoD) provides to its military and civilian personnel and their families, to the extent such information can be made available prior to travel outside the United States; and

(4) Obtain and comply with the most current antiterrorism/force protection guidance for Contractor and subcontractor personnel.

(c) The requirements of this clause do not apply to any subcontractor that is--

(1) A foreign government;

(2) A representative of a foreign government; or

(3) A foreign corporation wholly owned by a foreign government.

(d) Information and guidance pertaining to DoD antiterrorism/force protection can be obtained from Combined Security Transition Command, Afghanistan (CSTC-A) Camp Eggers, Kabul, Afghanistan.

(End of clause)

252.229-7000 INVOICES EXCLUSIVE OF TAXES OR DUTIES (JUNE 1997)

Invoices submitted in accordance with the terms and conditions of this contract shall be exclusive of all taxes or duties for which relief is available.

(End of clause)

252.229-7001 TAX RELIEF (JUN 1997)

(a) Prices set forth in this contract are exclusive of all taxes and duties from which the United States Government is exempt by virtue of tax agreements between the United States Government and the Contractor's government. The following taxes or duties have been excluded from the contract price:

Reference the exchange of diplomatic notes between the USA and Afghanistan dated 26 September 2002, 12 December 2002, and 28 May 2003; and/or successor notes or agreements as applicable.

(b) The Contractor's invoice shall list separately the gross price, amount of tax deducted, and net price charged.

(c) When items manufactured to United States Government specifications are being acquired, the Contractor shall identify the materials or components intended to be imported in order to ensure that relief from import duties is obtained. If the Contractor intends to use imported products from inventories on hand, the price of which includes a factor for import duties, the Contractor shall ensure the United States Government's exemption from these taxes. The Contractor may obtain a refund of the import duties from its government or request the duty-free import of an amount of supplies or components corresponding to that used from inventory for this contract.

(End of clause)

252.236-7001 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

- (1) Check all drawings furnished immediately upon receipt;
- (2) Compare all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies;
- (4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and
- (5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

- (1) Large-scale drawings shall govern small-scale drawings; and
- (2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

Title	File	Drawing No.
(See Appendix A of the RFP)		

(End of clause)

ECONOMIC SURVEILLANCE

Economic Surveillance Contract Language

Contractor shall report average pay rates and employment levels, for both domestic and international employees monthly. The information will be reported by labor category (as specified by USACE) and be specific to each work active work site. In addition the contractor shall report monthly non-labor contract spending for domestic and international contract expenses. This information will be reported by category (as specified by USACE) and will be specific to each active work site.

“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”.

52.000-4105

(b)

**WORKERS COMPENSATION INSURANCE (DEFENSE BASE ACT) -
CONSTRUCTION (NOV 2005)**

- 52 This clause supplements FAR Clause 52.228-3
- 53 The contractor agrees to procure Defense Base Act (DBA) insurance pursuant to the terms of the contract between the U.S. Army Corps of Engineers (USACE) and the USACE DBA insurance carrier unless the contractor has a DBA self-insurance program approved by the Department of Labor. The contractor shall submit a copy of the Department of Labor's approval to the contracting officer upon contract award. The current rate under the USACE contract is \$8.50 per \$100 of compensation for construction.
- 54 The contractor agrees to insert a clause substantially the same as the one in all subcontracts to which DBA is applicable. Subcontractors shall be required to insert a similar clause in any of their subcontracts subject to the DBA.
- 55 Should the rates for DBA insurance coverage increase or decrease during the performance of this contract, USACE shall modify the contract accordingly.

52.000-4106

DEFENSE BASE ACT INSURANCE RATES – LIMITATION FIXED-PRICE (NOV 2005)

- (c) The U.S. Army Corps of Engineers (USACE) has entered into a contract with an insurance carrier to provide all Defense Base Act (DBA) insurance to USACE contractors at a contracted rate under the OSD/USACE Centrally-Managed Pilot DBA Insurance Program. The rates for this insurance are as follows:

Services @ \$3.00 per \$100 of compensation; or

Construction @ \$7.25 per \$100 of compensation.

- (d) Bidders/Offerors should compute the total compensation (direct salary plus differential, but excluding per diem, housing allowance and other miscellaneous post allowances) to be paid to employees who will be

covered by DBA insurance and the cost of DBA totals in the spaces provided for the base period and whatever extension there may be thereafter, if applicable

- (e) Compensation of Covered Employees: _____
- (f) Defense Base Act Insurance Costs: _____
- (g) Total Cost: _____
- (h) Bidders/Offerors shall include a statement as to whether or not local nationals or third country nationals will be employed on the resultant contract

End of clause

**Your insurance should be applied to each line item as they pertain to labor cost for that line item.
Do not add a separate line item for DBA insurance, if you do your bid may be considered as non-responsive.**

(a) CNA Insurance – Contractor – Insurance Carrier

(1) Roger Ellickson (312) 822-4395 Roger.ellickson@cna.com

The Continental Insurance Co.
Roger Ellickson
DBA CNA Insurance
333 S. Wabash Avenue
Chicago, IL 60685-1809

• Rutherford International – Insurance Broker

– James Walczak (703) 813-6544 jim.walczak@rutherford.com

Rutherford International
James Walczak
5500 Cherokee Avenue, Suite 300
Alexandria, VA 22312

CLAUSES INCORPORATED BY REFERENCE

52.211-13	Time Extensions	SEP 2000
52.246-12	Inspection of Construction	AUG 1996
252.225-7028	Exclusionary Policies And Practices Of Foreign Government	APR 2003
252.232-7003	Electronic Submission of Payment Requests	MAY 2006

CLAUSES INCORPORATED BY FULL TEXT

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within **Seven (7)** calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than **240** calendar from receipt of the notice to proceed. * The time stated for completion shall include final cleanup of the premises.

(End of clause)

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of \$2,453.46 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

52.232-5000 PAYMENT FOR MATERIALS DELIVERED OFF-SITE (MAR 1995) --EFARS

(a) Pursuant to FAR clause 52.232-5, Payments Under Fixed Priced

Construction Contracts, materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to: (1) materials required by the technical provisions; or (3) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

(b) Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item. In addition to petroleum products, payment for materials delivered off-site is limited to the following items: _____
(End of clause)

52.236-4 PHYSICAL DATA (APR 1984)

52.236-4 PHYSICAL DATA (APR 1984)

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) The indications of physical conditions on the drawings and in the specifications are the result of site investigations by either surveys, core borings, and/or reconnaissance.

(b) Weather conditions. Information regarding weather conditions is available in Technical Specifications Section 01060 for examination by bidders. If additional information concerning weather is required prospective bidders should contact the U.S. Army corps of Engineers, Afghanistan Engineer District, House #1, Street #1, West Wazir Akbar Khan, (behind Amani High School); Kabul, Afghanistan.

(c) Transportation facilities. It shall be the responsibility of the Contractor to make his own investigation of available roads for transportation, of load limits of bridges on the roads, and of other road conditions, which may effect transportation of materials, equipment, and personnel to the site of the work.

(End of clause)

SECTION: 01010

**SECTION 01010
SCOPE OF WORK**

PAKTIKA

1. GENERAL

The project consists of a design/build complete facility at the Afghan National Army Brigade site at Paktika (Khair Kot), Afghanistan. The project is defined as the design, material, labor, and equipment to construct the following as a minimum: all structures (type and dimensions as defined in the drawings), production water wells, water storage tanks, permanent utilities to a defined termination point, temporary utilities, site grading, site drainage and runoff grading and contouring, access road, temporary fencing, and other supporting infrastructures. The Contractor shall provide all site drainage features and appurtenances as described in the text or identified on the sketches and as required to for site grading and drainage. It is the expectation of the Government that the Contractor exercise maximum flexibility and innovation in providing a quality end product that meets or exceeds the technical requirements with in this section. The work within this contract shall meet and be constructed in accordance with current U.S. design and International Building Codes (IBC), Life Safety Codes (NFPA-101), Force Protection and security standards. A partial listing of references is included herein:

IBC, International Building Codes 2003
NFPA 101, Life Safety Codes
UFC 4-010-01, DoD Minimum Anti-Terrorism Standards for Buildings.

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 of the Basic Contract.

1.3 WARRANTY: The Contractor shall repair and/or replace all defective materials or workmanship, at his own cost for a warranty period of one (1) year commencing upon the date of final acceptance of the project.

1.4 LOCATION:

All work in this contract is for the design and construction of ANA Brigade facilities at Khair Kot, Paktika Afghanistan. Paktika Brigade has a 1150 meter X 1150 meter footprint. Approximate coordinates are:

68D 29' 41.279"E	69D 30' 10.514"E
32D 53' 30.591"N	32D 53' 53.602"N
68D 30' 8.469"E	68D 30' 37.703"E
32D 52' 56.015"N	32D 53' 19.062"N

1.4. 1 Contractor shall use design schematics included in Appendix A; the Contractor will need to supplement per RFP and Code Analysis during the design phase. Note: All K-Span type buildings in the Khair Kot, Paktika Brigade are brand new and have no drawings available. Design drawing of certain buildings are also provided in Appendix C. The Contractor will need to site adapt these drawing packages to fit this site, design, draw and edit as required to meet the requirements of this RFP. Contractor shall prepare complete designs and specifications per RFP for all buildings and systems for review and approval by the Government. All designs and specifications created by the Contractor shall become the property of the Government and may be used in the future by the Government for Construction of similar facilities without further compensation to the Contractor. The Contractor shall site-adapt the K-Span designs to assure that the designs reflect the requirements of this RFP, making all changes as required. Contractor shall provide all Design Analysis, Specifications and Working Drawings for the entire Brigade including options for the 35%, 99% and 100%. In addition to printed full-sized copies, the Contractor shall provide electronic versions of all design documentation in AUTOCAD 2006 (version) to the AED in Kabul and the Residence Office. Files shall be arranged on a CD with each facility clearly identified as a separate subdirectory, with all files for that facility contained in that subdirectory. Each disk shall have an adhered printed label listing contents; hand-written labels are unacceptable.

1.4.2 SITE SECURITY

The Contractor shall provide perimeter force protection security for the developing site. Security may include but is not limited to fence and private security guards. Perimeter security shall prevent unauthorized site access and provide safety protection to the Contractor's work force and government personnel for the duration of the project. The Contractor is solely responsible for security; however, local police should be coordinated with regarding security.

1.5 The master plan site shall include layout of all option items and a planned future Mosque (785m²) to be master planned (in this contract). The contractor shall provide utility connections designed and sized for the future connection of these option items and Mosque facility in this contract. The Contractor shall provide water line, sewer line, electrical conduit, and communications conduit. All connections shall be within 1.5 meters of each option item and Mosque building site.

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

TABLE 1.1 WORK ITEMS **Base Bid Items**

Work Item	Completion Dates-Days from NTP
2.1 Site Survey/Master Planning	30 days
2.2 Site Grading, Road Network, and Storm Water Runoff	210 days
2.3 Sewage Treatment Plant	210 days
2.4 Temporary Electrical Power-NOT USED	NOT USED
2.5 Permanent Electrical Power & Distribution (Base Bid Buildings)	210 days
2.6 Water System	210 days
2.7 Force Protection Enclosure	150 days
2.8 Infantry Battalion Complex (1)	240 days
2.9 Infantry Battalion Complex (2)	240 days
2.10 Infantry Battalion Complex (3)	240 days
2.11 Embedded Training Team Compound	240 days
2.12 DFAC NO 1	240 days from award of option
2.13 Brigade & Garrison HQ Complex BHC/GHC	240 days from award of option
2.14 Bachelor Officers Quarters BOQ	240 days from award of option
2.15 Refueling Point	240 days from award of option
2.16 Reception Center	240 Days from award of option
2.17 Communications Building	240 days from award of option

**TABLE 1.2 WORK ITEMS
OPTION ITEMS**

**Order of option items has nothing to do with priority of award.
Options may be awarded **UP TO 120 days** after notice to proceed**

Work Item	Completion Dates-Days from Award of Options
2.18 Medical Clinic	180 days
2.19 Fire Station	180 days
2.20 Helipad	180 days
2.21 Sports Field	180 days
2.22 Combat Services Support Complex CSS	180 days
2.23 Combat Support Battalion Complex CS	180 days
2.24 Central Receiving Warehouse	180 days
2.25 Training Building	180 days
2.26 DPW Shop Building	180 days
2.27 Community Center (MWR)ZX	180 days
2.28 Detention Center	180 days
2.29 Solid Waste	180 days
2.31 Anti Vehicle Trench	180 days
2.32 Concrete Bunkers	180 days
2.33 Arms Storage Building	180 days
2.34 Laundry Building	180 days
2.35 Ammo Supply Point (ASP)	180 days
2.36 Solid Waste Management and Disposal	180 days

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 and cooling systems. All toilets shall be eastern style, except where western toilets are designated on the drawings. All 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 Appendices A and C.

The design and construction work shall include but not be limited to the following sub-paragraphs.

2.1 SITE SURVEY AND MASTER PLANNING:

The Site Plan shall be approximately 1150 meters X 1150 meters, see Section 1.2 Location for grid coordinates in of Site. The Contractor shall perform a site topographic survey; prepare a Master Plan for the entire facility including siting optional items, and a complete Site Drainage Plan with existing grades, proposed grades, perimeter force protection, and building finished floor elevations. The Contractor shall not locate facilities in wadis, dry river beds or areas subject to flooding. The development of the master plan will include participation in a Planning Charette that will be conducted at the Afghanistan Engineer District (AED), Qalaa House in Kabul. A Site Plan required for this project will be designed per this RFP. Contractor shall survey entire site. The master plan site shall include layout of Base Bid Items and all Option Items to be master planned and built (in this contract). See Appendix A for layout.

2.2 SITE GRADING, ROAD NETWORK, AND STORM WATER RUNOFF:

Perform complete site grading and installation of all required drainage structures per the Site Landscaping and Drainage Plan that will be prepared as part of this scope of work. Conduct topographic survey and mapping of the project site to include any existing and/or associated utilities, wet/dry creek beds, hydrological, geological, and botanical or other physical conditions that could impact on design. Design and construct the road network connecting main road or highway to the main entrance of the compound, all roads within the compound. Road design and construction shall include road signage, using international symbols for speed, curves, slow, and stop signs. Road construction shall include the installation of all required drainage structures.

2.3 SEWAGE TREATMENT PLANT

Sewer collection system shall be designed to accommodate a total occupant load of (4,000) persons. Provide an aerated stabilization pond system effluent pond, and sewer piping with manholes and cleanouts. The lowest elevation sewage treatment pond shall include a pump for recycling gray water. Exterior sanitary sewer line construction shall include service to all buildings 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 all sewers shall be located outside of the roadways as much as practical, and minimize the number of roadway crossings. Construction required shall include appurtenant structures and building sewers to points of connection with Building drains 1.5m outside the Building, to which the sewer collection system is to be connected. Design Drawing Package of this building shall be provided for construction to successful Contractor. If the sewage treatment system cannot be completed on schedule, the contractor shall provide temporary sewage collection and disposal services.

2.4 TEMPORARY ELECTRICAL POWER & DISTRIBUTION SYSTEM- NOT USED

2.5 PERMANENT ELECTRICAL POWER & DISTRIBUTION SYSTEM

Design and build a Permanent Power Plant including Building and power distribution system for PAKITIKA (Khair Kot Base Bid Items). Generators shall be provided for on-site power. Provide refueling

point adjacent It is the Contractor's responsibility to calculate the full load requirements and determine the size of the generators necessary to provide total electrical power supply for all base bid buildings and power requirements. Number of generating units shall be based on N+2 principal. Where 'N' would represent number of units required to meet initial demand loads plus 25% spare capacity and '+2' would represent a spare generator available at all times. Provide switch gear for future connection to Permanent power, see optional items. Generators shall have fuel heaters for cold weather operation. Connect Generators to concrete foundation with vibration isolators. Provide a generator pads that dampens vibrations to the surrounding building. Building type shall be Pre-Engineered metal buildings on concrete slab with equipment pads with reinforced CMU walls. Provide space in the prime power building for two (2) future generators to include all necessary equipment pads and connection conduits. Contractor shall fill tanks full and refill at the end of testing before project turn over. See Appendix A for drawings. If the contractor cannot provide permanent power on schedule, temporary power shall be provided to the facilities.

2.5.1 PERMANENT ELECTRICAL POWER FUEL SUPPLY (Base Bid)

Contractor to include bulk fuel storage capacity based on 4 week (30 days) full-load operation for current base bid requirements. After testing generators, Contractor shall provide a full supply of fuel to the tanks at the time of turnover to the Government. All the fuel tanks will be inside a concrete reinforced containment wall and water tight wall to contain any fuel spillage. The volume of the concrete reinforced wall shall be 110% of the fuel tank capacity and shall be 600 mm above top of fuel tank. Provide a 50 mm diameter drain pipe with a valve thru the wall to drain water that may have accumulated inside after a rain. Provide chain link fence and gates around entire fuel storage facility. Provide chain link fence with gates, C-wire, heavy duty hasp and locks at all fuel storage tanks and openings to prevent theft.

2.6 WATER SYSTEM

Design and construct a water system to include development of a ground well water source; water well pumps and service booster pumps, chlorination and water storage tank(s) sized for the entire Master Plan of 4,000 occupants with one day of storage and one day of usage; and water distribution system to serve the entire installation including all buildings in Master Plan. Provide chain link fence and gates around entire water facility. If the contractor cannot provide water on schedule, the contractor shall provide temporary water to the facilities.

2.7 FORCE PROTECTION ENCLOSURE

Base force perimeter size is 1100 meters X 1100 meters. Design and construct a Force Protection Perimeter Fence (4400 meters); approximately 1,400 meters of stone wall and 3000 meters chain link fence. Provide two (2) gates minimum into compound; with guard towers at 400 meter maximum intervals. Provide a Guard House at each opening in the perimeter one at the main gate, and one at the alternate gate; and a Reception Building at the main gate. See Section 01015 for additional Force Protection requirements. Design Drawing Package of this fence shall be provided for construction to successful Contractor.

2.7.2 GUARD TOWERS

Guard towers shall be provided at each corner and at all gates through the Force Protection Perimeter Fence/Wall and at 400 meter intervals maximum. Construction of guard towers shall be 200 mm reinforced concrete, slab, walls, and ceiling. Provide metal roof and eaves to match other buildings on the compound, with gutter and downspout to splash block. Guard towers shall be provided with general lighting and shall be fitted with a prison-grade 360-degree Omni- directional searchlight. Provide built-in counters with two (2) file drawers and one (1) pencil drawer. Provide duplex receptacles shall be as required for general use. Provide red lights inside guard towers to maintain night vision for occupants. Area immediate outside vicinity of guard towers shall be provided with mud grate similar to what is provided at the barracks door and shall be sloped sufficiently drain away from the building. Guard Towers shall have a concrete foundation below the frost line. Guard Facility shall be provided with general illumination, Communication/Data and duplex receptacles. Provide wiring to Communication Building thru a loop to all guard towers and guard houses with a redundant feed to Communication Building. Provide a minimum of two comm. jacks to each tower. Provide built-in counter with 2 file drawers and pencil drawers. Windows shall be 13 mm laminated glass in heavy duty steel frames that

open out and up. Provide arm on each side to lock in open position and provide cam latch to lock window in closed position. Provide seals on doors and windows to make dust tight. Provide remote lever controlled 45 million candlepower 500 watt prison grade search light roof mounted on each guard tower roof. Provide electric wall mounted split-pack heat pump units located on wall opposite fence. Provide bullet-resistant entry doors. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.7.3 GUARD HOUSES

Guard House design shall be shall be 200 mm reinforced concrete, slab, walls, and ceiling. Provide metal roof and eaves to match other building on compound. Provide metal roof and eaves to match other building on compound. A general space shall be provided for two (2) guards within Guard House. Provide duplex receptacles shall be as required for general use. Provide red lights inside guard houses to maintain night vision for occupants. Windows shall be sliding 13 mm laminated glass in heavy duty sliding aluminum frames. All other spaces mentioned in the standard design shall be provided elsewhere within the site. Areas immediately outside vicinity of Guard House shall be provided with mud grate similar to what is provided at the barracks door and shall be sloped sufficiently drain away from building and pedestrian areas. Guard House shall have a concrete slab foundation below the frost line. Guard House shall be provided with general lighting and shall be fitted with a 360-degree Omni directional searchlight and Communication/Data and duplex receptacles. Provide wiring to Communication Building thru a loop to all guard towers and guard houses with a redundant feed to Communication Building. Provide a minimum of two comm. jacks to each guard house. Provide built in counter with 2 file drawers and pencil drawers. Provide electric wall-mounted split-pack heat pump units. Area immediately outside vicinity of Guard House shall be lighted and provided bullet-resistant entry doors. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2. 8 INFANTRY BATTALION COMPLEX (1)

Design and construct a Infantry Battalion capable of supporting 651 personnel. (42 Officers will Billet at the BOQ). Complex shall consist of the following buildings: 3 - "A" Type Barracks; 3 - "B" Type Barracks; 1- Toilet/Shower Building; 1- Battalion Headquarters Building; w/Toilets; 1- Arms Storage Building; 1- Battalion Storage Building; 1 – Motor Pool; 1- POL Storage Building; 1- Solid Waste Collection Point. See Appendix A for drawings.

2. 9 INFANTRY BATTALION COMPLEX (2)

Design and construct a Infantry Battalion capable of supporting 651 personnel. (42 Officers will Billet at the BOQ). Complex shall consist of the following buildings: 3 - "A" Type Barracks; 3 - "B" Type Barracks; 1- Toilet/Shower Building; 1- Battalion Headquarters Building; w/Toilets; 1- Arms Storage Building; 1- Battalion Storage Building; 1 – Motor Pool; 1- POL Storage Building; 1- Solid Waste Collection Point. See Appendix A for drawings.

2. 10 INFANTRY BATTALION COMPLEX (3)

Design and construct a Infantry Battalion capable of supporting 651 personnel. (42 Officers will Billet at the BOQ). Complex shall consist of the following buildings: 3 - "A" Type Barracks; 3 - "B" Type Barracks; 1- Toilet/Shower Building; 1- Battalion Headquarters Building; w/Toilets; 1- Arms Storage Building; 1- Battalion Storage Building; 1 – Motor Pool; 1- POL Storage Building; 1- Solid Waste Collection Point. See Appendix A for drawings.

2.11 EMBEDDED TRAINING TEAM COMPOUND (ETTC) FACILITES:

Near center of Brigade provide ETTC consisting of stone force protection wall with two separate 2400 mm steel gates, parking for 200 vehicles and a guard tower at each corner, all utilities water, sewer, and electricity shall be connected to base utilities. Provide electric wall mounted split-pack heat pump units for these facilities.

2.11.1 ETTC Facilities: All buildings shall be constructed of reinforced insulated concrete plastered walls, with K – Span roofs. Windows shall be 6 mm laminated glazing set in heavy duty aluminum frames. Barracks and toilet facilities shall be built separately for men and women (80% Men and 20%

Women). Provide Barracks with double loaded corridors built to the following space requirements. Sleeping rooms for ten (10) Officers @15 m² net per sleeping area, one-hundred sixty-five (165) enlisted @ 7.5 m² net per sleeping area. Fifty (50) KBR personnel @ 7.5 m² net per sleeping area. Provide shower, sink and toilet facilities for 250 persons @ 1/10. Provide one (1) Moral, Welfare and Recreation (MWR) building @ 200 m². Provide Storage Building 100 m². Provide Laundry Room with industrial grade washers and dryers for 250 persons @ 1/10. All ETTC facilities shall be provided with split pack heat pump units, for air conditioning/heating. Walk-off grates shall be provided at all exterior doors with removable galvanized steel grates and dirt wells, size full door width by one (1) meter long. Provide 1 collection point for solid waste temporary solid waste storage. Provide Master Plan and space for expansion in camp for a total population of 450 trainers.

2.11.2 DFAC Number 2: Facility shall be a western style kitchen for ETTC forces in the compound with commercial grade tables and commercial grade metal stackable chairs for 120 occupants. Stoves and ovens shall be commercial electric. Kitchen shall be sized to prepare food for 250 people. This facility shall provide cafeteria-style feeding and a short order grill next to a heated serving line w/sneeze guard 8 meter length min. Provide toilets, (2 separate) hand wash area with a stainless steel 2 meter pot sink, food service with all stainless fixtures and shelves and prep sinks/tables, dry storage, walk-in freezer, walk-in refrigerator, stainless self-serve counter, beverage counter, self-service cold-drink refrigerator w/sliding doors, and loading dock. Dining facility shall be 400 m² minimum. Provide an adequate grease trap with clean out to collect discharge from the kitchen area prior to discharging into the sewer system. Provide at front entry a concrete sidewalk and covered canopy to match roof. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.11.3 INTERPRETER FACILITIES: Locate adjacent to the ETTC Facility. Provide separate compound consisting of stone force protection wall per Section 2.5 Force Protection Perimeter with two 2400 mm steel gates, all utilities water, sewer, and electricity shall be connected to base utilities. All floors in building shall be terrazzo, except utility type rooms and buildings. All buildings shall be constructed of reinforced fully grouted CMU with metal roofs. Provide Barracks with double loaded corridor built to the following space requirements; sleeping rooms for 50 Translators @ 7.5 m² net per sleeping area @ 6.0 m² minimum. Provide shower, sink and eastern toilet facilities for 50 persons @ 1/10 and a storage room for janitor supplies and mop sink. Provide one (1) Moral, Welfare and Recreation (MWR) Building @ 75 m². Provide 50 m² Office Space. Minimum. Walk-off grates shall be provided at all exterior doors with removable galvanized steel grates and dirt wells, size full door width by one (1) meter long. Provide electric wall mounted split-pack heat pump units for these facilities.

2.11.4 DFAC Number 3: Facility shall be a western style kitchen for ETTC Interpreters in the compound with commercial grade tables and commercial grade metal stackable chairs for 30 occupants. Stoves and ovens shall be commercial electric. This facility shall provide cafeteria-style feeding and a short-order grill next to heated serving line w/sneeze guard. Kitchen shall be sized to prepare food for 50 people. Provide two public toilets, hand wash area, food service with all stainless fixtures and shelves, dry storage, walk-in freezer, walk-in refrigerator, stainless self-serve counter and beverage counter, stainless steel prep sinks and wash pot sinks and, self-service cold-drink refrigerator w/sliding doors and loading dock. Dining facility shall be 120 m² minimum size. All Interpreter facilities shall have split-pack units, air-conditioning/heating. Provide an adequate grease trap with clean out to collect discharge from the kitchen area prior to discharging into the sewer system. Provide at front entry a concrete sidewalk and covered canopy to match roof. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.12 DINING FACILITY (DFAC NUMBER 1)

Supplement existing designs as required by RFP and construct a new Dining Facility (DFAC) 2,088 m² with 1512 m² Dining Room seating for 1,000 persons. Design shall be for an open-clear span facility (may have one row of columns in center of room), using insulated modular building construction with CMU walls 3 meters min A.F.F. All floors in building shall be terrazzo, except utility type rooms and

buildings. Provide at front entry a concrete sidewalk and covered canopy to match roof construction, length 20 meters. The Training Building shall be located adjacent to of the DFAC with connecting canopy at door between for use during population surges. Exact layout will be confirmed at Design Charette. Walk-off grates shall be provided at all exterior doors with removable galvanized steel grates and dirt wells provide boot scraper for boot cleaning. Size grates full door width by one (1) meter long. Provide 3 flag poles at main entry. The Contractor shall design and construct one (1) collection point suitable for solid waste disposal temporary storage area adjacent to the DFAC. This building shall be Pre-engineered Metal Building with upper wall and roof constructed of insulated metal panels. The lower walls shall be reinforced insulated CMU. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.12.1 DINING FACILITY PROPANE STORAGE

Provide Propane Storage for four (4) weeks operation assuming all stoves are in operation at the highest fuel consumption rate. Provide full tanks when project is turned over to Client.

2.13 BRIGADE & GARRISON HEADQUARTERS COMPLEX BHC/GHC

Design and construct a combined Brigade & Garrison HQ. Capable of supporting 351 personnel. (93 Officers will Billet at the BOQ). Complex shall consist of the following buildings: 1 - "A" Type Barracks; 2 - "A" Type Barracks; 1- Toilet/Shower Building; 1- Brigade Headquarters Building w/toilets (552 m²); 1- Garrison Headquarters Building, w/toilets 990 m²; 1- Arms Storage Building; 1- BHC Motor Pool with POL Storage Building; 1- GHC Motor Pool with POL Storage Building; 1- Maintenance Garage (1395 m²); 1- Refueling Point with 39,000 liters of diesel storage and 1,000 liters of MOGAS storage; 1- Solid Waste Collection Point; 6-Flagpoles. This will be finalized at the Charette.

2. 14 BACHELOR OFFICERS QUARTERS BOQ BUILDING All buildings shall be constructed of reinforced insulated concrete plastered walls, with K – Span roofs. Design and construct a Bachelor Officer Quarters complex with double loaded 1500 mm corridors built to the following space requirements. Provide housing for: (274) O1-O3 @ 14 m² double occupancy, with shared toilets; Shared toilets shall be grouped in one area on the corridor shall be constructed with a toilet/shower/sink ratio of 7:1 for O1-O3. Provide housing for: (35) O4-O5 @ 14 m² single occupancy, with shared toilets; Shared toilets grouped in one area on the corridor shall be constructed with a toilet/shower/sink ratio of 4:1 for O4-O5. Provide housing for: (2) O6-O8 one bedroom apartments with living room, private bath and closets @ 52 m² single occupancy. Provide Diesel Heat w/Evaporative Cooling with ceiling fans. Provide a janitor room with a mop sink each toilet.

Sink ratio	1:10
Shower Ratio	1:8
Toilet Ratio	1:10
Ablution Area	1:10

2.15 REFUELING POINT

1- Refueling Point with 38,000 liters of diesel storage and 1,000 liters of MOGAS storage; complete with concrete containment floor and walls, power, and dispensing pumps. Design Drawing Package of this facility shall be provided for construction to successful Contractor.

2.16 RECEPTION CENTER

Design shall be 200 mm reinforced concrete, as indicated on plans. Building shall have concrete slab with foundation below the frost line. Provide Eastern style toilets with wall- mounted vitreous china sink; furnish soap dispensers, paper towel dispensers, robe hooks and toilet paper holders. Provide a janitor room with a mop sink. Finish in toilets shall be terrazzo floors and ceramic tile walls. Provide Split Pack

Heat Pump Units for entire building. All floors in building shall be terrazzo. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.17 COMMUNICATIONS BUILDING

Design and construct a Communications Building and wiring system. Design shall be 200 mm reinforced CMU, as indicated on plans. Building shall have concrete slab with foundation below the frost line. Provide toilets with wall-mounted vitreous china sink; furnish soap dispensers, paper towel dispensers, robe hooks and toilet paper holders. Provide a janitor room with a mop sink. Janitor room and any room(s) with water may not contain any electrical panel boards, circuit breakers, UPS system, or communications equipment. Floor in Communication Equipment Room shall be raised floor. See Section 4.9 below and 01015 paragraphs 10 thru 10.3.2 for additional details and requirements. Provide HVAC system for entire building. Walls: Concrete walls below grade shall be waterproofed using a water stop, waterproofing adhered to concrete walls, with geo-cloth, gravel, and perforated drainage pipes sloped 2% to drain. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.18 MEDICAL CLINIC

Supplement existing design as required and construct a 900m² medical clinic with similar layout per appendices. Clinic shall provide the following: Examination rooms, X-ray room, Film room, Eye exam, Orthopedic, Dental, Dental lab, Pharmacy, Medical records, Administration, Lobby/waiting, Conference, Offices, Electrical room, Medical storage, Emergency room, Laboratory, Toilets, Showers, Patient rooms, Patient Bay, Break room, Janitor closet with a mop sink and Storage area. All floors in building shall be terrazzo, except utility-type rooms or as required by UFC-4-510-01. Build using insulated modular construction; insulated prefabricated metal structure with CMU 3,000 mm A.F.F. Building shall have concrete slab with concrete foundation below the frost line. The structure will have a central ducted forced air HVAC system for the entire building. Medical clinic shall be constructed to the standards specified in UFC 4-510-01: Military Medical Facilities. Provide four (4) covered ambulance parking spaces using prefabricated metal building. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.19 FIRE STATION

Design and construct a 520 m² Fire Station. Design shall be for an open bay facility, insulated modular construction with 4-meter overhead doors. Open bays will be provided with exhaust fans for summer ventilation. Provide living quarters with Offices, Sleeping Areas, and Toilets together with a janitor room with a mop sink, Class Room, Living Room, Kitchen, and Dining Room. Entire building will be provided Diesel Heat w/Evaporative Cooling with A/C in the living areas. All floors in building shall be terrazzo, except garage and utility-type rooms. Modify plan and provide second exit at end of the corridor. Construct building using insulated prefabricated metal structure with CMU 2,000 mm A.F.F. Provide two bollards at each roll-up door jamb. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.20 HELIPAD

Design and construct a reinforced concrete helipad. The helipad shall be sited in accordance with safe minimum distances from all structures, and shall have an asphalt access road to the helipad. Helipad shall have a reinforced concrete landing surface with a 5 meter wide asphalt concrete apron on 4 sides of helipad, and shall be designed to accommodate a fully loaded CH-47 Chinook Helicopter. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.21 SPORTS FIELD

Construct Sports Field with reviewing stand and soccer field (standard 400 meter asphalt track). Provide heavy-duty aluminum bleachers (seating for 320) with 10" wide aluminum seats with non-skid surface. All aluminum planks shall be furnished with smooth finish end caps that install easily with self-tapping screws. Framework understructure is heavy-duty galvanized steel with front and rear cross braces to stabilize frame. Understructure is robotic welded and hot dipped galvanized. Anchor entire

assembly to concrete a foundation. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.22 COMBAT SERVICES SUPPORT BATTALION CSS

Design and construct a Combat Services Support Battalion capable of supporting 496 personnel. (49 Officers will Billet at the BOQ). Complex shall consist of the following buildings: 3 - "A" Type Barracks; 1 - "B" Type Barracks; 1- Toilet/Shower Building; 1- Battalion Headquarters Building; w/Toilets; 1- Arms Storage Building; 1- Battalion Storage Building; 1 – Motor Pool; 1- POL Storage Building; 1- Solid Waste Collection Point. See Appendix A for drawings.

2.23 COMBAT SUPPORT BATTALION CS

Design and construct a Combat Services Support Battalion capable of supporting 352 personnel. (43 Officers will Billet at the BOQ). Complex shall consist of the following buildings: 2 - "A" Type Barracks; 2 - "B" Type Barracks; 1- Toilet/Shower Building; 1- Battalion Headquarters Building; w/Toilets; 1- Arms Storage Building; 1- Battalion Storage Building; 1 – Motor Pool; 1- POL Storage Building; 1- Solid Waste Collection Point. See Appendix A for drawings.

2.24 CENTRAL RECEIVING WAREHOUSE

Construct a Central Receiving Warehouse (1,520 m²) Designs shall be for open bay facilities, using insulated modular construction with 3 meter CMU walls. Provide Split Pack Heat Cool Unit in office with 52-inch ceiling fan. Provide two 5 meter X 5 meter high roll-up doors. Provide two bollards at each roll-up door jamb. Building type shall be Pre-Engineered metal building with reinforced CMU walls. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.25 TRAINING BUILDING

Design and construct a 1,202 m² Training Building. Training Building shall have an auditorium/gymnasium. Four (4) offices (10 m² each) shall be provided. Provide 11 Eastern style toilets and 6 sink troughs together with a janitor room with a mop sink, all toilets shall face north/south. Locate Training Building near the dining facility to accommodate surges in brigade population. Design shall be for an open-clear span facility, using insulated modular construction with CMU walls 3 meters min A.F.F. Building shall be heated and cooled using Diesel Heat w/Evaporative Cooling and minimum 52-inch ceiling fans. Building shall have 5-meter high unobstructed ceiling space. Reconfigure Appendix A Plan, turn toilets and office spaces, 90 degrees and relocate them to the end of building (away from Dining Facility), and keep the double doors. Building type shall be Pre-Engineered metal buildings with reinforced CMU walls. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.26 DPW SHOP BUILDING.

Supplement existing design as required and construct a DPW Shop Building 486 m². Building shall have offices, toilet, break room, conference room, and shop with double roll up doors. The building will have Diesel Heat w/Evaporative Cooling. Drawing Package of this building shall be provided for construction to successful Contractor.

2.27 MORAL WELFARE RECREATION BUILDING MWR

Supplement existing designs as required and construct the following 900 m² MWR Building: provide 3-meter clear ceiling height. The building will have Diesel Heat w/Evaporative Cooling. Building type shall be Pre-Engineered metal buildings with reinforced CMU walls. See Appendix A for layout.

2.28 DETENTION FACILITY

Provide and install Detention Facility for 10 detainees and office for 2 guards. Holding cells shall be designed for double occupancy with the following built in amenities: Bunks attached to wall, eastern style toilets, shower, and lavatory. Entry shall be a sally port. Building shall be constructed with reinforced concrete floor, walls and ceiling, with a metal roof. Provide office

space and Toilet with eastern style toilets, shower, lavatory, power, and comms for two guards. Provide lockers for four guards. All fixtures shall meet the current American Correction Association (ACA) standards. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.29 SOLID WASTE COLLECTION POINTS AND DISPOSAL SITE

Provide and install collection points for solid waste until it is picked up and removed to the landfill/burn site. Design and construct a landfill/burn site from base off the ASP or Range road. See Section 01015 for requirements.

2.30 PERMANENT ELECTRICAL POWER PLANT AND FUEL STORAGE

Contractor to include the design and build of an incremental increase in the Permanent Power Plant, including Building, power distribution system, and bulk fuel storage capacity based on 4 week (30 days) full-load operation for the optional bid item capacity, with provision to accommodate fuel storage for future generators based on paragraph 1.2 future buildings. After testing generators, Contractor shall provide a full supply of fuel to the tanks at the time of turnover to the Government. Provide switch gear for future connection to local power. All the fuel tanks will be inside a concrete reinforced wall and water tight wall to contain any fuel spillage. The volume of the concrete reinforced wall shall be 110% of the fuel tank capacity and shall be 600 mm above top of fuel tank. Provide a 50 mm diameter drain pipe with a valve thru the wall to drain water that may have cumulated inside after a rain. Provide chain link fence and gates around entire fuel storage facility see Perimeter Fence Section 01015 paragraph 2.5.6 for construction. Provide heavy duty hasp and locks at all fuel storage tanks and openings to prevent theft. Design Drawing Package of this building shall be provided for construction to successful Contractor.

2.31 ANTI VEHICLE TRENCH

Provide an anti-vehicle trench (3 meters wide X 2 meters deep) around perimeter of Brigade and Ammo Supply Point. Ditch shall be adjacent to all force protection fences and walls. Ditch shall be 5 meters from perimeter fences and walls.

2.32 CONCRETE BUNKERS

Provide Concrete Bunkers though out compound; with seating for 1200 persons. Site and grade so water cannot stand inside bunkers. Provide 150 mm base course of gravel under sandbags. See Appendix A for layout.

2.33 ARMS STORAGE BUILDING

Construct Battalion Arms Storage Building (350 m²). Design using reinforced fully grouted CMU walls and partitions with insulated metal gable, and roof construction. Install vented louver in each storage area with 30 mm security bars @ 150 mm O.C. Install split-pack heat pump unit in office. Provide wood racks for storing long arms. Provide two bollards at each roll-up door jamb. Design Drawing Package of this building shall be provided for construction to successful Contractor. See Appendix A for layout.

2.34 LAUNDRY BUILDING

Design and construct the Laundry Building (112 m²). Design shall provide for 10 washers and 10 dryers single stack, provide folding table with storage shelves under table, and storage shelves along one end wall. Washer and dryer shall be commercial grade. Main entry door shall have a recessed entry with Dutch door. The building will have Diesel Heat w/Evaporative Cooling. Provide 52-inch ceiling fan. See Appendix A for layout.

2.35 AMMUNITION SUPPLY POINT (ASP)

Design and construct an Ammunition Supply Point for an ANA Infantry Brigade. Facility shall be 187 square meters (7.62 meters (25 feet) by 24.5 meters (80 feet)]. Munitions Storage Igloo Type A, per Army Standard Magazine STO 33 15 74. The ASP shall be located remotely from the Garrison 1500

meters, and will consequently require a perimeter fence with concertina wire and security lighting, one guard house, one guard tower that allows for visibility in all four directions. See Appendix A.

2.35.1 ASP Guard tower shall be provided in a position and of sufficient height to view entire facility and surrounding area. Construction of guard tower shall be 200 mm reinforced concrete. Guard tower shall be provided with general lighting and shall be fitted with a 360-degree omni-directional searchlight. Provide built-in counter with 2 file drawers and 1 pencil drawer. Duplex receptacles shall be provided as required for general use. Provide red lights inside the guard tower to maintain night vision. Access will be by stairs. Area immediately outside the vicinity of guard hut shall be provided with an all-weather non-slip surface and shall be graded to sufficiently drain away from the building. Building shall have a concrete slab with a foundation below the frost line. Facility shall be provided with general illumination, and Communication/Data and duplex receptacles. Provide wiring to Communication Building thru a loop to all towers and guard house with a redundant feed to Communication Building. Provide a minimum of two comm. jacks to each tower. Facility shall be provided with general lighting. Provide remote lever controlled 45 million candlepower 500 watt prison grade search light roof mounted on guard tower roof. Provide built in counter with 2 file drawers and pencil drawers (see comment above). Windows shall be 13 mm laminated glass in heavy duty steel frames that open out and up. Provide arm on each side to lock in open position and provide cam latch to lock window in closed position. Provide seals on doors and windows to make dust tight. Provide grate for boot cleaning. Entry doors to be bullet-resistant. Provide Split Pack Heat Pump Unit.

2.35. 2 ASP Guard House design shall be shall be 200 mm reinforced concrete, as indicated on plans. A general space (1500 mm X 1500 mm) shall be provided for one (1) guard within the Guard House. Windows shall be 13 mm laminated glass in heavy duty steel frames that open out and up. Provide arm on each side to lock in open position and provide cam latch to lock window in closed position. Provide seals on doors and windows to make dust tight. All other spaces mentioned in standard design shall be provided elsewhere within the site. Areas immediately outside vicinity of guard hut shall be provided with an all-weather non-slip surface and shall be graded to sufficiently drain away from the building and pedestrian areas. Building shall have concrete slab with foundation below frost line. Facility shall be provided with general lighting and shall be fitted with a 360-degree omni directional searchlight, Provide red lights inside the guard house to maintain night vision. Communications/Data and duplex receptacles. Provide wiring to Communication Building thru a loop to all guard houses and guard tower with a redundant feed to Communication Building. Provide a minimum of two comm. jacks to each guards house. Provide built-in counter with 2 file drawers and 1 pencil drawer. Provide Split Pack Heat/Cool Unit. Area immediately outside the vicinity of guard house shall be lighted. Provide grate for boot cleaning. Entry doors to be bullet-resistant.

2.36 SOLID WASTE MANAGEMENT AND DISPOSAL

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

2.36.1 Design and construct a landfill/burn site down wind from base off the ASP or Range road. Site shall be dug into hillside and lined with 1000 mm clay fill to prevent leachate from entering the ground water (size 90 meters X 40 meters X 3 meters deep.) Verify with the COR for exact location.

2.36.2 Design and construct 4 collection points for living quarters and 4 for administration building, suitable for solid waste temporary storage areas with a 2 meter high wall and metal roof, enclosure shall have two metal gates in a 2 meter opening. Storage area shall be 4 meters X 5 meters with reinforced concrete slab and CMU or stone walls and metal roof on metal trusses. Eave shall match typical buildings. The Contractor shall prepare design plans showing location of collection points. Indicate locations on site plan. Provide next to hard surface road and 25 meters from inhabited buildings.

2.36.3 Design and construct 1 collection point suitable for solid waste disposal temporary storage area adjacent to each DFAC with a 2 meter high wall and metal roof on metal trusses. Eave shall match typical building profiles. Enclosure shall have two metal gates in a 2 meter opening. Storage area shall be 4

meters X 5 meters with reinforced concrete slab and CMU w/plaster or stone walls. The Contractor shall prepare design plans showing location of collection point adjacent to DFAC. Provide next to hard surface road and 25 meters from DFAC.

2.36.4 Design and construct an Incinerator adjacent to medical clinic install downwind of clinic on a concrete foundation. Include UFGS Specification Section 118221 for Incinerator Medical Waste in Specification. Incinerator shall be designed, constructed and installed per this standard and specification. Include in Specifications and Design Analysis

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.

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, UXO/mine disposal shall be handled in accordance with Section 01015, Technical Requirements.

4. DESIGN GUIDE INFORMATION:

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

4.1 UNIQUE SITE REQUIREMENTS:

4.1.1 The building design for shall provide insulation and exterior window shading techniques to reduce building heat loss and heat gain. Contractors shall include energy efficient heating and cooling solutions in design analysis.

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

4.1.4 All building that are not K-Span shall have a sloped metal roof, with metal eaves, and soffits. See Section 01015 for roof specifications and warranty. All roof water run off from K-Span buildings shall have gutters and downspouts. All buildings with sloped metal roofs shall have gutters and downspouts. No water shall drain across walkways, stairs etc.

4.1.3 All building shall have finish floor set 150 mm above adjacent finish grade. Finish grade shall slope away from building 5% for three meters. All downspouts shall terminate at a splash block that diverts water 1000 mm away from building.

4.2 Barracks, Office, and Other habitable Buildings

The following notes shall be incorporated into the Barracks and Headquarters designs:

Barracks, HQ Building complexes and all habitable building shall be designed to accomplish the following:

a. Barracks shall be spaced far enough apart to minimize noise (minimum 15 meters between barracks). The spacing shall also be suitable for snow removal at entrances, where applicable, and allowing for green space (trees and scrubs) for all sites.

B. Barracks complexes shall be arranged to allow for common area (central plaza) for Battalion/Headquarters assembly.

c. Heating and cooling for all habitable buildings larger than 250 square meters shall be by forced-air diesel-fired furnaces; and cooling by an integral evaporative-cooler. At least one Heat-Cool Unit for each separate structure, with multi Units for larger buildings. Buildings less than 250 square meters and those buildings specifically requiring split package heat pump units shall be provided with split package heat pump units.

d. All habitable buildings shall be thermally insulated to R13 for walls and R 38 for roof, except where Government furnished designs define R 30 for the roof.

e. All Barracks buildings shall be designed as open bay structures, sized for 5 square meters gross per soldier. Barracks buildings will be heated by forced-air diesel-fired furnaces; and cooling by an integral evaporative-cooler. Full height non-load bearing partitions shall be provided between the Enlisted and NCO billeting, as shown on the drawing. E9's and E8's shall have private rooms at 12 m2 net. E7's shall be double occupancy within 12 m2 rooms. All E1 – E6's shall sleep in open bays.

f. All barracks shall be of the standard size shown in the drawings.

g. All Barracks and building lighting shall be designed and constructed to provide a uniform level of minimum lighting in accordance with Section 01015 throughout the buildings. Fluorescent lighting shall be installed throughout barracks buildings.

h. Each Brigade Headquarters, Garrison Headquarters and Infantry Battalion Complex shall have a central toilet/shower facility with showers, toilets, and ablution/sinks, to be designed and constructed in each of the Complex-areas. The central toilet/shower facilities shall be sized to fit each complex see Paragraph i below for ratio, (see attached sketch as a guide only, sizes will vary) with a central changing area, open lockers, private bathing/showers, ablution, and toilets. The central toilet/shower facilities shall be designed with toilets facing North/South away from Mecca, for cultural reasons. Do not provide urinals for cultural reasons. Provide one central toilet/shower facility in each complex area as a separate stand alone building (not attached to a barracks building).

i. Provide the following Toilet/Shower/Sink Ratios for the facilities unless other wise noted (U.O.N)

Sink ratio	1:20
Shower Ratio	1:12
Toilet Ratio	1:20
Ablution Area	1:20

j. All toilets shall be eastern style. Toilets shall be oriented on the north-south axis. The flush tank shall be provided with heavy duty push type button capable of withstanding abuse. Reference Section 1015 for additional details.

k. Ablution areas shall contain hot and cold water spigots with a flexible 1.5m spray hose mounted below the control valves with a back flow prevented fitting at the hose bib and hanger. Ablution areas shall be provided with low flow water devices.

l. All sinks for the Brigade, Garrison, and Battalion HQ buildings and the central toilet/shower facilities shall be 1.8m wide trough type constructed poured in place with ceramic tile exterior and stainless steel lining capable of withstanding abuse. Maximum width is 1.8m. Individual troughs shall serve only three (3) individuals with 3 spigots with hot and cold water and two drains.

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

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

o. Showers shall contain a valve for hot and cold water mixing. There shall be a swivel showerhead mounted on the wall. The showerhead and the spigot shall each have a valve so that flow can be diverted to each. Showers shall be provided with low flow water devices.

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

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

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

4.3 SITE

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

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

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

4.4 Warehouse Facilities

Construct Battalion Storage Building and Central Receiving warehouse facilities will be unheated except for offices. Design shall be for open bay facilities, provide 3 meter CMU walls and pre-engineered insulated building. Provide Split Pack Heat Pump Unit in office with 52-inch ceiling fan. Provide two 5 meter X 5 meter high roll-up doors. Building shall have 5 meter high unobstructed space. Provide two bollards at each roll-up door jamb. For full height chain link partitions. Building type shall be Pre-Engineered metal buildings with reinforced CMU walls. See Appendix A for layout.

Battalion Storage Buildings	800 m ²
Central Receiving Warehouse	1,520 m ²

4.5 Motor Pool Parking Areas

The following minimum space requirements shall apply to the motor pool parking areas:

Infantry Battalion Motor Pools	2,000 m ²
CSS Company Motor Pool	1,000 m ²

CS Company Motor Pool	1,000 m ²
Garrison Motor Pool	15,600 m ²
Brigade Motor Pool	1,500 m ²

4.6 Motor Pool and Vehicle Maintenance Facilities

The Motor Pool and Vehicle Maintenance facilities open areas will be heated by forced-air diesel-fired furnaces; and cooling by an integral evaporative-cooler. Offices spaces shall have split unit HVAC heat pumps with both heating and cooling and 52-inch ceiling fans.

The following requirements shall apply to the motor pool and vehicle maintenance facilities:

a. Garrison, CS, and CSS Company Maintenance Building, Provide dutch doors at all tool rooms with lock for both halves. Provide Diesel Heat w/Evaporative cooling each building. Brigade Motor Pool, and Garrison Motor Pool – Each Motor Pool shall have a small 5 m x 5 m building with two separate rooms for storage of vehicle fluids and tools. Provide two bollards at each roll-up door jamb. All floors in building shall be sealed concrete.

b. Garrison Motor Pool – The Garrison Motor Pool Area shall have a refueling point with storage capacity as specified in Section 01015.

c. Maintenance Garages – 1,395 m² Maintenance Garages shall be provided at the Garrison area. These garages shall contain 9 drive-through maintenance bays with overhead doors (5mx4m) at both ends of each bay as well as 5 meter concrete apron. The maintenance buildings shall have storage areas, office areas and tool rooms. Provide pits w/steps in 2 bays, on each side. They will have a 2-ton and 10-ton overhead bridge crane that can traverse the entire length of all maintenance bays. One each welding hood tailpipe CO exhaust system with hose reel and waste oil collection system to be provided for each of the two sides of the maintenance garage. The CS and CSS Company Maintenance Building shall be a similar floor plan with a reduced building size. CS and CSS Maintenance garage will have 3 drive-through maintenance bays with one two ton crane. Provide pits w/steps. Maintenance garages shall include exhausted battery storage/maintenance rooms in the garage. Provide two bollards at each roll-up door jamb. Reference the drawings attached.

d. POL storage buildings, minimum size 25 m². Each POL storage building shall have two rooms.

4.7 Brigade Headquarters Buildings

The designs for the following buildings should consider co-location of the Brigade and HQ buildings and should take into consideration the future expansion of the HQ building.

The following space requirements shall apply to the Brigade Headquarters Buildings:

Brigade Headquarters Building

Type of Space	Quantity	Area(m ²)	Total(m ²)
Open Office Spaces	N/A	351	351
Private Office	2	10	20
Private Office	7	14	98
Private Office	1	15	15
Private Office	1	28	28
Conference Room	1	40	40
Total Office Space			552

4.9 Installation Communication Systems

This facility will serve as the installation's center for telecommunications, switching, and automation networking (including internet service). See 01015, section 10.

4.10 Foundations

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

4.11 Prime Power Plant Fuel

The prime power plant shall include bulk fuel storage capacity based on four weeks full-load operation for current capacity on design with provision to accommodate fuel storage for 2 additional generators. Provide refueling point adjacent to exterior stone wall, location subject to approval of the COR. Provide a road with truck turn-around at fueling point.

PART 2 – COMPLETION OF WORK

All work under this contract shall be completed and buildings ready for beneficial occupancy in accordance with the following schedule:

2.1 Site Survey/Master Planning	30 days
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Work Items to be completed no later than 30 calendar days after Task Order award:

2.7 Force Protection Enclosure	150 days
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Work Items to be completed no later than 150 calendar days after Task Order award:

2.2 Site Grading, Road Network, and Storm Water Runoff	210 days
2.3 Sewage Treatment Plant	210 days
2.5 Permanent Electrical Power & Distribution (Base Bid Buildings)	210 days
2.6 Water System	210 days

Work Items to be completed no later than 210 calendar days after Task Order award:

2.8 Infantry Battalion Complex (1)	240 days
2.9 Infantry Battalion Complex (2)	240 days
2.10 Infantry Battalion Complex (3)	240 days
2.11 Embedded Training Team Compound	240 days

Work Items to be completed no later than 240 calendar days after Task Order award:

Work Items to be completed no later than 180 calendar days after exercise/award of OPTION items:

Work Item	Completion Dates-Days from Award of Options
2.18 Medical Clinic	180 days
2.19 Fire Station	180 days
2.20 Helipad	180 days
2.21 Sports Field	180 days
2.22 Combat Services Support Complex CSS	180 days
2.23 Combat Support Battalion Complex CS	180 days
2.24 Central Receiving Warehouse	180 days
2.25 Training Building	180 days
2.26 DPW Shop Building	180 days
2.27 Community Center (MWR)ZX	180 days
2.28 Detention Center	180 days
2.29 Solid Waste	180 days
2.31 Anti Vehicle Trench	180 days
2.32 Concrete Bunkers	180 days
2.33 Arms Storage Building	180 days
2.34 Laundry Building	180 days
2.35 Ammo Supply Point (ASP)	180 days
2.36 Solid Waste Management and Disposal	180 days

2.12 DFAC NO 1	240 days from award of option
2.13 Brigade & Garrison HQ Complex BHC/GHC	240 days from award of option
2.14 Bachelor Officers Quarters BOQ	240 days from award of option
2.15 Refueling Point	240 days from award of option
2.16 Reception Center	240 Days from award of option
2.17 Communications Building	240 days from award of option

Work Items to be completed no later than 240 calendar days after exercise/award of OPTION items:

2.1 Liquidated Damages: The Government reserves the right to exercise one, all or none of the optional items shown in the Proposal Schedule. Liquidated damages for the amount of \$ 6,408.69 will be assessed for each day of delay over and beyond the pre-determined performance period for the base contract. Liquidated damages for the amount of \$ 970.00 will be assessed for each day of delay over and beyond the pre-determined performance period for each completion date for each optional line item.

PART 3 – EXECUTION

3.1 SCHEDULE

Review Section 00150 for Schedule requirements. The development of the master plan and conceptual plans will include participation in a 2 to 5-day Planning Charette meeting at the 10% to 15% design effort in Kabul to finalize design. The Charette shall consist of the Customer, Contractor, Design Team and U.S. Army Corps of Engineers personnel to finalize design. Completion of construction documents for 100%, after approval of a preliminary facility layout and landscape plan, the Contractor may commence Site Work. Any Options to be awarded shall be awarded no later than 360 calendar days after the Notice to Proceed (NTP). Contractor will prosecute the work diligently, and complete the entire work, ready for use, See Table 1.1 for completion dates for individual buildings and groups of buildings. The time stated for completion shall include final cleanup of the premises. The Contractor shall survey site and verify the existing conditions and report to the Contracting Officer any interface problems that could potentially impact this work. The Contractor shall be responsible for submittals and developing and performing all operational and acceptance testing. Contractor shall construct the facilities as a Design-Build construction contract and shall be in accordance with all codes, regulations, and requirements outlined in this Request for Proposal (RFP).

3.2 All primary construction facilities, such as, barracks, heat plant, all headquarters buildings, MWR, DFAC, DPW, Training Center, and Community Center facilities will display both the flag of the Peoples Islamic Republic of Afghanistan and the United States of America.

EXAMPLE: MARKING (NOT TO SCALE)



از طرف دولت امریکا
برای مردم افغانستان

From the People of the United States
to the People of Afghanistan

End of Section

SECTION 01015

TECHNICAL REQUIREMENTS

1. GENERAL

1.1 The Contractor's design and construction must comply with technical requirements contained herein. The Contractor shall provide design and construction using the best blend of cost, construction efficiency, system durability, ease of maintenance and environmental compatibility.

1.2 These design and product requirements are minimum requirements. The Contractor is encouraged to propose alternate design or products (equipment and material) that are more commonly used in the region; will be equally or more cost effective or allow for more timely completion, but furnish the same system durability, ease of maintenance and environmental compatibility. The Contractor will be required to submit information as requested by the Contracting Officer to make a comparison of the proposed alternate. All variations must be approved by the Contracting Officer.

1.3 ASBESTOS CONTAINING MATERIALS

Asbestos containing material (ACM) shall not be used in the design and construction of this project. Submission of material data sheets with non-ACM material is required. 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.

1.4 SAFETY

1.4.1 Unexploded Ordnance (UXO). Conducted by others.

1.4.1.1 UXO/Mine Discovery During Project Construction

It is the responsibility of the Contractor to be aware of the risk of encountering UXO and to take all actions necessary to assure a safe work area to perform the requirements of this contract. If during construction, the contractor becomes aware of or encounters UXO or potential UXO, the contractor shall immediately stop work at the site of encounter, 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.

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.

NOTE: For previous UXO/mine information, 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

1.4.1.1 Explosives Safety

1.4.1.1.1 General Safety Considerations

General safety considerations applicable to personnel, both essential and non-essential, at project sites where UXO may be encountered include:

- a. Do not carry fire or spark-producing devices.
- b. Do not conduct explosive or explosive-related operations without approved procedures and proper supervision and UXO safety support.
- c. Do not become careless by reason of familiarity with UXO or the reported probability level of UXO contamination.
- d. Do not conduct explosive or potentially explosive operations during inclement weather.
- e. Avoid contact with UXO except during UXO clearance operations.
- f. Conduct UXO-related operations during daylight hours only.
- g. Employ the "buddy system" at all times.

1.4.1.1.2 Activity Hazard Analysis (AHA) briefings

- a. Activity Hazard Analysis's shall be prepared in accordance with the Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1.
- b. Hazard analyses will be prepared and briefed by personnel that are knowledgeable in UXO and explosives safety standards and requirements. These personnel should understand the specific operational requirement and hazard analysis methodologies. A hazard analysis will be performed for each activity to determine the significance of any potential explosive-related hazards. Explosive residues may be discovered or exposed during UXO operations in the form of powder or various granular and powder based pellets. These contaminants can enter the body through the skin or by ingestion if proper personal hygiene practices are not followed. Explosive fillers such as white phosphorus are dangerously reactive in air and acute exposure can result in serious injury to the skin, eyes, and mucous membranes. They are also a fire hazard.

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

1.4.1.2 Notification of Noncompliance

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall make no part of the time lost due to such stop orders the subject of claim for extension of time or for excess costs or damages.

1.5 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.

1.6 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.

1.7 SUBCONTRACTORS

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

1.8 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. This list is not exhaustive and is not necessarily complete.

AABC - Associated Air Balance Council (National Standards for total System Balance)
ACI 318 Building Code Requirements for Structural Concrete (latest edition), American Concrete Institute
Air Force Manual 32-1071, Security Engineering, volumes 1-4, 1 May 1994
American Water Works Association, ANSI/AWWA C651-99 standard
ARI - Air Conditioning and Refrigeration Institute
ASCE 7-02, Minimum Design Loads for Buildings and Other Structures, 2002
ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers
ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy
ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality
ASHRAE Standard 62.2-2004, Ventilation and Acceptable Indoor Air Quality for Low-Rise Residential
ASHRAE Standard 90.1-2001, Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE Standard 90.2-2004 with 2006 supplement, Energy-Efficient Design of Low-Rise Residential Buildings
ASME - American Society for Mechanical Engineering
ASTM - American Society for Testing and Materials
AWS - 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 (2002).
IBC - International Building Codes, 2003 (and its referenced codes including those inset below)
IFGC – International Fuel Gas Code
IMC – International Mechanical Code
IPC – International Plumbing Code
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].

National Electrical Safety Code (NESC), Institute of Electrical and Electronic Engineers (IEEE C2), 2002 edition
NFPA 10, Portable Fire Extinguishers, 2002 edition
NFPA 54, National Fuel Gas Code, 2002
NFPA 58, Liquefied Petroleum Gas Code, 2004
NFPA 70, National Electrical Code, 2002 edition
NFPA 72, National Fire Alarm Code, 2002 edition
NFPA 75, Standard for the Protection of Information Technology Equipment
NFPA 90A, Air Conditioning and Ventilating Systems, 2002 edition
NFPA 101, Life Safety Code, 2003 edition
NFPA 110, Standard for Emergency and Standby Power Systems, 2005 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
UFC 1-200-01, Design: General Building Requirements, 20 June 2005
UFC 1-300-07A Design Build Technical Requirements
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 3-240-09FA previous document TM 5-814-3/AFM 88, Vol 3 Domestic Wastewater Treatment
UFC 3-240-06A Wastewater Collection and Pumping
UFC-24—07FA Sanitary and Industrial Wastewater Collection: Gravity Sewers and Appurtenances
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, 25 May 2005
UFC 3-400-01, Design: Energy Conservation, 5 July 2002
UFC 3-410-01FA Heating, Ventilating and Air Conditioning, Change 1, 15 May 2003
UFC 3-410-02A, HVAC Control Systems. 15 May 2003
UFC 3-430-01FA, Heating and Cooling Distribution Systems, 27 Jy 2003
UFC 3-501-03N, Electrical Engineering Preliminary Considerations, 16 Jan 2004
UFC 3-520-01, Interior Electrical Systems, 10 June 2002
UFC 3-530-01AN, Design: Interior and Exterior Lighting and Controls, 19 Aug 2005
UFC 3-540-04N Design: Diesel Electric Generating Plants, 16 Jan 2004
UFC 3-550-03FA Design: Electrical Power Supply and Distribution Systems, 1 Mar 2005
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 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings, 19 Jan 2007
UFC 4-020-01FA, Security Engineering: Project Development, 1 Mar 2005
UFC 4-020-02FA, Security Engineering: Concept Design, 1 Mar 2005
UFC 4-020-03FA, Security Engineering: Final Design, 1 Mar 2005
UFC 4-020-04FA, Electronic Security Systems: Security Engineering, 1 Mar 2005
UFC 4-021-01, Design and O&M: Mass Notification Systems, draft 1 May 2006
Underwriters' Laboratories (UL) Fire Protection Equipment Directory (2002)
UL Standards (as applicable)

UL 710, Exhaust Hood for Commercial Cooking Equipment, latest edition
UL 737, Fireplace Stoves, latest edition
UL 752, Bullet Resisting Equipment, 2000 or later
USCINCCENT OPORD 97-1

The publications to be taken into consideration shall be those of the most recent editions. 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.

2. SITE DEVELOPMENT:

2.1 GENERAL

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

2.2 ENVIRONMENTAL PROTECTION

2.2.1 Applicable regulations

The Contractor shall comply with all Host Nation laws, rules, regulations or standards concerning environmental pollution control and abatement with regard to discharge of liquid waste into natural streams or manmade channels. The contractor shall review host nation and U.S. Government environmental regulations with the contracting officer prior to design and discharge of any liquid wastes into natural streams or manmade channels.

2.2.2 Notification

The Contracting Officer will notify the Contractor in writing of any observed non-compliance with the foregoing provisions. The Contractor shall immediately take corrective action. If the Contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No extension of time or damages will be awarded to the Contractor unless it was later determined that the Contractor was in compliance.

2.2.3 Spillages

Measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washings, herbicides and insecticides, and construction materials from polluting the construction site and surrounding area.

2.2.4 Disposal

Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., shall be taken to a dumpsite off site and subject to the approval of the Contracting Officer. Burning at the project site for the disposal of refuse and debris will not be permitted.

2.3 CIVIL SITE DEVELOPMENT

2.3.1 SITE PLAN

The contractor shall locate the facilities in general agreement with the drawings included and any requirements in the Scope of Work 01010. All buildings, roads, parking areas, entry control points, guard towers, wall, fence, utility structures, and other 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.

Assume survey mapping and detailed topographical maps are not obtainable. If existing and will be used, the accuracy shall be verified. Assume that there is no functioning infrastructure for water supply, pumping or distribution; no sanitary sewer collection system, lift stations or sewage treatment facility. Assume solid waste management and/or collection facilities are non-existent. Generally, limited investigation has been conducted to determine availability, previous usage, capacities or quality of water. For the project site, it is anticipated that the sole source of water will be Ground Water Wells (GWW) to be located on the site for Force Protection. Unless otherwise noted, raw water from on-site GWW sources shall not be considered acceptable for potable water use. The estimated water demand is 41 gallons per day per soldier, with the estimated total strength of 4,000 soldiers. Hence new water supply, pumping and distribution infrastructure will include: 1) A sufficient number of wells drilled into the best available aquifer in the vicinity of planned wells, installed with properly sized screen or slotted pipe, sand and gravel packs, etc., and fully developed for optimal yield, 2) Well pump(s), valves, flow meters, flow control devices, air and vacuum 3) Water transmission main to the proposed water distribution network planned to serve the battalions and support activities, 4) Water Storage Tank (minimum 1 day's storage) 5) Service booster pumps plus jockey (if necessary based on engineering site investigation) 6) Water disinfection (chlorination system). An entirely new sanitary sewer collection system shall be constructed to include: 1) aerated stabilization pond with effluent discharge pipe to an approved effluent pond 2) Sewage Lift Station (if necessary based on engineering site investigation) 3) complete sewage collection system, gravity sewer in service areas and force main as needed, 4) Building service connections

Design and construct the road network connecting main road or highway to the main entrance of the compound, all roads within the compound, to the ASP, and to the Ranges. All roads shall be graded and constructed with 300mm sub base course and surfaced with 100mm well graded, crushed aggregate. The minimum roadway width shall be 7 meters. The road network within the compound shall be asphalt surfaced, with 100 mm of asphalt. Road construction shall include the installation of all required drainage structures. See Appendix A.

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, and clear and grubbing. All refuse and debris shall be disposed of off site. Holes and depressions shall be backfilled. Fill materials shall be composed of satisfactory soils or aggregates defined in ASTM D 2487 as GW, GP, GM, SP, SM, SW, CL-ML. Minimum soil compaction shall be 95 percent of maximum density as defined in ASTM D 1557.

2.3.3 GRADING AND 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 5% for 3 meters.

2.3.4 PAVING

2.3.4.1 Roads

Approximately four (4) kilometers of roads are required within the compound area and approximately 2 km of road to connect from the main entrance of the compound to the nearest main road or highway. All pre-existing conditions are undeveloped land with gentle slopes, without substantial vegetation and with natural drainage channels of moderate size and spacing that are dry most of the time. All roads shall be of wearing surface 7.3 meters wide with 1.5 meters shoulders, graded for proper drainage, provided with necessary drainage structures, drainage ditches and completed with prescribed surfaces in accordance with applicable sections of TM 5-822-2 and TM 5-822-5 standards. Provide road signs in the compound using universal language or symbols. Provide markings on the asphalt road. The compound (cantonment area) roads sections shall have compacted crushed aggregate base course with an asphalt topping and shall be provided with necessary drainage structures and completed with prescribed surfaces in accordance with applicable sections of TM 5-822-2 and TM 5-822-5 standards. Provide road to the ASP approximately 1500 meters, and a road to the Ranges these roads shall be constructed with 300mm sub base course and surfaced with 100mm well graded, crushed aggregate. Base course shall be compacted to 95% proctor density and mechanically stabilized by compaction. Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. Provide Base Parking per Section 01010, paragraph 4.5, surfaced with crushed stone per Section 01010 paragraph 4.3. Crushed stone shall also be provided around buildings and pathways. Contractor shall notify the Contracting Officer immediately if initial site survey determines that area hydrology requires major drainage structures or bridges (see Bridges). Also, the Contracting Officer shall be immediately notified if the required lengths of road or preexisting conditions are determined to be substantially or materially different than the above-described conditions/estimates.

2.3.4.2 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.

2.3.4.3 Parking Areas and Motor Pools

Contractor shall construct parking and storage areas using aggregate surface. Sub grade shall be 150mm (6 inches) minimum in depth scarified and compacted to 95% proctor density. Aggregate base shall be 150mm (6 inches). Aggregate Base Course (ABC) material must be well graded, durable aggregate 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 presented in ASTM D 1557 or equivalent DIN, BS, or EN standards.

2.3.5 Entry Control Point

2.3.5.1 Exterior Compound Wall

Design and construct a Force Protection Perimeter Stone Wall perimeter Fence per Scope of Work Section 01010 and RFP. All foundations shall extend below the frost line to frost depth (min 800 mm), top of wall shall be 2400 mm from finish grade to high point of concrete cap, and align with top of chain link. Provide detail/elevation at fence indicating how fence will transition from level to slope and over ridges. The stone walls will need vertical reinforcing and horizontal reinforcing to resist wind and seismic loads. The vertical reinforcing must be adequately anchored or lapped into the wall footing. The footing must be sized to resist sliding and overturning from the design loads. Install outriggers and single-strand concertina wire on top of the wall. The walls shall measure at least 2500 mm high with a thickness of the walls not less than 600 mm.

2.3.5.2 Gates and Fence

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. Post sizes shall be as shown on drawings.

The gates shall be swing type. Vehicle gates shall be a pair of 3.65 m wide x 2.4 m high leafs, constructed of a steel tube frame and steel tube intermediate posts and rails. Design and construct a Force Protection entry gates heavy steel frame, with decorative 6mm steel skin and matching man gate with view port. Gates shall swing from one meter square reinforced concrete columns covered with stone to match fence. Provide reinforced grade beam across gateway flush with pavement to lock gates with flush mounted vertical sliding bolts, bolts shall be 50 mm dia solid steel. The design of the gates shall insure that it is dimensionally stable, square, true and planar. Gate leafs shall not rack or deflect when installed on its hinges. Gates shall have a sufficient number of hinges 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.

2.3.5.3 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.

2.3.5.4 Outriggers

Outrigger supporting arms shall be "Y" shaped with post securely embedded into the top of the wall. Posts shall conform to ASTM F 1083, Pipe, Steel, Hot Dipped Zinc Coated (Galvanized) Welded.

2.3.5.5 Vehicle Barriers

2.3.5.5.1 Active Barriers - Drop Arm Gates

The height of the beam shall be a minimum of 30 inches (750 mm) above finished grade. The crash beam must be capable of blocking a minimum road width of 4.0 meters. The crash beam shall be manually raised and lowered with less than 30 pounds of force. The end of the crash beam should include a locking pin with padlock acceptance for securing the beam when it is in the down position capable of stopping large (10,000 lb.) trucks, in addition to heavy duty steel gates into the Brigade. Additional active barriers shall be tire shredder type with manual latch down capability. Shredders shall extend the entire width of the roadway opening where installed.

2.3.5.5.2 Passive Barriers

Barriers shall be concrete blocks of one meter by one meter by one meter dimensions. Similar arrangements of large stones (one cubic meter size), jersey barriers or equal sized obstacles may be used.

2.3.6 CIVIL UTILITIES

2.3.6.1 General

The design of the water and sanitary systems shall be sized to provide flow and discharge based on a

fixture unit basis. The design drawings shall show all utility lines, line sizes, valves, manholes, disinfection systems, and applicable details associated with water and sanitary system designs. Specifications covering water lines, valves, pumps, controls, sanitary sewers and storm sewers shall be submitted as part of the design and shall require standard materials that are available in-country. Contractor shall install and connect exterior sanitary sewer collection and water supply piping to service connection points of each facility requiring such.

Infrastructure design and construction shall be designed for a total population of 4,000 personnel.

2.3.6.2 Water

2.3.6.2.1 General Water

Infrastructure design and construction shall serve the demand. The Contractor shall install water distribution mains, branches, laterals, lines and service connections to include all pipe, valves, fittings and appurtenances. Exterior water line construction shall include service to all buildings as described in the Scope of Work Section 01010. Also reference the Overall Site Map attached to this document. The required Average Daily Demand (ADD) approximation is ultimately 620,000 liters (or 164,000 gallons) of potable water, derived from 155 liters per capita per day (lpcd) or 41 gallons per capita per day (gpcd). In the event potable or non-potable use water is required prior to completion of the water facilities infrastructure, the Contractor may be issued a Request for Proposal to provide non-potable (tank truck) and potable (bottled or other reliable source) consumption. Provide a minimum of one (1) freeze proof outside water hydrant (hose spigot) for each building. A minimum cover of 800 mm (2'-8") will be required to protect the water lines against freezing.

Water Quality Sampling and Analysis

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

2.3.6.2.2 Well House

At new wells or springs, construct a permanent well house with concrete slab floor. The floor of the well house shall slope away from the casing approximately 3 mm per 300 mm (1/8" per foot). Floor of well house shall be above flood plain. The well house design should be such that the well pump, motor and drop pipe could be removed readily. The well house shall protect valves and pumping equipment plus provide freeze protection for the pump discharge piping beyond the check valve. The well house shall be insulated and a heating unit installed. The well shall be protected from unauthorized use by a security fence with lockable gate. Provide outriggers, barbed wire and concertina wire on fence and gate.

2.3.6.2.3 Raw Water Disinfection

Contractor shall perform disinfection of the well water in accordance with AWWA A 100 or equivalent. Bacteriological samples shall be collected and examined in accordance with Standard Methods for the Examination of Water and Wastewater by a qualified lab as approved by the Contracting Officer. A filtration system is required; its location, type and function to be determined by the contractor.

2.3.6.2.4 Service Booster Pumps (Direct Pressure System Pending Engineering Site Investigation)

Contractor shall provide a booster pump station with end suction or split case double suction horizontal split case (frame mounted) centrifugal pumps arranged in parallel for pumping water storage into the main distribution system. The pumps and controls shall be designed to supply and maintain acceptable system pressure throughout the distribution network given the full range of flow conditions (low flow to peak). For conditions of low demand and to prevent short cycling of primary pumps, provide a low demand jockey pump with capacity of one-third (1/3) of the Average Daily Demand (ADD). Each booster pump, two (2), shall be capable of delivering 2 times (2x) the ADD. Provide suitable expansion tank. The suction side of the service booster pumps shall have an eccentric reducer and gate valve installed. The discharge side shall have a gate valve, check valve between the pump and the gate valve and concentric reducer, pressure gage and air relief valve.

2.3.6.2.5 Water Storage Tank

Contractor shall provide a circular steel or circular concrete ground storage reservoir (GST) to be located on the ground surface. Volume of the GST 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. The storage facility shall be located on the higher elevations of the site to promote gravity flow and reduce pumping requirements. Overflow and air vents shall be screened so that birds, rodents and debris cannot enter the reservoir. Contractor shall provide a circular steel or circular concrete ground storage reservoir (GST) to be located on the ground surface. Volume of the GST shall be a minimum storage volume of a full days demand 620 m³ (164,000 gal). The Contractor shall verify storage volume requirements based on final design population. The storage facility shall be located above drainage areas and locations subject to flooding as approved by the Contracting Officer. The storage facility shall be located on the highest elevations of the site to promote gravity flow and reduce pumping requirements. Overflow and air vents shall be screened so that birds, rodents and debris cannot enter the reservoir.

2.3.6.2.6 Disinfection & Chlorination System

Use hypochlorite compounds for disinfection. A hypo-chlorinator shall be used to feed a sodium hypochlorite solution of 5-15% available chlorine into the system. Hypochlorite compound may be a liquid or solid form. The hypo chlorination system shall consist of a chemical solution tank for hypochlorite, diaphragm-type pump, power supply, water pump, pressure switch and storage tank (optional hydro-pneumatic/storage). The pump shall feed a hypochlorite solution in proportion to the water demand. The solution must be introduced to the water supply system after the filter to prevent its damage. The hypo-chlorinator shall have a pumping rate, liters per day (lpd) (gallons per day (gpd)) adequate to deliver 5 percent (%) available hypochlorite solution adjustable to the quantity of water being produced from the source. Dosage rate will vary somewhat depending on actual pump production rate and available residual chlorine in the system. Contractor shall determine the required dosage rate milligrams per liter (mg/l) to maintain the required chlorine residual (usually 0.2-0.2mg/l) in the distribution system. Chlorine solution tank shall be large enough to hold a three days supply of hypochlorite solution. A fresh solution shall be prepared every two or three days because the solution may lose its strength over time and this will affect the actual chlorine feed rate. The hypochlorite shall be stored in a cool dry place. Sodium hypochlorite can lose from two to four percent of its available chlorine content per month at room temperature. Contractor shall verify required minimum residual chlorine, and this shall also be verified and approved by the Contracting Officer. The chlorination system shall have the capability for manually adjusting the dosage rate and be installed in such a manner that the system can be easily disconnected and bypassed in the event of health safety or routine maintenance and repair. Disinfection of water mains shall be in accordance with AWWA standard C651-86 and disinfection of storage facilities in accordance with AWWA standard C652

2.3.6.2.7 Chlorine Shelter

Contractor shall furnish a shelter as per chlorine manufacturer's installation requirements. The Contractor shall provide manufacturers catalog information and shop drawing to the Contracting Officer for approval.

2.3.6.3 Water Distribution System

2.3.6.3.1 General

The Contractor shall provide a water distribution system described as follows: Pipe diameters used in the network shall be 300mm (12 inch), 250mm (10 inch), 200mm (8 inch), 150mm (6 inch) and 100mm (4 inch), as calculated, using ductile iron (DI) conforming to AWWA C151, installed in accordance with C 600 or polyvinyl chloride (PVC) as per ASTM D 1784 and 1785. All pipes and joints shall be capable of at least 1.03 Mpa (150 psi) and 1.38 (200psi) hydrostatic test pressure unless otherwise specified. Pipes should be adequate to carry the maximum quantity of water at acceptable velocities 0.9 to 1.5m/sec (3 to 5 ft/sec) at maximum flows not to exceed 2.8m/sec (9.2ft/sec) with working pressures of 240kPa (35psi) to 350kPa (50psi). **Minimum pressure shall be 140kPa (20psi) to all points of the distribution system and maximum pressure shall be 690kPa (75psi).** If high pressures (greater than 690kPa) cannot be avoided, pressure-reducing valves shall be used. Water service connections to buildings shall vary from 19mm, 25mm or 38mm to 75mm, as calculated, depending on the usage requirement. Pipe service connections from the distribution main to the building shall be either Polyvinyl Chloride (PVC) plastic Schedule 80 ASTM D 1785 or copper tubing conforming to ASTM B 88M, Type K, annealed. After choosing piping material type, use similar piping materials for all buildings for efficiency of future maintenance activities. The distribution network shall be laid out in a combination grid and looped pattern with dead ends not exceeding 30m (99 feet). 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. 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.

2.3.6.3.2 Pipe

The Contractor shall provide pipe of adequate strength, durability and be corrosion resistant with no adverse effect on water quality. The exterior surface of the pipe must be corrosion resistant. If the pipe is installed underground pipe shall be encased with polyethylene in accordance with AWWA C105. Water distribution pipe material shall be PVC or Ductile Iron (DI). Ductile iron pipe shall conform to AWWA C104, etal. DI fittings shall be suitable for 1.03MPa (150psi) pressure unless otherwise specified. Fittings for mechanical joint pipe shall conform to AWWA C110. Fittings for use with push-on joint pipe shall conform to AWWA C110 and C111. Fittings and specials shall be cement mortar lined (standard thickness) in accordance with C104. Polyvinyl Chloride (PVC) pipe shall conform to ASTM D 1785. Plastic pipe coupling and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. PVC screw joint shall be in accordance with ASTM D 1785, etal, Schedules 40, 80 and 120. PVC pipe couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. Pipe less than 80mm (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, All pipe and joints shall be capable of 1.03 Mpa (150psi) working pressure and 1.38 Mpa (200psi) hydrostatic test pressure.

2.3.6.3.3 Hydrostatic, Leakage and Disinfection tests

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

after installation of the concrete thrust blocking, unless otherwise approved.

2.3.6.3.4 Pressure Test

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

2.3.6.3.5 Leakage Test

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

$L = 0.0001351ND (P \text{ raised to } 0.5 \text{ power})$
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.

2.3.6.3.6 Bacteriological Disinfection

2.3.6.3.6.1 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. Valves on the lines being disinfected shall be opened and closed several times during the contact period.

2.3.6.3.6.2 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.

2.3.6.3.6.3 Acceptance Requirements

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

2.3.6.3.7 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.

2.3.6.3.8 Concurrent Tests

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

2.3.6.3.9 Valves

Valves (Gate valves w/box) shall be placed at all pipe network tee and cross intersections and the number of valves shall be one less than the number of lines leading into and away from the intersection. For isolation purposes valves shall be spaced not to exceed 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 etal. 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.

2.3.6.3.10 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.

2.3.6.3.11 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.

2.3.6.3.12 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.

2.3.6.4 Sanitary Sewer

2.3.6.4.1 General

There are no functional or salvageable sanitary sewer collection, treatment or 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.

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. The sewer collection system shall be designed to accommodate the initial occupancy (3,200) as well as the future expansion of (800) for a total occupant load of (4,000) persons. 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. All sewers shall be located outside of the roadways as much as practical, and minimize the number of roadway crossings. To the extent practical, a sewer from one building shall not be constructed under another building, or remain in service where a building is subsequently constructed over it. Construction required shall include appurtenant structures and building sewers to points of connection with building drains 1.5m (5 feet) outside the building to which the sewer collection system is to be connected.

The Contractor shall use the following criteria where possible to provide a layout which is practical, economical and meets hydraulic requirements: 1) Follow slopes of natural topography, 2) avoid routing sewers through areas which require extensive restoration or underground demolition, 3) Avoid areas of high groundwater and placement of sewer below the groundwater table, 4) locate manholes at change in direction, size or slope of gravity sewers, 5) use straight sections between manholes, curved alignment shall not be permitted, 6) locate manholes at intersections of streets where possible, 7) avoid placing manholes where the tops will be submerged or subject to surface water inflow, 8) evaluate alternative sewer routes where applicable, 9) verify that final routing selected is the most cost effective alternative that meets service requirements. In the event that facilities to be provided under the contract must be occupied prior to completion of permanent wastewater infrastructure, the Contractor will be responsible for providing temporary portable shower and bathroom facilities.

2.3.6.4.2 Protection of Water Supplies

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

2.3.6.4.3 Sanitary sewers shall be located no closer than 15m (50 feet) horizontally to water wells or reservoirs to be used for potable water supply.

2.3.6.4.4 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 1.8 m (6 feet).

2.3.6.4.5 Sanitary sewers crossing above potable water lines shall be constructed of suitable pressure pipe or fully encased in concrete for a distance of 3000 mm (10 feet) on each side of the crossing. Pressure pipe will be as required for force mains shall have no joint closer than 1 meter (3 feet) horizontally to the crossing, unless the joint is encased in concrete.

2.3.6.4.6 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 usage rate of 41 gallons per capita day (water usage). The average daily flow will represent the total waste volume generated over a 24-hour period, and shall be based on a population of 4,000 troops and usage rate of 155 lt (41 gallons) per capita day (water usage) equaling 620 m³ (164,000 gallons) per day. The wastewater flow rate shall be calculated as 80% of average daily flow or 496 m³ (131,000 gallons) per day. Design criteria guideline shall be based on average influent wastewater characteristics as BOD of 400mg/l, SS of 400mg/l, BOD load of 750ppd, and SS load of 750ppd.

2.3.6.4.7 Gravity Sewer

Sanitary sewers shall be designed to flow at 90 to 95 percent full. Sanitary sewer velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps) or 2.0 feet per second (fps) at the ADD flow rate and a minimum velocity of 0.8 to 1.05 mps (2.5-3.5fps) at the peak diurnal flow rate. In no case shall the velocity drop below 0.3 mps, (1.0 fps) to prevent settlement of organic solids suspended in the wastewater. Pipe slopes shall be sufficient to provide the required minimum velocities and depths of cover on the pipe. Unless otherwise indicated (see Building Connections and Service Lines), gravity sewer pipe shall be installed in straight and true runs in between manholes with constant slope and direction. Adequate cover must be provided for frost protection. A minimum cover of 800 mm (2'-8") will be required to protect the sewer against freezing.

2.3.6.4.8 Manholes

The Contractor shall provide standard depth manholes (MH), (depth may vary) an inside dimension of 1.2 meters (4 feet). Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover. Alternate precast 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.

2.3.6.4.8.1 Manhole Design Requirements

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

2.3.6.4.8.2 Spacing

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

2.3.6.4.8.3 Pipe Connections

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

2.3.6.4.8.4 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.

2.3.6.4.8.5 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.

2.3.6.4.8.6 Joints

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

2.3.6.4.8.7 Branch Connections

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

2.3.6.4.8.8 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.

2.3.6.4.8.9 Steps for Manholes

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

2.3.6.4.9 The minimum depth of the cover over the pipe crown shall be 0.8m (2'-8").

2.3.6.4.10 Building Connections and Service Lines

Building connections and service lines will be planned to eliminate as many bends as practical and provide convenience in rodding. Bends greater than 45 degrees made with one fitting should be avoided; combinations of elbows such as 45-45 or 30-60 degrees should be used with a cleanout provided. Connections to other sewers will be made directly to the pipe with standard fittings rather than through manholes. However, a manhole must be used if the connection is more than 31m from the building cleanout. Cleanouts shall be provided outside of the building. Service connection lines will be a minimum of 100 mm (4 inch) diameter and laid at a minimum 1% grade, but up to 2% as design parameters dictate. Service laterals shall be 150 mm (6 inch) and sloped to maintain the minimum velocity as described in paragraph "Gravity Sewer."

2.3.6.4.11 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 100 mm (4 inch).

2.3.6.4.12 Field Quality Control

2.3.6.4.12.1 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, ASTM 969.

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

2.3.6.4.13 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 Sewage Treatment The Contractor shall design an Aerated Stabilization Pond to serve 4,000 personnel on a 24-hour basis. Basic general requirements for sewage aerated stabilization pond shall include the following: 2.4.1 The Contractor shall provide an aerated stabilization (facultative) pond treatment system with a nominal capacity (adjusted to 80% of 164,000 gpd) of 131,000 gpd based on water usage rate of 41 gpcd (ADD) operating 24 hours a day. The Contractor shall verify and adjust flow rate. The Contractor shall coordinate the selection of the aerated stabilization pond design with the Contracting Officer through the submittal process. Design and construction shall have flow splitter, primary and secondary ponds in series with chlorine contact basin. Sludge drying beds shall be designed and constructed accordingly. The aerated stabilization pond shall be capable of achieving a water quality effluent of less than or equal to 30mg/l Biochemical Oxygen Demand (BOD) and 30mg/l Total Suspended Solids (TSS). The Contractor shall provide yard hydrants, hose and hose cabinet to facilitate the washing of the equipment. The aerated stabilization pond shall be equipped with a means of draining the system for maintenance. The Contractor shall insure that engineering, construction and maintenance is handled by experienced engineers, trained installers and qualified technicians, respectively. Individual equipment and every component shall be manufactured by manufacturers that have back-up spare parts in stock. Effluent from the treatment facility must be routed to a natural or manmade drainage area and must not be allowed to pond or spread on the ground surface. All Dining Facilities (DFACs). Shall incorporate preliminary treatment with use of grease traps prior flow entering

to the sanitary sewer collection system. Grease trap will connect to the sanitary sewer collection system and located outside the DFAC building.

Upon completion of the aerated stabilization pond installation, the Contractor shall check the system in the presence of the Manufacturer's Representative and Contracting Officer according to prescribed manufacturer's check procedures (O&M Manual). Upon clearance, the Contractor shall perform initial start up and initial operation, also in the presence of the Manufacturer's Representative (MR) and Contracting Officer (CO). The Contractor will operate the aerated stabilization pond for the contractual period performing all daily and weekly O&M tasks as recommended by the manufacturer's O&M Manual. The Contractor shall utilize the services of qualified operators, approved by the Contracting Officer, preferably trained Afghan Nationals, but imported specifically for that purpose, if necessary. During routine O&M, the Contractor shall perform all sampling and testing necessary to ensure proper daily operations and to optimize the system efficiency in achieving required effluent standards. During this performance period, the Contractor shall ensure that all prudent Log Records of daily O&M (repairs, inflow cycle, aeration cycles, effluent flow cycle and condition, etc.) are clearly, accurately and consistently recorded. The Contractor shall establish classroom training for USACE and Afghanistan National Army facility authorities and will establish long-term on-job-training (3 months) for three local Nationals with the goal to turn over O&M to their capable services at the end of the Contractor's period of performance.

2.4. 2 Sludge Handling and Disposal (Sludge Drying Beds)

The Contractor shall prepare an operation and maintenance plan for the aeration operation and sludge removal and disposal. Drying of the sludge may take at least 12 weeks in the winter and 6 weeks in the summer. The operation and maintenance plan shall be submitted for Contracting Officer's review and approval.

2.4.3 Effluent Pond

The Contractor shall construct a holding pond to receive the treated effluent. The pond shall have an over flow device. The purpose of the effluent pond is to allow for pumping of treated water into irrigation trucks for site watering.

2.5 FORCE PROTECTION PERIMETER FENCE

All foundations shall extend below the frost line to frost depth (min 800 mm). Provide guard towers at 400 meter intervals; Provide main gate with a guard Booth; and a reception building. Provide secondary gate with a guard booth. See 2.24.1 ASP Guard tower for requirements for ASP. Provide an anti vehicle trench (3 meters wide X 2 meters deep) adjacent all force protection fences and walls. Design anti-vehicle trenches to drain and not hold water after rain

2.5.1 Design and construct a Force Protection Perimeter Fence per Scope of Work Section 01010 and RFP. Note: Coordinate the height and construction of stone wall to align chain link with concertina wire to stone wall and concertina wire.

2.5.2 Provide concertina wire at top of stone wall, chain link fence, and all gates. Concertina wire shall be supported double 45 degree outriggers on top of fence posts with 3 strands of 14 gauge barbed wire on each side and a center 600 mm dia concertina wire with support wire attached to upright post at 3000 mm O.C.

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

2.5.4 Clips and top rail will not be used. Fence fabric will be installed no higher than 50 mm from the ground. Supporting arms will be securely anchored with rivets to the line posts. Fences shall have a bottom rail bolted to double rail ends and double rail ends shall be securely fastened to the posts. Bolts shall be peened to prevent easy removal. Bottom rail shall be installed before chain link fabric. Posts will be limited to ASTM F 1083, (1993) Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded and PVC coated for Fence Structures Group IA or Group IC steel pipe only. The fence shall be provided with the cable system shown on the attached figures. Cable shall conform to ASTM A 475, 19.05 mm (3/4-inch), extra high strength, Class A zinc coating. Turnbuckles, for the cable, shall conform to ASTM F 1145, 31.8 mm x 610 mm (1-1/4 inch x 24 inches) Type I, galvanized. Clamps shall be of equal or greater strength than the shear strength of the cable. All cable accessories shall be galvanized. Placement of cables will be at 760 mm and 890 mm above finish grade, measured to the centerline of the cables. Place the cable between the fence fabric and the line posts with U-bolts as shown. Reduce the slack by anchoring and tightening the cable so that it will not move along or slide through the U-bolts. Cable connections shall be of equal or greater strength than the shear strength of the cable. Dead man spacing shall be as shown on drawings. The next dead man shall start two fence panels back, overlapping the previous cable run, to cover the gap of the last dead man and to eliminate the need for pipe guards at those locations.

2.5.6 Design and construct a Force Protection Perimeter Stone Wall perimeter Fence per Scope of Work Section 01010 and RFP. All foundations shall extend below the frost line to frost depth (min 800 mm), top of wall shall be 2400 mm from finish grade to high point of concrete cap, and align with top of chain link. Provide detail/elevation at fence indicating how fence will transition from level to slope and over ridges. The stone walls will need vertical reinforcing and horizontal reinforcing to resist wind and seismic loads. The vertical reinforcing must be adequately anchored or lapped into the wall footing. The footing must be sized to resist sliding and overturning from the design loads.

2.5.7 Design and construct a Force Protection entry gates heavy steel frame, with decorative 6mm steel skin and matching man gate with view port. Gates shall swing from one meter square reinforced concrete columns covered with stone to match fence. Provide reinforced grade beam across gateway flush with pavement to lock gates with flush mounted vertical sliding bolts, bolts shall be 50 mm dia solid steel. Provide rolling steel rail device at each lane, capable of stopping large (10,000 lb.) trucks, in addition to heavy duty steel gates into the Brigade, ASP, ETTC Compound, Interpreters Compound and other facilities.

3. ARCHITECTURAL REQUIREMENTS

3.1 GENERAL

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

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

3.1.3 The site is located on undeveloped land. Reference the site map for the project location.

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

shall be in American English.

3.2 DESIGN PRODUCTS

3.2.1 General

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

3.2.2 Design Analysis

The design analysis should be written in the English Language for review by the Government for all buildings and to have indexes, table of contents and each page numbered. Each building shall be listed as indicated in Section 01010. The design analysis is a written explanation of the project design which is expanded and revised (updated) as the design progresses. The design analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the final drawings and specifications. The design analysis contains the criteria for and the history of the project design, including criteria furnished by the Government, letters, codes, references, conference minutes, and pertinent research. Design calculations, computerized and manual, are included in the design analysis. Narrative descriptions of design solutions are also included. Written material may be illustrated by diagrams and sketches to convey design concepts. Catalog cuts and manufacturer's data for all equipment items required, shall be submitted. Copies of all previous design phase review comments and the actions assigned to them shall be included with each submission of the design analysis. Specific requirements for the design analysis, listed by submittal phase, are contained hereinafter. Provide Code Analysis for each building based on the following items and code sections.

3.2.3 Code Analysis

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

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

3.2.4 Design Calculations

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

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

3.2.5 Specifications

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

3.2.6 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.

3.2.7 Colors

Designer of record shall provide one Color Board comprised of all finishes to be used on project and submit at 65% for approval. Upon approval two Color Boards shall be submitted for record. Color Boards shall be kept at job site for approval of materials used at jobsite.

3.3 DEMOLITION

3.3.1 Limited exterior site clearing is required; site preparation is required. There are several structures on site requiring demolition.

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

3.4 LIFE SAFETY/ FIRE PROTECTION/ HANDICAPPED ACCESSIBILITY

To the extent possible, all facilities will 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. If a sprinkler system is required by building code, a waiver will have to be obtained before construction notice to proceed is issued. However, due to the lack of adequate water volume and pressure, sprinkler systems are not feasible. The facility shall comply with all other safety requirements of NFPA 101 and the latest edition of the International Building Code. In keeping with the intended function of these facilities, handicapped accessibility will not be incorporated into 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.

3.5 ANTITERRORISM/ FORCE PROTECTION

Force protection/anti-terrorism measures for this location shall be followed and incorporated into this project in accordance with the referenced DoD Regulations (check UFC 4-010-01 and other related requirements). Information regarding force protection may be found at the following link: www.tisp.org/files/pdf/dodstandards.pdf .

3.6 EXCAVATION

Trench excavation shall be made for concrete footings. Trenches shall be a minimum of .8 meter deep. Trenches deeper than 1.5 meters shall have protective shoring to protect workers or have the sides of the trench sloped back at a slope of 1.5:1. Care shall be taken when backfilling of foundation trenches to avoid damage to walls. Any excess dirt shall become the property of the Contractor and shall be removed from the site to a location approved by the Contracting Officer.

3.7 CONCRETE

Place 100 mm (4") of capillary water barrier below areas to receive a concrete slab on properly compacted soil free of organic material. Concrete flooring in wet areas shall slope to the floor drain and not allow for water to puddle. Concrete slabs in all areas shall not be placed prior to inspection and approval of piping and sub-surface by the Contracting Officer. Foundation trenches shall be level and free of loose material. Trenches shall be inspected and approved by the Contracting Officer prior to placing of any concrete foundations. See paragraph 5 for structural characteristics of concrete and reinforcing steel for foundations and slabs.

3.7.1 INSULATED CONCRETE SANDWICH WALL 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, 2.52mm (12.5 gauge) wire, attached to both faces of the polystyrene core. The welded wire mesh shall be installed at 13mm 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 45mm (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. This wall system applies to all barracks type buildings, Communication building, DPW shop building, Detention Facility, Embedded Training Team Compound, Interpreter Facilities, and Fire Station. All 3-D building shall have a metal roof meeting the requirements of RFP. All 3.D walls & ceiling shall be plastered interior/exterior and painted.

3.8 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. Concrete masonry units (CMU) for exterior walls shall be either 200 mm or 300 mm wide x 400 mm x 200 mm high as shown on drawings. All cells shall be fully grouted in exterior walls. They shall be installed in running bond level and plumb. Mortar joints shall be 9 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.

3.9 METAL

3.9.1 STEEL ROOF JOISTS

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

3.9.2 METAL WINDOW SILLS

Galvanized metal window sills, 1 mm (20 gage), 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. Bevel all exposed metal sill edges as a safety feature. Extend the metal windowsill 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 6mm to the exterior and not allow water to puddle.

3.9.3 STEEL COOK TOP

Provide steel cook top in kitchen minimum thickness of 25 mm. Provide circular cut outs. Consult with the Contracting Officer for the diameter of circular cutouts. Provide steel infill plates for all cut out openings. Cook top can be made of several pieces for ease of handling. Adjacent plates shall be tight fitting to each other. Cook top can be made of several pieces for ease of handling. Provide large Afghan type tea boilers to fit cook top.

3.9.4 PASS-THROUGH COUNTER TOP

Provide 1.6 mm (16 gauge) stainless steel, or 40 mm marble, pass through counter tops at openings between the kitchen and dining area. 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 six (6) anchors on the Dish Return Counter, three (3) on each side of the wall. Provide eight (8) anchors on the Serving 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 800 mm wide, 1100 mm height x length of opening shown.

3.10 PRE-ENGINEERED METAL BUILDING

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

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

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

Steel Framing: Steel framing shall conform to American Iron and Steel Institute (AISI), Cold Formed Steel Design Manual, American Institute of Steel Construction (AISC) ASD, Manual of Steel Construction, Allowable Stress Design, and TI 809-07, Design of Cold-Formed Load Bearing Steel Systems and Masonry Veneer/Steel Stud Walls. Cold-formed framing shall consist of steel studs, top and bottom tracks, runners, horizontal bridging, and other cold-formed members and other accessories. All members and components made of sheet steel shall be hot-dip galvanized in accordance with ASTM A 653/A 653M with a minimum coating thickness of G 60. This framing shall be used only in framing the exterior steel stud wall system. Design metal siding and flashing to overhang CMU wall or concrete 50 cm.

3.11 ROOFING AND WEATHERPROOFING

3.11.1 SLOPED ROOFS

All roofing shall be standing seam metal roofing or K-Span type building system with matching Kynar 500 finish on all roofing, see Section 01010 for buildings. Roofing system shall include all edge, ridge and penetration flashings necessary for a watertight installation. Provide continuous soffits and ridge vents meeting the venting requirements of the IBC Code. Roof slopes shall be continuous to the perimeter of the building, without interior valleys or depressions where ponds can form. Provide reinforcing at roof and nonskid walk surface at each HEAT/COOL UNIT installed on roof for access,

maintenance, and changing filters.

3.11.2 Sloped roofs shall be standing seam metal roofing or K-Span type building system. Roof slopes shall be 4 in 12 minimum. Roof Panels: Panels shall be a minimum of 0.85-070 mm (22 – 24 gauge) standing seam metal. Roof deck assemblies shall be Class 90 as defined in UL 580. Length of sheet shall be sufficient to cover the entire length of any unbroken roof slope when such slope is 9.000 mm or less. When length of run exceeds 9000 mm and panel splices are provided, each sheet in the run shall extend over three or more supports. Sheets longer than 9.000 mm may be furnished if approved by the Contracting Officer. Width of sheets shall provide not more than 450 mm of coverage in place. SSMRS with roofing panels greater than 300 mm in width shall have standing seams rolled during installation by an electrically driven seaming machine. Height of standing seams shall be not less than 60 mm. All sheets shall be cut in the shop to correspond to the roof slope and may have a horizontal joint at the eave line.

Steel Panels: Zinc-coated steel conforming to ASTM A 446, G 90 coating designation. Panels shall be 0.85-070 mm (22 – 24 gauge). The final coating for aluminum, galvanized steel or aluminized steel shall be a factory-applied, oven-baked finish based on Kynar 500® polyvinylidene fluoride resin.

This finish shall be a dispersion coating based on Kynar 500 resin as formulated by an Arkema Kynar 500 licensee. This finish shall be in strict accordance with the formulator's specification and applied by an applicator approved by the formulator. This finish, based on Kynar 500 resin, shall meet the performance criteria of AAMA 2605 specification and be certified by the formulator as containing Kynar 500 resin manufactured by Arkema.

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

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

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

Exposed roof fasteners shall not be used for standing seam roof of K-Span.

Screws: Screws shall be as recommended by the manufacturer to meet the strength design requirements of the panels.

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

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

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

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

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

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

Concealed Anchor Clips: Concealed anchor clips shall be as recommended by the manufacturer for the roofing system furnished. Clip bases shall have factory punched or drilled holes for attachment. Clips used with panel width greater than 300 mm shall be made from multiple pieces with the allowance for the total thermal movement required to take place within the clip.

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

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

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

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

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

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

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

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

Ventilation: A minimum of 25 mm of airspace shall be provided between the insulation and the roof sheathing. The net free ventilating area shall not be less than 1/300 of the area of the space ventilated, with 100 percent of the required ventilating area provided by ventilators located in the upper portion of the space.

3.11.6 Contractor's Weather Tightness Warranty: The SSSMR system shall be warranted by the Contractor on a no penal sum basis for a period of five years against material and workmanship deficiencies; system deterioration caused by exposure to the elements and/or inadequate resistance to specified service design loads, water leaks, and wind uplift damage. The SSSMR system covered under this warranty shall include the entire roofing system including, but not limited to, the standing seam metal roof panels, fasteners, connectors, roof securement components, and assemblies tested and approved in. In addition, the system shall consist of panel finishes, slip sheet, insulation, vapor retarder, all accessories, components, and trim and all connections with roof panels. This includes roof penetration items such as vents, curbs, and skylights; gutters and downspouts; eaves, ridge, hip, valley, rake, gable, wall, or other roof system flashings installed and any other components specified within the contract to provide a weather tight roof system; and items specified in other sections of the specifications that are part of the SSSMR system. All material and workmanship deficiencies, system deterioration caused by exposure to the elements and/or inadequate resistance to specified design loads, water leaks and wind uplift damage shall be repaired. This warranty shall warrant and cover the entire cost of repair or replacement, including all material, labor, and related markups. The Contractor shall supplement this warranty with written warranties from the installer and system manufacturer, which shall be submitted along with Contractor's warranty; however, the Contractor shall be ultimately responsible for this warranty. The Contractor's written warranty shall be as outlined in the Corps Of Engineers Guide Specifications for WARRANTY FOR STRUCTURAL STANDING SEAM METAL ROOF (SSSMR) SYSTEM, and shall start upon final acceptance of the facility. It shall be required that the Contractor provide a separate bond in an amount equal to the installed total roofing system cost in favor of the owner (Government) covering the Contractor's warranty responsibilities effective throughout the five-year Contractor's warranty period for the entire SSSMR system as outlined above.

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

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

A manufacturer's 20-year exterior material finish warranty on the factory finish warranting that the finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of eight as determined in ASTM D 4214 test procedures; or change color in excess of five CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. Liability under

this warranty is exclusively limited to refinishing with an air-drying version of the specified finish or replacing the defective coated material.

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

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

7. Insulation: 5cm (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.

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

Walls R Value of (R 13)

Roof R Value of (R 38)

3.12 WINDOWS, DOORS & GLAZING

3.12.1 WINDOWS

3.12.1.1 Materials

A. Aluminum Extrusions: Provide horizontally sliding aluminum windows in all buildings to fit the masonry openings, with factory baked finish off-white to match doors. All windows shall be single 6 mm glazed unless otherwise noted (U.O.N). Windows openings shall be provided with insect screening permanently fixed to the exterior frame. Provide a locking device on the interior of each window. Provide anchors on each side of the frame into the adjoining masonry, 3 on each side, 2 top and bottom. Provide weather stripping system for all exterior windows and doors. 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.

B. 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.

1. Reinforcement: Where fasteners screw-anchor into aluminum less than 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.

2. 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.

C. 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.

D. Compression-Type Glazing Strips and Weather stripping: Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weather stripping such as molded EPDM or neoprene gaskets.

E. 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.

F. Wire Fabric Insect Screen shall be permanently fixed to the exterior, except for guard towers.

3.12.1.2 Hardware

A. General: 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.

3.12.1.3 Fixed, Casement, Projected and Horizontal Sliding Windows

Provide window units meeting UL 752, level 5, but no less than 16 mm laminated single glazed. This standard shall apply to all window units within guard shack, guard house, guard tower, and guard rooms in Headquarters Building. Provide cam action sweep sash lock and keeper at meeting rails. All other glazing shall be minimum 6mm laminated single glazed. Refer to ASTM F-2248 for anchorage requirements.

3.12.1.4 Fabrication

Provide horizontally sliding aluminum windows with factory finish in all buildings to fit the masonry openings. Window openings shall be provided with insect screening permanently fixed to the exterior. Provide a locking device on the interior of each window. Provide anchors on each side of the frame into the adjoining masonry, 3 on each side. Provide weather stripping system for all exterior windows and doors.

3.12.1.5 Finishes

Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.

1) Color: White meeting the requirements of DIN 50018

3.12.1.6 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.

3.12.1.7 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.

3.12.1.8 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.

3.12.1.9 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.

3.12.2 DOORS

All exterior doors (entry and exit doors) shall be heavy duty metal doors with metal frames. Interior door shall be hollow metal doors with hollow metal frames. All exterior doors shall be 44.5 mm hollow metal 1.30 mm (18 gauge) steel with rigid foam core insulation. Hollow metal frames shall be 1.30 mm (18 gauge) steel and comply with ASTM A-366 cold rolled 3-piece knock down or equal Steel doors, frames, and steel glazing frames shall be painted to match factory finish off-white window frames. Doors shall be 900 mm wide X 2100 mm high.

All glazed doors shall have 6mm tempered glazing in the upper half of the door. Heavy gauge metal exterior doors are required for security of unmanned buildings, such as water treatment building, power station, warehouses, and other buildings requiring higher security. Commercial duty lock sets and hardware shall be used on all doors. Install required louvers, as called for in paragraph 6, in the lower portion of the door. Provide (3) hinges 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. Generally each building should have 8 master keys fitting all locks, 8 sub-master keys fitting all exterior doors and 3 keys each for each interior door. Include 25% spare key blanks for the amount of keys provided per building. Provide numbering system identifying key to associated room door. All glazing in or adjacent to doors shall be tempered per IBC. Provide weather stripping system for all exterior doors.

All Interior doors shall be 44.5 mm hollow metal 1.00 mm (20 gauge) steel. Hollow metal frames shall be 1.30 mm (18 gauge) steel comply with ASTM A-366 cold rolled 3-piece knock down or equal Steel doors, frames, and steel glazing frames shall be painted. Door lites on interior doors shall be sized in accordance with building codes and positioned at a height above finished floor to allow vision on both sides. All doors in corridors shall have 150 mm X 600 mm X 6 mm minimum tempered glass lites 150 mm from door edge at lock side. Steel doors, frames, and steel glazing frames shall be painted to match factory finish off-white window frames. Doors shall be 900 mm wide X 2100 mm high.

3.12.2.1 PVC Doors

PVC doors and PVC door frames are for interior wet room use only. PVC may be used for bathrooms, shower rooms, and toilets rooms.

3.12.2.2 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.

3.12.2.2.1 Accessories

3.12.2.2.2 Louvers

3.12.2.2.2.1 Interior Louvers

SDI 111-C, Louvers shall be stationary sight-proof or lightproof type as required. Louvers for lightproof doors shall not transmit light. Detachable moldings on room or non security side of door; on security side of door, moldings to be integral part of louver. Form louver frames of 0.9 mm thick steel and louver blades of a minimum 0.6 mm. Louvers for lightproof doors shall have minimum of

20 percent net-free opening. Sight-proof louvers shall be inverted "V" blade design with minimum 55 or inverted "Y" blade design with minimum 40 percent net-free opening.

3.12.2.2.2 Exterior Louvers

Louvers shall be inverted "Y", "V" or "Z" type. Weld or tenon louver blades to continuous channel frame and weld assembly to door to form watertight assembly. Form louvers of hot-dip galvanized steel of same gage as door facings. Louvers shall have steel-framed insect screens secured to room side and readily removable. Provide aluminum wire cloth, 7 by 7 per 10 mm or 7 by 6 per 10 mm mesh, for insect screens.

3.12.2.2.3 Astragals

For pairs of exterior steel doors which will not have aluminum astragals or removable mullions, provide overlapping steel astragals with the doors. For interior pairs of fire rated and smoke control doors, provide stainless steel astragals complying with NFPA 80 for fire rated assemblies and NFPA 105 for smoke control assemblies.

3.12.2.2.4 Moldings

Provide moldings around glass of interior and exterior doors. Provide non-removable moldings on outside of exterior doors and on corridor side of interior doors. Other moldings may be stationary or removable. Secure inside moldings to stationary moldings, or provide snap-on moldings. Moldings shall interlock at intersections and shall be fitted and welded to stationary moldings.

3.12.2.2.5 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. Provide steel frames for doors, transoms, sidelights, mullions, cased openings, and interior glazed panels, unless otherwise indicated.

3.12.2.2.6 Welded Frames

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

3.12.2.2.7 Mullions and Transom Bars

Mullions and transom bars shall be closed or tubular construction and shall member with heads and jambs butt-welded thereto or knock-down for field assembly. Bottom of door mullions shall have adjustable floor anchors and spreader connections.

3.12.2.2.8 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 fasteners approximately 300 to 400 mm on centers. Miter molded shapes at corners. Butt or miter square or rectangular beads at corners.

3.12.2.2.9 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.

3.12.2.2.10 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.

a. Masonry: Provide anchors of corrugated or perforated steel straps or 5 mm diameter steel wire, adjustable or T-shaped;

b. Completed openings: Secure frames to previously placed concrete or masonry with expansion bolts

3.12.2.2.10.1 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.

3.12.2.2.11 Fire and Smoke Doors and Frames

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

3.12.2.2.12 Weather-stripping, Integral Gasket

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. Insert gasket in groove after frame is finish painted.

3.12.2.2.13 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.

3.12.2.2.14 Door sweeps

Provide door sweep at all exterior doors.

3.12.2.2.15 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 galvanized steel without primer. Where coating is removed by welding, apply touchup of factory primer.

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 1200mm wide Hinges for labeled fire doors must be either steel or stainless steel.

Hinges shall conform to ANSI/BHMA A156.1 and A156.7. Locksets, Latchets, Exit Devices, and Push and Pull Plates: Exterior doors shall have mortise locks conforming to ANSI/BHMA A156.13 for metal doors. Emergency exit devices shall be Grade 1, flush mounted type. Interior doors shall have mortise locksets conforming to ANSI/BHMA A156.13, Series1000, Grade 1. All locks and latchsets shall be the

product of the same manufacturer. Locksets, padlocks and latchsets shall be provided, as required, with lever handles on each side. Provide heavy duty hasp and locks at all fuel storage tanks.

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

Thresholds: All exterior doors (except Mech/Elect rooms) shall be provided with marble thresholds. Doors at ceramic tile flooring shall be provided with marble thresholds and set marble threshold 13 mm above tile at all wet areas.

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

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

3.12.4 Master Keying

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

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

3.12.5 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.

3.12.5.1.1 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.

3.12.5.1.2 Installation

3.12.5.1.2.1 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.

3.12.5.1.2.2 Doors

Hang doors in accordance with clearances specified in SDI A250.8. After erection and glazing, clean and adjust hardware.

3.12.5.1.2.3 Fire and Smoke Doors and Frames

Install fire doors and frames, including hardware, in accordance with NFPA 80.

3.12.5.1.3 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 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.

3.12.5.2 Overhead Coiling Doors

Doors shall be fabricated from interlocking cold-rolled slats, designed to withstand building wind loading and be installed with wind locks. Slats shall be continuous for the width of the door. For doors not exceeding 4.27 m, slats shall be flat-profile design, with a depth of not less than 15.9 mm, a center to center width not more than 69.9 mm, and not less than a 1.21 mm uncoated thickness. Provide weather stripping for door-head and door jamb guides, and a bottom astragal. Weather stripping and astragal shall be natural rubber or neoprene rubber. Curtain jamb guides shall be fabricated from a combination of steel angles of sufficient size to retain curtain against the specified wind. Guides shall be fabricated from structural quality steel angles. Door shall have manufacturer's standard five pin tumbler locks; keyed. Doors shall be counterbalanced by an adjustable, steel, helical torsion spring mounted around a steel shaft in a spring barrel and connected to the door curtain with the required barrel rings. Hoods shall be fabricated from steel sheets with a minimum yield strength of 227.5 MPa.

Counterbalance-barrel components shall be as follows:

- Spring barrels shall be hot-formed structural-quality carbon steel, welded or seamless pipe. Pipe shall be of sufficient diameter and wall thickness to limit deflection to a maximum of 1/360 of the span.
- Counterbalance springs shall be oil-tempered helical steel springs designed with a safety factor of 4. Springs shall be sized to counterbalance the weight of the curtain at any point of its travel, and shall be capable of being adjusted to counterbalance not less than 125% of the normal curtain load. Spring adjustment shall be arranged in such a way that the curtain need not be raised or lowered to secure the adjustment.
- Counterbalance shafts shall be case-hardened steel of the proper size to hold the fixed ends of the spring and carry the torsion load of the spring.

Barrel plugs shall be fabricated from cast steel machined to fit the ends of the barrel. Plugs shall secure the ends of the spring to the barrel and the shaft.

Barrel rings shall be fabricated from malleable iron of the proper involute shape to coil the curtain in a uniformly increasing diameter.

Shaft bearings shall be factory sealed ball bearings of the proper size for load and shaft diameters.

Door operators shall consist of an endless steel hand chain, chain-pocket wheel and guard, and a geared reduction unit of at least a 3:1 ratio. Required pull for operation shall not exceed 16 kg. Chain hoists shall have a self-locking mechanism allowing the curtain to be stopped at any point in its upward/downward travel and to remain in that position until moved to the fully open or closed position.

Hand chains shall be cadmium-plated alloy steel with a yield point of at least three times the required hand-chain pull. Pretreated zinc-coated steel sheets shall be given the manufacturer's standard prime coat and an enamel finish coat applied to the exterior face after forming.

After installation, doors, track, and operating equipment will be examined and tested for general operation and weather against the specified wind pressure, and weather resistance. Doors that fail the required tests shall be adjusted and retested. Doors that have been adjusted and fail subsequent tests shall be removed and replaced with new doors at no additional cost.

3.12.6 GLAZING

ASTM C 1036 or ASTM C 1172 or equal.

3.12.6.1 Temper Glass

Tempered glass shall be kind FT fully tempered flat type. Class 1 clear, condition A uncoated surface, Quality q3-glazing select, conforming to ASTM, DIN, BS or EN standards. Color shall be clear.

3.12.6.2 Glazing Accessories

3.12.6.2.1 Sealant

Sealant shall be elastomeric conforming to ASTM, DIN, BS, or EN standards. Type S or M, Grade NS, Class 12.5, Use G, of type chemically compatible with setting blocks, preformed sealing tape and sealants used in manufacturing insulation glass. Color of sealant shall be as selected from manufacturer's full range of standard colors by Contracting Officer.

3.12.6.2.2 Glazing Gaskets

Glazing gaskets shall be extruded with continuous integral locking projection designed to engage into metal glass holding members to provide a watertight seal during dynamic loading, building movements and thermal movements. Glazing gaskets for a single glazed opening shall be continuous one-piece units with factory-fabricated injection-molded corners free of flashing and burrs. Glazing gaskets shall be in lengths or units recommended by manufacturer to ensure against pull-back at corners.

3.12.6.2.3 Fixed Glazing Gaskets

Fixed glazing gaskets shall be closed-cell (sponge) smooth extruded compression gaskets of cured elastomeric virgin neoprene compounds conforming to ASTM, DIN, BS. Or EN standards.

3.12.6.2.4 Wedge Glazing Gaskets

Wedge glazing gaskets shall be high-quality extrusions of cured elastomeric virgin neoprene compounds, ozone resistant, conforming to ASTM, DIN, BS, or EN standards.

3.12.6.2.5 Putty and glazing Compound

Glazing compound shall conform to ASTM, DIN, BS, or EN standards for face-glazing metal sash. Putty shall be linseed oil type conforming to DIN, BS, or EN standards for face-glazing primed wood sash. Putty and glazing compounds shall not be used with insulating glass or laminated glass.

3.12.6.2.6 Setting and Edge Blocking

Neoprene setting blocks shall be dense extruded type conforming to ASTM, DIN, BS, or EN standards. Silicone setting blocks shall be required when blocks are in contact with silicone sealant. Profiles, lengths and locations shall be as required and recommended in writing by glass manufacturer.

3.12.6.2.7 Preparation

Openings and framing systems scheduled to receive glass shall be examined for compliance with glass manufacturer's recommendations including size, squareness, offsets at corners, presence and function of weep system, face and edge clearance requirements and effective sealing between joints of glass-framing members. Detrimental materials shall be removed from glazing rabbet and glass surfaced and wiped dry with solvent. Glazing surfaces shall be dry and free of frost.

3.12.6.2.8 Installation

Glass and glazing work shall be performed in accordance with, glass manufacturer's instructions and warranty requirements. Glass shall be installed with factory labels intact and removed only when instructed. Edges and corners shall not be ground, nipped or cut after leaving factory. Springing, forcing or twisting of units during installation will not be permitted.

3.12.6.2.9 Cleaning

Upon completion of project, outside surfaces of glass shall be washed clean and the inside surfaces of glass shall be washed and polished in accordance with glass manufacturer's recommendations.

3.12.6.3 Protection

Glass work shall be protected immediately after installation. Glazed openings shall be identified with suitable warning tapes, cloth, or paper flags, attached with non-staining adhesives. Reflective glass shall be protected with a protective material to eliminate any contamination of the reflective coating. Protective material shall be placed far enough away from the coated glass to allow air to circulate to reduce heat buildup and moisture accumulation on the glass. Glass units which are broken, chipped, cracked, abraded, or otherwise damaged during construction activities shall be removed and replaced with new units.

3.13 FINISHES

3.13.1 The exterior of all buildings shall be plaster over CMU, plaster over concrete, or Plaster over furring over rigid insulation. No gypsum board material is to be used in this project. Install new plaster in 2 coats which shall have color integral with the finish. The first coat shall be a scratch coat approximately 1 cm thick. Allow 7 days to cure. The second coat shall be finish plaster, smooth finish, approximately 1 cm thick. Allow 7 days to cure before painting. 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. All exterior color finish shall be integral with the stucco finish. No painted stucco shall be permitted due to minimize future maintenance. Color to be selected by the Contracting Officer from the color board provided by the Contractor.

3.13.2 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.

3.13.3 Ceilings of Barracks, and Headquarters, shall be plaster applied in 2 coats over wire mesh, which is to be stapled to the 20 mm x 60 mm wood battens. Paint ceiling with 2 coats of flat white, with less than .06% lead by weight. Gypsum board may be used in lieu of plaster but framing supports for Gypsum board shall be as follows: For ½" thick gypsum board structural fastener supports shall be not further apart than 400 mm. If gypsum board is thicker follow guidelines in ASTM C 840 for supports and fastener frequency.

- 3.13.4 Ceilings of Dining Facility shall be exposed concrete painted with 2 coats of flat white, with less than .06% lead by weight.
- 3.13.5 Paint all exposed wood fascia, soffits, and doors with 2 coats of gloss enamel, white.
- 3.13.6 Exposed exterior steel trim, frames, doors and pipe railings: 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.
- 3.13.7 Exposed wood trim, frames and doors: 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
- 3.13.8 Tile: 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.
- 3.13.8.1 Floors in wet areas shall be ceramic 150 mm x 150 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.
- 3.13.8.2 Floors in administration areas, living quarters, corridors, and all rooms unless otherwise stated shall be **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. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.
- 3.13.8.3 Walls in wet areas shall be tiled with 150 mm x 150 mm glazed ceramic tile up to 2 meters above the floor to include interior of toilet stalls, showers and behind sinks. Joints shall be 2-3 mm. Waterproof gray grout shall be applied full depth of the tile. Grout shall cure for 72 hours and then be sealed with a commercial grout sealant in two coats. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.
- 3.13.8.4 The ablution drain areas shall be recessed below the floor level 200 mm and lined with ceramic tile. Ceramic tile shall extend up the wall past the water spigots to a height of 2 m above finished floor. Seats shall be formed concrete with terrazzo tile finish to match the floor, 300 mm x 300 mm x 300 mm high finished dimensions. Color of ceramic tile shall be selected by the Contracting Officer from samples provided by the Contractor. Spacing between tiles shall be similar to terrazzo tile.
- 3.13.8.5 All floors in POL Storage buildings, and Battery rooms, shall be completely cleaned and the concrete painted with an epoxy floor paint formulated for that application. Color to be selected by the Contracting Officer from samples provided by the Contractor.
- 3.13.8.6 All other floors are to be completely cleaned and sealed epoxy. Color to be selected by the Contracting Officer from samples provided by the Contractor.
- 3.13.8.7 Kitchen in Dining Facility shall be covered with terrazzo flooring. Walls in kitchen shall

be ceramic tile up to 2 m above finished floor. Floor in Dining area shall be **sealed concrete**.

3.14 SPECIALTIES

3.14.2 Mirrors

0.6 m x 0.9 m, 6 mm plate glass, shall be mounted above all lavatories. Mount bottom of mirrors 1.1m above finished floor.

3.14.3 Toilet Paper Holders

Toilet paper holders, stainless steel, shall be installed approximately 200 mm above floor in Eastern Toilets.

3.14.4 Shower Curtain Rods & Shower Curtain

Shower curtain rods, stainless steel, heavy duty, 18 gauge shall be mounted between the screen walls of each shower stall. Mount rod at 2.0 m above finished floor. Stainless steel rod shall be securely supported by the end supports embedded in concrete. Provide a shower curtain with support rings for each shower stall.

3.14.5 Paper Towel Dispensers

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

3.14.6 Light Duty Metal Shelf

Provide a 600 mm long, light duty stainless steel shelf and brackets over each lavatory.

3.14.7 Robe hooks on all toilet and shower stalls required.

3.14.8 COLD STORAGE ROOMS

DFAC'S: See Appendix A for DFAC NO. 1. Provide 18 sq meters DFAC NO. 2. Provide 9 sq meters in DFAC NO. 3.

3.14.8.1 Contractor shall provide the Contracting Officer shop drawings for approval of appropriately sized walk-in refrigerators and freezer to include proposed manufacturer, construction details, manufacturer's instructions, evacuation and charging procedures, operation and maintenance date, start-up and initial operational tests.

3.14.8.2 Walk-in coolers shall be panel type modular construction. Doors shall be swing type. Refrigeration equipment shall be remote located on the exterior of the building. Provide a temperature/ alarm system. Provide interior lighting with exterior switch. Floors of cool rooms shall be insulated panelized construction from the manufacturer of the cool rooms. The concrete floor will not be depressed.

3.14.8.3 Refrigeration piping shall be annealed or hard drawn seamless copper tubing in conformance with ASTM B280. Refrigeration systems shall be remote type.

3.14.8.4 Electrical characteristics shall match local power 400v/3ph/50Hz and 220v/1ph/50Hz.

3.14.8.5 Preservation and packing shall be commercial grade.

3.14.8.6 Provide a recording thermometer.

3.14.8.7 Provide temperature alarm with connector to remote temperature alarm.

3.14.8.8 Provide outdoor condensing unit cover and security fence or wall to protect outside units. Provide condensing unit outdoor controls for operation down to –18 degrees C ambient temperature.

3.14.8.9 Refrigeration Equipment

Refrigeration equipment shall be designed for remote installation. Design units for 16 to 18 hour operation at the indicated interior temperature in –18 degree C ambient temperature. Capacities, air delivery, and dimensions shall be as indicated. Remote condensing units shall be factory fabricated and rated in accordance with UL303 and ARI 365. Provide with motor, air cooled condenser, receiver, compressors, mounted on a common base. Compressors shall be hermetic type. Evaporators shall be factory fabricated and rated in accordance with UL 412 and ARI 420. Forced convection, unit cooler type, made to suspend from the ceiling panels, with forced air discharged parallel to the ceiling. Provide with air circulating motor, multi-fin tube type coil and grille assembled within a protective housing. Air circulation motors shall be lifetime sealed, and the entire unit-cooler assembly shall be accessible for cleaning. Provide a drip pan and drain connection. When the cold storage room is used for freezing, provide an automatic electric heat defrosting system. Provide a timer type defrost controllers.

3.14.8.9.1 Provide condensate drain lines and drains below freezer floors with electric heating cable, thermostatically controlled to maintain 10 degrees C at zero flow rate. Cable shall be sized in accordance with manufacturer's recommendations.

3.14.8.9.2 Submit a copy of installation instructions to the Contracting Officer covering both assembly and installation of the refrigeration equipment prior to start of work. Start up and initially operate the systems upon completion of the installation of the equipment and refrigerant piping. Adjust the safety and automatic controls to place them in operating sequence. Record manufacturer's recommended readings hourly. Operational test shall cover a period of not less than 24 hours. Upon completion of Operational test the systems shall be performance tested. Test duration shall not be less than 8 hours. Test shall include the following information to be in the report with conclusions regarding the adequacy of the systems:

Time, dates and duration of tests:

- Inside dry-bulb and wet-bulb temperatures maintained in each room during the tests employing recording instruments calibrated before the tests.
- Outside dry-bulb and wet-bulb temperatures obtained from recording instruments calibrated and checked hourly with a sling psychrometer.
- Evaporator and condenser entering and leaving temperatures taken hourly with the compressors in operation.
- The make, model, and capacity of each evaporator and condensing unit.
- Voltmeter and ammeter readings for condensing units and evaporators.

3.14.8.9.3 Provide chart showing the layout of the refrigeration systems, including piping, valves, wiring, and control mechanisms. Submit printed instructions covering the maintenance and operation of refrigeration equipment. Tag shutoff valves in accordance with the instructions. Provide any special tools necessary for repair and maintenance of the systems.

3.14.8.9.4 Remove any packing material. Wash and clean floors, walls, ceilings and equipment inside of cool rooms. Wash and clean exposed surfaces on outside.

- 3.14.8.9.5 Upon completion of the work and at a time designated by the Contracting Officer, provide instruction to designated personnel in the operation and maintenance of each refrigeration system. The period of instruction shall not be less than one 8-hour day.
- 3.14.9 Provide and install propane burning cooking stoves and chimneys in DFAC NO. 1. and Temporary DFAC. Stove is to be site built concrete faced with terrazzo tiles color to match flooring. Provide 1cm steel cooking top as described above.
- 3.14.10 Provide Dish Tables with preparation sinks in all DFAC'S: See Appendix A for DFAC NO. 1 floor plan, Provide 18 meters of Dish Tables with preparation sinks DFAC NO. 2. Provide 9 meters of Dish Tables with preparation sinks in DFAC NO. 3. 1.9mm (14 gauge) stainless steel dish table. Provide 2cm rolled front rim on 3cm high drip guard on front and sides. Provide 25cm high rear splash. Legs shall be 3cm diameter, 1.6mm (16-gauge) stainless steel with adjustable feet. Sinks are integral 50cm x 50cm x 30cm deep, 5 each. Provide spray hose next to each set of sinks.
- 3.14.11 Provide Stainless Steel Worktables in DFAC'S: Provide 9 each in DFAC NO. 1, Provide 2 each in DFAC NO. 2. Provide 1 each in DFAC NO. 3. 14 gauge stainless steel worktables. Front and rear to have bull nose edges with square ends. Legs are 3cm diameter, 16-gauge stainless steel with adjustable feet. Provide shelf under table. Tables are 9,000 mm x 300 mm.
- 3.14.12 Provide stainless steel open slotted shelves, 1.9mm (14 gauge). Each set of shelves is 100cm wide x 50cm deep x 1.8m high, 4 tier, with 3cm diameter adjustable stainless steel legs. Shelves are adjustable. Provide 8 of the sets with lockable 12.5cm diameter swivel rolling casters. Provide 40 each in DFAC NO. 1. Provide 10 each in DFAC NO. 2. Provide 6 each in DFAC NO. 3.

3.15 DESIGN-BUILD GUIDANCE

3.15.1 While all facilities under this Contract are design-build, several buildings will be required under this Contract for which there are no conceptual drawings provided. These will be design-build buildings based on requirements developed for site utilities by the Contractor. These buildings are the Power Plant, Water Treatment Building, sewage treatment plant, and associated structures

3.15.2 Power Plant: The Power Plant building will be a slab on grade with a metal pre-engineered building, 4-meters high, or as required, clear height, with a clear span, as required, to cover all equipment. This building shall be Pre-engineered Metal Building with upper wall and roof constructed of insulated metal panels. The lower walls shall be reinforced CMU.

3.15.3 Water Treatment Building: The Water Treatment Building is envisioned to be a CMU building, with slab on grade, minimum 3-meters high, with insulated metal roof.

3.15.4 Sewage Aerated Stabilization Pond

This aerated stabilization pond is envisioned to be located on the lower elevation of the site. The discharge shall be into a holding pond with subsequent drainage to an adjacent wadi/dry creek bed. See paragraph 2. CIVIL for further details.

3.16 STANDARDS

The Contractor should use the following American standards to provide sound structural design. The Contractor shall follow American Concrete Institute Standards for design and installation of all concrete

structures.

Concrete For Slabs	21 MPa (f _c) cylinder strength @ 28 days (ASTM-. C 31M)
Structural Concrete	28 MPa (f _c) cylinder strength @ 28 days (ASTM-. C 31 M)
Steel Reinforcement	4218.0 kg./sq.cm(F _y = 60.0 ksi),yield strength.
Welded Wire Fabric	ASTM A185
Anchor Bolts	ASTM A307 using A36 steel.
Concrete Masonry Units	ASTM C90, Type I (normal wt, moisture Cntrl).
Mortar	ASTM C270, Type S (Ultimate compressive strength of 130.0 kg/sq.
cm.)	
Proportion	1 part cement, 0-1/2 part lime and 4-1/2 parts aggregate
Grout	ASTM C476 (Slump between 200 mm to 250 and Compressive
Strength	14 MPa (2000 psi) at 28 days.
Joint Reinforcement	Standard 9 gage minimum, Ladder Type
Structural Steel	ASTM A36: 2530.0 kg./sq.cm (F _y = 36,000psi)
Welding	AWS (American Welding Society) D1.1-2002.

4 STRUCTURAL

4.11 GENERAL

The project consists of various structures. The new buildings shall be provided with a reinforced concrete slab foundation that is properly placed on suitable compacted ground area and shall be in accordance with the recommendations from the geotechnical investigation. The reinforced concrete foundation shall be designed by the Contractor. Building foundations shall be founded a minimum of 800 mm below grade. Most Buildings shall be insulated K-Span metal building built on reinforced stem wall. The single-story buildings constructed using insulated reinforced fully grouted CMU (concrete masonry units) load bearing walls with steel beams supporting the roofing system. Several new facilities will be constructed using insulated pre-engineered metal building systems with metal roof deck and siding and with reinforced CMU exterior masonry walls. The ground floor slab shall be minimum 150 mm thick reinforced concrete. Slab shall be placed on clean vapor barrier over 150 mm thick capillary water barrier on compacted soil.

4.12 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 building 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. All building exterior walls shall be constructed with reinforced CMU, shotcrete 3-D panels, or reinforced concrete unless otherwise stated in sections 1010 or 1015.

4.13 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 American Society of Civil Engineers, ASCE STANDARD, and Minimum Design Loads for Buildings and Other Structures, ASCE 7, edition as referenced herein.

4.14 WIND LOADS

Wind loads shall be calculated in accordance with ASCE 7 using a "3-second gust" wind speed of 125 km/hr.

4.15 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 $S_s = 1.65g$ and $S_1 = 0.75g$.

4.16 STRUCTURAL CONCRETE

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, latest edition. A minimum cylinder 28 day compressive strength of 21 MPa (3000 psi) shall be used for design and construction of all concrete, except that 24 MPa (3500 psi) shall be used for sprayed concrete applications. Reinforcing steel shall be deformed bars conforming to American Society for Testing and Materials (ASTM) publication ASTM a 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. Concrete at or below grade shall have maximum water-cement ratio of 0.40. 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. Concrete members at or below grade shall have a minimum concrete cover over reinforcement of 75 mm (3 inch).

4.17 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, latest editions. Mortar shall be Type S and conform to ASTM C 270, latest edition. Masonry shall not be used below grade, unless for fully grouted and reinforced foundation stem walls. All cells of exterior CMU walls shall be fully grouted and reinforced.

4.18 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, 9th Edition. 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.

4.19 METAL DECK

Deck units shall conform to SDI Pub. No. 29. 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.

4.20 OPEN WEB STEEL JOIST

Open web steel joists shall conform to SJI Specifications and Tables. Joists shall be designed to support the loads given in the standard load tables of SJI Specifications and Tables.

4.21 FOUNDATIONS

Foundations shall be in accordance with the Geotechnical requirements of this RFP.

5 GEOTECHNICAL

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

5.1 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 and a 4 year degree (or equivalent) in geotechnical engineering from a recognized university; professional registration as acceptable to the Contracting Officer; and a minimum of ten (10) years of experience in geotechnical engineering design.

5.2 Design Certification.

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

6 MECHANICAL

6.1 GENERAL

The Contractor shall design, supply, fabricate and install new HVAC systems and special mechanical systems in the facilities identified in Section 01010 Scope of Work and as described herein. Heating, Ventilation, and Air-Conditioning (HVAC) requirements for typical facilities are described hereinafter in paragraph 6.0 Mechanical. The contractor shall be responsible for complete design and construction of all HVAC and special mechanical systems as required for the respective buildings. The Contractor shall submit cooling and heating load analysis for each space using recognized computer programs, such as Trane "Trace" or Carrier "HAP" software.

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

6.2 SPECIALIST SUB-CONTRACTORS QUALIFICATIONS

The heating/ventilation and air-conditioning works shall be executed by an air-conditioning specialist sub-contractor experienced in the design and construction of these types of systems.

6.3 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.

6.4 DESIGN CONDITIONS

Heating & Cooling of all habitable buildings 250 square meters and larger (barracks, DFAC, , repair shops, training bldg. etc.) shall be by an integrated, diesel-fired furnace & evaporative cooler Unit, as indicated in RFP. The installed heat output shall be a minimum of 0.15 tkW/m² (0.20 for DFAC) of floor area. Evaporative Cooling shall be at a minimum rate of 20 m³/h (25 for DFAC) outside air flow / m² floor area.

Contractor will install galvanized steel ducts for supply and return of warm/cool air distribution to all areas of the building. Maximum duct air velocity is 6.0 m/s (1180 fpm)

Design Criteria

Insulated walls of R = 3.5 m²-°C/watt, Roofs of R = 5.5 m²-°C/watt: Average 3 m² floor / person:

Summer cooling 100% outside air. Winter outside air ventilation is 15 m³/h/person (20 for defac) which is 5 m³/h/m² floor (6.7 for defac) : Summer outside air ventilation (cooling) is 60 m³/h/person (80 for defac) which is 20 m³/h/m² floor (27 for defac).

Conversion factors: Btu/h = 3413 * tkW. CFM = 0.589 – m³/h. R(h-sf-°F/Btu) = 5.68 * R(m²-°C/watt)

6.4.1 Outside Design Conditions

Ghazni area :

[Latitude – (approx.) 33 deg. North

Longitude – (approx.) 68 deg. East

Elevation – (approx.) 2210 M (7250 ft.)

Summer – 30.5 deg C (87 deg F) Dry Bulb (DB) [& 8.3 deg C (47 deg F)] Wet Bulb (WB)]

Winter – (-11.1 deg C/12 deg F)

Daily Range – data unknown]

INDOOR DESIGN CONDITION

Summer – 23.9 deg C (75 deg F) & 50% RH for rooms with packaged air conditioning units

Buildings served by the evaporative cooler shall be limited to EDB minus (82% of the EWBD)

Winter – 21.1 deg C (70 deg F)

6.4.2 NOISE LEVEL

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

6.4.3 INTERNAL LOADS

a. Occupancy: refer to Section 01010.

b. Lighting (Fluor.): 21.5 W/m² (2 W/Ft²) maximum (however lighting levels shall meet minimum requirements)

c. Outdoor Air: 34 CMH/Person (20 CFM) or “51 CMH/bedroom (30 CFM/bedroom)”; Latrine – 85 CMH/WC or Urinal (50 CFM) exhaust. Maintain negative pressure in latrine areas where mechanical HVAC is required.

d. Building Pressurization: 1.3 mm W.G. (0.05 in W.G.) (only applicable for buildings provided with diesel-fired furnace & evaporative cooler unit)

6.4.4 THERMAL PERFORMANCE

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:

Assembly	Minimum Thermal Value
exterior walls	RSI 2.288 (R 13)
(above grade)	

ceilings/roof	RSI 6.688(R 38)
basement wall	RSI
floor	RSI 5.28 (R 30)
	(over unheated space)
exterior doors	RSI 0.25 (R 1.43)
exterior windows/ (glazing within doors)	RSI 0.308(R 1.75)
Skylights	RSI 0.18 (R 1.02)

6.4.5 Building Pressurization

Buildings provided with the diesel-fired furnace & evaporative cooler unit shall be designed to maintain positive pressure inside the building with respect to the exterior to minimize sand and dirt infiltration. This shall be achieved by reducing exhaust air (i.e. closing: dampers, doors, windows) so that make-up air works against a positive pressure of 1.0 to 2.0 mm W.G.

Kitchen ventilation design shall be in accordance with NFPA 92A, NFPA 96, NFPA 204, NFPA 211, and other standards listed in this document as appropriate.

6.4.6 Ventilation Standards

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

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

Toilet and Wash Area: Minimum exhaust ventilation shall be the larger of 35 m³/h / m² floor or 85 m³/h / toilet (WC). At extreme cold in winter these values can be reduced for short periods to 10 m³/h / m² or 40 m³/h / toilet (WC) to conserve heat.

Kitchen Hood Exhaust and Make-up Air: As required and as per Kitchen design specialist and equipment supplier requirements. The designer shall take special note that multiple large propane stoves will be installed in the kitchen. The steam generated by the local style of cooking with large pots is immense in comparison to western standards, and the additional need for ventilation must be accounted for in the design. Also, the cooks are accustomed to standing on top of the stoves in order to stir the large cauldrons of food. This common cooking practice should be taken into consideration when designing the exhaust hood. The height of the hood above the stovetop should be such that a man of average stature could stand upright without risk of hitting his head on the hood. Design per NFPA 92A, 96, 204, and 211. Make up air intake shall be integral with the hood system or be located as close to the exhaust intake to prevent cold drafts.

6.4.6 Air Intakes

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

6.5 EQUIPMENT

6.5.1 Filtration

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

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

6.5.1.3 High efficiency (80-85 percent, as defined by ASHRAE 52 Dust Spot Efficiency Criteria) filters, 300 mm (12-inch) deep cell type, shall be provided as the final stage of filtration in special maintenance and inspection operations, food preparation, health care facilities, electronic facilities and corrosion control facilities.

6.5.2 Ventilation and Exhaust Fans

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

6.5.3 Refrigeration System. Only used for buildings less than 250 square meters and select offices and conference rooms. All other buildings are cooled by evaporative-cooling modules, which are a part of the diesel fired heating system.. Direct Expansion (DX) air-cooled condensing unit shall be located outdoors and mounted slab-on-grade. Grade mounted equipment shall be protected from the wind-blown sand by a 1-meter high enclosure walls or by mounting condensing unit using 1-meter high elevated steel support platform. Each unit shall consist of weatherproof casing, compressor(s), condenser coil, condenser fans, motor and appurtenances. Compressor shall be of the hermetic or semi-hermetic reciprocating type. Refrigeration system shall be connected to the refrigeration circuit of the split system air-conditioning unit.

6.5.4 Unitary (ductless split) DX Air Conditioning Units

If specifically required, ductless split units shall be unitary in design and factory manufactured ready for installation. Evaporator unit shall consist of a DX evaporator cooling coil, blower, electric heater and washable filter all mounted in a housing finished for exposed installation. Cooling coil condensate piping shall route to and discharge to the sanitary sewer system or to the ground. The condensing unit will contain compressor, condenser coil, and all internal controls/fittings complete to include a weatherized housing. Copper refrigerant suction and liquid piping shall be sized, insulated and installed in accordance to unit manufacture recommendations. Unit temperature control shall include wall mounted adjustable thermostat, blower on-off-auto switch and heating-cooling change over control.

6.6. Ductwork

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

6.6.1 Duct Insulation

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

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

6.6.3 Branch Take-offs

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

6.6.4 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.

6.6.5 Control Wiring and Protection Devices

Control wiring and protection of the air conditioning units being offered must be the manufacturer's standard, pre-wired, installed in the unit at the factory or as recommended. Thermostats shall be located near the unit return. For units serving more than one area, the thermostat shall be located near the return of the space with the highest heat generation.

6.6.6 Thermostats

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

6.6.7 Electric Motors

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

6.6.8 Air Filtration

All supply air shall be filtered using manufacturer's standard washable filters mounted inside the unit. In addition, all outdoor air intakes where required shall be equipped with 50 mm (2 inch) thick washable filters.

6.6.9 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, dimensions, performance data, electrical requirements, and compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location of each piece of equipment, routing and size of refrigerant piping.

6.6.10 VENTILATION AND EXHAUST SYSTEMS

All fans used for building ventilation and pressurization shall be with capacities specified and be selected for minimum noise level generated. Unit mounted fans either used for supply or 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 exhaust fan shall be provided with shut-off dampers which close automatically when the fan is not running. Also, each fan shall be complete with vibration isolator, external lubricators, and all accessories and sound attenuators as necessary.

6.6.11 NOT USED

6.6.12 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.

6.7 ELECTRIC RESISTANCE HEATERS

6.7.1 Unit Heater. Provide a self-contained electric heating unit, suspended from ceiling or structure, with fan 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 tamper resistant integral thermostat.

6.7.2 Cabinet Heater. Provide a self-contained electric heating unit, recessed mounted in wall or structure, with fan 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 tamper resistant integral thermostat.

6.7.3 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.

6.8 CEILING FANS

6.8.1 Ceiling Fan

Provide 1320mm blade ceiling fans at one per 40 square meters of floor space. Fans shall have reversible motors. Center or distribute evenly in room. Coordinate placement with the lighting plan to prevent conflict or casting shadows. Fan mount shall be flush, standard, or angle mount depending on ceiling height. Fan shall be mounted such that the fan blade is approximately 2.44 meters above the finished floor. The fan shall be provided with out light kit. The finish shall be factory painted white. The controls shall be from either a single pole switch or from two 3 way switches to provide on/off operation. The electrical supply shall be 230volts, single phase, and 50 hertz. Install per manufacturers' instructions.

6.8.2 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.

6.9 PROPANE COOKING STOVE

Cooking area shall be provided canopy type exhaust only kitchen hoods and associated exhaust fans. These exhaust hoods shall include baffle type aluminum filters to trap grease/oil. The exhaust fan sizing calculations should recognize the use of propane stoves in the kitchen. Sizing should accommodate all propane burning stoves running simultaneously. Additionally, the placement of the exhaust hood should allow enough clearance for an average sized male to stand on top of the stove platform unobstructed, for standing on the stove is common local cooking practice. The higher than average placement of the hood will require the extension of the lip of the hood out further than normal, in order to catch the majority of the smoke and adequately vent the area. Propane tank shall be located out the DFAC covered in the fenced storage yard.

Make-up air for kitchen hood exhaust shall be pulled in from roof mounted louvered penthouse filter air intake and from adjoining Kitchen/Dining areas.

6.10 TEST ON COMPLETION

6.10.1 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. 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.

6.10.2 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. Room Inside Conditions:

1. Inside room DB & WB temperatures
2. Air flow supply, return and/or exhaust

b. Air Handling Equipment: Air quantities shall be obtained by anemometer readings and all necessary adjustments shall be made to obtain the specified quantities of air indicated at each inlet and outlet. Following readings shall be made:

1. Supply, return and outside air CMH (CFM) supplied by each air conditioning system.
2. Total CMH (CFM) exhausted by each exhaust fan
3. Motor speed, fan speed and input ampere reading for each fan
4. Supply, return and outside air temperature for each air-conditioning system.

c. Electric Motors:

- For each motor: (1) Speed in RPM
(2) Amperes for each phase
(3) Power input in KW

6.11 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.

b. All thermostats shall be wall mounted near the return grilles in the room with the highest heat load generation and mounted 1.5 meters (5 feet) above the floor. In lieu of a thermostat, a temperature sensor may be located in the same location and connected to a thermostat located near the unit return.

Thermostat shall be mounted 1.5 meters (5 feet) above the finished floor and be easily accessible. Thermostats for the latrine facilities shall be located near the unit return and mounted 1.5 meters (5 feet) above the finished floor. 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:

1. Compressor Hermetic: Provide inherent (internal) overload protection.
2. Condenser: Provide internal thermal overload protection.
3. Evaporator (Open Class "A") fan motor type provides internal thermal overload protection.

6.14 Outdoor Equipment

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

6.15. HVAC SYSTEMS REQUIREMENTS

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

6.15.1.1 General

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

6.15.1.2 Engine Generator Room

Provide multiple air-handling units (AHU) to satisfy variable ventilation requirements for operation of multiple engine-generator sets in the Engine-Generator room. Each AHU shall be configured to provide filtered ventilation and heated air as required and recommended by the engine generator supplier for safe and full performance of equipment. HVAC equipment shall be located indoor wherever possible with access and adequate clearance for maintenance and installed at minimum 100mm high steel-skid or concrete pad for housekeeping. For administrative, storage, control rooms and other occupied areas, a typical air-handling system shall comprise of 30 percent efficiency pleated filters, dampers and controls and shall have provision for fresh air intake. Outside air shall be ducted in from a weatherproof sidewall louver equipped with insect screen and washable filters. Air-conditioning shall be provided in Control Rooms if so required to maintain summer temperature for switchgear performance. The air shall be distributed using metal ducts and registers. Balancing dampers shall be provided for airflow balance. AHU shall be controlled manually and shall be configured for Off/Summer/Winter modes of operation. Winter operation is by a diesel-burning heater; and summer operation is by an evaporative-cooler (swamp-cooler), using Heat-Cool Unit, see Dwg. "ANA HEAT-COOL DESIGN-02".

6.15.1.3 Exhaust Systems

Exhaust systems shall be provided to remove excess heat and noxious fumes and to maintain indoor temperature within equipment operational parameters. All toilet, battery storage and charging, maintenance rooms shall be provided exhaust ventilation using wall or roof-mounted centrifugal fans and ductwork. Make-up air for small exhaust shall be pulled in from adjacent rooms through door grills or undercuts.

Toilet and Wash Areas: Exhaust ventilation at 5 CMH/m² of floor area or 15 CMH/WC, whichever is greater..

6.15.1.4 Special Mechanical Systems

6.15.1.4.1 Water Pump/Treatment Plant. Refer to Civil section for requirements and provide heating,

cooling and ventilation as required for process control, safety and personnel comfort.

6.15.1.4.2 Wastewater Treatment Plant. Refer to Civil section for requirements and provide heating, cooling and ventilation as required for process control, safety and personnel comfort.

6.15.1.4.3 Power Plant. Contractor shall design and construct diesel-engine exhaust system, engine cooling water system, and other HVAC and special systems required for full performance of equipment and operations in the Generator Plant. These systems shall be designed and built in accordance with codes and publications referenced hereinbefore and in compliance with equipment manufacturer recommendations.

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

6.15.1.4.4 Arms Storage Buildings

The Contractor shall design the electrical load and provide for electrical split-Pack heat pump units for the office(s).. No heating for storage areas. Provide operable ridge ventilation and wall intake louvers with washable filters and operable dampers in the storage area.

6.15.1.4.5 Maintenance Facility

Central Maintenance. Heating & cooling shall be by the Heat-Cool Units (diesel-heater & evaporative-cooler). Provide ceiling fans in offices. Provide exhaust ventilation in the maintenance bays using roof mounted exhaust fans and intake wall louvers with washable filters and dampers. Provide overhead tailpipe exhaust system between the first two end bays. Provide Toilet room exhaust system, battery room exhaust systems and a welding exhaust hood on the outside wall. Provide cold water and shop compressed air drops with hose reels one each to service every four bays with additional air drops with filter/regulators and quick disconnect at each column along each side of the building. Provide a waste oil collection system for used engine-oil from the service pits with discharge to a buried double wall storage tank. Trench waste to be routed through an oil/water separator to a buried in a double wall storage tank.

Motor Pool Maintenance. Heating & cooling shall be by the Heat-Cool Units (diesel-heater & evaporative-cooler). Provide ceiling fans in offices. Provide shop compressed air drops with filter/regulators and quick disconnect to service maintenance bays. Provide a waste oil collection system for used engine oil from service pits with discharge to a buried double wall waste oil storage tank.

6.15.1.4.6 Fuel Point

Fuel Storage & Dispensing. Refer to plumbing section for fuel storage and dispensing requirements at various Fuel Points.

6.15.1.4.7 Storage Buildings

Contractor shall design the electrical load and provide electrical infrared heating units for the paint shop and bays. Provide split package heat pump unit in offices. Provide operable ridge-vent ventilation and wall intake louvers with washable filters and operable dampers in the storage areas.

6.15.1.4.8 Ammunition Supply Point

No mechanical ventilation. Provide relief vents near ceiling and secured intake louvers near floor for natural ventilation.

6.15.1.4.9 Central Receiving

Office/Admin Area. Contractor shall design the electrical load for lights and equipment. Provide air intake with washable filters and operable dampers for ventilation and exhaust make-up. Storage Area. Provide operable ridge ventilation and wall intake louvers with washable filters and operable dampers in the storage areas.

6.15.1.4.10 Training Building

Contractor shall design the electrical load for lighting, ceiling fans, and equipment. Heating & cooling shall be by the Heat-Cool Units (diesel-heater & evaporative-cooler).

6.15.1.4.11 Entry Control Point and Reception Center Guard Houses & Towers

Reception Center. shall be heated and cooled by split-pac heat-pumps, with electrical heaters for outside temperatures below -5 °C.

Guard Houses. shall be heated and cooled by split-pac heat-pumps, with electrical heaters for outside temperatures below -5 °C.

Guard Towers. shall be heated and cooled by split-pac heat-pumps, with electrical heaters for outside temperatures below -5 °C.

6.15.1.4.12 Communications Building

Provide HVAC in communications building. Provide split pac heat pump units in offices and conference room(s). Provide exhaust ventilation in Toilets and generator room. Provide air intakes with washable filters and operable dampers for ventilation and exhaust make-up.

6.15.1.4.13 Brigade and Battalion Headquarters

Provide Heat Cool Unit (diesel-heater & evaporative-cooler) in buildings. The Contractor shall design the electrical load and provide 52-inch ceiling fans for offices, conference rooms, toilet areas, outside of shower areas, and general administration areas. Provide exhaust systems in Toilet areas, Shower areas, and Conference Rooms.

6.15.1.4.15 Barracks, All Types

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

6.15.1.4.16 Dining Facilities

6.15.1.4.17.1 Dining Area

Provide Heat-Cool Unit (diesel-heater & evaporative-cooler) in the Dining area. Install through the wall exhaust fans and 52- inch ceiling fans Minimum sizing of Heat-Cool Unit is: for winter 0.20 tkW / m² floor (heat) & outside ventilation air of 20 m³/h / person or 6.7 m³/h / m² floor, which ever is greater: for summer, outside air is 25 m³/h / m² floor of evaporative cooled air equal to 80 m³/h / person at 3 m² / person.

6.15.1.4.17.2 Kitchen Area

Motorized dampers shall be provided to change outdoor/return air mix and to allow summer/winter operation. Exhaust ventilation in the Can Wash, Toilet Room, and Kitchen area shall be provided with roof or wall mounted centrifugal exhaust fans. Cooking area shall be provided canopy type exhaust-only kitchen hoods and associated exhaust fans. These exhaust hoods shall include baffle type aluminum filters to trap grease/oil. The exhaust fan sizing calculations should recognize the use of propane

burning stoves in the kitchen, and that there will be excessive steam and moisture loading due to the use of large pots on this type of stove. Sizing should accommodate all propane stoves running simultaneously. Additionally, the placement of the exhaust hood should allow enough clearance for an average sized male to stand on top of the stove platform unobstructed, for standing on the stove is common local cooking practice. Provide Propane burners and Afghan type tea boilers. The higher than average placement of the hood will require the extension of the lip of the hood out further than normal, in order to catch the majority of the moisture and adequately vent the area. Make-up air for kitchen hood exhaust shall be pulled in from roof mounted louvered penthouse filter air intake and from adjoining Kitchen/Dining areas. The makeup air supply registers shall be located as close to the exhaust intake to prevent cold drafts in the kitchen.

6.15.1.4.17.3 Controls

Dining Room Heat-Cool Unit shall provide in summer 100 percent outside filtered (evaporative cooled) air for ventilation. , During winter heating, provide a minimum of 20 m³/h / person of outside ventilation air.. Toilet exhaust fans and Dining exhaust fan(s) shall be provided with Hand-Off-Auto switch. In the Hand setting, these shall operate continuously and in the Auto setting, these shall be interlocked to the air handler unit for operation.

The kitchen Heat-Cool Unit shall provide 100 percent filtered outside air for ventilation in the “summer” and heating with minimum outside air in the “winter”. The Can Wash exhaust fan and Kitchen exhaust fan(s) shall be provided with Hand-Off-Auto switch. In the Hand setting, these shall operate continuously and in the Auto setting, these shall be interlocked to the air handler unit for operation. Provide each of the Kitchen Exhaust Hood exhaust fans with a wall mounted ON/OFF switch. In the On setting the fan shall operate continuously.

6.15.1.4.18 POL Storage

Provide exhaust fan(s) with explosion-proof construction and coated metal ductwork suitable for corrosive fumes. Provide air intakes with washable filters. Provide exhaust fans on the roof and the intake register within 150 mm of the floor.

6.16 TESTING AND COMMISSIONING

6.16.1 General

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

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

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

6.16.3 Following readings shall be recorded:

- a. Supply, return and outside air CMH (CFM) supplied by each air handling system.
- b. Total CMH (CFM) exhausted by each fan.
- c. Motor speed, fan speed.(4)Input amperes and power input (KW) for each fan.

7 PLUMBING

7.1 SYSTEM REQUIREMENTS

Domestic water and waste systems shall be provided to each area with fixtures requiring water and/or waste connections such as toilets, etc. The entire water system shall include cold water to each fixture as well as to a water heater. Hot water shall be distributed to all lavatories, sinks, showers, etc. normally requiring hot water. Design of the water distribution and waste systems shall be in complete accordance with the requirements of the International Plumbing Code (latest edition). Design and construct a sewage tank system that can be converted into a lift station in the future. The Contractor shall design, furnish, install and test a domestic water supply system for each showers/latrines module (three for male and one female) as indicated on the drawing. Each supply system shall comprise of a booster pump, booster tank and water heater. Mechanical equipment shall be housed inside an insulated enclosure designed for year around operation and suitably protected from weather elements. Contractor shall design and install a domestic water tank system that can be easily converted to a permanent system in the future.

7.2 PIPING MATERIALS

Domestic water shall be distributed by means of PVC (cold water only), CPVC (cold or hot water) or copper for the pressure to be utilized. PVC and CPVC shall not be used in areas where it will be exposed to outdoor sun.

7.3 FIXTURES

All plumbing fixtures shall be provided with p-traps and shall be vented to the roof per International Plumbing Code, latest edition. The following typical plumbing fixtures shall be provided:

- a. Eastern Water Closet (P-1) with flush tank assembly. Enameled cast iron, recessed floor mounted. Provide a cold water spigot 300mm above finished floor on the right (from a perspective of standing inside of the cubicle and looking out) sidewall of the cubicle.
- b. Western Water Closet (P-1A) with flush tank assembly as specified by the designer. Vitreous china floor mounted, elongated bowl type. Provide at least one (1) western type water closet in Dining Facility, Power Plant, Corps Brigade, and Garrison HQ Buildings.
- c. Lavatories (P-3). Enameled cast iron, wall or counter mounted. Brass fittings provided for water supplies. To be used in American or Afghan/American mixed facilities only.
- d. Janitor's Sink (P-4). Floor mount janitor, enameled cast iron with copper alloy rim guard. Provide hot and cold water valves with manual mixing. Faucet handles shall be copper alloy.
- e. Shower (P-5). Showerhead and faucet handles shall be copper alloy. Provide for manual mixing with hot and cold water valves. In addition to a shower head, provide each shower stall with a threaded faucet approximately 1.2 m AFF with hot and cold-water controls, mixing valve and a diverter type valve so water can be directed to either the shower or to the lower faucet. Shower shall be provided with low flow shower head. Shower head shall be wall mounted, with swivel head and commercial grade.

f. Emergency Shower and Eye Wash Assembly (P-7). Provide in Power Plant, Battery Room and in other facilities where appropriate. Provide a floor drain in the area, if appropriate (where emergency water flowing on the floor may lead to additional safety or operational complications).

g. Service Sink (P-8). Standard trap type, enameled cast iron. Service sinks provided in maintenance areas shall be metallic, and in battery rooms acid resistant.

h. Kitchen Sink (P-9). Single Bowl corrosion resisting formed steel. Faucet bodies and spout shall be cast or wrought copper alloy. Handles, drain assembly, and stopper shall be corrosion resisting steel or copper alloy.

The adequacy of water supply piping design will be based on the following:
International Plumbing Code, 2003: Water Supply Fixture Units (wsfu)

Dwg. Sym.	Plumbing Fixture		Cold	Hot	Total
P-1	WC Eastern, Tank		5.0	-	5.0
P-1A	WC Western, Tank		5.0	-	5.0
P-3	Lavatory, Public	1.5	1.5	2.0	
P-4	Janitor's Sink		2.3	2.0	3.0
P-5	Shower, Public	3.0	3.0	4.0	
P-7	Shower, Emergency	1.0	1.0	1.4	
P-8	service Sink		2.3	2.2	3.0
P-9	Kitchen Sink		2.0	2.0	3.0

Water flow rates are calculated from curve-fitting formulas

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

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

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

Water flow velocity range is 0.5 to 2.4 m/s

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

i. Ablution Trench (P-10). See building floor plans for size and construction of trench and number of stations. Provide trench drain with brass grating and strainer. Provide each station with hot and cold water valves with manual mixing. Faucet handles shall be copper alloy.

j. Grease Interceptor (P-11). Steel construction, manual cleaning type with removable checker-plate cover, complete with flow control valve. Tested and rated in accordance with PDI G-101. Concrete shall have 21 MPa (3045 psi) minimum compressive strength in 28 days.

k. Floor Sink (P-13). Provide floor sink, circular or square, with 300mm overall width or diameter and 250 nominal overall depth. Acid resistant enamel interior with cast iron body, aluminum sediment bucket and perforated grate of cast iron. Outlet size as indicated on plans.

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

m. Trench Drain (FD-B). Cast iron construction with galvanized body, integral seepage pan, and adjustable perforated or slotted chromium plated bronze, nickel-bronze, or nickel brass strainer consisting of a grate and threaded collar. This style of drain shall be employed in the kitchen area of the DFACs in response to kitchen cleaning practices of the local national staff. Also,

access needs to be provided to the solids collector for routine emptying.

n. Room hose bibs and floor drains shall be provided as required. Afghan dining facility kitchen area clean-up hose bib to be supplied with connecting hose on reel including approximately 12 meters of hose. Provide clean-up spray nozzle with hose assembly.

o. Drinking Water Fountain (P14): Non-refrigerated with enamel cast iron or corrosion resistant bowl with brass fittings and faucets.

p. Provide P-Traps per Section 10022.4 of the International Plumbing Code IPC.

7.4 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.

7.5 Hot Water Heaters

The hot water shall be generated by electric water heaters. The unit shall be typically located inside a mechanical room, storage room, toilet/janitor room or similar type space. The unit shall be of the commercially available tank type having low or medium watt density electric heating elements. Gas (natural or liquid propane) powered hot water generators shall be provided to satisfy large hot water requirements when economically justifiable and practical. In cases where the pressure of the water coming into the tank will violate manufacturer recommendations, and pressure reducer shall be installed in the line before the water heater. Also, all water heaters shall be equipped with a blowoff valve that will empty into a nearby floor drain.

7.6 WASTE, DRAIN AND VENT SYSTEM

Floor drains shall be provided in each room that contains a water source. Floor drains shall be provided in the mechanical equipment and toilet rooms as required. Drains shall be located near urinals or toilet partitions in toilet rooms. In mechanical rooms, floor drains shall be provided to avoid running drain piping long distances above or over the floor. A trench drain shall be provided for the DFAC Kitchen. All waste and vent piping shall be provided in accordance with the latest edition of IPC. Drain outlet shall use p-trap system to trap sewer gases. P-trap drain per Section 10022.4 of the International Plumbing Code IPC.

7.7 SPECIAL PLUMBING SYSTEMS. Contractor shall design and construct compressor air storage and distribution, waste-oil collection and storage, fuel-oil storage and distribution other plumbing systems that are required for full performance of equipment and operations and for maintenance in the Power Plant and Vehicle Maintenance facilities. These systems shall be designed and built in accordance with codes and publications referenced herein before and in compliance with equipment manufacturer recommendations.

7.7.1 Compressed Air Systems. Compressed air shall be provided using a packaged air-cooled electric motor driven compressor and ASME rated receiver with air cooler and moisture separator to remove moisture and oil. Compressed air system shall be capable of operation up to 1.4 MPa (200 psig maximum) for 0.86 MPa (125 psig normal) units. High-pressure system 1.4 MPa (200 psig maximum) shall be provided to supply compressed air to equipment where required. Provide an engine driven air compressor where needed for operation during electrical power outages. The air distribution system shall be provided with necessary regulator valves to maintain desired pressure. Where required, line filters, lubricators, and/or hose reels shall be provided. Compressed air piping shall be black steel pipe

and painted to match wall color. Noise level of air compressor should not exceed acceptable db limits.

7.7.2 Waste or hazardous drainage from battery repair/charging areas shall be treated prior to entering the base general waste drainage system. Hazardous waste drainage piping shall be acid resistant. Smaller battery rooms shall have waste treatment available using an acid neutralizing tank. Waste oil storage tanks shall be provided for collection of waste oil in the power plant and vehicle maintenance facilities. Waste oil storage tank shall be underground double-wall fiberglass or double-wall steel. Provisions should be made in the design of the underground storage tank that enable manual detection of leaks, prevent overfilling, facilitate liquid level detection, and allow for vapor release.

7.7.3 Drainage from maintenance areas, fueling areas, POL areas, etc., shall be treated prior to entering the base general waste drainage system. Treatment shall consist of sand and oil separators as required by facility function. Buried oil storage tanks shall be provided where required.

7.7.4 Generator Fuel Storage/Distribution. Fuel Oil Storage and Distribution shall be provided to support operation of diesel engine generators at the Power Plants, emergency generators and other locations. The bulk storage of fuels shall consist of above-ground horizontal steel tanks sized to store a 30-day supply of fuel, with containment dikes. 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 be provided with support saddles, platform/stair and concrete pad. Fuel shall be transferred from the bulk storage tanks by duplex transfer pumps into individual day tanks. Fuel piping shall be fiberglass for underground and steel for piping located above grade. Bulk storage capacity shall be based on minimum four-week full load operation of the plant. Metal fuel tank saddles should not be placed directly on fuel containment area slabs. They should be elevated on piers to avoid moisture corrosion. Fuel containment area should have a sump or manually controlled water release valves for water removal.

Provide fuel filling system 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) and the Power Plant Control Room.

7.7.5 Motor Pool Fuel Point

Motor Pool Fuel Point (Storage/Dispensing). Fuel storage and distribution shall be provided to support the vehicles used at various locations on base. The fuels shall be stored in one or more above-ground horizontal steel tank as per capacity scheduled given below.

Brigade Motor Pool 38,000 liters of Diesel and 5,000 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 be provided with support saddles, platform/stair, concrete pad and leak spillage containment provisions. Fuels shall be transferred from the storage tanks by transfer pumps located within the fuel dispensing units. Fuel piping shall be fiberglass for underground and steel for piping located above grade. Provide separate dispensing units for diesel and MOGAS. Each dispensing unit shall be equipped with dual nozzles and key control. Coordinate site design and route all contaminated drainage water from the fuel dispensing pad through an oil/water separator.

7.7.6 Kitchen Fuel Storage/Distribution. Propane Storage and Distribution shall be provided to support operation of the propane stoves for cooking and boiling tea. The bulk storage of fuels shall consist of above-ground horizontal steel tanks sized to store a 28-day supply of fuel, with earth berms (earth beams shall be designed to prevent gas from accumulating at low points). Earth berms shall be sloped 1 to 1 and be 600 mm above high point of tanks. These tanks shall be complete with fill fittings, 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. Bulk storage capacity shall be based on minimum four-week full load operation of the kitchen. Metal fuel tank saddles should not be placed directly on fuel containment area slabs. They should be elevated on piers to avoid moisture corrosion.

Provide chain link fence and gates around entire propane storage facility. Fence shall match perimeter Force protection fence with lockable gates, and concertina wire etc. Provide fuel filling system for unloading fuel from fuel tanker into individual bulk storage tanks comprising of truck pad(s), duplex fuel transfer pumps, piping manifold and valves as required for a complete system.

7.8 TESTING AND COMMISSIONING

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

8 FIRE PROTECTION

8.1 GENERAL

Facility construction and fire protection systems shall be installed in accordance with the publications listed herein and the publications referenced therein. Where a conflict occurs among various criteria, the more stringent requirement shall take precedence.

8.2 BUILDING CONSTRUCTION

Building construction shall conform to fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements of the building codes listed.

8.3 LIFE SAFETY

Facilities features will be provided in accordance with NFPA 101 and the International Building Code, among other references, to assure protection of occupants from fire or similar emergencies.

8.4 FIRE PROTECTION EQUIPMENT

All fire protection equipment and all fire rated assemblies shall be listed by Underwriters' Laboratories (UL) or approved by Factory Mutual (FM) or equivalent as determined by the Contracting Officer and shall be listed in the current UL Fire Protection Equipment Directory or Factory Mutual Approval Guide or equivalent.

8.5 NOT USED

8.6 FIRE ALARM AND DETECTION

Smoke detection – see electrical section for more fire alarm and detection details. Smoke detectors are required per NFPA 101 and 72 for each building or as required by the applicable code. Smoke detectors shall have back up battery power and be installed according to all applicable fire protection codes. Alarm activation shall be connected to a zoned fire alarm control panel for each facility as required by the applicable codes. Alarm redundancy is not required. Fire alarm evacuation systems

shall be provided as required by NFPA 101 and UFC 3-600-01 and listed herein.

8.7 WATER SUPPLY FOR FIRE PROTECTION

A dedicated fire protection water supply is unavailable. Sprinkler systems are not required.

8.8 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). Special care is required for high hazard and multi-usage extinguishers required for areas such as the DFAC kitchen.

9. ELECTRICAL

9.1 GENERAL

SCOPE OF WORK

9.1.1 General. Contractor shall design and construct: (a) On-site Prime Power Generating Plant (b) Exterior Overhead Primary Power Distribution System, (c) Interior Secondary Distribution System (d) Lighting and power branch circuitry, (e) Premise telephone and network/data wiring and (f) Interior Fire Detection and Alarm System. All of the systems shall be designed for the ultimate demand loads plus 25% spare capacity.

9.1.2 Temporary Electrical Service (Not Used)

9.1.3 All equipment shall be tested, commissioned, and operational at time of turn-over to the government. Contractor shall provide all necessary operating instructions, commissioning reports, spare parts, and related items at time of turn-over.

9.2 Design Criteria

9.2.1 Applicable Standards

- a. Design shall be in the required units as stipulated herein.
- b. Conflicts between criteria 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.
- c. All electrical systems and equipment shall be installed in accordance with NFPA code requirements.
- d. Acceptance Testing: Contractor shall develop and submit for approval complete acceptance test procedures on all systems provided. As a minimum the testing procedures shall comply with the requirements of NFPA 70 (NEC) and International Electrical Testing Association Inc. (NETA).
- e. Any other applicable references listed herein, including the following:

ANSI/IEEE Std 81-1983

ANSI/NETA ETT-2000

ANSI/NETA MTS 7.2.2-2001

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

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

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

ETL 1110-3-412 Transformer Application Guide

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

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

IBC - International Building Code

IMC – International Mechanical Code
IPC – International Plumbing Code
IEEE C2 National Electrical Safety Code (NEESC)
IEEE 48 IEEE Standard Test Procedures and Requirements for Alternating- Current Cable Terminations
2.5 kV Through 765 Kv
IEEE Std 62™-1995 (R2005)
IEEE Std 81.2-1991
IEEE 100
IEEE 241 - 1990
IEEE 242 - 2001
IEEE standard 400-1991
IEEE standard 519-1992
IEEE C57.12.22
IEEE C57.12.34
IEEE C57.12.28
IEEE C57.12.80
IESNA Lighting Handbook
International Electrical Testing Association Inc. (NETA) Acceptance Testing Specifications for Electrical
Power Distribution Equipment and Systems
NFPA 10, Portable Fire Extinguishers
NFPA 70, National Electrical Code
NFPA 72, National Fire Alarm Code, 2002 edition
NFPA 90A, Air Conditioning and Ventilating Systems, 2002 edition
NFPA 101, Life Safety Code, 2003 edition
NFPA 780, Lightning Protection
TM 5-811-1 Design: Electrical Power Supply and Distribution
TM 5-811-3 Electrical Design: Lightning and Static Electricity Protection
UFC 3 410-01FA Heating, Ventilating and Air Conditioning
UFC 3 410-02A Heating, Ventilation and Air Conditioning (HVAC) Control Systems
UFC 3-520-01 Interior Electrical Systems, 10 June 2002
UFC 3-530-01AN Design: Interior and Exterior Lighting and Controls 19 Aug 2005
UFC 3-550-03FA Electrical Power Supply and Distribution
UFC 3-600-01 Fire Protection Engineering for Facilities
UFC 3-540-04 Diesel Electric Generating Plant
Underwriters' Laboratories (UL) Fire Protection Equipment Directory (2002).

9.3 Material:

9.3.1 General:

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

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

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

equipment shall be in new condition, undamaged and unused.

9.3.2 Standard Product:

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

9.3.3 Design Conditions: All equipment shall be rated and designed for 49 degrees Celsius (120 degrees Fahrenheit) and minimum elevation of 2000 meters above sea level.

9.3.4 Restrictions: Aluminum conductors shall not be specified or used. Aluminum windings shall not be used in transformers. Any references to 120/208/220/277/480 volt, 60Hz systems in any code or standard shall be interpreted as 220/380 volt, 50Hz systems, unless otherwise modified or directed in this RFP. References in the National Electrical Code to 120 or 125 volt receptacles shall be taken to mean 220v receptacles.

9.4 Design Requirements

9.4.1 Electrical Distribution System

Contractor shall perform a load calculation to determine the number of required transformers to feed all facilities in this project. In the event the existing transformer(s), if present, cannot support the load of the entire facilities package, the contractor shall notify the Contracting Officer. In such instances the contractor shall provide all the information regarding the required number of the new transformers to the Contracting Officer. Design and installation of any additional feeders required from any new ATS(s) will be the responsibility of the contractor. Contractor shall coordinate power needs with the Contracting Officer relative to needs met by each transformer, and to limit power interruption to other services already connected.

DESIGN REQUIREMENTS

Power Plants

On-site Prime Power Generating Plant shall be housed in a power plant building consisting of, as a minimum, a separate generator area, high voltage switchgear room, an office area (+/- 4M x 5M) and a storage room (+/- 4M x 5M). Two empty generator bays, provided with necessary conduit stub-up etc. for future equipment, room for switchgear expansion, and room for two future step-up transformers shall be provided within the building. Sufficient aisle space shall be provided around the generators for a forklift/A-Frame crane for transporting/handling heavy equipment. Building shall be sized for power plant equipment necessary to meet immediate demand load requirements (4 MW minimum) for all of the Base, as explained in the paragraph for generators. Electrical equipment shall include, but not be limited to, diesel engine generators, high-voltage switchgear, step-up transformers, compressors, pneumatic tanks, black start generator, day tanks, relaying equipment and all other auxiliary equipment that is necessary for operating a prime power plant. All equipment items should have brief instructions posted on them in English and Afghan languages. Final generating capacity of the power plant design only shall be for the ultimate site demand load based on the master (site) plan, plus 25% spare capacity for any future load growth. The construction shall meet a minimum of 4 MW (4000 KW) capacity, but shall be designed to meet the total site demand load, plus 25% spare capacity. HID Metal Halide light fixtures may be provided in the generator/high bay area(s). Fluorescent light fixtures shall be provided in the remaining areas. Emergency lighting, emergency egress 'exit' lights and exterior building lighting shall be provided as necessary. Secondary wiring within the building shall be per paragraph 'Secondary Power Distribution System' below. Initial capacity of the Power Plant equipment shall be to meet initial electrical demand loads. Power Plant Building shall be designed and built for the total number of

generators/equipment required to service the Base. All cabling within the Power Plant associated with Power Generation (Generator to Transformer to Switchgear) shall be installed underground.

9.4.1.1 Generators

Generators shall be skid mounted standard industry size, 1,500 RPM, diesel-engine Prime Power rated units. Number of units shall be based on the N+2 principle. Where 'N' would represent number of units required to meet the Base demand load plus 25% spare capacity and '+2' would represent a spare generator available at all times. Contractor shall consider building sq footage, of existing and any known future buildings planned for the Base, for the purpose of calculating ultimate electrical demand loads for the Base in sizing of the Power Plant/generators. Generating voltage shall be 3 phase, 380 volts, and 50 hertz, stepped up to 15kV, via transformers, for base wide Primary Power Distribution through the generator switchgear described below. Generator starting may be either pneumatic or electric, at the Contractor's option. Each generator shall be provided with a day tank with a minimum fuel capacity of 8 hours operating at 100% generated rated (kW) load. Maximum generator size shall not exceed 1000kW (1250 kVA). Contractor, at his option, may select generators with 15kv generating voltage in lieu of 380v and stepping-up to 15kv via transformers for distribution. The Contractor shall schedule transformer and other long lead-time power submittals in time for approvals, procurement, delivery and installation to establish permanent power as soon as possible.

9.4.1.2 Black Start Generator

Power plant shall be provided with a 'black-start' generating unit. Generator shall be appropriately sized (kW rating) to meet all of the power requirements for the initial start-up of the power plant. Unit shall be skid mounted and rated at 380/220 volt, 3 phase, 4 wire and 50 hertz. Upon bringing the prime power generator on line, initial start-up power plant load shall be automatically transferred from the black-start generator to the plant power, via an Automatic Transfer Switch (ATS). Cabling within power plant will be underground.

9.4.1.3 High Voltage (15 kV) Switchgear

Dead-front type (i.e. no live parts shall be exposed) switchgear shall consist of a Generator Bus and a Distribution Bus. Both buses shall be connected via a bus-tie circuit breaker. Distribution Bus shall be provided with a minimum of three (3) 15 kV feeder circuit breakers and one (1) spare 15 kV circuit breaker for future connection to commercial power. Minimum two (2) high voltage feeders, with load transfer capability, shall service initial Base loads. Three (3) high voltage feeders shall service ultimate Base loads. Circuit breakers shall be vacuum or SF-6 gas filled type. Each feeder breaker shall be furnished with, but not be limited to, necessary relays, ammeter, voltmeter, current and potential transformers etc. for recording current and voltage readings. Concrete encased high voltage feeder cable get-a-ways (duct-bank) shall be provided from each breaker cubicles to outside manhole(s). Spare conduit shall be provided in each get-a way (duct-bank). Conduits shall be PVC, minimum 100 mm (4 inch) in diameter.

9.4.1.4 Generator Synchronizing Equipment

Generator synchronizing/paralleling equipment shall be provided, in order for the generator(s) to synchronize with an operating generator, prior to coming on-line. Minimum of one (1) prime power generator shall be on line at all times. With an increase in the demand load, all stand-by generator(s) shall start and the generator that synchronizes first with the operating generator shall come on-line and share load equally. The other generator(s) shall run through a complete cool-down cycle and then stop. Similarly, with the decreases in the demand load, the generator(s) shall drop-off line, one at a time, keeping a minimum of one generator operating on-line. All generator(s) shall go through a cool down cycle prior to coming to stop. All relaying shall be automatically reset for automatic restart and stopping of generators as the load demands increases or decreases. Load sharing by the stand-by generator(s) shall be adjustable between 50% to 85% load on the operating generator(s). Synchronizing/ paralleling of generators shall be automatic and manual.

9.4.1.5 Load Bank

Contractor shall provide a factory manufactured, industry standard permanent load bank connected to the high voltage (15 kV) bus via a transformer to supplement for low demand load on the operating generator(s). Load bank shall be rated at 1000 kW, with 50 kW load steps. Unit shall be provided with a control panel and necessary circuit protection.

9.4.1.6 Fuel Storage / Distribution System: Refer to mechanical section for generator fuel storage/distribution system requirements.

9.4.1.7 Miscellaneous

Contractor shall be responsible for providing all relaying, metering and power plant grounding equipment necessary for safe and efficient operation of the power plant. Relaying shall include, but not be limited to, differential, locking-out, over current, directional, reverse power, and related items.

9.4.1.8 Operating Instructions

Contractor shall provide, mounted in a frame, a complete electrical one-line diagram of the power plant with detail operating instruction. Instruction shall be mounted on a wall inside the switchgear room. Similarly, complete fuel and cooling system schematic diagrams shall also be provided in the switchgear room. Brief operating instructions shall be posted on major components in the power plant. These instructions shall be written in English and Afghanistan languages.

9.4.2 Site Primary & Secondary Power Distribution System

Primary (15kV 'Delta') and secondary power distribution shall be underground. Design and installation of primary and secondary power distribution systems shall be complete and in compliance with the requirements of the National Electrical Safety Code (ANSI/IEEE C2), UFC 3-550-03FA (also called Army TM 5-811-1), National Electrical Code (NFPA 70), and other electrical references listed in this RFP. Site-wide primary power distribution system shall be designed (laid-out) to be serviced by a minimum of three (3) high voltage feeders. All feeders shall be provided with feeder-to-feeder tie capabilities to transfer loads between feeders. Feeder tie points shall be located in the field and away from the Power Plant. 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, sectionalize or recloser, as necessary. Minimum of 3 fuses, with appropriate rating, shall be provided as spares at each fused cut-out location.

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

9.4.2.1 Raceways

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

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

9.4.2.2 Existing Services / Building Loads

Contractor shall connect all existing active electric services to facilities in the Base, to the new power distribution system provided under this contract. Connection of existing services to the new system shall be via appropriately sized pad-mount transformer(s) and coordinated with the Contracting Officer.

9.4.3 Provide telephone lines to the Corps, Brigade, and Battalion Headquarters Buildings.

9.4.4 Transformer Stations: Transformer stations shall be strategically located close to the loads. Dedicated transformer stations shall be provided for large loads. Transformers shall be Primary 'Delta' and Secondary 'WYE' connected. Primary side load-break disconnecting means shall be provided with all transformers. All transformers shall be sized for known projected demand loads, plus (+) 25% spare capacity for future growth. On ground transformers 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.

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

Medical Clinic: Electrical system shall be designed as a double-ended substation, fed from two different feeder circuits, to two different transformers. Installation shall be per UFC 4-510-01 paragraphs 10.2.3 and 10.3 (including 10.3.1 thru 10.3.5) and figure 10-1. Power system for medical clinic shall be a "type 1 EES" as defined in NFPA 99. Size of transformers, generators, and power feeds shall be governed by UFC 4-510-01, NFPA 99, and the NEC. In case of conflict between transformer design criteria between the above named standards, UFC 4-510-01 shall govern; in cases where UFC 4-510-01 can not resolve the conflict, it shall be brought to the attention of the Contracting Officer for resolution.

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

9.4.6 Secondary Power Distribution System

Secondary Power shall be 380/220 volts, 3 phase, 4 wire, 50 Hz. Building secondary power distribution system shall include main distribution, lighting and power panels as required. All panel boards shall be circuit breaker 'bolt-on' type panels. In large buildings separate lighting and power panels shall be provided. It is recommended that minimum size circuit breaker be rated at 20 amperes. Circuit breakers shall be connected to bus bar(s) within the panel boards. Daisy chain (breaker-to-breaker) connection(s) shall not be acceptable. Indoor distribution panels and load centers shall be flush mounted in finished areas. All circuit breakers shall be labeled with an identification number corresponding to the panel schedule. A 3-pole circuit breaker shall be a single unit and not made up of 3 single pole circuit breakers connected with a wire or bridged to make a 3-pole breaker. All wiring shall be copper, minimum # 12 AWG (4mm sq), recessed in finished areas and surface mounted in metal conduits in unfinished areas. All panels shall be provide with a minimum of 25% spare capacity for future load growth. Power receptacles (outlets) shall be duplex, 240 volts, 50 HZ, German (DIN) Standard. All splicing and terminations of wires shall be performed in a junction or device boxes. Proper wire nuts/connectors shall be used for splicing wire. No twist-wire connections with electrical tape wrapped around it shall be acceptable. All electrical installation shall be in accordance with the requirements of NFPA 70 (National Electric Code). Main Distribution Panel shall be provided with an ammeter, voltmeter and kilowatt-hour meter. Selector switch shall be provided for reading all 3 phases. All service entrance cables and equipment, such as main distribution panels etc., to the facilities shall be sized for the ultimate facility loads, to include any heating loads (infrared heating), initial and future provided by others.

9.4.6.1 Receptacles

General purpose receptacles shall be duplex, grounding (earthed) type, "flush" or "semi-flush" wall mounted type, color ivory and installed 500 mm above finished floor (AFF). In office or similar areas receptacles shall be provided at every 1.8 M intervals. In maintenance buildings 3-duplex receptacles shall be provided at each vehicle maintenance bay. In storage buildings, receptacles shall be provided in 5 m intervals. In communications rooms, receptacles shall be provided at 1 m intervals or closer. CEE Type receptacles with plugs 2P+E (240v) or 3P+E (380v) and with appropriate rating, shall be provided for, but not be limited to, washers, dryers, kitchen equipment and any other type of large plug-able equipment. Receptacle shall be complete to include box, cover plate and necessary screws/connectors and of the type most commonly used in Afghanistan.

Medical Clinic: Provide receptacles at patient beds per NEC 517.18 and 517.19. Provide and install electrical receptacles no more than three (3) meters apart on all other interior walls. All receptacles shall be Hospital Grade, per NEC requirements. Receptacles shall be complete to include box, cover plate and necessary screws/connectors and shall be type CEE 7/7. Provide no less than two separate 20A circuits per room, unless more are required per NEC, NFPA 99, and UFC 4-510-01.

Fuel storage capacity shall be base on usage at total electrical load for a minimum of 30 days at full load for the entire duration. Fuel storage shall either be in aboveground single wall steel tank(s) with containment pit or underground double wall with leak detection. The contractor shall provide and install properly sized service entrance feeder from the generator system to the service entrance equipment located inside of each facility. Service entrance equipment shall include a distribution panel board properly sized to feed each facility.

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

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

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%.

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

9.4.2 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.

General Office Space / Computer Rooms	50 FC (504 Lux)
Conference Rooms	30 FC (320 Lux)
Dinning Rooms	70 FC (700 Lux)
Laundry Rooms	30 FC (320 Lux)
Bed Rooms	30 FC (320 Lux)
Kitchen	70 FC (750 Lux)
Lobbies	15 FC (160 Lux)
Lounges	15 FC (160 Lux)
Mechanical & Electrical Equipment Rooms	15 FC (160 Lux)
Stairways	20 FC (215 Lux)
Toilets	20 FC (215 Lux)

Medical Clinic Lighting: Lighting in the Medical Clinic shall be per UFC 4-510-01 Appendix A. High frequency electronic ballasts shall NOT be used in the Medical Clinic.

FC = footcandle
H = horizontal component
V = vertical component

Indoor lighting for all areas shall consist of fluorescent surface mounted light fixtures. Exterior lighting will be installed as referenced. Moisture resistant/waterproof fluorescent light fixtures shall be provided in high humidity and wet areas such as latrines and showers. 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. High Ceilings-Contractor may provide high bay High Pressure Sodium (HPS) vapor light fixtures in facilities with high ceilings, provided that the replacement lamps for the fixtures are available locally.

9.4.3 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) except medical clinic with magnetic 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.

9.4.4 Emergency "EXIT" Light Fixtures

Emergency "EXIT" light fixture shall be provided in accordance with NFPA requirements. Fixtures shall be single side 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/re-set and lamp failure indication buttons. Primary operating voltage shall be 220 volts. Exit signs shall be the international standard for signs using diagrammatic image to convey message. Illuminations shall be with LEDs.

9.4.5 Above Mirror Lights

Above mirror lights shall be provided in toilet rooms.

9.4.6 Emergency Lighting

Battery powered emergency lights shall be provided within each building per NFPA for safe egress during power outage. 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 and lamp failure indication buttons. Primary operating voltage shall be 220 volts.

9.4.7 Light Switches

Light switch shall be single pole. Minimum of one light switch shall be provided in every room. Lighting in large rooms/areas may be controlled from multiple switches. Three-way or Four-way lighting shall be provided in all rooms / areas with multiple entrances.

9.4.8 Receptacles

General-purpose receptacles shall be as required herein. All receptacles shall be duplex, unless

otherwise specified in this section, section 01010, the NEC, or other referenced standard.

Receptacles shall be placed at 3-meter (10 feet) intervals (maximum) in general. Areas with computer work-stations or similar equipment will have additional receptacles. Sinks will have a receptacle above, with one dual receptacle serving two sinks that are side-by-side. Receptacles in wet/damp areas or within 1 meter (~3 feet) of sinks, lavatories, or wash-down areas shall be ground fault circuit interrupter (GFCI) type or Residual Current Disconnect (RCD) type, with the trip setting of 10 milliamperes or less. Total number of duplex receptacles shall be limited to six (6) per 20-ampere circuit breaker.

9.4.9 Conductors

All cable and wire conductors shall be copper. Conductor jacket or insulation shall be color coded to satisfy NEC requirements. The use of 75 or 90 degree C (minimum) terminals and insulated conductors is required. Use of 75 degree C conductors on circuits with protective device terminals rated for 60 degree C is inappropriate.

9.4.10 Grounding and Bonding

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

Communications Building: Grounding and Bonding shall meet the requirements of ANSI/TIA/EIA-942, IEEE 81.2 and IEEE 1100, as well as the NEC. Ground resistance shall not exceed 5 ohms when measured more than 48 hours after rainfall using the fall of potential method outlined in IEEE 81. A ground ring shall be installed around the communications building.

Medical Clinic: Grounding and Bonding shall meet the requirements of ANSI/TIA/EIA-942, IEEE 81.2, IEEE 1100, NFPA 99, and UFC 4-510-01, as well as the NEC. Ground resistance shall not exceed 5 ohms when measured more than 48 hours after rainfall using the fall of potential method outlined in IEEE 81.

Power plant: Grounding and Bonding shall meet the requirements of ANSI/TIA/EIA-942, IEEE 81.2 and IEEE 1100, as well as the NEC. Ground resistance shall not exceed 5 ohms when measured more than 48 hours after rainfall using the fall of potential method outlined in IEEE 81. A ground ring shall be installed around the Power Plant.

9.4.11 Lightning Protection

Communications Building, Medical Clinic, Ammo Supply Point, Propane Tanks, Fuel Point and Power Plant including Fuel storage tanks shall have a lightning protection system installed per the NEC and NFPA 780, as well as other applicable standards listed in this document. Medical clinic lightning protection requirements shall also meet the requirements in UFC 4-510-01.

Ammo Supply Point and all fueling areas shall also implement static electricity controls in accordance with standards listed in this document.

9.4.12 Enclosures

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

9.4.13 Fire Detection & Alarm System

In barracks Fire Detection and Alarm System shall consist of hard-wired, multi-station smoke detectors, with building wide annunciation. In the Headquarters Building complete Fire Detection and Alarm System shall be provided, to include, fire alarm control panel, pull (or push button) stations, horns, strobe lights, smoke and/or heat detectors, as required. No Fire Alarm System shall be provided in the Dining/MWR Facility. Fire alarm cable shall be installed in recessed hard wall RSC conduit and plastered over it. In addition to building wide fire alarm annunciation, the system shall also be capable of automatically transmitting the alarm signal via telephone lines to the local Base Fire Department / Fire Station. System design shall be in accordance with the requirements of NFPA 72. Fire alarm system shall be complete and a standard product of one manufacturer. Contractor shall provide hard-wired carbon monoxide (CO₂) detectors, with local in-room annunciation, in all rooms where wood burning or oil-fired heaters will be provided.

9.5 TELEPHONE/COMPUTER NETWORK SYSTEM

Each Corps, Brigade, and Battalion HQ building office, room shall have telephone and computer data outlets. Telephone/data System shall include 110 punch down blocks, cross-connect boxes, cross connect patch panels, duplex RJ-45 telephone outlets with a minimum of 4 pair Category 5 Enhanced (CAT 5e) cable terminating at each outlet (jack) one for voice and one for data. The Contracting Officer shall determine outlet locations for individual rooms. Telephone wiring shall be recessed in finished areas and surface mounted in metal conduits in unfinished areas. Two (2) 4 inch empty conduits shall be provided from the telecommunication room/closet to the outside communication manhole or handhole. See paragraphs 10 thru 10.3.2 below for additional requirements for communications systems.

9.6 TELEVISION SYSTEM

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

9.7 IDENTIFICATION NAMEPLATES

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

9.8 SCHEDULES

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

9.9 SINGLE LINE DIAGRAM

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

9.10 MEDICAL CLINIC

All electrical work in the medical clinic shall comply with the health-care-facility specific requirements outlined in UFC 4-510-01 and NFPA 99, in addition to the general requirements of the NEC and other general electrical codes and standards listed above.

The medical clinic shall be provided with an overhead paging system (Public Address System), as outlined in UFC 4-510-01.

Backup power systems shall be installed per the requirements of UFC 4-510-01, NFPA 99, and NEC. Power systems for the medical clinic shall be designed as a double-ended substation with two or more transformers, fed from two different feeders. Hospital power system shall be a "type 1 EES" system, as defined in NFPA 99, and shall meet the design criteria defined in UFC 4-510-01, chapter 10.

UPS systems for the medical clinic shall be provided as required in UFC 4-510-01.

The terms "double ended" and "double ended substation" are defined in IEEE 602.

Provide power for X-ray equipment in accordance with UFC 4-510-01.

In case of conflict between transformer design criteria between the above named standards, UFC 4-510-01 shall govern; in cases where UFC 4-510-01 can not resolve the conflict, it shall be brought to the attention of the Contracting Officer for resolution.

10 Installation Communication Systems

This facility will serve as the installation's center for telecommunications, switching, and automation networking (including internet service).

10.1 Communication Building

A communication building shall be constructed centrally on base with a communications Equipment Room, support offices, and a storage area.

10.1.2 Equipment Room (AKA: Telephone Switch Room, Communications Room, and Computer Room)

An equipment room is a special-purpose room that provides space and maintains a suitable operating environment for large communications and/or computer equipment. Equipment Rooms (ER) differ than Telecommunications Rooms (TR) in that ERs are generally considered to serve a campus/base, whereas the TRs serve a floor area of a building.

The equipment room should be located as indicated on the plan to support the communications cable backbone/distribution system and Main Distribution Frame (MDF).

All voice telephone, data and emergency wiring, including any planned or future fiber optical runs, will originate and/or terminate in the equipment room.

Typical voice active equipments are Private Branch Exchange (PBX/telephone switch), attendant/maintenance consoles, call accounting systems, and voice mail systems.

Typical data active equipments are centralized processing systems, such as mainframe/minicomputers using wide area network (WANs) and Local Area Network (LANs).

Other active equipment includes satellite and microwave equipment.

The floor and aerial space must be large enough to support the telephone switch, data network equipment, HF/RF radio systems, microwave systems, VSAT equipment, and operations / maintenance personnel. The size should be consistent with the Regional Corps Communications Buildings.

Do not locate the equipment room in a location that is subject to water infiltration, steam infiltration, humidity from nearby water/steam, heat, and any other corrosive atmospheric or adverse environmental conditions. Do not share the equipment room with the mechanical room, washroom, janitor's closet, storage room, or loading docks.

Locate the equipment room far enough away from sources of Electrical Magnetic Interference (EMI) to reduce interference with the telecommunications cabling. EMI sources are power supply transformers, motors, generators, x-ray equipment, radio transmitters, radar transmitters, and induction heating devices (photocopying equipment).

In addition to the telecommunications equipment and cabling, the equipment room must include space for any environmental control equipment, power distribution/conditioners, and uninterruptible power supply (UPS) systems that will be installed. Provide space outside of the building to support the VSAT pad/dish, HF/RF antennas, and microwave tower.

The Uninterruptible Power Supply (UPS) should be indoor and environment friendly and should be inside the Equipment Room. It should have a year-round Heating, Ventilating, and Air-Conditioning (HVAC) climate control for the sensitive electronic equipment.

Provide four (4) spare 100 mm PVC conduits with 600 mm radius from floor adjacent to open wall area to 1500 mm outside of building wall (cap ends for future cables). Arrange equipment in room to allow equipment removal and maintenance. Electrical service to the building shall be underground.

The equipment room must be locked with controlled access.

10.1.3 Power

The main power source will come from the Prime Power Plant. The Communication Building will be provided with the Prime Power Plant and will be supported by standby power generator, Uninterruptible Power Supply with Voltage Stabilizer System to secure graded and reliable power source for all types of communication and computer equipment.

The main communication building will be provided with Electrical Distribution Panel along with branch circuits for the connectivity of UPS, Voltage Stabilizer, Air Conditioner, and other related electrical machineries.

10.1.3.1 Stand-by Generator

The generator will be on stand-by to provide power in case of power outage from the Prime Power Plant. The minimum rating is 80 KVA generator, 380V, 3-phase, 50Hz, with automatic transfer switch (ATS) and 4000 liters fuel tank. Generator shall be sized for the expected demand load, plus 25% spare capacity, however, 80kVA is the minimum size generator; if a larger generator is needed, a larger generator shall be provided.

Provide a 3m x 5m concrete pad outside the Communications Building for the backup generator with an adjacent 2m x 3m concrete pad with a spill dike for the fuel tank.

A 15cm diameter or larger conduit shall connect the generator pad to the Communication Building (ATS, Main Electrical distribution panel board) and shall use long sweep elbows totaling no more than 180 degrees for any bends.

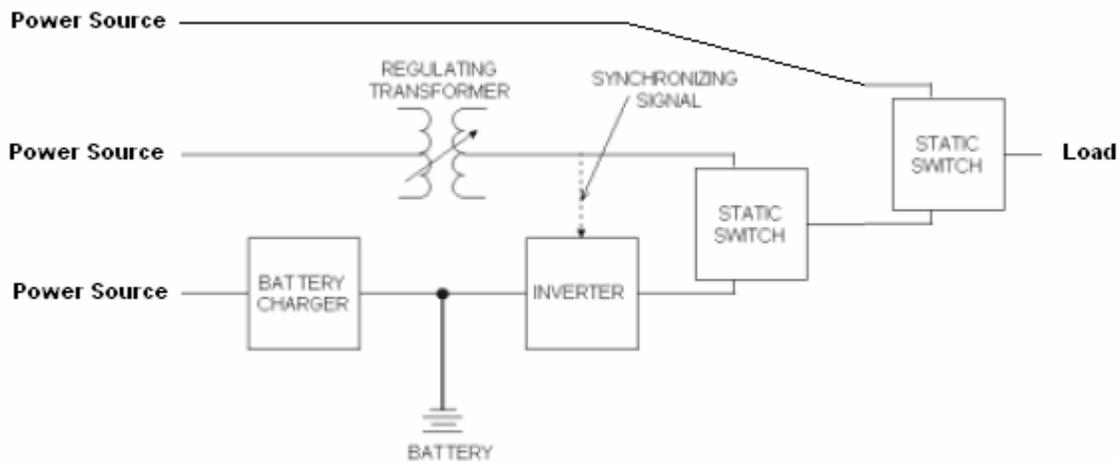
10.1.3.2 Uninterruptible Power Supply

The UPS will have a **minimum** rating capacity of 30KVA, 380V, 3-phase, 50Hz, but shall be sized for the load, if it is known. UPS shall be equipped with valve regulated lead acid autonomy of 4 hours battery backup at rated loads with neutral and earth. UPS shall be double-conversion type (also called a “static UPS”, consisting of a rectifier, battery at float voltage, and an inverter).

UPS system shall be hardwired to the building’s electrical distribution system; but only to circuits for communications and computer equipment. Lighting, HVAC, and other non-computer and non-communications loads shall not be on the UPS circuits.

Parallel to the UPS system shall be a Regulating Transformer (aka Servo Motor Voltage Stabilizer) with a manual transfer switch. Regulating Transformer shall be of same rating as the UPS. A Manual Transfer Switch (MTS) shall be provided to bypass the UPS and instead use the Regulating Transformer.

A Manual Transfer Switch shall be provided to by-pass the UPS and Voltage Stabilizer in the event of a major problem with both units. See diagram. (Static Switch & Manual Transfer Switch are used interchangeably). Automatic Transfer Switch between base power and Communications Building Stand-by Generator are connected to the power source end of the diagram below.



10.1.3.3

Not used

10.1.3.4 Grounding System

A grounding grid tested to 5 ohms or less shall be distributed throughout the UPS and Equipment Room. A ground ring shall be installed around the communications building.

10.1.4 HVAC

The main communication building will be provided with sufficient Heating, Ventilation, and Air Conditioning System capable to provide cooling temperature of 20 – 25 degree centigrade.

The HVAC system is designed for the thermal management of computer, network server and telecommunication rooms. They typically incorporate good filtration performance. The units will be provided with a minimum rating for outdoor shelters or enclosures

10.1.5 Raised Floor

The Equipment Room should have raised flooring. It should use industry-standard interchangeable 600m x 600m all-steel High Pressure Laminate (HPL) raised panels, with 450mm clear space below finish floor.

Assembly shall be designed for the highest earthquake zone. Design shall be bolted stringer capable of withstanding a 55,600N (12,500 lb) uniform load and a 2.200 N (500 lb) rolling load. Provide Four (4) panel lifting devices. Provide bonded anti-static raised floor assembly and flooring.

10.2 Outside Plant Infrastructure

10.2.1 Conduit System

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

10.2.2 Maintenance and Hand Holes

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

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

10.2.3 Outside Plant (OSP) Cables

Brigade, Battalion, separate Company and equivalent HQ buildings to include hospital/clinic, military police/security forces, and base operations shall have 50-100 pair 24 AWG copper UTP cable each run from the building's Telecommunication Room directly back to the Communications Building Equipment Room. In parallel with each copper telephone cable shall be run a six-strand Single Mode (SM) fiber optic OSP cable in support of data communications.

Terminate copper cables on the Main Distribution Frame (MDF) located in the Communications Building Equipment Room with gas type protector blocks and in the Telecommunications Room on 110 punch down blocks.

Terminate SM fiber optic cables in the Communications Building Equipment Room and in the Telecommunications Room on SC type connectors. SM fibers shall have less than 0.5dB loss per connector and 0.1dB loss per kilometer. Contractor shall provide a report from TRD test measurements showing loss characteristics for each fiber. End caps (dust caps) shall be provided over all SC connectors.

Provide a 25-pair 24 AWG copper UTP cable from the Communications Building Equipment Room around the base perimeter to connect all guard towers and security posts with redundant paths so that communications are maintained even if a cable is cut.

Inter-building telephone and data cabling shall be of high grade such as: Essex Group Copper UTP Underground Conduit/Direct Burial Cable xx-pair, 24AWG Gel filled (PE89 gel/foam filled) for Outside Plant, Corning Underground Duct 6 Fiber SM OSP Dielectric Cable, and Corning Outdoor/Direct Burial 6 Fiber SM OSP Armored Cable.

10.3 Inside Plant Infrastructure

10.3.1 Inside Plant (ISP) Cables

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

Room.

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

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

10.3.2 Telecommunications Room (TR): (AKA: Telephone Closet)

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

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

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

The telecommunications room must be equipped with adequate electrical power which is normally 20A protected branch circuits for equipment, non-switched 3-wire alternating current duplex outlets for equipment, and separate continence outlets for test equipment/tools. All outlets must be non-switched (outlet power must not be controlled by a wall switch which may lead to inadvertent loss of service).

The telecommunications room must be locked with controlled access.

11. SPARE PARTS AND CONSUMABLES

The Contractor shall provide for all systems, based upon the spare parts list described in 1.29.2.2.j. of Section 01060, a supply of spare parts, equipment and consumables necessary to maintain operations throughout the performance period and conduct preventive maintenance and repair for a 6 month period beyond the contract performance period, to include those items required to perform testing and commissioning.

12. ATTACHMENTS

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

Appendix A – ANA Brigade List of Facilities

A-0	Site Plan Example
A-2	Barracks A Plan
A-3	Barracks A Elevation
A-4	Barracks A End Elevation
A-5	Barracks B Plan
A-6	Barracks B Section
A-7	Toilet Building C Plan
A-8	Toilet Building C Elevation
A-9	Toilet Building C Section
A-10	ETTC Barracks Floor Plan
A-11	ETTC Exterior Elevation
A-12	Central Toilet Building
A-24	Typical Helipad

A-27 Communications Building
A-31 Soccer Field, Bleachers, and Running Track
A-34 Laundry Room Plan Example
C-1 Stone Wall Detail
C-2 Chain Link Details
C-3 Chain Link Details
C-4 Anti-Vehicle Ditch
C-5 Elevated Guard Tower
C-6 Bunker
USACE Lodging (Special Facilities)
CJ-1 Heat Cool Unit Schematic

Appendix B – Topographic Map

Appendix C- Designs for the following projects:

Guard Tower	Guard House	Reception Center
DFAC 1 (ANA)	Power Plant	Brigade Headquarters
Garrison Headquarters	Arms Storage	POL Storage
Maintenance Garage, 9 Bay	Maintenance Garage 3 Bay	Refueling Point
Battalion Headquarters	Central Warehouse	Training Building
Ammo Supply Point Igloo	Community Center	Medical Clinic
Perimeter Fence	Standard Details	
Index of Following Drawings	DPW Shop Building	MWR Facility (ETTC)
MWR Facility	DFAC 2 (ETTC)	DFAC 3 (Interpreters)
Detention Facility	Ammunition Storage	Fire station
	-- End of Section --	

SECTION 01015A

WATER WELL TECHNICAL REQUIREMENTS

1. GENERAL. The Contractor shall review the water well study that will be provided by the Contracting Officer's Representative (COR) to locate the best source of potable water within the perimeter of the complete Brigade site. The Contracting Officer's Representative shall identify the selected site for the well installation and development.

1.1 For all sites: When the Contracting Officer's Representative has approved the findings and recommendation, the Contractor shall install a water well(s) with a minimum production capability of 2 times the Average Daily Demand (ADD), for a full build out of 4,000 ANA troops, and maintain necessary supply connections and piping for same, but only at such location and in such manner as approved by the Contracting Officer's Representative. The contractor shall provide water storage equivalent to one day's water demand ADD based on 41 gallons per capita per day (gpcd) or 155 liters per capita per day (lpcd) using the full build out population of 4,000 personnel. 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 (CO).

1.2 WELL INSTALLATION GENERAL REQUIREMENTS

The Contractor shall comply with technical requirements contained herein, the attached drawings, and the minimum requirements of ANSI/AWWA A100-06. The wells shall be sufficiently developed so as to provide the maximum efficient delivery of water when connected to the piping systems.

Contractor shall have all materials necessary to complete the well installation in his possession, and demonstrate that fact to the Contracting Officer or his designated representative, prior to starting on site work.

1.2.1 The well shall be located where directed by the COR. The well shall be installed to prevent aquifer contamination by the drilling operation and equipment, cross-aquifer contamination, and vertical seepage of surface water adjacent to the well into the subsurface.

1.3 Water Well Submittals

1.3.1 SD-02 Shop Drawings, Installation Diagrams;
As-built installation diagram for each well prepared by the geologist or qualified well driller present during well installation operations, within 20 calendar days of the completion of the well installation procedure.

1.3.2 Well Installation Plan;

A plan describing the drilling, sampling, well construction, and well development methods, within 10 calendar days prior to beginning drilling operations. Mobilization activities may start prior to submittal of the plan. The plan shall be approved and signed by a geologist experienced in the installation and development of water wells.

1.3.3 Well Material

Technical specifications, catalog cuts, and name and contact information of supplier shall be submitted for all well construction and development materials to include well screens (to include the screen slot size), casing, riser pipe, filter pack material, pellet bentonite, cement, centralizers, surface protective covers, locking caps, dedicated sampling equipment, pumps, disinfecting agents, and drill fluid additives, if used.

1.3.4 Site Conditions

A copy of all permits, licenses, or other legal requirements necessary for execution of the work shall be furnished 10 calendar days before commencement of the work.

1.3.5 Water Source

Decontamination and drilling water source analytical test results shall be submitted within 10 calendar days before beginning drilling operations. Contractor shall notify COR 48 hours in advance of drilling operations so that the Government Technical Representative may be present.

1.3.6 The Government shall provide comments to the test result submittals in 4 calendar days. The final analysis shall be provided 7 calendar days after comments.

1.4 Intent to use Local Material and Labor

The intent of this project is to use locally procured materials and labor to the maximum extent. Local building codes and typical construction practice should also be used and supplemented where required by US Codes and Standards.

PART 2 - PRODUCTS

2.1 Casing, Couplings, Piping

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 years prior to bid opening.

2.3 Filter Pack

Filter pack material shall be a designed, screened and graded mix of rounded material comprised of 20% (3cm), 15% (6cm), 30% (100cm), 35% (140cm) that is washed clean, round, hard, water worn, siliceous material, free of flat or elongated pieces, organic matter, or other foreign matter. The filter material shall be thoroughly sterilized with chlorine or hypochlorite immediately before being placed.

2.4 Pump & Controls

Pump shall be an approved submersible sized as shown on attached drawing. The pump shall be manufactured by Goulds Pumps or of equal quality. The pump shall be connected to the pump controls by a three-wire drop line. All piping for the well drop line shall be polyethylene plastic pipe. The pump shall operate at 208 volts, 50 Hz, 3-phase power, and the motor shall be of sufficient size to operate the pump under the maximum operating conditions without exceeding its rating. Pump shall be equipped with necessary controls to provide for automatic operation of the pump.

PART 3 - EXECUTION

3.1 WELL CONSTRUCTION

Prepare each well as shown on drawings. The piping from these wells shall tie into the existing water supply system as shown on drawings.

3.1.1 Setting Outer Casing

The outer casing shall not be less than 200 mm in diameter. The bore hole shall be of sufficient size to leave a concentric annular space of not less than 100 mm and not more than 150 mm between the outside of the outer casing and the walls of the hole.

3.1.2 Construction of Inner Casing and Screen

Approved centering devices shall be installed at a spacing of 120 degrees, between the outer casing and inner casing prior to well construction. Centering devices shall not be placed on the screened interval, or within the bentonite seal, if used.

3.2 TESTS

3.2.1 Test for Quality of Water

3.2.1.1. Water Quality Sampling and Analysis

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

Contractor shall perform disinfection of the well water in accordance with AWWA B301, for liquid chlorine and AWWA B300 for hypochlorite and AWWA C 654 for preparation of solution and introducing it into the well. Bacteriological samples shall be collected and examined in accordance with Standard Methods for the Examination of Water and Wastewater by a qualified lab as approved by the Contracting Officer.

3.3 INSTALLATION OF PERMANENT PUMP

The permanent well pump depth shall be as shown on drawings. The pump shall be secured at the required elevation as recommended by the pump manufacturer and pump test analysis.

3.4 PUMPHOUSE AND SLAB

Pumphouse and slab shall be constructed as per drawings. The top of the outer casing shall extend 40cm above the top of the slab.

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-- End of Section -

SECTION: 01060

SECTION 01060

SPECIAL CLAUSES

PART 1 GENERAL

1.1 PRECONSTRUCTION CONFERENCE

1.1.1 Schedule of Meeting

At the earliest practicable time, prior to commencement of the work, the Contractor and any Subcontractors whose presence is necessary or requested, shall meet in conference with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to the details of the administration and execution of this contract. This will include but not necessarily be limited to the Contractor's Quality Control (CQC) Program, the 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 ten (10) calendar days after award of this contract, an Area Use Plan designating intended use of all areas within the project boundaries. This plan shall include, but not necessarily be limited to the following: the proposed location and dimensions of any area to be fenced and used by the Contractor; construction plant 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 designated by the Contracting Officer within the contract limits for operation of his construction equipment and plants, shops, warehouses, and offices. 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.

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 made available for use by Government personnel.

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.

1.3.1.8 Sanitation

a. Sanitary Facilities: The Contractor shall provide portable sanitation facilities for the Contractor's use.

The Contractor shall be responsible for maintaining such facilities at no expense to the Government.

b. **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 Contracting Officer Representative and host nation 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 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 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.

1.6.2 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 Contractor's failure to properly schedule an outage shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

1.7.1.1 [Not used.] [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 from 2100 – 0530 hours on duty days 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 0530 – 1800 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. Water required for final testing, adjusting and balancing of HVAC systems will be furnished by the Government. 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 NOT USED

1.10 ELECTRICITY (CONTRACTOR PROVIDED)

Electrical service is not available for use under this contract; therefore all electric current required by the Contractor shall be the responsibility of the Contractor, furnished at his own expense. The Contractor shall provide diesel generators to meet his demand requirements. 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.

1.11 WORK OUTSIDE REGULAR HOURS

If the Contractor desires to carry on work outside regular base duty hours, or on holidays, including the following U.S. holidays: New Year's Day, Martin Luther King Jr Birthday, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's 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".

1.12 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.

1.13 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. The facilities cannot be portable facilities, such as a prefabricated trailer. The facilities shall be CONNEX containers that are modified to meet the project requirements and firmly secured to a foundation at the project site. The facilities shall include steel fold down covers on windows. Windows shall be 6 mm laminated glazing. Units shall have the following insulation R-30 @ Floor and Ceiling and R-19 in Walls. 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 furnished and/or installed by the Contractor under this clause shall remain the property of the Government at the completion of the

contract. The generator for the Field office and the field housing shall be protected on all sides by standard fencing.

1.13.1 Field Office Facility

Field office facility sufficient for four (4) persons shall include all utilities, indoor toilet facilities, small conference area, break area with sink, and storage room. The Field Office Facility shall be 4.673 meter x 36.757 meter (or equivalent) office shall be located at the Embedded Trainers' Site, or as directed by the Contracting Officer Representative. The layout of the office facility shall be approved by the Contracting Officer. The facility, including electrical diagrams, shall be provided no later than 60 days after award of this contract. Provide a Communications Room in the Field Office Facility for the electronics. Provide an Air Conditioned Communications Room with sufficient Lighting in the USACE office building for the electronics. The Communications Room size requirement is 10 feet (3.048 m) by 8 feet (2.438 m), or if more appropriate, 3 meters (9 ft, 10 in) by 2.5 m (8 ft, 2 in). Room shall be air tight and sealed to prevent dust from entry. Communication conduit entrance requirement is one 4 inch conduit with pull string. Conduit is to be trenched from the concrete satellite pad at a minimum depth of 18" preferably 24" with Digging/Caution Tape at a depth of 12" to the outside wall penetrating into the communications room with an LB or 12"x 12"x 6" Waterproof Junction Box. Conduit at satellite pad must be bent (see below) so that opening is pointing down (not up) with at least 18 inches clearance from the pad surface. Conduit enters the Communications Room above ground, using a Weatherhead at the dish location. Opening into the Communications Room should be at 18 inches above the communications floor, horizontal entry. Contractor shall provide 2 8' Ground Rods with a minimum of 8' separation in the Communications Room with ground clamps. Conduit should be one piece, PVC Schedule 40 minimum or thicker. Interior must be free of protrusions and completely butted up at all the joints to allow smooth, non-cutting surfaces for the wire or fiber optics that will eventually be pulled through. Conduit is to be installed with a pull string or rope. Each bend must continue through a minimum of 36 inches of straight pipe before the next bend using a minimum 24" preferably 36" sweeps and installation of a 4'X4'X4' hand hole in between every 3 sweeps.

Conduit must be buried no less than 18 inches, 24 inches if there is a possibility of tank or other heavy equipment passage with Digging/Caution Tape at a depth of 12". Conduit is intended for communications only and must maintain a minimum of 24" separation from all power lines. If Power is also to be run, it must be in a separate conduit, separated from the communications conduit by a minimum of 24 inches. Power conduit is not specified herein. Consult with the electrical engineer for requirements.

Provide a 4 m X 4m X 200 mm concrete pad for anchoring the satellite antenna. Antenna weighs 1,800 pounds, design the base to anchor the antenna and withstand high winds on site. Provide 80 CMU Cinder blocks and 2 8' Ground Rods with clamps for proper grounding.

In both residence and office, install raceways, run category 6 or better Ethernet cable (UTP 23 AWG solid 4-pair) and terminate on RJ-45/Keystone Style CAT6 jack. Free ends are to be pulled and labeled into Communications Room and terminated on a CAT6 Patch Panel leaving a minimum of 20 feet extra cable inside the Communications Room, all terminations will be to the 568B standard. In the office space a duplex / dual outlet box will be installed every 6' along the interior walls, and will have 1 data / 1 phone connection each. In the residence space a duplex / dual outlet box will be installed along both long interior walls, and will have 1 data / 1 phone connection each. All Phone and Data connections will use CAT6 cable terminated in a 568B configuration. See Appendix A USACE Facility.

In both residence and office, install raceways, run category five (5) or better Ethernet cable and terminate on RJ-45 connecting block arranged for 568B wiring at each workstation, printer location and table/desk in residence. Free ends are to be pulled and labeled into Communications Room and left un-terminated with a minimum of 15 feet exposure inside the Communications Room.

Provide personnel bunkers at the COE living quarters/ office for 6 people. Contractor shall propose bunker type, and upside down concrete U with protection each end and double sand bags with neoprene cover is acceptable. Bunker shall have bench seating.

1.13.2 Field Housing Facility to be provided at the Embedded Trainers' Site or other location as designated by the Contracting Officer:

Provide Housing units as follows: The facility shall be 4.673 meter x 36.757 meter (or equivalent). Two single bedrooms with individual attached toilet/shower facilities; two 2-person bedroom unit with separate adjoining toilet/shower facilities; day room; kitchen with sink and countertop, and washer, dryer room. All sleeping areas and office space will be air conditioned and heated. The field housing facility shall become Property of the US Government upon completion of the contract. The Contractor shall be responsible for providing all utilities for the facility. All facilities within this section as described above shall be completed and ready for Government use not later than 60 days after award of the contract. See Appendix A USACE Facility.

1.13.3 Services for the Office and Housing Facilities

- a. Maintain all utility systems required to support the facilities. Provide heat and air conditioning to the facilities.
- b. Provide janitorial services to the facilities.
- c. Provide operation and maintenance of building structure, all furnishings and equipment contained therein, including painting and incidental repairs.
- d. Provide dust control in area adjacent of the buildings.
- e. Provide vector control services, including insect and rodent control in the areas adjacent to the buildings.
- f. Provide a conduit with pull string between Corps of Engineers (COE) living quarters and office. The conduit shall be a 100 mm min dia not exceed 100 m in length, and will be equipped with a minimum 24" preferably 36" sweeps and no more than 3 sweeps, without installation of a 4'X4'X4' hand hole. Contractor shall provide a 8' ground rod and ground clamp at each end of all conduits. Verify number of conduits required.

1.13.3 Equipment

Within 60 calendar days following the contract award, provide one diesel powered, four wheeled drive all terrain equipment with roll bar, similar to Kawasaki MULE 3010 diesel off highway style. The equipment shall be with automatic transmission, heavy duty cooling system, heater, windshield, fabric top and doors, fire extinguisher, and Red Cross approved First Aid Kit. The Contractor shall provide insurance to the full requirements of local jurisdiction law. Maintenance including major repairs shall be accompanied in a timely manner. When repairs require more than four (4) hours in effort, a similar substitute shall be provided for the CE's use. The Contractor shall provide insurance to the full requirements of local jurisdiction law. The Contractor shall maintain licensing, registration and ownership of this vehicle. The equipment shall be provided no later than 60 days after award of this contract. This equipment shall not become Government property at the completion of this contract.

The contractor shall provide four desktop computers and monitors similar to: Dell Latitude D820 [w/Intel Core 2Duo T7600@2.33GHz](#), 80GB-HDD, 2GB Ram, 8X DVS +/- RW, Wireless 802.11 adaptor, Laptop Bag, Optical USB Mouse, Power Supply, mouse pad, extra battery). All of the laptops shall be equipped with Microsoft XP Professional operating system and Office Professional 2003 Edition; and one laser printer (with network interface card (NIC) (similar to: HP Color LaserJet 5550dtn, wide carriage printer capable of printing on 11"X17" paper). One of the laptops shall have full version AUTOCADD 2007 with all required licenses, including software discs and licenses. The Contractor shall provide four cellular telephones with unlimited service through the local provider. The contractor shall maintain the printer, laptops, as required, including maintenance kits, toner cartridges, other consumable supplies and paper.

1.14 PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR)

1.14.1 General

Upon completion of each facility under this contract, the Contractor shall prepare and furnish as-built drawings to the Contracting Officer. The as-built drawings shall be a record of the construction as installed and completed by the Contractor. They shall include all the information shown on the contract

set of drawings, and all deviations, modifications, or changes from those drawings, however minor, which were incorporated in the work, including all additional work not appearing on the contract drawings, and all changes which are made after any final inspection of the contract work. In the event the Contractor accomplished additional work that changes the as-built conditions of the facility after submission of the final as-built drawings, the Contractor shall furnish revised and/or additional drawings and drawing files as required depicting final as-built conditions. The requirements for these additional drawings shall be the same as for the as-built drawings specified in this paragraph.

1.14.2 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 include the addition of the predominant native language of the region in addition to the English language.*

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

b. Existing digital drawing files shall be updated to reflect as-built conditions. Independent drawing files containing only as-built information are not acceptable. The modifications shall be made by additions and deletions to the original drawing files, and where additional drawings are necessary, they shall be developed in individual digital files for each new drawing. All additions and corrections to the contract drawing files shall be clear and legible, and shall match the adjacent existing line work and text in type, size, weight, and style. New or revised information placed into the design files shall be placed on the levels and in the colors used for placement of the corresponding initial data. Similarly, the drawing size, title block, and general format of new drawings shall be consistent with the format established by the original drawings.

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

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

e. The Contractor shall furnish the digital as-built drawing files in the format as directed within Section 01335. 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 and file format compatibility with the described CADD software.

h. One (1) complete set of the updated final Record Copy digital drawing files and one (1) paper plot or

copy of the final Record drawings shall be delivered to the Contracting Officer upon completion of each facility. 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.

1.15 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.

1.16 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.

1.16.1 Accident Prevention Program

Within fifteen (15) days after award of this contract, 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.

1.16.2 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.

1.16.3 Temporary Power - Electrical Distribution Boxes

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

Contractors shall:

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

1.17 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.

1.18 SPARE PARTS

1.18.1 General

The requirements of this clause are in addition to any requirements for the provision of specific spare parts to be provided by the Contractor included in Technical Provisions. The Contractor shall furnish spare parts as directed by the Contracting Officer under the provisions of this clause for all equipment for which O&M data is to be provided under Clause OPERATION AND MAINTENANCE (O&M) DATA of this contract. The term "spare parts" as used herein shall include spare parts, special tools and test equipment.

1.18.2 Selection of Spare Parts to be Furnished

The Contractor shall provide master parts lists, recommended spare parts lists and lists of special tools and test equipment as a part of the equipment O&M data required by Clause OPERATION AND MAINTENANCE (O&M) DATA. The master parts list shall include the supplier's price for each part. After review of the lists, the Contracting Officer will select spare parts and furnish written direction to the Contractor indicating quantities and types of spare parts to be furnished by the Contractor. Written directions for spare parts orders may be provided on an incremental basis as reviews of O&M data submitted by the Contractor are completed but will not necessarily be issued in the sequence in which the Contractor submitted the equipment O&M data.

1.18.3 Procurement and Delivery of Spare Parts

The Contractor shall procure and be responsible for delivery, receipt, handling, placing in storage, inventory, and turnover to the Contracting Officer all spare parts selected by the Contracting Officer. In addition to the recommended spare parts list required in paragraph SELECTION OF SPARE PARTS

TO BE FURNISHED above, the Contractor is responsible to have one (1) year supply of manufacturer's recommended spare parts on site ready to turn over to the Contracting Officer at the time of acceptance of the facility.

1.18.3.1 Shipment and Delivery

The Contractor shall be responsible for the shipment and delivery of spare parts to the location on or near the site in Afghanistan as selected by the Contracting Officer. The Contractor shall provide all manpower and equipment required to receive and place into designated storage areas all spare parts purchased under this clause. The Contractor shall give the Contracting Officer thirty (30) calendar days notice of arrival at the site of the first shipment.

1.18.3.2 Turnover of Spare Parts

The Contractor shall notify the Contracting Officer seventy-two (72) hours prior to delivery of spare parts to the designated storage area. The Contractor and the Contracting Officer will perform a joint inventory of the spare parts and the spare parts will be turned over to the Contracting Officer. Spare parts purchased under this clause shall not be used by the Contractor.

1.18.3.3 Parts and Package Identification

Prior to shipment from point of purchase, each spare part shall be tagged or otherwise marked or labeled. Such labeling may be placed or affixed to the container, box or packaging in which spare parts are located when it is not feasible to place or affix such labeling directly on each spare part. Tags or labels shall include, but not necessarily be limited to; part number, description, parent equipment name and number location, project and/or other data as directed by the Contracting Officer.

1.18.3.4 Preservation and Packaging Instruction

- a. Items ordered under this contract shall be preserved and packed for a minimum of three (3) years shelf life storage. All items shall be individually packaged except when the manufacturer specifies that the items are to be used in sets. Appropriate identification labels must be affixed to the items protective box or package. After the spare parts are packaged, the manufacturer shall weigh the spare parts and packaging and place the weight and size of the packaged container on the label with other information as outlined herein. Each item, not normally identified with manufacturer's name and part number, shall have an appropriate label affixed to it with manufacturer's name and part number.
- b. Machined spare parts shall be lubricated or coated in order to withstand extensive periods of storage in a highly corrosive atmosphere.
- c. Large items (greater than 22.7 kg (50 lbs.), or larger than 0.03CM (one cubic foot) shall be packaged in waterproof wooden boxes and properly braced. Cushioning shall be used to prevent damage to the item and to the packaging material.
- d. Solid state components, such as diodes, transistors, integrated circuits or equipment consisting of such parts that can be damaged as a result of static electricity and other stray electro-magnetic fields shall be packaged in heat-sealed, aluminum foil, laminated, flexible packages.
- e. All other spare parts shall be packaged in heat sealed plastic bags or wrap. Delicate and more fragile items such as test equipment shall be cushioned or wrapped with transparent bubble wrap material prior to being inserted into the plastic package.

1.18.4 Warranty

All spare parts provided by the Contractor under this clause are subject to the general warranty clauses of this contract.

1.18.5 Payments for Spare Parts

Payments for spare parts ordered under the paragraph entitled "Selection of Spare Parts To Be Furnished" will be made under the work item of the Work Breakdown Sheet entitled "Spare Parts". Payments for spare parts specifically required elsewhere in this contract shall be considered as part of those equipment costs and shall be included in other payment items as appropriate. Payments for spare parts ordered under this clause shall be based on the invoice price (FOB supplier) plus certified invoice price of surface shipment to the site in Afghanistan. The invoice price (FOB supplier) shall include the separately listed cost for preservation and packaging by the manufacturer as specified herein. The Contractor shall provide invoices and any additional backup, which may be required to demonstrate that the invoices presented represent the cost of spare parts, preservation and packaging, and cost of surface shipment to the site. Payment for handling, delivery, inventory, turnover, customs, overhead or profit shall not be paid or allowed under this Contract Provision, and shall be included in the cost for installation of this equipment under the other appropriate payment items of this contract. Price increases over prices furnished under paragraph SELECTION OF SPARE PARTS TO BE FURNISHED shall be fully substantiated. Payment for spare parts will be made after the spare parts have been accepted at the site by the Contracting Officer. If the total payments under the work item entitled "Spare Parts" does not reduce the balance of this work item to zero, the remaining balance will be deducted from the final contract amount. If orders exceed the work item entitled "Spare Parts", a modification for equitable adjustment will be issued in accordance with Contract Clause 52.243-4 entitled CHANGES. Payments for spare parts ordered under this clause shall constitute full payment for all cost of the spare parts and associated cost of preservation and packaging, and cost of surface shipment to the site. Other ancillary costs shall be included by the Contractor under the other appropriate work items of this contract and no additional cost except as provided herein will be allowed.

1.19 OPERATION AND MAINTENANCE (O&M) DATA

1.19.1 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.

1.19.2 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.

1.19.3 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 written in English and Dari. 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. Required number of submittals (number of sets) shall be as specified in Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD.

1.19.4 Recommended Spare Parts List

The Contractor shall furnish a recommended spare parts list containing equipment manufacturers' recommendations for five (5) years; two (2) years and one (1) year spare parts stock levels in Afghanistan. Current unit price and effective date, lead time, shelf life for each individual part, and total cost of all recommended parts shall be furnished.

1.19.5 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.

1.19.6 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. Instructions shall be in English and Dari. 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.

1.19.7 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 re-submittals 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.

1.20 INSTRUCTIONS AND TRAINING FOR OPERATION AND MAINTENANCE

1.20.1 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 in English and Dari for a minimum period as follows:

Title	Duration of Training
Mechanical Systems	10 Days
Electrical Systems	10 Days

1.20.2 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.

1.20.3 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.

1.20.4 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.

1.20.5 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.

1.20.6 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. Re-submittals shall be made within twenty (20) days of notice from the Contracting Officer.

1.20.7 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.

1.21 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.

1.22 TIME EXTENSIONS

1.22.1 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.

MONTHLY ANTICIPATED UNUSUALLY SEVERE WEATHER CALENDAR DAYS

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

1.22.2 Time Extensions

1.22.2.1 Weather

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

1.22.2.2 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.

1.23 STANDARDIZATION

Where two or more items of the same type or class of product, system or equipment furnished in this project are required, the units shall be products of the same manufacturer and shall be interchangeable when of the same size, capacity, 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.

1.24 COMPLIANCE WITH HOST COUNTRY RULES AND CUSTOMS

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

1.24.1 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.

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

1.25.1 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.

1.25.1.1 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.

1.25.1.2 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.
- n. Registration, insurance company, policy number and expiration date for each vehicle.

1.25.2 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.

1.25.3 Security Plan

The Contractor shall submit to the Contracting Officer, within ten (10) calendar days after award of this contract, his proposed personnel and vehicular access plan. This plan shall cover all elements for issuance of the access passes, safeguarding of passes not issued, construction security operations, lost passes, temporary vehicle passes, and collection of passes for employee's and vehicles on 1)- temporary absence; 2)- termination or release; and 3)- termination or completion of contract. The plan shall address in detail the 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.

1.26 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.

1.27 ON-BASE PHOTOGRAPHY PROHIBITION

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

1.28 PUBLIC RELEASE OF INFORMATION

1.28.1 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.

1.28.2 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.

1.29 ATTACHMENTS

TAC FORM 61 - Accident Prevention Program Hazard Analysis

TAC FORM 356 - Operation and Maintenance Training Validation Certificate

PART 2 LOCAL CLAUSES

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.

2.5 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 252.222-7006(d) ***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 AGENT'S FEE AND COMMISSION

The contractor certifies that the contract price (including any subcontracts awarded hereunder) does not include any direct or indirect costs of sales commissions or fees for contractor sales representatives for the solicitation or promotion or otherwise to secure the conclusion of the sale of any of the supplies or services called for by this contract to the Government of Afghanistan.

-- End of Section --

SECTION: 01312

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

PART 1: GENERAL

1.1 GENERAL

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

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- 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. 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**SECTION 01321****PROJECT SCHEDULE****PART 1 GENERAL****1.1 SUBMITTALS**

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

PART 2 PRODUCTS (Not Applicable)**PART 3 EXECUTION****3.1 GENERAL**

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

3.2 BASIS FOR PAYMENT

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

3.3 PROJECT SCHEDULE**3.3.1 Schedule of Construction**

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

3.3.2 Non-Compliance

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

3.3.3 Horizontal Bar Chart

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

3.3.4 Cost

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

3.3.5 Scheduled Project Completion

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

3.3.6 Projected Earning Curve

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

3.3.7 Construction Schedule

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

3.3.8 Submission With Partial Payment Estimate

Each time the Contractor submits a payment request under this contract he shall also submit three (3) copies of the Bar Chart. The Bar Chart shall be annotated by indicating the percent complete for each activity directly on the bar. The Projected Earnings Curve shall be annotated by plotting actual earnings versus time on the same graph. Those work items reflecting performance which is behind schedule by fifteen (15) calendar days or more shall be fully explained in detail giving the reason for delay and the Contractor's plan for timely completion within the schedule.

3.3.9 Modifications

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

3.4 PERIODIC PROGRESS MEETINGS

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

3.4.1 Update Submission Following Progress Meeting

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

3.4.2 Progress Meeting Contents

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

3.4.3 Earnings Report

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

3.4.4 Cost Completion

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

3.4.5 Network Analysis System

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

-- End of Section --

SECTION: 01335

SECTION 01335

SUBMITTAL PROCEDURES FOR DESIGN-BUILD PROJECTS

PART 1 GENERAL

1.1 REFERENCE

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

CONSTRUCTION SPECIFICATIONS INSTITUTE

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

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

AFGHANISTAN ENGINEER DISTRICT

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

TRANSATLANTIC PROGRAMS CENTER

Design Instructions Manual

U.S. Army Corps of Engineers
<http://www.tac.usace.army.mil/extranet/>
Transatlantic Programs Center
201 Prince Frederick Drive
Winchester, Virginia 22602

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 DESIGN SUBMITTALS

Refer to the *Submittal Distribution and Quantities Table* at Attachment A for minimum submission requirements.

The Government reserves the right to issue an NTP (notice to proceed) for any phase for fast-track projects.

1.2.2 CONSTRUCTION SUBMITTALS

1.2.2.1 Contractor Furnished Government Approved Construction Submittals

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

1.2.2.2 For Information Only Construction Submittals (FIO)

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

1.3 SUBMITTAL CERTIFICATION

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

1.3.1 Effective Quality Control System

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

1.3.1.1 Organizational Responsibility

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

1.3.1.2 CQC System Manager Review and Approval

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

1.3.1.3 Determination of Compliance

Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements by the Contracting Officer.

1.3.2 Responsibility for Errors or Omissions

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

1.3.2.1 Government Review

Government review, clearance for construction, or approval of post design construction submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory.

1.3.3 Substitutions

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

1.3.4 Additional Submittals

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 Design-Build Contractor fails to submit 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 such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor.

1.3.6 Stamps

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

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

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

Name of CQC System Manager: _____

Signature of CQC System Manager: _____

Date: _____

1.4 ENGLISH LANGUAGE

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

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

1.5.1 Drawings

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

1.5.1.2 All site plans shall be 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 English or SI units as deemed appropriate by the designer to meet the requirements of the design. Calculations shall be in SI (metric) units to meet the requirements of the design. Quantities on the contract drawings stated in SI (metric) units, may also be stated in English units.

1.5.3 Specifications

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

1.6 WITHHOLDING OF PAYMENT FOR SUBMITTALS

1.6.1 Design Submittals

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

1.6.2 Construction Submittals

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

PART 2 PRODUCTS

2.1 GENERAL

The following are contract deliverables which give further details about 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.

An interim building design package submittal shall contain as a minimum, the following (but only that information applicable to the individual design package):

2.1.1.1. Landscape, Planting and Turfing

2.1.1.2. Architectural

1.1.1.2.1. Design Narrative

1.1.1.2.2. Architectural Floor Plans, Typical Wall and Roof Sections

1.1.1.2.3. Finish schedule

1.1.1.2.4. All required equipment

1.1.1.2.5. Special graphics requirements

1.1.1.2.6. Door and Window Schedules

1.1.1.2.7. Hardware sets using BHMA designations

1.1.1.2.8. Composite floor plan showing all pre-wired workstations

2.1.1.3. Structural Systems

1.1.1.3.1. Identify all loads to be used for design

1.1.1.3.2. Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method

1.1.1.3.3. Calculations for all principal roof, floor, and foundation members and bracing and secondary members.

1.1.1.3.4. Drawings showing principal members for roof and floor framing plans as applicable

1.1.1.3.5. Foundation plan showing main foundation elements where applicable

1.1.1.3.6. Typical sections for roof, floor, and foundation conditions

1.1.1.3.7. Complete seismic analyses for all building structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone for which the facility is being constructed.

2.1.1.4. Plumbing Systems

1.1.1.4.1. List all references used in the design including Government design documents and industry standards

1.1.1.4.2. Provide justification and brief description of the types of plumbing fixtures,

pipng materials and equipment proposed for use

- 1.1.1.4.3. Detail calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping; [lp gas piping and tanks] [fuel oil piping and tanks]
- 1.1.1.4.4. Show locations and general arrangement of plumbing fixtures and major equipment
- 1.1.1.4.5. Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), [LP gas], [fuel oil] and other specialty systems as applicable.
- 1.1.1.4.6. Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required

2.1.1.5. HVAC Systems

1.1.1.5.1. Design Analysis: Complete design calculations for mechanical systems. Include computations for sizing equipment, compressed air systems, air duct design, and U-factors for ceilings, roofs and exterior walls and floors. Contractor shall employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation (e.g., TRNSYS, DOE 2.1 Blast, etc.) is required. Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

1.1.1.5.2. Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:

- Room designations.
- Mechanical legend and applicable notes.
- Location and size of all ductwork and piping.
- Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).
- Pre-Fabricated Paint Spray Booth
- Paint Preparation Area
- Exhaust fans and specialized exhaust systems.
- Thermostat location.
- Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).
- Location of all air handling equipment.
- Air balancing information.
- Flue piping size and location.
- Piping diagram for forced hot water system (if used).

1.1.1.5.3. Equipment Schedule: Complete equipment Schedules shall be provided. Schedule shall also include:

- Capacity
- Electrical characteristics
- Efficiency (if applicable)
- Manufacturer's name
- Optional features to be provided
- Physical size

- Minimum maintenance clearances

1.1.1.5.4. Details: Construction details, sections, elevations, etc., shall be provided only where required for clarification of methods and materials of design.

1.1.1.5.5. HVAC Controls: Complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information shall be submitted. See the Statement of Work for additional specific requirements.

2.1.1.6. Electrical Systems

1.1.1.6.1. Electrical Floor Plan: The floor plans shall show all principle architectural features of the building which will affect the electrical design. The floor plan shall also show the following:

- Room designations.
- Electrical legend and applicable notes.
- Lighting fixtures, properly identified.
- Switches for control of lighting.
- Receptacles.
- Location and designation of panelboards. Plans should clearly indicate type of mounting required (flush or surface) and be reflected accordingly in specifications.
- Service entrance (conduit and main disconnect).
- Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.

1.1.1.6.2. Building Riser Diagram (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.

1.1.1.6.3. Load Center Panelboard Schedule(s): Schedule shall indicate the following information:

- Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting).
- Branch Circuit Designations.
- Load Designations.
- Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)
- Branch Circuit Connected Loads (AMPS).
- Special Features.

1.1.1.6.4. Lighting Fixture Schedule: (Schedule shall indicate the following information:)

- Fixture Designation.
- General Fixture Description.
- Number and Type of Lamp(s).
- Type of Mounting.
- Special Features.

1.1.1.6.5. Details: Construction details, sections, elevations, etc., shall be provided only where required for clarification of methods and materials of design.

2.1.1.7. Fire Protection/Suppression Analysis

- 1.1.1.7.1. All references used in the design including Government design documents and industry standards used to generate the fire protection analysis
 - 1.1.1.7.2. Classification of each building in accordance with fire zone, building floor areas and height and number of stories
 - 1.1.1.7.3. Discussion and description of required fire protection requirements including extinguishing equipment, detection equipment, alarm equipment and water supply. Alarm and detection equipment shall interface to requirements of Electronic Systems
 - 1.1.1.7.4. Plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:
 - 1.1.1.7.5. The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.
 - 1.1.1.7.6. The location and coverage of any fire detection systems
 - 1.1.1.7.7. The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.)
 - 1.1.1.7.8. The location of any other major fire protection equipment
 - 1.1.1.7.9. Indicate any hazardous areas and their classification
 - 1.1.1.7.10. Schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required
 - 1.1.1.7.11. Hydraulic calculations based on water flow test for each sprinkler system to insure that flow and pressure requirements can be met with current water supply. Include copies of Contractor's water flow testing done to certify the available water source
- 3.5.5.8.12. Working Plans and all other materials submitted shall meet NFPA 13 requirements, with respect to required minimum level of detail.

2.1.1.8. Elevators

- 1.1.1.8.1. List of criteria codes, documents and design conditions used.
- 1.1.1.8.2. List of any required permits and registrations for construction of items of special mechanical systems and equipment
- 1.1.1.8.3. Description of the proposed control system
- 1.1.1.8.4. Description, approximate capacity and location of any special mechanical equipment for elevators.

2.1.1.9. Electronic Systems including the following responsibilities:

- Fire Detection and Alarm System
- Fire Suppression System Control

- Public Address System
- Telephone System
- Cable Television System
- Local Area Network Cabling/Terminations
- Special Grounding Systems
- Cathodic Protection
- Intrusion Detection, Card Access System
- Central Control and Monitoring System
- Mass Notification System
- Electrical Power Distribution Systems

1.1.1.9.1. Design of the fire alarm and detection system shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.)

1.1.1.9.2. Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Clearly describe how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. Designate all components shown on floor plans "FS system components" (as opposed to "Fire Alarm components"). Show location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors sub-zoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and under floor detectors with distinct symbols and indicate sub-zone of each

1.1.1.9.3. Show location of telephone outlets (including pay phones). Include legend and symbol definition to indicate height above finished floor. Show Telephone Conduit System Riser Diagram. Size conduit on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans. Show underground telephone distribution conduit

1.1.1.9.4. Grounding System: The specifications and drawings shall completely reflect all design requirements. The specifications shall require field tests (in the construction phase), witnessed by the Contracting Officer, to determine the effectiveness of the grounding system. Include drawings showing existing construction, if any

1.1.1.9.5. Identify the licensed corrosion engineer or NACE specialist

1.1.1.9.6. Cathodic protection systems: Clearly define areas of structures or components in soil or water to be protected. Describe type of system.

Security: Provide a narrative, demonstrating compliance with each of the 22 standards in UFC 4-0101-01. Where sufficient standoff distance is not being provided, show calculations for blast resistance of the structural system and building envelope. For 3 story and higher buildings, provide calculations to demonstrate compliance with progressive collapse requirements

2.2 DESIGN ANALYSIS

2.2.1 A design analysis, written in the English Language with SI units of measure with (English unit in parentheses, as applicable), 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. Copies of all previous design phase review comments and the actions assigned to them shall be included with each submission of the design analysis. Specific requirements for the design analysis, listed by submittal phase, are contained hereinafter.

2.2.2 The Contractor shall prepare and present design analyses with calculations necessary to substantiate and support all design documents submitted. For parts including sitework, site specific civil calculations shall be included. For parts including structural work, structural calculations shall be included. For parts including architectural work, Fire Protection, Life Safety, and Building Code analysis and building floor area analysis shall be included (See Attachment __). For parts including mechanical work, HVAC analysis and calculations, and sprinkler system analysis shall be included. For parts including electrical work, electrical load analysis and calculations, electrical short circuit and protective device coordination analysis and calculations and arc fault calculations shall be included. The Contractor shall submit the geotechnical evaluation report, reports of soil borings and any other foundation investigations performed in support of design of sitework, utilities, foundations, etc. with the appropriate design package(s).

2.2.3 Format of design analysis shall closely match the standard format referenced within the request for proposal (RFP).

2.3 DESIGN CALCULATIONS

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

2.3.1 Automatic Data Processing Systems (ADPS)

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

2.3.1.1 Computer Printouts

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

2.3.1.2 Preparation of the Description

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

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

2.4 SPECIFICATIONS

Specifications shall be prepared in accordance with the Construction Specifications Institute (CSI) format. The Design-Build Contractor prepared specifications shall include as a minimum, all applicable specification sections referenced by the CSI. Where the CSI does not reference a specification section for specific work to be performed by this contract, the Design-Build Contractor shall be responsible for creating the required specification. The contractor shall add Section 1 given to the Contractor by the Government to the specifications.

2.4.1 Preparation of Proprietary Non-Generic Design Documents

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

2.4.2 Use of Unified Facilities Guide Specifications (UFGS)

If UFGS are used, it is the sole responsibility of the Design-Build Contractor to prepare these specifications in strict conformance with the paragraph entitled PREPARATION OF PROPRIETARY NON-GENERIC DESIGN DOCUMENTS. UFGS containing non-proprietary and/or generic design criteria, where proprietary items are available, will be returned for resubmission. If the UFGS contains a "SUBMITTALS" paragraph, the Design-Build Contractor shall delete it and incorporate all required information directly into the design documents. Under no circumstances will the Design-Build Contractor be permitted to use submittals and shop drawings to finalize an incomplete design. UFGS (Uniform Federal Guide Specifications) are required for this project when U.S. products and systems are required or used. Current UFGS information may be obtained at the following location:
http://www.wbdg.org/ccb/browse_org.php?o=70.

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

2.4.3 Quality Control and Testing

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

2.4.4 Ambiguities and indefinite specifications

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

2.4.5 Industry Standards

2.4.5.1 U.S. Industry Standards

The Specifications shall be based on internationally accepted U.S. industry Standards. Customarily accepted publications may be found in the UNIFIED MASTER REFERENCE LIST (UMRL) which may be located at the following URL: <http://www.hnd.usace.army.mil/techinfo/UFGS/UFGSref.htm>.

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

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

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

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

2.4.5.2 Non U.S. Industry Standards

If non U.S. industry standards (e.g., codes, regulations, or technical references and norms) are authorized for use under this contract and are incorporated in the Design-Build Contractor's design, one (1) copy of each standard referenced shall be provided to the Government.

Where a U.S. design and/or construction standard cannot be referenced due to non-availability of products and/or systems, another specification format using the CSI guidelines may be utilized for that particular product and/or system. If a majority of the specifications within this project reference non-U.S. products due to availability and/or other factors, the entire set of specifications are not required to be in UFGS and SpecsIntact format.

2.4.6 Incorporation of Government review comments

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

2.5 DRAWINGS

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

2.5.1 Drawing Size

If project is required to be in SI units, all drawings shall be prepared in size "A1" sheets (594mm by 841mm). If project is required to be in English units, all drawings shall be modified Architectural D size (24 inches by 36 inches) sheets. Design submissions may be prepared in True half size "A2" sheets or (12 inches by 18 inches) to save paper and for ease of review. All final contract drawing sets shall be prepared with full size sheets. Drawings shall be trimmed to size if necessary.

2.5.2 Computer Assisted Design and Drafting (CADD)

Computer Assisted Design and Drafting (CADD) is required for all work related to this contract. The CADD deliverables shall meet the requirements of the AEC CAD Standard Release 2.0. Emphasis is on drawings meeting sheet layout standards, level/layer naming standards and sheet naming conventions. CAD standards may be found at the following link: <https://tsc.wes.army.mil/products/standards/aec/aecstdweb.asp>. Transatlantic Programs Center Design Instructions Manual, Chapter 22 entitled COMPUTER ASSISTED DESIGN AND DRAFTING. The Contractor shall furnish the digital as-built drawing files in .DWG file format utilizing AutoDesk AutoCAD version 2000 or later. Drawings prepared in any convention other than CADD, must have approval of the Contracting Officer. The Contractor shall also provide all drawings in PDF format at every submittal stage.

2.5.3 Plotter Prepared Original Drawings

Plotter prepared original drawings shall be prepared on 20 pound bond paper, unless otherwise approved and shall be plotted on the matte side. Raster plotters must provide a minimum resolution of 400 dpi while vector plotters shall provide a minimum resolution of 0.0010 inch with an accuracy of +0.1% of the move and a repeatability error of not more than 0.005 inch. Drawings produced from dot matrix plotters are not acceptable. Plots accompanied by the digital design file may be prepared on vellum: translucent bond is not acceptable. Line density shall be equivalent to that produced by black India ink: half-tones and gray scale plots are not acceptable unless otherwise approved. Manual changes to plotted originals are not acceptable.

2.5.4 Half-Size Reduction

Preparation of all work shall accommodate half size reduction unless instructed otherwise by the Contracting Officer.

2.5.5 Symbols and Abbreviations

Symbols and abbreviations shall be in accordance with AEC CAD Standard Release 2.0 or later.

2.5.6 Design Discipline Designation Format

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

Discipline

Designation Discipline

Use the following for AEC CAD Standard Release 2.0:

C	Civil
S	Structural
A	Architectural
F	Fire Protection and Life Safety
P	Plumbing
M	Mechanical

E Electrical and Communication

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

Public FTP site:

ftp://anonymous:anonymous@ftp.usace.army.mil/pub/aed/Standards/AEC_Nat_CAD_Std/level_libs/

SharePoint site:

https://aedsharepoint.tac.usace.army.mil/C16/Drawings/Document%20Library/AEC_CAD_level_templates.ZIP

2.5.7 Grouping Drawings

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

2.5.8 Title and Revision Block

Title and revision block shall match FIGURES

2.5.9 Drawing Scales

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

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

Key Plans as large as practical

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

Details - 1:10 minimum, if in SI units

2.5.10 Binding

All volumes of drawing prints shall be firmly bound and shall have covers of heavier bond than the drawing sheets. 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.

2.5.11 Typical Sheets

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

2.5.12 Index Sheet(s)

The first sheet of each volume in a project shall be a cover sheet. In general, the second sheet shall be the first index. Multiple index sheets may be required, depending on the project size. All index sheets shall be included with each volume of drawings and shall be an index of all the individual drawings in all volumes. The index shall list sequentially the site development drawings, each facility's drawings, and the standard details drawings (if any), and shall locate them by volume and file number. Each index sheet shall be signed and stamped by a principal of the Design-Build Contractor.

2.5.13 Drawing File Number

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

2.5.14 Specifications Placed on the Drawings

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

2.5.15 Legends

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

2.5.16 Location Grid

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

2.5.17 Composite and Key Plans

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

2.5.18 Revisions

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

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Design Concept Coordination Meeting

In addition to regular meetings with the Government the Contractor shall conduct formal status briefings on a bi-weekly basis, as a minimum, to provide a management overview of design development. Shortly after contract award the Government may choose to conduct meetings with the Design-Build

Contractor to refine proposal concept features. The purpose of the meeting is to assure attention to project requirements and to suggest ways of improving the design prior to tentative level submissions.

3.1.2 Government Design Changes

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

3.2 SUBMITTAL REGISTERS

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

3.2.1.1 General

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

3.2.1.2 Additions or Revisions

Any additions or changes required to be made to the TAC Form 122-E as a result of the Contracting Officer's review shall be incorporated into the TAC Form 122-E by the Contractor and a resubmittal of (3) copies shall be affected within five (5) calendar days after receipt of the Contracting Officer's review comments.

3.2.2 Construction Submittal Register (ENG Form 4288)

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

3.3 TRANSMITTAL FORM (ENG Form 4025)

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

3.4 PROGRESS SCHEDULE

The Contractor shall prepare and submit a design progress schedule to the Contracting Officer. The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The progress schedule shall show, as a percentage of the total design price, the various items included in the contract and the order in which the Contractor proposes to carry on the work, with dates on which he will start the features of the work and the contemplated dates for completing same. Significant milestones such as review submittals shall be annotated. The Contractor shall assign sufficient technical, supervisory and administrative personnel to insure the prosecution of the work in accordance with the progress schedule. The Contractor shall correct the progress schedule at the end of each month and shall deliver (3) copies to the Contracting Officer. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.5 SCHEDULING

3.5.1 Design Submittals

Adequate time (a minimum of fourteen (15) calendar days exclusive of mailing time) shall be allowed for review and clearance for construction. If the Contractor fails to submit design submittals in a timely 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 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) 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)

Refer to Submittal Distribution and Quantities **Table Attachment A**.

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

3.6.1.2 Editable CADD Format As-Builts

In accordance with section 01060 SPECIAL CLAUSES clause PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR), one (1) set of the Government approved As-Builts shall be submitted to the following address in an editable CADD format:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District

House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan
Attn.: Engineering Office

(2) U.S. Postal Service:
U.S. Army Corps of Engineers
Afghanistan Engineer District (CEAED-EC)
Attn.: Qalaa House
APO AE 09356

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

3.6.1.5 Digital Transmission of Design Submittals

The Design-Build Contractor shall not be permitted to submit design deliverables addressed by this specification in digital format in lieu of hard copies without the expressed written approval from the government.

3.6.2 Post Design Construction Submittals

Three (3) copies of all post design construction submittals shall be transmitted to the Resident field office administering the construction portion of the contract. The address will be given at a later date after award.

Submittals of Operations and Maintenance (O & M) Manuals in (3) copies shall be as follows:

[AFGHANISTAN ENGINEER DISTRICT

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

(2) U.S. Postal Service:
U.S. Army Corps of Engineers
Afghanistan Engineer District (CEAED-EC)
Attn.: Qalaa House
APO AE 09356]

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:

Sec 01015	"Technical Requirements"
Sec. 02831	"Chain-Link Fence"
Sec. 02710	"Subdrainage System"
Sec 03300	"Concrete For Building Construction"
Sec. 04200	"Masonry"

3.6.3.2 Numbering procedures for transmittal on ENG FORM 4025

a. Each section, may include a list of items. All these items will then be listed with a progressive number within the sections they belong to, for example:

Sec. 01015	will have 01015.00 (Basic number)
Item x	" " 01015.01
Item y	" " 01015.02
Item z	" " 01015.03

Sec. 02710	will have 02710.00 (Basic number)
Item x	" " 02710.01
Item y	" " 02710.02
Item z	" " 02710.03

Sec. 02600	will have 02600.00 (Basic number)
Item x	" " 02600.01
Item y	" " 02600.02

Sec. 03300	will have 03300.00 (Basic number)
Item x	" " 03300.01
Item y	" " 03300.02
etc.	

b. It is evident a transmittal will never show a Section number i.e., 02831.00, 03300.00, etc., since these are only the basic numbers of the system. Numbers on transmittals will be the item numbers, i.e., 01015.01, 02710.01, 02710.02, 02710.03, 03300.01, 03300.02, etc. All items, as listed on the Submittal Register, will be submitted via a separate transmittal form ENG FORM 4025 thus avoiding getting together more than one item (as listed) and more than one number. There are items, on the other hand, which may be submitted all together on the same transmittal form. This must be established before submission is made.

c. Sec. 10800 "Toilet Accessories" - this section will have basic number 10800.00 - all items relative to it will be listed one by one on separate lines. ONLY one transmittal number will then be given for all of these "10800.01" which will include i.e., robe hook, toilet paper holder, mirror, soap holder, cabinet for paper towels, etc. Each one of these items will be listed on the same Transmittal Number 10800.01 as item 1, item 2, item 3, etc.

3.6.3.3 Resubmittals

Should the Contractor be required to resubmit any transmittal, it will be accomplished by utilizing the same transmittal number followed by the number "-1" for the first resubmittal, "-2" for the second resubmittal, "-3" for the third resubmittal, etc. For example, a first resubmittal would be "SUBMITTAL PROCEDURES FOR DESIGN BUILD PROJECT" 01335.01-1, a second resubmittal 01335.01-2, etc. The purpose of this system is to avoid deviations from Submittal Register and, to avoid confusion arising

from the use of more than one number on transmittal when more than one item is submitted on the same form. This system will also facilitate the use, wherever required, on machine printouts.

3.6.4 Variations

If design documents or construction submittals show variations from the contract parameters and/or requirements, the Contractor shall justify such variations in writing, at the time of submission. Additionally, the Contractor shall also annotate block "h" entitled "variation" of ENG FORM 4025. After design submittals have been reviewed and cleared for construction by the Contracting Officer, no resubmittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered unless accompanied by the following:

- a. Reason or purpose for proposed variation, substitution, or revision.
- b. How does quality of variation compare with quality of the specified item? This shall be in the form of a technical evaluation tabulating differences between the item(s) originally specified and what is proposed.
- c. Provide a cost comparison. This shall include an acquisition and life cycle cost comparison.
- d. For proprietary materials, products, systems, and patented processes a certification signed by an official authorized to certify in behalf of the manufacturing company that the proposed substitution meets or exceeds what was originally specified.
- e. For all other actions, a certification signed by a licensed professional engineer or architect certifying that the proposed variation or revision meets or exceeds what was originally specified.
- f. Advantage to the Government, if variation is approved, i.e. Operation and Maintenance considerations, better product, etc.
- g. Ramifications and impact, if not approved.

If the Government review detects any items not in compliance with contract requirements or items requiring further clarification, the Contractor will be so advised. Lack of notification by the Contracting Officer of any non-complying item does not relieve the Contractor of any contractual obligation.

3.6.5 Non-Compliance

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7 REVIEW OF CONTRACTOR PREPARED DESIGN DOCUMENTS

3.7.1 General

The work under contract will be subject to continuous review by representatives of the Contracting Officer. Additionally, joint design review conferences with representation by all organizations having a direct interest in the items under review may be held. The Design-Build Contractor shall furnish copies of all drawings and related documents to be reviewed at the review conference on or before the date indicated by the Government. Additional conferences pertaining to specific problems may be requested by the Design-Build Contractor or may be directed by the Contracting Officer as necessary to progress

the work. The Design-Build Contractor shall prepare minutes of all conferences and shall furnish two copies to the Contracting Officer within seven (7) days after the conference.

All design submittal reviews shall be reviewed and comments and entered into DrChecks located on the website at: <https://www.projnet.org/projnet/binKornHome/index.cfm>

3.7.2 Independent Design Review

The Design-Build Contractor shall have someone other than the Designer or Design Team perform an independent review of all specifications, drawings, design analysis, calculations, and other required data prior to submission to the Government. Upon completion of this review, the Design-Build Contractor shall certify that each design submittal is complete, accurate, is in strict conformance with all contract requirements, that repetition has been avoided, that all conflicts have been resolved, and that the documents have thoroughly coordinated and cross checked against all the applicable disciplines to prevent the omission of vital information.

3.7.3 Contractor's Quality Control Organization Review

This review shall be for the purposes of eliminating errors, interferences, and inconsistencies, and of incorporating design criteria, review comments, specifications, and any additional information required. Design submittals submitted to the Contracting officer without evidence of the Contractor's certified approval will be returned for resubmission. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7.4 Government Review

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 fifteen (15) days to review and comment on each 35% and 50% design submittal and fifteen (15) days to review and comment on each 99% design and 100% submittal, except as noted below. For each design review submittal, comments from the various design sections and from other concerned agencies involved in the review process will be made in the on-line review management system DrChecks_{SM} (<https://www.projnet.org/projnet/binKornHome/index.cfm>). Contractor shall coordinate with the Contracting Officer and/or Representative(s) to register for DrChecks_{SM} use. The review will be for conformance with the technical requirements of the solicitation and the Successful Offeror's (Contractor's) RFP proposal.

If a design submittal is deficient, it will be returned for correction and resubmission. The review time will begin when the corrected submittal is received.

The contractor shall not begin construction work until the Government has reviewed the contractor's design and has cleared it for construction. Clearance for construction does not mean Government approval. Government review shall not be construed as a complete check but will evaluate the general design approach and adherence to contract parameters. The Government Review is often limited in time and scope. Therefore, the Contractor shall not consider any review performed by the Government as an excuse for incomplete work. Upon completion of the review, all comments will be posted on the online DrChecks_{SM} review system for the Contractor. The Contracting Officer will indicate whether the design submittal has or has not been cleared for construction using the following action codes:

- A – Cleared for Construction
- B – Cleared for Construction, except as noted in attached comments
- C – Cleared for Construction, except as noted in attached comments, resubmission required

E - NOT Cleared for Construction, see attached comments, resubmission required

FX – Receipt acknowledged, does not comply as noted with contract requirements.

These codes shall NOT be used by the Design-Build Contractor. Design-Build Contractor's Quality Control Organization will annotate Block "g" entitled "FOR CONTRACTOR USE CODE" of Eng Form 4025-R using the action codes listed on the reverse side of the form.

Design submittals Cleared for Construction by the Contracting Officer shall not relieve the Contractor from responsibility for any design errors or omissions and any liability associated with such errors, nor from responsibility for complying with the requirements of this contract.

3.7.4.1 Incorporation of Government Review Comments

If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after close of review period in order that the comment can be resolved. The Contractor shall furnish disposition of all comments in DrChecks_{SM}, and with the next scheduled submittal. The disposition shall identify action taken with citation of location within the relevant design document. Generalized statements of intention such as "will comply" or "will revise the specification" are not acceptable. The Contractor is cautioned that if he believes the action required by any comment exceeds the requirements of this contract, that he should flag the comment in DrChecks_{SM} as a scope change, and notify the COR in writing immediately. If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period may be extended 7 days. Submittals date revisions must be made in writing at least five (5) days prior to the submittal. During the design review process, comments will be made on the design submittals that will change the drawings and specifications. The Government will make no additional payments to the Contractor for the incorporation of comments. Review comments are considered part of the design-build process.

3.7.4.2 Conferences

As necessary, conferences will be conducted between the Design-Build contractor and the Government to resolve review comments.

Two review conferences will be held for each design submittal. One review conference will be held at the installation, and the second review conference will be held at the Corps District Office in Kabul, Afghanistan. For each design submittal, a review conference will be held at a location to be determined. The Contractor shall bring the personnel that developed the design submittal to the review conference. These conferences will take place the week after review periods.

3.7.4.3 Design Deficiencies

Design deficiencies noted by the Government shall be corrected prior to the start of design for subsequent features of work which may be affected by, or need to be built upon, the deficient design work.

3.7.5 Design Discrepancies

The Design-Build Contractor shall be responsible for the correction of incomplete design data, omissions, and design discrepancies which become apparent during construction. The Design-Build Contractor shall provide the Contracting Officer with a proposed recommendation for correcting a design error, within three (3) calendar days after notification by the Contracting Officer. The Contracting Officer

will notify the Design-Build Contractor of any detected noncompliance with the foregoing requirements. The Design-Build Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Design-Build Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Design-Build Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor. Should extensions of design, fabrication plans and/or specific manufacturer's details be required as a result of a Government issued Change Order, the Government will make an equitable adjustment in accordance with Contract Clause 52.243-4 entitled CHANGES.

3.8 Phased or "Fast-Track" Design

3.8.1 General

If approved by the Government, design and construction sequencing may be effected on an incremental basis as each approved phase or portion (e.g., demolition, geotechnical, sitework, exterior utilities, foundations, substructure, superstructure, exterior closure, roofing, interior construction, mechanical, electrical, etc.) of the design is completed.

3.8.1.1 Design Phases

Complete or partial design phasing may or may not have been specified by the Government elsewhere in this contract. For construction sequencing or phasing that the Government has not specifically mandated, the Design-Build Contractor may submit a proposed phasing plan. Design phasing proposed by the Design-Build Contractor shall be submitted to the Government for approval in accordance with TAC Form 122-E CONTRACTOR FURNISHED DESIGN DOCUMENTS.

3.8.1.2 Approval of TAC Form 122-E

In all cases, TAC Form 122-E indicating the proposed phasing shall be submitted for review and approval by the contracting Officer prior to initiation of any procurement action or commencement of any construction.

3.8.2 Sequence of Design-Construction (Fast-Track)

After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements and obtain Government review of each submission. The contractor may begin construction on portions of the work for which the Government has reviewed the final design submission and has determined satisfactory for purposes of beginning construction. The Contracting Officer will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the Government, the initial submission failed to meet the minimum quality requirements as set forth in the contract.

3.8.3 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.

3.8.4 In-Place Construction Payment

No payment will be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

3.8.5 Commencement of Construction

Construction of work may begin after receipt of the clearance for construction (Notice to Proceed) for each design phase. Any work performed by the Contractor prior to receipt of the clearance for construction, shall be at the Contractor's own risk and expense. Work cleared for construction that does not conform to the design parameters and/or requirements of this contract shall be corrected by the Contractor at no additional cost or time to the Government.

3.9 DESIGN STAGES

The Contractor shall schedule the number and composition of the design submittal phases. Design submittals are required at the [Concept (35%)] [Preliminary (50%)] [and] [Final (99%)] design stages and at the Ready-to-Advertise (100%) stage. The requirements of each design stage are listed hereinafter. The number and contents of the design submittals phases shall be reflected in TAC Form 122-E as well as in the Contractor's design progress schedule.

3.9.1 Concept Review Submittal (35%) **with Complete Civil and Utilities works at (100%)**

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 to how the functional and technical requirements will be met, and to show Contractor compliance (or justify noncompliance) with the design parameters and/or requirements. Refer to requirements herein for specific submittal requirements. As a minimum, the submittal shall consist of the following:

- a. Design Analysis, Preliminary Design Calculations
- b. Outline Construction Specifications
- c. Preliminary Construction Drawings with Concept Plans for all Disciplines, Typical Wall Sections, Typical Details
- d. A soft copy (CD) of the design drawings (in CAD format and PDF format), specifications, and design analysis (all documents in PDF format) shall be submitted at this stage and all other subsequent stages of the design process.
- e. Draft Construction Cost Estimate breakout
- f. Geotechnical Report, Site Topographic Survey, Grading plan, (100% Complete Civil Package)

3.9.2 not used

3.9.3 Final Design Review Submittal (99%)

The review of this submittal is to insure that the design is in accordance with 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 the Government Review Comments. The Contractor shall submit the following documents for Final review:

- a. Design Analysis, developed to a 99% design stage. The Design Analysis shall be in its final form. It shall include all backup material previously submitted and revised as necessary. All design calculations and reports shall be included. 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. 99% Complete Construction Specifications. The Draft Specifications on all items of work submitted for Final Review shall consist of marked-up proprietary specifications.
- c. 99% Complete Construction Drawings. The Contract Drawings submitted for Final Review shall include the drawings previously submitted which have been revised and completed as necessary. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall be finalized at this time including the incorporation of any design review comments generated by the Preliminary design review. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.
- d. The Government's Design Review Comments from previous submittal with the Contractor's annotation to each comment.
- e. Final Revised Construction Cost Estimate.
- f. A soft copy (CD) of the design drawings (in CAD format and PDF format), specifications, and design analysis (all documents in PDF format) shall be submitted at this stage and all other subsequent stages of the design process.

3.9.4 "Cleared for Construction" Design Review Submittal (100%)

After the FINAL DESIGN REVIEW SUBMITTAL review, the Contractor shall revise the Contract Documents by incorporating any comments generated during the FINAL DESIGN REVIEW SUBMITTAL and shall prepare final hard copy Construction Specifications. The Contractor shall submit the following documents for the design complete submittal:

- a. Design Analysis
- b. Construction Specifications
- c. Construction Drawings
- d. A soft copy (CD) of the design drawings (in Cad format and PDF), specifications, and design analysis (all documents in PDF format) shall be submitted at this stage and all other subsequent stages of the design process.
- e. The Government's FINAL (99%) DESIGN REVIEW SUBMITTAL comments with the Contractor's annotation to each comment.

Once the design documents have been "Cleared for Construction" by the Contracting Officer, the Design-Build Contractor shall clearly identify each document by annotating it as "Cleared for Construction."

3.9.5 Partial Design Submittals

In the interest of expediting construction, the Contracting Officer may approve partial design submittals, procurement of materials and equipment, as well as issue the Notice To Proceed (NTP) for construction of those elements of the design which have been cleared for construction. Such partial notices to proceed shall be solely at the discretion of the Contracting Officer.

3.9.6 Design Submittals not in compliance with the contract documents

The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its design analysis, specifications, and drawings, and promptly furnish a corrected submittal in the form and number of copies as specified for the initial submittal. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice shall be given promptly to the Contracting Officer.

3.10 GENERAL DESIGN INSTRUCTIONS

3.10.1 Responsibility of the Design-Build Contractor

3.10.1.1 Professional Quality, Technical Accuracy, and Coordination

The Design-Build Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all design specifications, drawings, and other services furnished under this contract. Work must be organized in a manner that will assure thorough coordination between various details on drawings, between the various sections of the specifications, and between the drawings and specifications. The Design-Build Contractor shall thoroughly cross-check and coordinate all work until he is professionally satisfied that no conflicts exist, vital information has not been omitted, and that indefinite language open to interpretation has been resolved.

3.10.1.2 Deviating From The "Cleared-For-Construction" Design

(a.) The Contractor must obtain the approval of the Designer of Record (DOR) and the Government's concurrence for any Contractor proposed revision to the professionally stamped and sealed design reviewed and Cleared for Construction by the Government, before proceeding with the revision.

(b.) The Government reserves the right to non-concur with any revision to the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and cleared for construction design.

(c.) Any revision to the design, which deviates from the contract requirements (i.e., the RFP and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision.

(d.) Unless the Government initiates a change to the contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the contract requirements, which results in additional cost, shall strictly be at the Contractor's expense.

(e.) The Contractor shall track all approved revisions to the reviewed and cleared for construction design and shall incorporate them into the as-built design documentation, in accordance with section 01060 SC entitled PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR). The Designer of Record shall document its professional concurrence on the As-Built for any revisions by affixing its stamp and seal on the drawings and specifications.

3.10.1.3 Government Oversight

The extent and character of the work to be done by the Design-Build Contractor shall be subject to the general oversight, supervision, direction, control, and review by the Contracting Officer.

3.10.1.4 Unlimited Drawing Rights

The Government shall have unlimited rights in all drawings, designs, specifications, notes and all other works developed in the performance of this contract, including the right to use same on any other Government design or construction without additional compensation to the Design-Build Contractor. The

Design-Build Contractor hereby grants to the Government a paid-up license throughout the world to all such works to which he may assert or establish any claim under design patent or copyright laws.

3.10.1.5 Conflicts

Any conflicts, ambiguities, questions or problems encountered by the Design-Build Contractor in following the criteria shall be immediately submitted in writing to the Contracting Officer with the Design-Build Contractor's recommendations. Prior to submission to the Government the Design-Build Contractor shall take appropriate measures to obtain clarification of design criteria requirements, to acquire all pertinent design information, and to incorporate such information in the work being performed.

3.10.1.6 Design Specialists

Whenever a design specialist is required, the Design-Build Contractor shall submit for the approval by Contracting Officer, the name of the designated specialist along with the individual's educational background, experience, and licenses or registrations held, before design work commences. The design specialists shall be registered architects, registered professional engineers, or recognized consultants with a background of at least five (5) years design experience in the appropriate specialty. Services of design specialists may be required for the following specialties: site grading.

3.10.2 Conduct of Work

In the performance of contract the Design-Build contractor shall:

3.10.2.1 Performance

Perform the work diligently and aggressively, and promptly advise the Contracting Officer of all significant developments.

3.10.2.2 Telephone Conversations

Prepare a summary, and promptly furnish a copy thereof to the Contracting Officer, of all telephone conversations relating to the design work under this contract.

3.10.2.3 Cooperation with Others

Cooperate fully with other firms, consultants and contractors performing work under the program to which this contract pertains, upon being advised by the Contracting Officer that such firms or individuals have a legitimate interest in the program, have need-to-know status, and proper security clearance where required.

3.10.2.4 Technical Criteria

All designs, drawings, and specifications shall be prepared in accordance with the contract documents and with the applicable publications referenced therein. As soon as possible, the Design-Build Contractor shall obtain copies of all publications applicable to this contract. Availability of publications (where to purchase) is contained in Specification Section 011015. Any deviations from the technical criteria contained in the contract documents or in the applicable publications, including the use of criteria obtained from the user or other sources, must receive prior approval of the Contracting Officer. Where the technical criteria contained or referred to herein are not met, the Design-Build Contractor will be required to conform his design to the same at his own time and expense.

3.10.3 Design Priorities

The design of this project shall consider the remote location and harsh environment 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:

3.10.3.1 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.

Mobilization, Emergency and Contingency Operations Construction. Buildings and facilities shall be designed and constructed to serve a specific mobilization or emergency requirement. Buildings will be austere to minimize construction time and maximize conservation of critical materials. Maintenance factors and longevity will be secondary considerations.]

3.10.3.2 Operability

Systems including but not necessarily limited to mechanical, electrical, communications, etc., must be simple to operate and easy to maintain.

3.10.3.3 Standardization

Use of standardized materials, products, equipment, and systems is necessary to minimize the requirements for replacement parts, storage facilities, and service requirements.

3.10.4 Topographic Surveys, Easements, and Utilities

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for detailed topographic mapping, available easements, and utility information for the project.

3.10.4.1 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.

3.10.4.2 Topography Requirements

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

The contours shall accurately express the relief detail and topographic shapes. In addition, 90 percent of the elevations or profiles interpolated from the contours shall be correct to within one-half of the contour interval and spot elevations shall be correct within plus or minus 20 millimeters.

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

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

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

3.10.5 Geotechnical Investigation

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for Geotechnical investigation, including subsurface explorations, sampling, field and laboratory testing, and water studies where applicable.

3.10.6 Cathodic Protection and Earth Resistance

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for determining whether cathodic protection on buried structures and underground utility systems are needed for special electrical grounding and counterpoise systems, and for gathering the field data necessary for design.

3.10.7 Water Supply and Quality Data

Unless otherwise stated in the contract, the Design-Build 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.

3.10.8 Occupational Safety and Health Act

The facilities, systems, and equipment designed under this contract shall comply with the Occupational Safety and Health Act (OSHA), Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926. Any problems in incorporating these standards due to conflicts with other technical criteria shall be submitted to the Contracting Officer for resolution.

3.10.9 Asbestos Containing Materials

Asbestos containing material (ACM) will not be used in the design of new structures or systems. In the event no other material is available which will perform the required function or where the use of other material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from CETAC.

3.10.9.1 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.

3.10.9.2 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.

3.11 VALUE METHODOLOGY/VALUE ENGINEERING

The Design-Build Contractor during the course of his design shall be alert for and shall identify those high-cost low-value items or areas which he considers may be accomplished in different ways that will increase the value of the project at the same or less cost. Potential value engineering study items shall be reported to the Value Engineer through the Contracting Officer.

3.11.1 Performance Oriented Value Engineering Change Proposal (VECP)

In reference to Contract Clause 52.248-3, "Value Engineering - Construction", the Government may refuse to entertain a "Value Engineering Change Proposal" (VECP) for those "performance oriented" aspects of the Contract Documents which were addressed in the Design-Build Contractor's accepted contract proposal and which were evaluated in competition with other Proposers for award of this contract. For purposes of this clause, the term "performance oriented" refers to those aspects of the design criteria or other contract requirements which allow the Proposer or the Design-Build Contractor certain latitude, choice of and flexibility to propose in its accepted contract offer a choice of design, technical approach, design solution, construction 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.

3.11.2 Prescriptive Oriented Value Engineering Change Proposal (VECP)

The Government may consider a VECP for those "prescriptive" aspects of the Solicitation documents, not addressed in the Design-Build Contractor's accepted contract proposal or addressed but evaluated only for minimum conformance with the Solicitation requirements. For purposes of this clause, the term "prescriptive" refers to those aspects of the design criteria or other Solicitation requirements wherein the Government expressed the design solution or other requirements in terms of specific materials, approaches, systems and/or processes to be used. Prescriptive aspects typically allow the Proposers little or no freedom in the choice of design approach, materials, fabrication techniques, methods of installation or other approach to fulfill the contract requirements.

3.12 SUBMITTAL OF CONTRACTOR FURNISHED DESIGN DOCUMENTS

The requirements of this paragraph pertain to the submittal of design documents, specifications, design calculations, surveys, testing reports and other documents prepared by the Design-Build Contractor to meet the design requirements of this project.

3.12.1 Geo-technical

3.12.1.1 Design Analysis

The Design-Build Contractor shall submit in the design analysis catalog cuts, manufacturer's data.

3.12.1.2 Specifications

Specifications for all civil utilities.

3.12.1.3 Design Drawings

Full Size and True Half-Size Design drawings shall be submitted for the following:

Refer to Submittal Distribution and Quantities Table

3.12.1.4 Manufacturer's recommendations, instructions, and certifications

Shall be submitted.

3.12.1.5 Samples

Samples shall be submitted.

3.12.1.6 Schedules

Schedules shall be submitted.

3.12.1.7 Reports

3.12.1.8 Records

Records shall be submitted.

Engineering Studies. Occasionally, in addition to the items previously mentioned, engineering studies that relate to specific problems or surveys may be required. The necessary instructions regarding the preparation of such reports must be added by the Specification Writer as appropriate.

3.12.2 Civil, Site Planning and Layout

3.12.3 Water, Wastewater, and Solid Waste Systems

3.12.4 Architectural/Interior Design

3.12.5 Structural

3.12.6 Force Protection Design Procedures for the Protection of
United States Forces

3.12.7 Fire Protection and Life Safety

3.12.8 Heating, Ventilating, and Air Conditioning

3.12.9 Plumbing

3.12.10 Special Mechanical Systems and Equipment

3.12.11 Electrical

3.12.12 Power Generation

3.12.13 Power Transmission and Distribution

3.12.14 Communications

3.12.15 Corrosion Prevention and Control

3.12.16 Renovation Design

3.12.17 Accident Prevention and Safety

3.13 SUBMITTAL OF CONTRACTOR FURNISHED DESIGN DRAWINGS

3.13.1 Geo-technical

3.13.2 Civil, Site Planning and Layout

3.13.3 Water, Wastewater, and Solid Waste Systems

3.13.4 Architectural/Interior Design

3.13.5 Structural

3.13.6 Force Protection Design Procedures for the Protection of
United States Forces

3.13.7 Fire Protection and Life Safety

3.13.8 Heating, Ventilating, and Air Conditioning

3.13.9 Plumbing

3.13.10 Special Mechanical Systems and Equipment

3.13.11 Electrical

3.13.12 Power Generation

3.13.13 Power Transmission and Distribution

3.13.14 Communications

3.13.15 Corrosion Prevention and Control

3.13.16 Renovation Design

3.13.17 Accident Prevention and Safety

3.14 GOVERNMENT APPROVED CONSTRUCTION SUBMITTALS (Required During Construction)

3.14.1 General

Since this contract requires that the drawings and specifications specify specific proprietary materials, equipment, systems, and patented processes by trade name, make, or catalog number, it is anticipated that construction shop drawings will primarily be limited to testing, construction plans (e.g., Contractor Quality Control, Accident Prevention, Resident Management System, Area Use etc), schedules (Project Schedule/Network Analysis), certificates of compliance, reports, records/statements and variations.

3.14.1.1 Variations

After design submittals have been reviewed and cleared for construction by the Contracting Officer, no submittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered by the Government unless submitted in accordance with the paragraph entitled VARIATIONS.

3.14.1.2 Additional Shop Drawings and Submittals

In accordance with the paragraph entitled DESIGN DISCREPANCIES, the Government may request the Design-Build Contractor to provide additional shop drawing and submittal type data subsequent to completion of the design.

3.14.2 Incomplete Design

The Design-Build Contractor shall not use construction submittals as a means to supplant and/or supplement an incomplete design effort.

3.14.3 Government Approval of Construction Submittals

The approval of construction submittals by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of design construction, materials, detailing and other information are satisfactory. Approval will not relieve the Design-Build Contractor of the responsibility for any error which may exist, as it is the sole responsibility of the Design-Build Contractor to certify that each submittal has been reviewed in detail and is in strict conformance with all the contract documents and design criteria referenced therein.

Virtually all design related construction submittals can and must be incorporated directly into the design specifications and drawings prepared by the Design-Build Contractor. Since the Design-Build Contractor has sole responsibility for the design, procurement, and construction, impediments do not exist which would impair his ability to specifically identify what is being furnished to the Government prior to the start of construction. Generic/non-proprietary specifications are indicative of an incomplete design effort and as such must be rejected as unacceptable.

3.14.4 Submittals

Submittals (other than shop drawings) shall be limited to items such as Plans (e.g., Quality Control Plan, Accident Prevention Plan, Area Use Plan etc.), Certificates of Compliance, Installation Instructions, Manufacturer's Catalog Data, Descriptive Literature/Illustrations, Factory and Field Test Reports, Performance and Operational Test Data Reports, Records, Operation and Maintenance Manuals, and required variations.

3.14.5 Government Review

Upon completion of review of construction submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. (2) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Design-Build Contractor.

3.15 FOR INFORMATION ONLY SUBMITTALS

These submittals shall be checked, stamped, signed and dated by the Design-Build Contractor's Quality Control Engineer, certifying that such submittal complies with the contract requirements. All Contractor submittals shall be subject to review by the Government at any time during the course of the contract. Any Contractor submittal found to contain errors or omissions shall be resubmitted as one requiring "approval". No adjustment for time or money will be allowed for corrections required as a result of noncompliance with plans or specifications. Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. These submittals will be used for information purposes. The Government reserves the right to require the Design-Build Contractor to resubmit any item found not to comply with the contract. This does not relieve the Design-Build Contractor from the obligation to furnish material conforming to the plans and

specifications and will not prevent the Contracting Officer from requiring removal and replacement if nonconforming material is incorporated in the work.

3.16 ATTACHMENTS

The following attachments form an integral part of this specification:

ENG FORM 4025 - Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificate of Compliance (2 pages)

TAC FORM 122-E - Contractor Furnished Design Documents Submittal Register

ENG FORM 4288 - Submittal Register

Figure 1 - sheet/number description; AED title block per AEC CADD standards

ATTACHMENT A**Submittal Distribution and Quantities for 35%, 99% and any submittals and resubmittals in between**

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section.

Activity and Address	Drawing Size [Full Size] (Half Size)	Design Analyses , Calcs, & Specs	Constructio n Cost Estimate	CD-ROM (PDF & DWG)	-	Interior Design Submittal
USACE, AED Headquarter - Kabul	[2_HALF]	[2]	[2]	[3_CD]	[0]	[0]
Resident Field Office	[1_HALF]	[1]	[2]	[2_CD]	[0]	[0]

Submittal Distribution and Quantities for 100% Final Design and Post Construction

Activity and Address	Drawing Size [Full Size] (Half Size)	Design Analyses , Calcs, & Specs	Constructio n Cost Estimate	CD-ROM (PDF & DWG)	All Construction Submittals	Interior Design Submittal
USACE, AED Headquarter - Kabul	[2_HALF]	[2]	[2]	[3_CD]	[2]	[0]
Resident Field Office	[1_FULL] [1_HALF]	[2]	[2]	[2_CD]	[2]	[0]

Mailing of Design Submittals

Mail or delivery all design submittals to the Government during design and construction, using an overnight mailing service. The submittals shall be mailed or delivered to the USACE, AED Headquarters at the following address and to the **Resident Field Office (To Be Determined at a later Date)**

(a) 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.: Engineering Office

(b) U.S. Postal Service:
USACE, AED,
ATTN: QALAA House
APO AE 09356
Attn: Engineering Office

Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

AS-BUILT DOCUMENTS

Provide as-built Full-size drawings and specifications in accordance with Section 01780, CONTRACT CLOSEOUT.

ATTACHMENT B**FIRE PROTECTION AND LIFE SAFETY CODE ANALYSIS REVIEW**

Instructions: The information outlined in this document shall be used to provide the minimum requirement for development of Fire Protection and Life Safety Code submittals for all building projects. Additional and supplemental information may be used to further develop the code review. Insert N/A after criteria, which may be "not applicable".

- 1.1. Project Name: ANA Brigade, Paktika
- 1.2. Applicable Codes and Standards
 - 1.2.1. Unified Facilities Criteria (UFC): 1-200-01, General Building Requirements, 31 July 2002.
 - 1.2.2. Unified Facilities Criteria (UFC): 3-600-01, Design: Fire Protection Engineering For Facilities, 17 April 2003
 - 1.2.3. International Building Code (IBC) 2003 for fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements, except as modified by UFC 3-600-01.
 - 1.2.4. National Fire Protection Association (NFPA) 101 Life Safety Code (latest edition), for building egress and life safety and applicable criteria in UFC 3-600-01.
 - 1.2.5. ADA and ABA Accessibility Guidelines for Buildings and Facilities (Federal Register July 23, 2004) Replaces UFAS and ADAAG criteria. [Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA)]. **NOT USED FOR THIS PROJECT**
- 1.3. Occupancy Classification
IBC chapters 3 and 4
- 1.4. Construction Type
IBC chapter 6
- 1.5. Area Limitations
IBC chapter 5, table 503
- 1.6. Allowable Floor Areas
IBC section 503, 505
- 1.7. Allowable area increases
IBC section 506, 507

- 1.8. Maximum Height of Buildings
IBC section 504
- 1.9. Fire-resistive substitution
- 1.10. Occupancy Separations
IBC table 302.3.2
- 1.11. Fire Resistive Requirements
 - 1.11.1. Exterior Walls - [per code requirements] hour rating, IBC table 601, 602
 - 1.11.2. Interior Bearing walls - [per code requirements] hour rating
 - 1.11.3. Structural frame - [per code requirements] hour rating
 - 1.11.4. Permanent partitions - [per code requirements] hour rating
 - 1.11.5. Shaft enclosures - [per code requirements] hour rating
 - 1.11.6. Floors & Floor-Ceilings - [per code requirements] hour rating
 - 1.11.7. Roofs and Roof Ceilings - [per code requirements] hour rating
 - 1.11.8. UFC 3-600-01, Appendix B Occupancy Classification. The entire building is Light Hazard except boiler room and storage rooms which are [per code requirements].)
 - 1.11.9. Available Water Supply. Provide the results of the water flow tests showing the available water supply static pressure and residual pressure at flow.
 - 1.11.10. NFPA 13, Para. 8.16.4.6.1. Provide backflow preventer valves as required by the local municipality, authority, or water purveyor. Provide a test valve located downstream of the backflow preventer for flow testing the backflow preventer at full system demand flow. Route the discharge to an appropriate location outside the building.
- 1.12. Kitchen Cooking Exhaust Equipment

Type of extinguishing systems for the equipment should be provided. per NFPA 96. Show all interlocks with manual release switches, fuel shutoff valves, electrical shunt trips, exhaust fans, and building alarms.
- 1.13. Portable Fire Extinguishers, fire classification and travel distance. per NFPA 10
- 1.14. Enclosure Protection and Penetration Requirements. - Opening Protectives and Through Penetrations
 - 1.14.1. IBC Section 712, 715 and Table 715.3. Mechanical rooms, exit stairways, storage rooms, janitor [per code requirements] hour rating. IBC Table 302.1.1
 - 1.14.2. Fire Blocks, Draft Stops, Through Penetrations and Opening Protectives per code requirements.
- 1.15. Fire Dampers. Per code requirements
- 1.16. Detection Alarm and Communication. UFC 3-600-01, (Chapter 5); NFPA 101 para. 3.4 (chapters 12-42); NFPA 72

- 1.17. Mass Notification. Describe building/facility mass notification system (UFC 4-021-01) type and type of base-wide mass notification/communication system (visible notification appliances).
- 1.18. Interior Finishes (classification). NFPA 101.10.2.3 and NFPA 101.7.1.4 NOT USED.
- 1.19. Means of Egress
 - 1.19.1. Separation of Means of Egress, NFPA 101 chapters 7 and 12-42; NFPA101.7.1.3
 - 1.19.2. Occupant Load, NFPA101.7.3.1 and chapters 12-42.
 - 1.19.3. Egress Capacity (stairs, corridors, ramps and doors) NFPA101.7.3.3
 - 1.19.4. Number of Means of Egress, NFPA101.7.4 and chapters 12-42.
 - 1.19.5. Dead end limits and Common Path of Travel, NFPA 101.7.5.1.6 and chapters 12-42.
 - 1.19.6. Accessible Means of Egress (for accessible buildings), NFPA101.7.5.4
 - 1.19.7. Measurement of Travel Distance to Exits, NFPA101.7.6 and chapters 12-42.
 - 1.19.8. Discharge from Exits, NFPA101.7.7.2
 - 1.19.9. Illumination of Means of Egress, NFPA101.7.8
 - 1.19.10. Emergency Lighting, NFPA101.7.9
 - 1.19.11. Marking of Means of Egress, NFPA101.7.10

■ End of Section –

ATTACHMENT C

TRACKING COMMENTS IN DRCHECKS

1. GENERAL

Throughout the design process, the DB Contractor shall enter, track, and back-check comments using the DrChecks system. Designers of Record shall annotate comments timely and specifically to indicate exactly what action will be taken or why the action is not required. Comments considered critical by the conference participants shall be flagged as such.

2. DRCHECKS REVIEW COMMENTS

The DB Contractor shall monitor DrChecks to assure all comments are annotated and agreed to by the designers and reviewers prior to the next submittal. The DrChecks comments and responses shall be printed and included in the design analysis for record.

Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

The Designers of Record shall answer each comment in DrChecks with a formal response prior to the next submittal, clearly indicating what action will be taken and what drawing/spec will change. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next design conference, reviewers will back-check answers to the comments against the submittal, in addition to reviewing additional design work.

Comments that, in the DB Contractor's opinion, require effort outside the scope of the contract shall be clearly indicated as such in DrChecks. The DB Contractor shall not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

3. DRCHECKS INITIAL ACCOUNT SET-UP

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at {<http://www.projnet.org>} and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

Once the office and individuals are registered, the COE's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

4. DRCHECKS REVIEWER ROLE

The DB Contractor shall take the role of the reviewer to enter comments into the DrChecks system that result from each design conference. To enter comments:

4.1. Log into DrChecks.

- 4.2. Click on the appropriate project.
- 4.3. Click on the appropriate review conference. An Add comment screen will appear.
- 4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.
- 4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.
- 4.6. Once comments are all entered, exit DrChecks by choosing "My Account" and then Logout.

5. DRCHECKS COMMENT EVALUATION

The role of the designers of record is to evaluate and respond to the comments entered by the DB Contractor. To respond to comments:

- 5.1. Log into DrChecks.
- 5.2. Click on the appropriate project.
- 5.3. Under "Evaluate" click on the number under "Pending".
- 5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)
- 5.5. Select the appropriate evaluation (concur, non-concur, for information only, or check and resolve) and add the response.
- 5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.
- 5.7. Once evaluations are all entered, exit DrChecks by choosing "My Account" and then Logout.

6. DRCHECKS BACK-CHECK

At the following design conference, participants will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and completed. The DB Contractor shall enter additional back-check comments, as necessary or close those that are resolved as a result of the design conferences:

- 6.1. Log into DrChecks.
- 6.2. Click on the appropriate project.
- 6.3. Under "My Backcheck" click on the number under "Pending".
- 6.4. If you agree with the designer's response select "Close Comment" and add a closing response if desired.
- 6.5. If you do not agree with the designer's response or the submittal does not reflect the response given, select "Issue Open", enter additional information.

- 6.6. Click on the Add button. The back-check will be added to the database and a fresh screen will appear with the next comment.
- 6.7. Once back-checks are all entered, exit DrChecks by choosing "My Account" and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE <i>(Read instructions on the reverse side prior to initiating this form)</i>	DATE	TRANSMITTAL NO.
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SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: <input type="checkbox"/> THIS IS A NEW TRANSMITTAL <input type="checkbox"/> THIS IS A RESUBMITTAL OF TRANSMITTAL _____
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SPECIFICATION SEC. NO. <i>(Cover only one section with each transmittal)</i>	PROJECT TITLE AND LOCATION	CHECK ONE: THIS TRANSMITTAL IS FOR <input type="checkbox"/> FIO <input type="checkbox"/> GOV'T. APPROVAL
--	----------------------------	---

ITEM NO.	DESCRIPTION OF ITEM SUBMITTED <i>(Type size, model number/etc.)</i>	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. <i>(See instruction no. 8)</i>	NO. OF COPIES	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE	VARIATION <i>(See instruction No. 6)</i>	FOR CE USE CODE
				SPEC. PARA. NO.	DRAWING SHEET NO.			
a.	b.	c.	d.	e.	f.	g.	h.	i.

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated. _____ NAME AND SIGNATURE OF CONTRACTOR
---------	---

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED <i>(List by Item No.)</i>	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE
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INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. Separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal, letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

- | | |
|---|---|
| A -- Approved as submitted. | E -- Disapproved (See attached). |
| B -- Approved, except as noted on drawings. | F -- Receipt acknowledged. |
| C -- Approved, except as noted on drawings.
Refer to attached sheet resubmission required. | FX -- Receipt acknowledged, does not comply
as noted with contract requirements. |
| D -- Will be returned by separate correspondence. | G -- Other (<i>Specify</i>) |

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

Contractor - Furnished Design Documents Submittal Register		Contract Title & Location:			
		Contractor:		Contract Number:	
Submittal Identification Nº.	NAS Activity Code	Description of Document (s)	Contractor Submittal Date	Government Action	
				Receipt Date	Construction Clearance Date

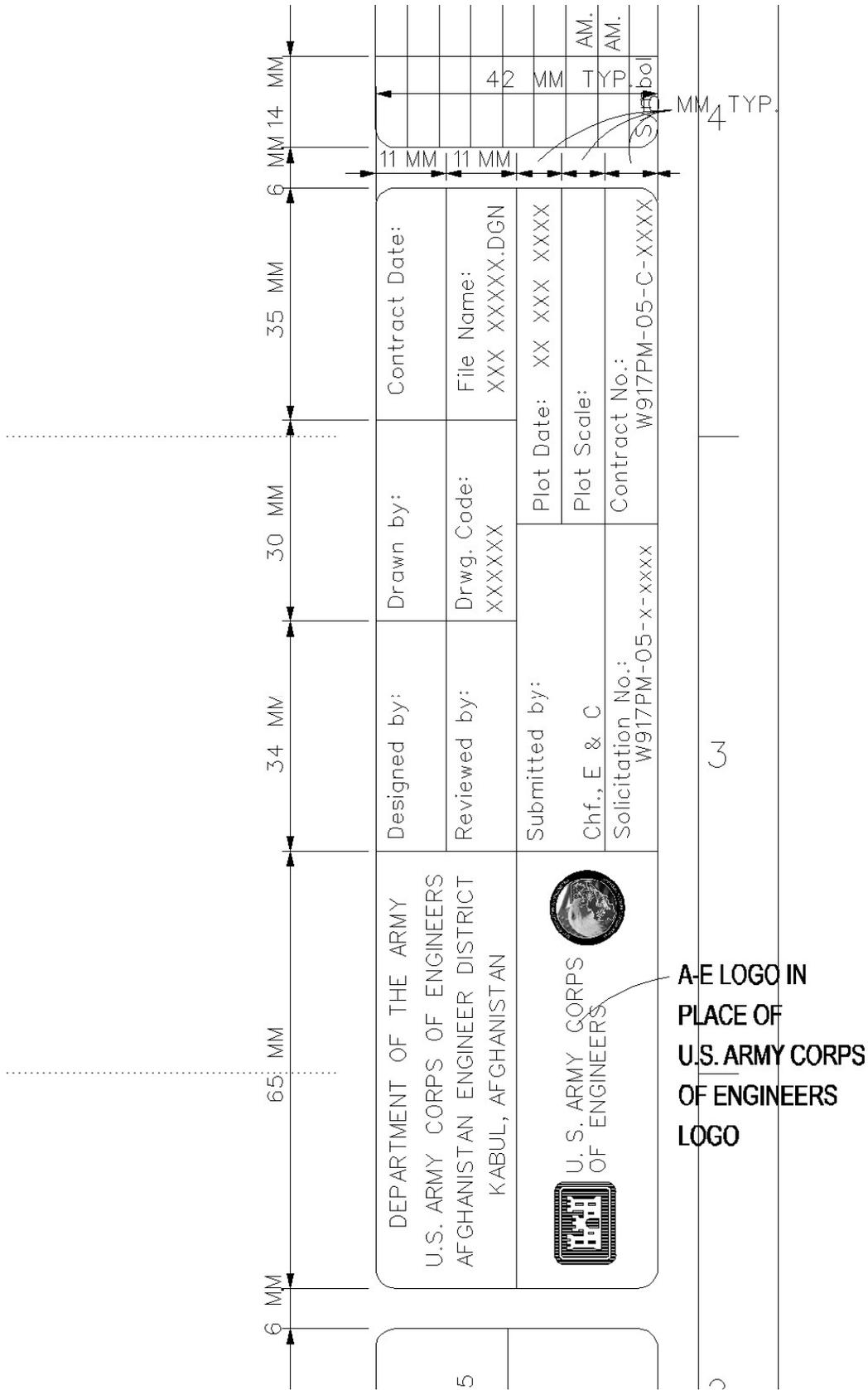


Figure 2 – A-E logo/created by/reviewed by; AED title block

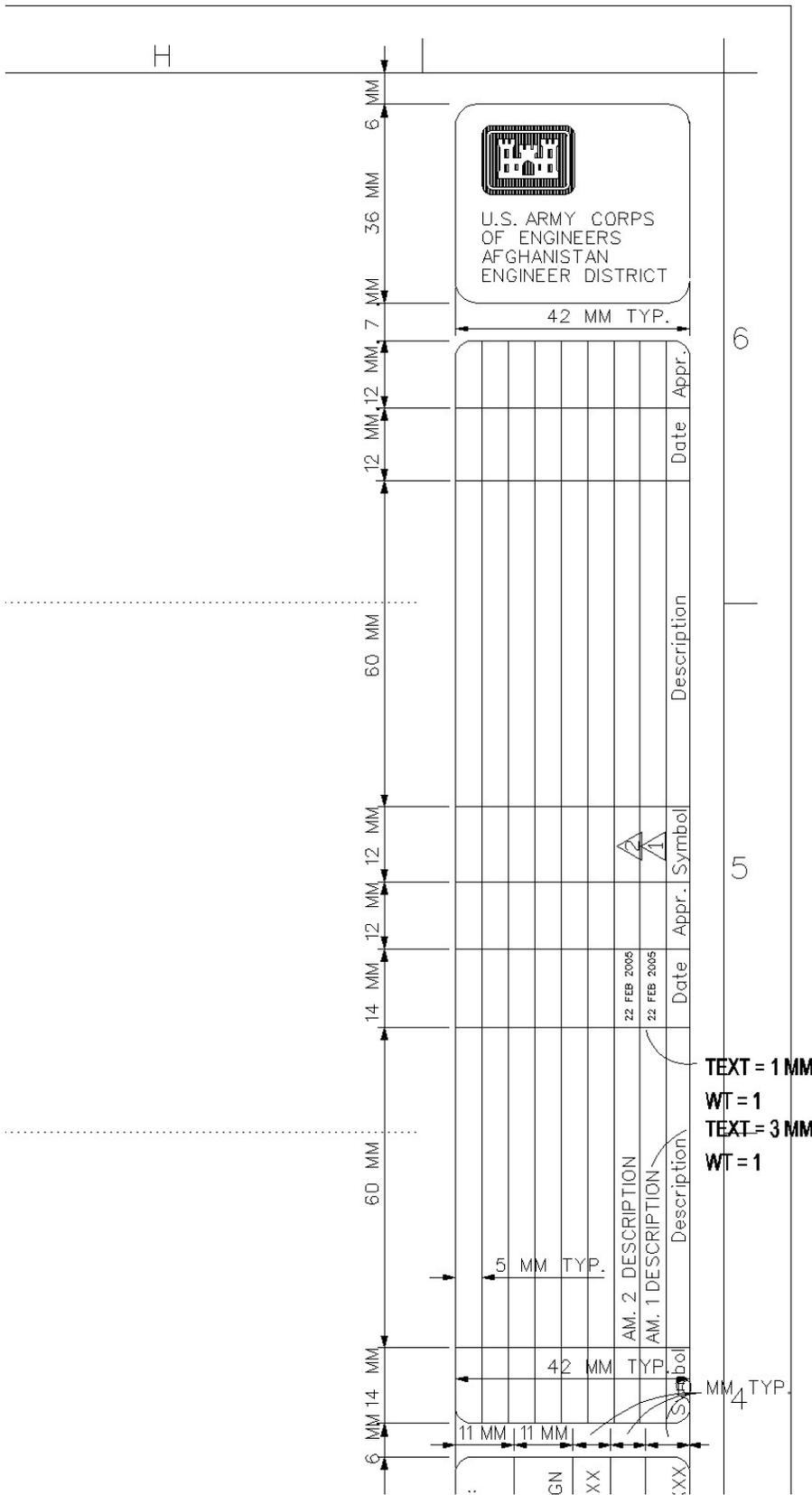
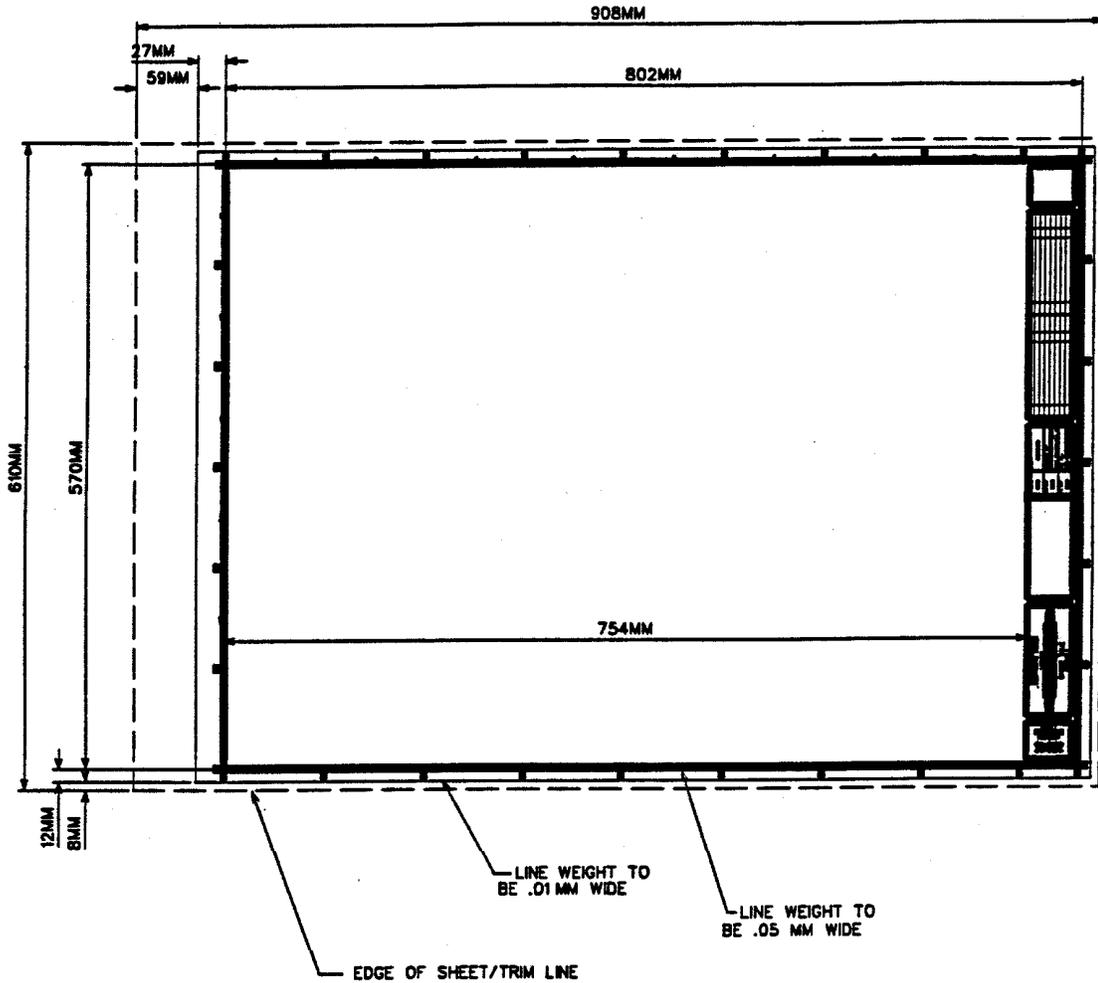


Figure 3 - revision block; AED title block

FINISHED FORMAT SIZE



NOTES:

1. SEE FIGURES 6 THRU 9 FOR TITLE BLOCK DEFINITIONS.

SECTION: 01415**SECTION 01415****METRIC MEASUREMENTS****1.1 REFERENCES**

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

ASTM INTERNATIONAL (ASTM)

ASTM E 621	(1994; R 1999e1) Use of Metric (SI) Units in Building Design and Construction (Committee E-6 Supplement to E380)
ASTM SI 10	(2002) American National Standard for Use of the International System of Units (SI): The Modern Metric System

1.2 GENERAL

This project includes metric units of measurements. The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the 11th CGPM in 1960. A number of circumstances require that both metric SI units and English inch-pound (I-P) units be included in a section of the specifications. When both metric and I-P measurements are included, the section may contain measurements for products that are manufactured to I-P dimensions and then expressed in mathematically converted metric value (soft metric) or, it may contain measurements for products that are manufactured to an industry recognized rounded metric (hard metric) dimensions but are allowed to be substituted by I-P products to comply with the law. Dual measurements are also included to indicate industry and/or Government standards, test values or other controlling factors, such as the code requirements where I-P values are needed for clarity or to trace back to the referenced standards, test values or codes.

1.3 USE OF MEASUREMENTS IN SPECIFICATIONS

Measurements in 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.

1.3.1 Hard Metric

A hard metric measurement is indicated by an SI value with no expressed correlation to an I-P value. Hard metric measurements are often used for field data such as distance from one point to another or distance above the floor. Products are considered to be hard metric when they are manufactured to metric dimensions or have an industry recognized metric designation.

1.3.2 Soft Metric

- (i) 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.
- (j) 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)).

1.3.3 Neutral

A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

1.4 COORDINATION

Discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the drawings shall be brought to the attention of the Contracting Officer for resolution.

1.5 RELATIONSHIP TO SUBMITTALS

Submittals for Government approval or for information only shall cover the SI or I-P products actually being furnished for the project. The Contractor shall submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise instructed or approved. The Contractor shall use ASTM SI 10 and ASTM E 621 as the basis for establishing metric measurements required to be used in submittals.

-- End of Section --

SECTION: 01451**SPECIFICATION SECTION 01451
CONTRACTOR QUALITY CONTROL****PART 1: GENERAL****1.1 REFERENCES**

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-1-12 (1993)	Quality Management
EM 385-1-1	Safety and Health Requirements Manual

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)**PART 3 EXECUTION****3.1 GENERAL REQUIREMENTS**

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clauses and this specification section. The quality control system shall consist of plans, procedures, and 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.

3.2 CQM TRAINING REQUIREMENT

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

Mhd. Haris

e-mail: mharis@afghanreconstruction.org

Telephone: 0700 08 0602

Pervaiz

e-mail: adpzmuj@yahoo.com

Telephone: 0700 61 3133

3.3 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.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both on site and off-site, including work by subcontractors, fabricators, suppliers and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, 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.

3.2.2 Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control

(DQC) plan:

(1) The Contractor shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents shall be technically reviewed by competent, independent reviewers identified in the DQC Plan. The same element that produced the 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.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

Notification of Changes. After acceptance of the QC plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Pre-construction Conference, before start of construction, and prior to acceptance by the Government of the Quality Control Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 5 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures, which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify an individual within his organization at the site of the work who shall be responsible for overall management of the CQC and have the authority to act in all CQC matters for the Contractor. The CQC system manager shall be a graduate engineer, graduate architect, or a graduate construction manager, with experience on construction projects similar in type to this contract OR a construction person with a minimum of ten (10) years in related work. The CQC System Manager shall be on the site at all times during construction and shall be employed by the Contractor. The CQC System Manager shall be assigned no other duties. An alternate for the CQC System Manager will be identified in the plan to serve in the event of the CQC system manager's absence. The requirements for the alternate will be the same as for the designated CQC manager.

3.4.3 Not Used.

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements, the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered by the government, and inquiries as to the next course offering may be directed to the local construction field office.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in the STR titled SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase.

This phase shall be performed prior to beginning work on each definable feature of work, after all required documents and materials are approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards, in the English language unless specifically approved otherwise by the Contracting Officer, applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. A check to assure that provisions have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to verify that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. Reviews of the appropriate activity hazard analysis to ensure safety requirements are met.
- h. Discussion of procedures for constructing the work including repetitive deficiencies, construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the Contracting Officer has accepted the portion of the plan for the work to be performed.
- j. Discussion of the initial control phase.

- k. The Government shall be notified at least 24 hours in advance of beginning any of the required action of the preparatory phase. This phase shall include a meeting conducted by the CQC system manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC system manager and attached to the daily QC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase.

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of preliminary work to ensure that it is in compliance with 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.

3.6.3 Follow-up Phase.

Daily checks shall be performed to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted, and all noted deficiencies corrected, prior to the start of additional features of work that may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases may be required by the Contracting Officer on the same definable features of work if the quality of on-going work is unacceptable; if there are changes in the applicable QC staff or in the on-site production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product that conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Costs incidental to the transportation of samples or materials shall be borne by the Contractor.

Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the Quality Control report for the date taken. Specification paragraph/item reference, location where tests were taken, and the sequential control number identifying the test will be given. Actual test reports may be submitted later, if approved by the Contracting Officer, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly to the Contracting Officer. Failure to submit timely test reports, as stated, may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

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.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from 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".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

- 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.

3.10 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.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

SECTION: 01525**SECTION 01525****SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS****PART 1 GENERAL**

For contractor safety on projects associated with this program, compliance with EM 385-1-1 safety requirements will be the long-term goal reached by growing a safety culture. This compliance will, by necessity, be achieved through a phased-in process. In the Commander's letter at the preface of the EM 385-1-1, he acknowledges that in OCONUS locations, strict compliance with the manual may not be possible – and through the hazard analysis process, safety measures can be developed to attain the same degree of safety.

This specification consists of two parts:

- 1) Sections 1.1 through 3.12.1, which are the standard safety specifications for work in Europe District and;
- 2) Appendix A, Phasing approach for safety in emerging countries where there is little or no national safety standards.

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.32	Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI Z359.1(1992; R 1999)	Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
ANSI/ASSE A10.34(2001)	Protection of the Public on or Adjacent to Construction Sites
ASME B30.3(1996)	Construction Tower Cranes

ASME INTERNATIONAL (ASME)

ASME B30.22(2000)	Articulating Boom Cranes
ASME B30.5(2004)	Mobile and Locomotive Cranes

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10(2002)	Portable Fire Extinguishers
NFPA 241(2000)	Safeguarding Construction, Alteration, and Demolition Operations
NFPA 51B(2003)	Fire Prevention During Welding, Cutting, and Other Hot Work

NFPA 70(2005)	National Electrical Code
NFPA 70E(2004)	Electrical Safety in the Workplace
U.S. ARMY CORPS OF ENGINEERS (USACE)	
EM 385-1-1(2003) Safety	Safety and Health Requirements
U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)	
29 CFR 1910	Occupational Safety and Health Standards (OSHA)
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.500	Fall Protection

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SR SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G, ACC

Activity Hazard Analysis (AHA); G, ACC

Crane Critical Lift Plan; G, ACC

Proof of qualification for Crane Operators; G, ACC

SD-06 Test Reports

Reports: Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports

Monthly Exposure Reports

Crane Reports

Regulatory Citations and Violations

SD-07 Certificates

Confined Space Entry Permit

Contractor Safety Self-Evaluation Checklist; G, ACC

Submit one copy of each permit/certificate attached to each Daily Quality Control Report.

1.3 DEFINITIONS

- a. **Competent Person for Fall Protection.** A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.
- b. **High Visibility Accident.** Any mishap which may generate publicity and/or high visibility.
- c. **Medical Treatment.** Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even 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.

1.4 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.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and in particular, the requirements of the European Union Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person can only be the SSHO on this project if approved by the Contracting Officer. Any project exceeding 1 Million US dollars in value shall have a full time SSHO. The SSHO shall meet the following requirements: A minimum of 5 years safety work on similar projects; 30-hour OSHA construction safety class or European Union equivalent within the last 5 years; an average of at least 24 hours of formal safety training each year for the past 5 years. Competent person training as needed.

1.6.1.2 Competent Person for Confined Space Entry

Provide a competent person meeting the requirements of EM 385-1-1 who is assigned in writing by the Government Designated Authority (GDA) to assess confined spaces and who possesses demonstrated knowledge, skill and ability to:

- a. Identify the structure, location, and designation of confined and permit-required confined spaces where work is done;
- b. Calibrate and use testing equipment including but not limited to, oxygen indicators, combustible gas indicators, carbon monoxide indicators, and carbon dioxide indicators, and to interpret accurately the test results of that equipment;
- c. Perform all required tests and inspections specified in Section 06.I of EM 385-1-1;
- d. Assess hazardous conditions including atmospheric hazards in confined space and adjacent spaces and specify the necessary protection and precautions to be taken;
- e. Determine ventilation requirements for confined space entries and operations;
- f. Assess hazards associated with hot work in confined and adjacent space and determine fire watch requirements; and,
- g. Maintain records required.

1.6.1.3 Crane Operators

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G. In addition, crane operators shall be designated as qualified by a source that qualifies crane operators (i.e., union, a government agency, or and organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily quality control report.
- b. Conduct mishap investigations and complete required reports. Maintain an accident/injury log such as the OSHA Form 300 or host nation equivalent, and Daily Production reports for prime and sub-contractors.
- c. Maintain applicable safety reference material on the job site.
- d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- e. Implement and enforce accepted APPS and AHAs.
- f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.
- g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

- a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).
- b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.
- c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.
- d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6.3.2 Safety Meetings

Shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily quality control report.

1.7 TRAINING

1.7.1 New Employee Indoctrination

New employees (prime and sub-contractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

1.7.2 Periodic Training

Provide Safety and Health Training in accordance with USACE EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for all onsite employees.

1.7.3 Training on Activity Hazard Analysis (AHA)

Prior to beginning a new phase, training will be provided to all affected

1.8 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP in both English and in the host nation language. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, 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.

1.8.1 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 06.I, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)
- d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:
 - (1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of EM 385-1-1, Section 22.F.
 - (2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.
- e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised every six months for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and

maintained at the job site for the duration of the project. The Fall Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1, and shall be written in both English and the host nation language. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.10 DISPLAY OF SAFETY INFORMATION

Within 1 calendar day after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project. Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. The Government has no responsibility to provide emergency medical treatment. Military medical clinics may provide emergency treatment for serious injuries; the contractor is responsible for coordination with the local military medical clinic prior to mobilization.

1.13 REPORTS

1.13.1 Accident Reports

For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

1.13.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.).

Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.13.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.13.4 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

1.14 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Installation. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) six kilogram ABC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in fire fighting techniques and remain on-site for a minimum of 120 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone numbers. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION/DEPARTMENT IMMEDIATELY.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

Before initiation of work at the job site, an accident prevention plan, written by the Contractor for the specific work and hazards of the contract and implementing in detail the pertinent requirements of EM 385-1-1, will be reviewed and found acceptable by designated Government personnel. Specific requirements for development of the accident prevention plan are found in sections 01.A and Appendix A of EM 385-1-1.

Before beginning each activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform the work, activity hazard analysis (AHA) shall be prepared by the Contractor performing the work activity. See paragraph 01.A.09 of EM 385-1-1.

The Contractor shall require subcontractors to submit their plan of operations showing methods they propose to use in accomplishing major phases of work.

The Contractor shall be prepared to discuss the plans in conferences convened by the Contracting Officer prior to starting work on each major phase of operation. Plans shall include all pertinent information such as layout of haul roads, access roads, storage areas, electrical distribution lines,

methods of providing minimum exposure to overhead loads, and methods of access to work areas. The plan for accomplishing the initial work phase shall be submitted within 15 calendar days after award of the contract. Plans for subsequent major phases of work shall be submitted not later than 15 calendar days prior to initiation of work on each major phase.

All areas where construction, demolition, alteration, building, or similarly related activities take place, all workers shall have the following minimum personal protective clothing and equipment:

1. Short sleeve shirt.
2. Long trousers.
3. Steel-toed safety boots.
4. Hard hat.

3.1.1 Falling Object Protection

All areas must be barricaded to safeguard employees. When working overhead, barricade the area below to prevent entry by unauthorized employees. Construction warning tape and signs shall be posted so they are clearly visible from all possible access points. When employees are working overhead all tools and equipment shall be secured so that they will not fall. When using guardrail as falling object protection, all openings shall be small enough to prevent passage of potential falling objects.

3.1.2 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose Government or Contractor employees to any unsafe or unhealthful conditions. Adequate protective measures must be taken to prevent Government or Contractor employees from being exposed to any hazardous condition that could result from the work or storage. The Prime Contractor shall keep a complete inventory of hazardous materials brought onto the work-site. Approval by the Contracting Officer of protective measures and storage area is required prior to the start of the work.

3.1.3 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.4 Unforeseen Hazardous Material

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."

3.2 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.2.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.A.16.

3.2.2 Fall Protection Equipment and Systems

The Contractor shall enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Employees shall be protected from fall hazards as specified in EM 385-1-1, section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.H. and 05.I. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with USACE EM 385-1-1 and host nation requirements, whichever is more stringent.

3.2.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1 or European Union equivalent. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.2.3 Fall Protection for Roofing Work

Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

- (1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized.

- (2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

3.2.4 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI Z359.1 or European Union equivalent. Exiting horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.2.5 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2.

3.2.6 Guardrails and Safety Nets

Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 or Host Nation requirements, whichever is more stringent.

3.2.7 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.3 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four 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.

3.4 EQUIPMENT

3.4.1 Material Handling Equipment

- a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.
- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.
- c. Operators of forklifts or power industrial trucks shall be trained/licensed in accordance with Host Nation requirements.

3.4.2 Weight Handling Equipment

- a. Cranes and derricks shall be equipped as specified in EM-385-1-1 section 16.
- b. The Contractor shall notify the Contracting Officer 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.

3.5 EXCAVATIONS

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect, and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

3.5.1 Utility Locations

Prior to any excavation, all underground utilities in the work area must be positively identified by the contractor utilizing a) a private utility locating service in addition to any station locating service, and/or b) a metal and/or cable-detecting device along the route of the excavation. All underground utilities discovered will be flagged a distance of one-half (1/2) meter on each side of the location, and any markings made during the utility investigation must be maintained throughout the contract.

Damage occurring to existing utilities, when the above procedures are not followed, will be repaired at the Contractor's expense.

3.5.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.61 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

3.5.3 Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacturer tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

3.5.4 Trenching Machinery

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

3.6 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

3.7 ELECTRICAL

3.7.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.7.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70 or European Union equivalent.

3.8 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 06.I of USACE EM 385-1-1. Any potential for a hazard in the confined space requires a permit system to be used.

a. **Entry Procedures.** Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures). All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Ensure the use of rescue and retrieval devices in confined spaces greater than 1.5 m (5 feet) in depth. Conform to Sections 06.I.08, 06.I.09 and 06.I.10 of USACE EM 385-1-1.

- d. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.
- e. Include training information for employees who will be involved as entrants and attendants for the work. Conform to Section 06.I.07 of USACE EM 385-1-1.
- f. Daily Entry Permit. Post the permit in a conspicuous place close to the confined space entrance.

3.9 CRYSTALLINE SILICA

Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica, shall comply with USACE EM 385-1-1, Appendix C. The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

3.10 DEMOLITION

3.10.1 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.

3.12.1 Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workers remove debris or perform other work in the immediate area.

3.10.1 Protection of Structures

Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the COR. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

Interior concrete or masonry walls shall be demolished from the top down unless a Registered Engineer can demonstrate that an alternate method poses no additional safety hazards

3.11 HOUSEKEEPING

3.11.1 Clean-Up

The Contractor shall be responsible for cleaning up. The Contractor shall require his personnel to keep the immediate work site clean of all dirt and debris resulting from work under this contract.

Accumulated dirt and debris shall be hauled off and disposed of in accordance with local law and at least once a week by the Contractor. Additionally, all debris in work areas shall be cleaned up daily or more frequently if necessary. Construction debris may be temporarily located in an approved location, however garbage accumulation must be removed each day.

Stairwells used by the Contractor during execution of work shall be cleaned daily. Cloths, mops, and brushes containing combustible materials shall be disposed of or stored outside of the buildings in tight covered metal containers. Paints and thinners shall not be poured into inlets of the interior or exterior sewage system. Paint, stains, and other residues on adjacent surfaces or fixtures caused by the Contractor shall be carefully removed and cleaned to original finish. Upon completion of the work, the Contractor shall remove all construction equipment, materials and debris resulting from the work. The entire work site and the area used by Contractor personnel shall be left clean.

ATTACHMENT

STR 015250 – SAFETY AND OCCUPATIONAL HEALTH PHASING PLAN

- End of Section -

A. PURPOSE AND RESPONSIBILITIES:

1. The purpose of this SOH Phasing Plan is to establish controls and procedures to reduce the safety and occupational health risks on associated projects to an acceptable level. This SOH Phasing Plan is not intended to address all program SOH requirements, but provides general emphasis to certain procedures and requirements addressed in: EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Requirements Manual
2. For contractor safety on projects associated with this program, compliance with EM 385-1-1 safety requirements will be the long-term goal reached by growing a safety culture. This compliance will, by necessity, be achieved through a phased-in process. In the Commander's letter at the preface of the EM 385-1-1, he acknowledges that in OCONUS locations, strict compliance with the manual may not be possible – and through the hazard analysis process, safety measures can be developed to attain the same degree of safety.
 - a. The exact timeline and methods of compliance, based generally on the Phase plan below will be determined by in-theater Project Delivery Team (PDT) partners responsible for safety, to include USACE Field Engineering/Construction/ Safety personnel, Prime Contractors and Local Subcontractors. The Prime Contractor, in partnership with the USACE and subcontractors, will develop a Safety and occupational Health Plan (SOHP) consisting of a specific Accident Prevention Plan (APP) and Activity Hazard Analysis for each project.
 - b. Each project SOHP will evolve as a living document, starting by dividing into phases to provide a goal with a timeline. Focus for the project safety program areas will be based on the following time-based phases.

Phase I: "Saving Lives". Establish achievable compliance methods and basic worker safety education to eliminate or reduce to an acceptable level the life-threatening conditions associated with high hazard construction activities.

- The initial high-hazard focus areas shall include:
 - Excavations
 - Fall Hazards
 - Electrical Work
 - Mobile Construction Equipment
 - Machinery
 - Confined Spaces
- Develop a basic worker safety and health practices manual/ guide and associated mandatory training for each Focus area listed above. These will be in English and local language, based on local conditions and practices and targeted at high-hazard activities.
- On all contract sites, the basic life-support will include First Aid Kits, and emergency communication.
- Contractor Accident Prevention Plans, Activity Hazard Analyses, and other safety-related systems under development with assistance by PDT

Phase II: "Building A Safety Culture" (Approximately one year, beginning at end of Phase I) Advanced safety education of local contractors and LN work force. Full contractor compliance with USACE safety standards related to high-hazard situations, increased application of standards on all work.

- Workforce education and training to include all applicable requirements of EM 385-1-1 and International Safety Standards
- All required Personal Protective Equipment (PPE) available and used by workers in applicable work practices, as outlined in the EM 385-1-1.

- Contractor Accident Prevention Plans, Activity Hazard Analyses, and other safety-related systems refined to meet standard USACE expectations with assistance by PDT
- Standard Contractor Safety administrative responsibilities required, i.e.: Accident reporting, man-hour tracking, training documentation, First Aid personnel certification, fire protection, etc.

Phase III, "Full Performance" (beginning at end of Phase II) Full performance in compliance with EM 385-1-1 and other applicable laws, regulations, design codes and standards.

Where standard compliance is not possible, local methods may be used in accordance with implementing letter of EM 385-1-1 or through formal waiver process.

3. The PDT shall employ the "Plan, Do, Check, Act" process for implementing this SOHP as a living document. Each PDT member is responsible for planning for safety and health management within their area of responsibility, implementing agreed-on mitigation, checking to assure that the SOHP is being implemented and acting to adjust plans and implementation with a goal of continuous improvement. This plan will be reviewed and revised as needed at the initiation of each Phase listed above.

4. The PDT members shall cooperate in developing a listing of potential hazards associated with each project.

B. GOALS AND OBJECTIVES:

1. Goals. The safety and health goals of all projects are:
 - a. Be accident free
 - b. Detect and address safety and health problems early in the life of each project
 - c. Do not accept unnecessary risk
 - d. Every team member, to include contractors shall contribute to the safety and health of their fellow team members and assure that the product is free of inherent hazards to the user.
 - e. Educate the workforce and promote Safety as a new way of doing business, show how the project and the employee benefit from Safety.
2. Objectives. The safety and health objectives of this program are:
 - a. Managers, supervisors, and workers shall be held accountable, based on the current Phase, for safety and health.
 - b. Safety and health expectations shall be communicated with the work force in their native language through the use of banners, flyers, and periodic safety meetings
 - c. The work force shall have the safety and health training needed to perform the work at hand, based on the Phase.
 - d. Injury and property damage shall be avoided through early detection and management of hazards

Phase I Interim Safety and Occupational Health Work Practices for USACE Contractor Projects

Phase I Safety Program

1. Contractors shall strive to maintain full compliance with the USACE Safety Requirements Manual, EM 385-1-1. This may not be easily achieved during this Phase, due to a number of factors. The focus for safety and health efforts during this Phase is Saving Lives – the prevention of deaths, permanently disabling injuries, and major property loss. The goal during this period is to provide the equipment and methods needed to save lives and to train the workforce in working safely and using the correct personal Protective Equipment (PPE).

2. In order to assist in achieving this goal immediately, the following interim standards shall be used (as a minimum acceptable standard) when full compliance with the EM 385-1-1 is not possible. Contractors shall provide these standards in to their workforce in the local language and shall provide training as needed to ensure worker awareness.

Basic Safety and Health Standards for Construction

- A. USACE and the contractors must form a team to assure safety on every job site and prevent serious accidents. All unsafe conditions must be reported and the hazard reduced before work may proceed.
- B. Personal Protective Equipment (PPE) may not always be available to every worker during this Phase. Where the equipment required by the USACE Safety Manual, EM 385-1-1, cannot be provided in a timely manner, the contractor shall develop methods that will provide a similar degree of safety (as accepted by USACE) and not expose the workers to serious risk. The mandatory minimum standards for all PPE are:
- Footwear: Closed-toe durable shoes or boots shall be worn by all workers on the project site. No sandals or sports shoes will be allowed, at no time will workers be allowed on the project site with bare feet. Safety footwear (steel-toe or other protection) should be worn by workers using steel rollers, tampers, jack hammers or carrying heavy objects (metal, concrete, stone)
 - Head Protection: When they are available, hard hats should be worn by all construction workers when they are at the project. Hard Hats must be worn in overhead hazard areas including material hoisting/ lifting operations, areas below scaffolds and other elevated work, in excavations, and low ceiling areas that have sharp or hazardous projections. If they are not available, then workers must be kept away from these and other overhead hazard areas.
 - Respirators: Workers exposed to toxic chemicals, vapors, gases and dusts must wear proper respiratory protection. Such exposure is expected in asbestos removal/ repair work, working with paints and solvents in rooms or enclosed spaces, and fuel production facilities. The employer must train the workers in the uses of the respirator and how to properly wear it. The minimum acceptable respirator is a negative pressure filter or cartridge half-face respirator that is correctly equipped for the hazard. Contractors shall consult and follow the ACGIH guidance for length of allowable exposure to the contaminant and workers shall not exceed the recommended time for exposure. Dust Masks will be worn when the work is producing visible dust.
 - Eye Protection: Workers shall wear protective glasses, goggles, or visors when exposed to eye hazards. These hazards include concrete dust, stone and concrete chips from hammering, sandblasting, and power tool cutting or milling. Workers performing welding and cutting with torches or arc-welding equipment shall wear the proper shaded lenses in face shields and/ or goggles.
 - Hearing Protection: Protective ear plugs shall be worn when workers are exposed to potentially damaging noise including jack hammers, flight line operations, power saws and grinders, and combustion engines without mufflers.
 - Gloves: All workers shall have protective gloves appropriate to the task.
 - Clothing: Workers shall wear clothing that protects their skin from damage – shirts and long pants at a minimum. Workers exposed to welding operations, chemicals, abrasive blasting, wet concrete, asbestos, and other hazardous contaminants will wear appropriate clothing for the hazard. Workers using power tools or operating equipment shall not wear very loose or flowing clothing that may get caught in the equipment.
- C. Work Methods for Highly Hazardous Work: The following types of work and hazards are recognized as the leading cause of serious injuries and deaths in construction work. Each type of work has specific PPE and safety equipment that is required to do the work and also specific

procedures that must be followed every time the work is done. These interim measures are the minimum acceptable precautions. For each project, an Activity Hazard Analysis (AHA) shall be completed and, when possible, compliance with more restrictive methods of the EM 385-1-1 shall be achieved.

Workers shall be trained on the following safety precautions, the nature of the hazards involved, and any additional work methods used before performing each type of work

- Excavations
 - The Site Safety and Health Officer will be contacted for inspection of the work prior to digging. The SSHO will assist in any safety equipment or techniques that are required to avoid injury. They will also provide a safety check on the location to assure there are no underground hazards at the site.
 - All excavations or unsafe areas will be marked with barricades or warning tape. These warnings must be maintained and visible until the area is restored to a safe condition.
 - When workers will enter trenches, the walls shall be sloped according to the type of soil or shoring, trench boxes, or other structures will be used to protect workers from collapsing walls
 - Soil removed from trenches will not be placed at the edge of the trench – it must be placed back at least 1 meter from the edge.
 - Vehicles and construction equipment must not be parked closer than 2 meters from the edge of an excavation.
 - Excavation walls shall be inspected regularly during each day to check for cracks, bulges, large stones, sandy areas, and failure of the wall. If these conditions are found, nobody may enter the excavation and the damaged area must be dug out or braced.

- Fall Hazards
 - When working above 2 meters from the ground or another level, all workers shall be protected from falling. The SSHO will inspect prior to beginning work to be sure the work methods are safe. Inspection will include work on ladders, scaffolds, and other elevated work areas.
 - Protection systems shall be sturdy railings, walls, or other structures
 - If there are no structures to protect workers, body belts or harnesses shall be used along with lanyards.
 - Body belts should be mainly be used only to prevent a worker from falling over an edge or off a structure.
 - Body belts and harnesses can both be used as fall protection (stopping a falling worker). The lanyard shall be rope strong enough to withstand the shock of stopping the worker's weight, and they shall be as short as possible, to limit the shock force. Lanyards shall never allow a worker to fall more than 2 meters. It is recommended that lanyards without shock absorber devices be no longer than 1 meter.

- Electrical Work
 - All circuits, wires, and electrical devices shall be tested with a volt meter and found to be de-energized before workers touch the energized parts
 - Controls, switches, and other means for energizing the circuit or equipment shall be tagged "do not operate"
 - Workers shall not work closer to energized systems than the distances listed in the USACE manual.
 - Temporary electrical systems shall be grounded and tested for good ground resistance before use.

- Power tools shall be protected from water and damage, and their cords must be insulated. Cords must be factory installed or equivalent replacements, including safety grip plug and cord boot.
- Extension cords will be in safe, good working order.
- Mobile Construction Equipment
 - If equipment, particularly cranes, are damaged the repairs shall be done by a competent repair person and verified by the SSHO prior to being brought back into service.
 - Nobody may ride outside the cab of construction equipment. Specifically, no riders may ever be in loader buckets, bulldozer blades, on forklift forks, or suspended by a crane.
 - When workers are nearby, construction equipment must have reverse signal alarms or shall use a spotter standing away from the equipment. The spotter must be visible by the driver and positioned to see the area behind the equipment.
 - Construction equipment must work a safe distance from electrical systems, based on the voltage.
 - Cranes must be used according to the manufacturer. If no manufacturer data is available, a load chart shall be developed by a qualified engineer.
 - Workers should stay out of the radius of the crane boom during a lift.
 - Lifting ropes shall be inspected daily for breaks and failure of hardware and fittings.
 - Nobody shall ever ride the hook or load of a crane.
- Machinery
 - Rotating shafts, wheels, blades, and other hazardous parts shall have guards to prevent workers from being injured.
 - Fuel-powered machinery must not be operated indoors or near enclosed areas without using powered ventilation to prevent toxic CO build-up.
 - Metal housings of electrically powered equipment must be grounded
- Confined Spaces
 - The SSHO will pre-approve any work in a confined space, such as in a tank, sewer, manhole or any other enclosed area. The SSHO will inspect the work and assist with any safety equipment or techniques that are required.
 - All permit-required confined spaces (PRCS) on a project shall have signs prohibiting entry.
 - Entrants, supervisors, and attendants for PRCS shall be properly trained.
 - When available, oxygen/flammable/toxic gas meters shall be used for all PRCS. This equipment must be used to evaluate the air in all spaces known or suspected to have contained flammable or toxic chemicals or contain sewage, rotting vegetation or other organic matter.
 - For spaces not meeting the above criteria, mechanical ventilation fans shall be used to clear the air in the space when meters are not available. Based on the air flow of the fan, it shall exhaust the total volume of the space a minimum of seven times prior to entry.
 - All entrants shall wear a harness, body belt, or other device attached to a rope sufficient to retrieve the worker in an emergency.
 - Permits should be used during PRCS entry. If not possible, then some visible means, such as flags or tags outside the entrance, shall be used so supervisors can see when workers are in the space.
- Gas Cylinders
 - Pressurized gas cylinders, such as Oxygen and Acetylene tanks will be stored in a holding stand/ cart to prevent them from falling over. Cylinders will not be placed free on the ground or standing free. If the bottle is not in use the valve will be removed.

- D. Child Labor. Minors under the age of 18 may not perform any of the above hazardous work. Additionally, these minors can not perform any hazardous work such as operating dangerous power tools (circular saws, jack hammers, lathes, etc), driving vehicles, be exterior assistants for vehicle operators or operating mobile construction equipment, explosives work, work at heights over 2 meters without standard railings, electrical work, entering excavations, and work with toxic substances.

-- End of Section --

SECTION: 01770

SPECIFICATION SECTION 01770

CLOSEOUT PROCEDURES

PART 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 01015 SPECIAL CONDITIONS

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. Names, addresses and telephone numbers of sources of spare parts.
 6. 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.
 7. Cross-reference to warranty certificates as applicable.
 8. Starting point and duration of warranty period.
 9. Summary of maintenance procedures required to continue the warranty in force.
 10. Cross-reference to specific pertinent Operation and Maintenance manuals.
 11. Organization, names and phone numbers of persons to call for warranty service.
 12. 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.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION: 01780**SECTION 01780A****CLOSEOUT SUBMITTALS****PART 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 CADD as-built drawings shall consist of one set of electronic CADD drawing files in the specified format, one set of mylar drawings, 2 sets of blue-line prints of the mylars, and one set of the approved working 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 CADD 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 CADD file as-built drawings.

1.2.1.2 Working As-Built and Final As-Built Drawings

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. The working and final as-built drawings shall show, but shall not be limited to, the following information:

- a. 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.
- b. The location and dimensions of any changes within the building structure.
- c. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.
- d. 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.
- e. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.
- f. Changes or modifications which result from the final inspection.
- g. Where contract drawings or specifications present options, only the option selected for construction shall be shown on the final as-built prints.
- h. 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.

i. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.

j. 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 (CADD) Drawings

Only personnel proficient in the preparation of CADD 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 CADD files. The Contractor will be furnished "as-designed" drawings in AutoCad Release 2000 or Microstation V8 format compatible with a Window 2000 or 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. The Contracting Officer will review final as-built drawings for accuracy and the Contractor shall make required corrections, changes, additions, and deletions.

a. CADD 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.

b. 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.

c. 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.

d. Within 20 days for contracts \$5 million and above after Government approval of all of the working as-built drawings for a phase of work, the Contractor shall prepare the final CADD as-built drawings for that phase of work and submit two sets of blue-lined prints of these drawings for Government review and approval. The Government will promptly return one set of prints annotated with any necessary corrections. Within 10 days for contracts \$5 million and above the Contractor shall revise the CADD files accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Government. Within 20 days for contracts \$5 million and above 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 mylars, two sets of blue-line 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 customer's CADD system. 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 Used	Where
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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, spare parts list, 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. Names, addresses and telephone numbers of sources of spare parts.
6. 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.
7. Cross-reference to warranty certificates as applicable.
8. Starting point and duration of warranty period.
9. Summary of maintenance procedures required to continue the warranty in force.
10. Cross-reference to specific pertinent Operation and Maintenance manuals.
11. Organization, names and phone numbers of persons to call for warranty service.
12. 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.

1.3.5 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 in applicable technical specification sections.

1.5 OPERATION AND MAINTENANCE MANUALS

Operation manuals and maintenance manuals shall be submitted as specified. Operation manuals and maintenance manuals provided in a common volume shall be clearly differentiated and shall be 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.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section -

SECTION: 01781**SECTION 01781****OPERATION AND MAINTENANCE DATA****PART 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.

1.2.3.5 Spare Parts and Supply Lists

Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead-time to obtain.

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.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 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 --