



**US Army Corps
of Engineers
Afghanistan Engineer District**

ANP NATIONAL TRAINING CNTR

Maydan Wardak Province, Afghanistan

Design/Build Project Specifications And Drawings

**Proposal Requirements, Contract Forms,
Conditions of the Contract**

October 2008

THIS IS A SINGLE-PHASE REQUEST FOR PROPOSAL

**See Special Notes to Contractors on Pre-proposal
Conference, Sunday, 5 October 2008, 2:00 – 4:00 PM**

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DESIGN BUILD SPECIFICATIONS
FOR
ANP National Training Center
Maydan Wardak Province, Afghanistan

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SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. W917PM-08-R-0092	2. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 01-Oct-2008	PAGE OF PAGES 1 OF 24
	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 See Item 7
TEL:	FAX:	TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME SHEILA W ENCLADE	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):*

ANP National Police Training Center, Mayden Wardak Province, AF

This project consists of the design, site-adaptation and construction of a new camp facility for the Afghanistan National Police (ANP), the National Police Training Center, to be located in the Maydan Wardak Province in Afghanistan.

SEE SPECIAL NOTES TO CONTRACTORS for additional information pertaining to Pre-Proposal Conference set for Sunday, 5 October 2008, 2:00 - 4:00 P.M. Kabul Time.

The contract will be awarded using the Best Value Trade Off Method. Estimated cost range for this project \$60,000,000.00 - \$115,000,000.00.

Proposals shall be hand delivered to the US Army Corps of Engineers, House #1, Street #1, West Wazir Akbar Khan (behind Amani High School, Kabul, AF - prior to the time and date specified for receipt of proposals).

Block 11. The Contractor shall begin performance within 10 calendar days and complete it within, see para. 7.0 of Section 01010 and Section 00800 Clause 52.211-10, Commencement, Prosecution & Completion of Work.

11. The Contractor shall begin performance within 10 calendar days and complete it within _____ calendar days after receiving award, notice to proceed. This performance period is mandatory, negotiable. *(See _____.)*

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> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	12B. CALENDAR DAYS
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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 11 Nov 2008 (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 120 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

**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	Unit	Unit Price	Total Amount
1.	Phase I Base Proposal:			
0001	Design Program:			
001AA	Site Survey / Master Planning A & E Design for Phase I	LS	xxx	\$ _____
001AB	A & E Design for Phase II	LS	xxx	\$ _____
0002	Demining:			
002AA	Comprehensive Site Demining (Includes Phase I and Phase II sites)	LS	xxx	\$ _____
0003	Force Protection Perimeter Walls, Guard Towers & ECP's:			
003AA	Force Protection Perimeter Walls, Guard Towers, Guard Shacks & Houses, ECP's	LS	xxx	\$ _____
003AB	Main ECP Reception Center (159)	LS	xxx	\$ _____
003AC	Concrete Bunkers for 1,250 people	LS	xxx	\$ _____
003AD	Eastern Hillside Guard Towers (005)	LS	xxx	\$ _____
0004	Phase I Site Development / Improvements:			
004AA	Mobilization, Contractor and AED Field Office Comprehensive Site Grading and Drainage	LS	xxx	\$ _____
004AB	Site and Transportation Security Measures	LS	xxx	\$ _____
004AC	Water Wells, Water Storage, and Distribution System (142 & 143A, B & C)	LS	xxx	\$ _____
004AD	Wastewater Treatment Plant and Sewage System (144)	LS	xxx	\$ _____
004AE	Prime Power Plant/Distribution System (137)	LS	xxx	\$ _____

004AF	Grading, Site Work, Phase I Roads (asphalt), Phase II Roads (gravel) and parking (gravel)	LS	xxx	\$ _____
004AG	Helipad (146)	LS	xxx	\$ _____
004AH	Multipurpose Track Field & Bleachers (147)	LS	xxx	\$ _____
004AJ*	Solid Waste Collection Points	LS	xxx	\$ _____
004AK	Training Ranges Construction and Safety Fan Development (300 – 303)	LS	xxx	\$ _____
004AL	Monument Sign	LS	xxx	\$ _____
Total Phase I Site Developments / Improvements:				\$ _____

0005 Phase I Buildings & Building Complexes:

005AA	Walled INL/IC Facilities & Compound (121 – 125)	LS	xxx	\$ _____
005AB	Medical Clinic (104)	LS	xxx	\$ _____
005AC	Central Issue Warehouse (128)	LS	xxx	\$ _____
005AD	Central Receiving Warehouse (129)	LS	xxx	\$ _____
005AE	DPW Building (132)	LS	xxx	\$ _____
005AF	Vehicle Maintenance Facility (133)	LS	xxx	\$ _____
005AG	Ammo Supply Point (140)	LS	xxx	\$ _____
005AH	Arms Storage Building (141)	LS	xxx	\$ _____
005AJ*	Training Classroom Buildings (109 - 112)	LS	xxx	\$ _____
005AK	Ordinary Student Barracks (114 – 120)	LS	xxx	\$ _____
005AL	High Rank w/separate Female Student Barracks (107)	LS	xxx	\$ _____
005AM	HQ Staff and Instructors Barracks (105 & 106)	LS	xxx	\$ _____
005AN	Dining Facility (126)	LS	xxx	\$ _____
005AO	Refueling Point & Fuel Storage (135 & 136)	LS	xxx	\$ _____
005AP	Fire Station (134)	LS	xxx	\$ _____
005AQ	Communications Building (103)	LS	xxx	\$ _____

005AR	HQ and Administration Building (100 & 101)	LS	xxx	\$ _____
005AS	MWR Building (131)	LS	xxx	\$ _____
005AT	Fenced New Recruit Compound (227 – 232)	LS	xxx	\$ _____
005AU	Spare Parts	LS	xxx	\$ _____
005AV	Facilities O&M Training	LS	xxx	\$ _____
Sub-Total Phase I Buildings & Building Complexes:				\$ _____
0006	PHASE I DBA INSURANCE	LS	xxx	\$ _____
TOTAL Phase I BID ITEMS				\$ _____
0007	Phase II Base Proposal			
007AA	Ordinary Student Barracks (211 – 214) (216 – 219)	LS	xxx	\$ _____
007AB	High Rank / Separated Female Student (209)	LS	xxx	\$ _____
007AC	HQ Staff / Instructors Barracks (207 & 208)	LS	xxx	\$ _____
007AD	HQ and Administration Building (200)	LS	xxx	\$ _____
007AE	Classrooms (204 – 206) (210)	LS	xxx	\$ _____
007AF	Classroom Toilet Facilities (204A & 206A)	LS	xxx	\$ _____
007AG	DFAC (215)	LS	xxx	\$ _____
007AH	MWR Gymnasium (221)	LS	xxx	\$ _____
007AJ*	Auditorium (222)	LS	xxx	\$ _____
007AK	Parade Ground & Green Space (233 & 233A)	LS	xxx	\$ _____
007AL	Volleyball Court (226)	LS	xxx	\$ _____
007AM	Gray Water System (236)	LS	xxx	\$ _____
007AN	Concrete Bunkers for 2,500 persons	LS	xxx	\$ _____
007AO	Phase II Asphalt Paving & Concrete Sidewalks	LS	xxx	\$ _____
007AP	Driving Course Construction (304)	LS	xxx	\$ _____
007AQ	Spare Parts	LS	xxx	\$ _____

007AR	Facilities O&M Training	LS	xxx	\$ _____
Sub-Total Phase II Buildings & Building Complexes:				\$ _____
0008	DBA INSURANCE for PHASE II BID ITEMS	LS	xxx	\$ _____
TOTAL PHASE II BID ITEMS:				\$ _____
TOTAL PROPOSAL: (total of all above costs – Phase I and Phase II)				\$ _____
2. Option Item				
0009 Credit Option				
009AA	Heat New Recruit Compound (227 – 232) & Power Plant (137) with Diesel instead of Cogen.	LS	xxx	\$ _____
TOTAL PROPOSAL & OPTION: (total of all Base Bid and Option Item)				\$ _____

*Standard Procurement System (SPS) does not recognize the letter "I". Therefore, Sub CLINS have been numbered from "AH" to "AJ"

PROPOSAL SCHEDULE NOTES

1. Offeror shall submit prices on all items. Scope of work on each items are described in Section 01010.
2. Only one contract for the entire schedule will be awarded under this solicitation. This project will be awarded as a lump sum contract. This Proposal Schedule is an accounting tool for allocating funds to applicable budget.
3. Costs associated with this project shall include design and construction costs, site development, and utility installation.
4. Design Costs Definition: Design costs shall consist of design analysis, drawings, and specifications of all facilities.
5. Cost Limitation: The established design cost limitation for all Design Costs, as defined in paragraph 4, shall not exceed 6 percent of the total construction cost.
6. Offeror shall provide a clear description of the Security Measures provided in association with the price of the Bid Item. The Security Measures shall not be excessive and it shall be calculated assuming the site somewhere in Kabul with commercial or residential surrounding areas.
7. Period of Performance is Completion of Phase I by 30 December 2009 and Completion of Phase II by 31 March 2011. Liquidated damages are assessed at \$6,310.00 per day for every day of delay past the period of performance.

-END OF SECTION-

SPECIAL NOTES TO CONTRACTORS:

Request for information (RFI) must be directed to Sheila W. Enclade. Please email all question to: Sheila.w.enclade@usace.army.mil

PRE-PROPOSAL CONFERENCE: There will be a pre-proposal meeting on Sunday, 5 October 2008, at 2:00 – 4:00 P.M. Kabul time, at U. S. Army Corps of Engineers, House #1, Street #1, West Wazir Akbar Khan (behind Amani High School), Kabul, Afghanistan.

Appendices to the solicitation document can be obtained from the following website, in their entirety:

[ftp://155.85.54.201/usace.aed/National Police Training Center](ftp://155.85.54.201/usace.aed/National%20Police%20Training%20Center)

Local National Afghan Firms **ONLY** will receive the Appendices on a CD instead of having to download the information from the ftp site. CDs will be available from Sheila W. Enclade at the address mentioned above.

Proposal submission: Original and three copies of technical proposals along with **ONE Price Proposal ONLY** should be delivered to: U. S. Army Corps of Engineers, House #1 Street #1, West Wazir Akbar Khan (behind Amani High School), Kabul, Afghanistan, Attn: Sheila W. Enclade. **Hard Proposals ONLY** are due 29 October 2008 at 5:00 P.M., Kabul Time. **NO** electronic proposals will be accepted.

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
52.215-20	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data	OCT 1997
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)

52.216-1 TYPE OF CONTRACT (APR 1984)

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

(End of provision)

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:

Goals for minority participation for each trade	Goals for female participation for each trade
Please contact the Office of Federal Contract Compliance Programs as appropriate.	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 Mayden Wardak Province, Afghanistan.

(End of provision)

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 :

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

(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)

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 NOT been scheduled.

(c) Contractors may visit the work area at their own risk.

(End of provision)

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/>

<http://www.hq.usace.army.mil/cepr/asp/library/efar.asp>

<http://acquisition.gov/comp/far/index.html>

<http://www.arnet.gov/far>

(End of provision)

SECTION 00110**PROPOSAL PREPARATION****1.0 GENERAL**

Instructions for the preparation and organization of each proposal are included herein. The proposal submittal shall include **(a) one original and four copies of Volume I and (b) one original and two copies of Volume II.** The Volume II proposal and all copies thereof shall be sealed in a single package separate from the Volume I proposal and all copies thereof, 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 70 single-sided or 35 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.

1.1 VOL I - MANAGEMENT-TECHNICAL PROPOSAL PREPARATION

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

1.1.1 Factor 1 - Project Management and Security Plan

The Project Management and Security Plan should address the following matters (Template 1):

1.1.1.1. An Organizational Chart: (include key personnel Names and their titles:

- a. Show the key design personnel
- b. Show the key construction personnel
- c. Show other firms involved such as partnerships and sub-contractors if applicable
- d. Show the relationship between the quality control and health & safety personnel, project level management and corporate management

1.1.1.2. An explanation of the quality control process for design.

1.1.1.3. An explanation of the quality control management throughout the construction process including;

- a. Testing
- b. Inspection
- c. Safety

1.1.1.4. An explanation of how the offeror plans to manage interactions with the Corps of Engineers and the roles that different team members will play when dealing with:

- a. Resolving problems with modifications to the contract (design and/or construction)
- b. Resolving potential design and/or construction delays
- c. Reviewing and approving submittals
- d. Attending progress meetings
- e. Facilitating contract completion and closeouts
- f. Explain process to control cost over runs while maintaining the project budget during design and construction.

1.1.1.5. Provide innovative but realistic and specific solutions to the following potential project management challenges:

- a. Identifying a qualified design firm and ensuring timely delivery of Design Plans and construction documents.
- b. Providing Site security, local community engagement, and access arrangement.
- c. Procuring the required materials and developing a transportation and security strategy that will ensure that the materials get to the construction site
- d. Organizing and using the engineering, technical, management personnel and local labor force in a manner that ensures successful completion of the project.
- e. Providing a construction and engineering methodology that will ensure success of the project.
- f. Provide a construction schedule that is efficient and effective.

The offeror shall 1) identify the major challenges and key issues on each above area, 2) provide alternatives and solutions to the challenges and issues, 3) describe the action plan and measures to ensure successful execution.

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 less than three and no more that ten similar and relevant design-build projects underway or completed in the last **five** years within Afghanistan that best demonstrates your experience, with at least one project over \$20 million. The list of projects shall include the following information (Template 2):

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

1.1.3 Factor 3 – Past Evaluations/Performance.

For the projects listed under Paragraph 1.1.2, Factor 2 - Experience, provide the following information (Template 3):

- a. Project Manager's (for the customer) name, **telephone**, email.
- b. List the problems encountered and the corrective actions taken.
- c. List of change orders and circumstances associated with them.
- d. Construction time duration beyond the contract time and why.
- e. Construction cost in dollars beyond the contract amount and why.
- f. Safety record and accident report.
- g. 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 with the offeror. 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 will be assigned.

1.1.4 Factor 4 – Personnel and 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.

1.1.4.2. The following key personnel shall have a minimum of **fifteen** years of documented professional experience.

- a. Project Manager for design and for construction
- b. Project Architect with accreditation or licensing
- c. Senior Structural Engineer
- d. Senior Civil Engineer
- e. Senior Mechanical Engineer
- f. Senior Electrical Engineer
- g. Construction Superintendent

h. Project Security Manager

1.1.4.3. The following personnel shall have a minimum of **seven** years of professional experience.

- a. Quality Control Manager
- b. Construction Foreman
- c. Safety Officer

1.1.4.4. Information to be provided for key personnel should be limited to no more than **one page** per person and shall include:

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

1.1.4.5 Resources

Provide resources to be utilized for this project such as labors, offices, shops, warehouses, machinery, construction tools, vehicles, loaders, key subs, financial arrangement and capacity. Evidence and description shall be focus on specific resource usages on this contract in addition to other projects in construction stage the offeror may have.

1.2 NOTES

1.2.1 Joint Ventures and Teaming Arrangements

Any contractors submitted in the proposal as part of a joint venture must submit a **legally binding joint venture agreement**. The Government will not evaluate the capability of any contractors that are not included in the joint venture agreement. Joint ventures must include a copy of the legal joint venture signed by an authorized officer from each of the firms comprising the joint venture with the chief executive of each entity identified and a translation in English, if the original agreement is in a language other than English. Incomplete evidence of a joint venture result in the proposal not being considered.

If submitting a proposal as a Joint Venture, the experience, past performance, management plan and equipment submittal of each of the Joint Venture Partners can be submitted for the Joint Venture Entity. The experience for each Joint Venture Partner will be considered the experience of the Joint Venture entity.

The proposal may receive a higher rating if the proposal contains evidence of the Joint Venture Entity working successfully together previously on relevant projects.

1.2.2 Credit For Others

If an Offeror wishes to be credited with a subcontractor or supplier, i.e. a firm that is not the prime contractor or part of the joint venture, a letter of commitment signed by the subcontractor must be submitted. The commitment letter must be submitted even if the firm is in some way related to a joint venture partner (for example, the subcontractor is a subsidiary of a joint venture partner, or a subsidiary of a firm to which the joint venture partner is also a subsidiary). In regard to the Experience and Past Performance factors, if an Offeror submits projects demonstrating experience in one of the factors or sub-factors, and that project was completed by a subcontractor, a subsidiary, or a supplier, as opposed to the prime or one of the joint venture partners, the Offeror **MUST** submit a signed letter of commitment from the contractor who performed and completed the work. If a letter of commitment is not submitted, the experience will not be considered.

2.0 VOLUME II - PRICE PROPOSAL PREPARATION

2.1 PROPOSAL SCHEDULE

Offeror's 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 Price Proposal and shall schedule any contingency for weather delays for severe weather in accordance with weather requirements. All prices shall be firm.

3.0 CLARIFICATIONS AND FINAL PROPOSAL REVISION

3.1 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.

3.2 Written Clarification Requirement

In the event that clarifications are required prior to submitting the proposal, contact the individuals listed on the RFP letter; such contact shall be in writing. All RFP holders shall be advised of significant clarifications affecting the scope of the project.

3.3 Clarifications Submitted with Proposals

If ambiguities remain in the RFP 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. 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.

3.4 Final Proposal Revision(s)

3.4.1 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.

3.4.2 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, offeror's in the competitive range shall be given the opportunity to submit their Final Proposal Revision (otherwise known as 'Best and Final offer').

- End of Section –

TEMPLATE FORMAT GUIDANCE ONLYTemplate 1: PROJECT MANAGEMENT & SECURITY PLAN

1. Provide an Organizational Chart: (include key personnel Names and their titles
 - a. Show the key design personnel
 - b. Show the key construction personnel
 - c. Show other firms involved such as partnerships and sub-contractors if applicable
 - d. Show the relationship between the quality control and health & safety personnel, project level management and corporate management
2. Explain the quality control process for design:
3. Explain quality control management throughout the construction process including;
 - a. Testing
 - b. Inspection
 - c. Safety
4. Explain the interactions with the Corps of Engineers and the roles that different team members will play when dealing with;
 - a. Resolving problems with modifications to the contract (design and/or construction)
 - b. Resolving potential design and/or construction delays
 - c. Reviewing and approving submittals
 - d. Attending progress meetings
 - e. Facilitating contract completion and closeouts
 - f. Explain process to control cost over runs while maintaining the project budget during design and construction.

Template 2 EXPERIENCE

- a. Project Name & Location:
- b. Contract Number if applicable:
- c. Project type: Construction: (Y/N) Design: (Y/N) Design/Build: (Y/N)
- d. Project owner's name:
Address:
Telephone:
eMail:
- e. Prime Contractor: (Y/N) Sub-Contractor: (Y/N)
- f. Project completion Date:

g. Construction Cost:

h. Brief explanation that illustrates your design/build capabilities and relevant experiences:

Template 3 PAST EVALUATIONS/ PERFORMANCE

(The following projects are to be the same projects submitted under Factor 2 Experience.)

1. Project Name & Location:

2. Customer Point of Contact: (Note: the Government may contact this customer to verify the information provided on this form)

Name:

Address:

Phone number:

Email Address:

3. Problems encountered and corrective actions taken:

4. List Change Orders and their circumstances:

5. Project scheduled Completion date Actual Completion date:

IF the above dates are different, explain reason for the change:

6. Initial Project Budget (US Dollars)

Final Actual Project cost (US Dollars)

IF the above dates are different, explain reason for the change:

7. Safety record and accident reports:

8. References: Submit the following, Customer Satisfaction letters, Letters of Appreciation, Performance Evaluations, Certification of Achievements, Letters of Recommendations. (Note: A neutral rating will be assigned IF no past performance is submitted) ATTACHMENT-B4 (CONTRACTOR PERSONNEL'S EXPERIENCE & QUALIFICATION)

Template 4: PERSONNEL & EQUIPMENT RESOURCES PLAN

SUB-FACTOR 1: PERSONNEL for the following:

- a. Project Manager for design and for construction
- b. Project Architect
- c. Senior Structural Engineer
- d. Senior Civil Engineer
- e. Senior Mechanical Engineer
- f. Senior Electrical Engineer
- g. Construction Superintendent or Manager
- h. Project Security Manager

- i. Construction Foreman
- j. Quality Control Manager
- k. Safety Officer

All key personnel shall have a minimum of **fifteen** years of professional experience. The following information is required for each of the key personnel below: Information to be provided for key personnel should be limited to no more than **one page** per person.

- a. Name:
- b. Project Title:
- c. Project Responsibilities:
- d. Years of Experience: with this Company: with other firms:
- e. Education: Degree(s) Year: Specialization:
- f. Active Registration: First year Registered:
- g. Other relevant experiences, accreditation, & qualifications:
- h. How many or the percentage of the Afghan ktrs & laborers who will be working on this project:

SECTION 00120**PROPOSAL EVALUATION AND CONTRACT AWARD****A. BASIS FOR AWARD AND PREREQUISITE**

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 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) factors are listed in order of importance, with the Contractors Project Management and Security Plan the most important factor. There are no sub-factors under each factor. The four 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) taken together are significantly more important compared to the pricing factor (Volume II) in the evaluation and selection process.

B.3 Templates.

1.0 VOLUME 1 – MANAGEMENT-TECHNICAL PROPOSAL EVALUATION CRITERIA**1.1 CONTENT****1.1.1 Factor 1 – Project Management and Security Plan**

The Government will evaluate and rate the Project Management and Security Plan for responsiveness and completeness in accordance with Template 1 in Section 00110. Offeror's proposals that deviate from RFP specifications or requirements may be considered weak or deficient.

The Project Management and Security Plan will be evaluated using the following standards or criteria:

- The level of understanding of conditions, challenges, issues, and time constraints pertinent to performance of this contract.
- The quality of the solutions provided in response to these challenges.
- The feasibility, viability, clarity, and commitment in executing the solutions.

The offeror who provides the most specific and compelling solutions that are most likely to ensure successful contract completion will receive the highest ratings.

The Offeror's commitments provided in the Project Management and Security Plan will be used as agreements between the government and the awardee. The government intends to enforce the agreement based on the awardee's Project Management and Security Plan and evaluate the contractor's performance accordingly.

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, applicable standards such as EMS 385-1-1) will receive a higher rating than those with dissimilar or non-relevant projects. Offerors must provide a list of no less than three and no more than ten similar and relevant design-build projects underway or completed in the last **five** years. At list one of these projects must include a successfully completed design and construction contract exceeding \$20 million within Afghanistan. The list of projects shall include the information as required by Template 2.

1.1.3 Factor 3 – Past Evaluations/Performance

For the projects listed under Paragraph 1.1.2, Factor 2 - Experience, Offerors must provide the information required by Template 3, Section 0110. The Offeror who submits the required Past Performance evaluations and receives uniformly favorable responses from the customer will receive the highest ratings from the SSEB.

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 with the offeror. 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 will be assigned.

1.1.4 Factor 4 – Personnel and Resources

1.1.4.1 Personnel

The Government will evaluate the qualifications and experience of the contractor's and the designer's key personnel for this project in accordance with the requirements outlined in Section 00110. Contractor personnel with experience working on similar projects (type of construction, dollar value, design-build method, complexity) will receive a higher rating than those with dissimilar or non-relevant project experience.

Contractor's use of other workers will be evaluated, with greater credit being given for Afghan workers unless logistics of using foreign workers is fully detailed.

Proposals will also be evaluated by how completely the offeror addresses how they 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 complete and detailed submissions will receive the highest ratings.

1.1.4.2 Resources

The Government will evaluate the adequacy of the Offeror's resources to successfully complete the project in accordance with the requirements outlined in Section 00110..

Proposals should also address how the offeror will have adequate resources 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 complete and detailed submissions will receive the highest ratings.

1.2 FORMAT

Proposal will be evaluated based on adherence to the requirements of Section 00110, Proposal Preparation.

1.3 NOTES

1.3.1 Joint Ventures and Teaming Arrangements

Any contractors submitted in the proposal as part of a joint venture must submit a legally binding joint venture agreement. The Government will not evaluate the capability of any contractors that are not included in the joint venture agreement. Joint ventures must include a copy of the legal joint venture signed by an authorized officer from each of the firms comprising the joint venture with the chief executive of each entity identified and a translation in English, if the original agreement is in a language other than English. Incomplete evidence of a joint venture will result in the proposal not being considered. If submitting a proposal as a Joint Venture, the experience, past performance, management plan and equipment submittal of each of the Joint Venture Partners can be submitted for the Joint Venture Entity. The experience for each Joint Venture Partner will be considered the experience of the Joint Venture entity. The proposal may receive a higher rating if the proposal contains evidence of the Joint Venture Entity working successfully together previously on relevant projects.

1.3.2 Credit For Others

If an Offeror wishes to be credited with a subcontractor or supplier, i.e. a firm that is not the prime contractor or part of the joint venture, a letter of commitment signed by the subcontractor must be submitted. The commitment letter must be submitted even if the firm is in some way related to a joint venture partner (for example, the subcontractor is a subsidiary of a joint venture partner, or a subsidiary of a firm to which the joint venture partner is also a subsidiary). In regard to the Experience and Past Performance factors, if an Offeror submits projects demonstrating experience in one of the factors or sub-factors, and that project was completed by a subcontractor, a subsidiary, or a supplier, as opposed to the prime or one of the joint venture partners, the Offeror **MUST** submit a signed letter of commitment from the contractor who performed and completed the work. If a letter of commitment is not submitted, the experience will not be considered.

2.0 VOLUME II - PRICE PROPOSAL PREPARATION

The Government will evaluate whether the Volume II price proposals are complete and reasonable. The 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 as required by sections 00110 and 00120. 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 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 based upon irregularities in the proposal or 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 --

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SECTION 00150**THE DESIGN/BUILD PROCESS****1.0 GENERAL****1.1 DESIGN/BUILD DB PROCESS**

The facility shall be designed and built by a single DB contractor. The DB contractor may be a single firm or a team of firms that includes registered Architects and Engineers either employed by or subcontracted to the DB contractor. Licensing jurisdiction of Architects and Engineers of record shall be shall be verifiable. The DB contractor shall be the Architect/Engineer-of-Record, whether the DB contractor utilizes services of licensed architects and engineers employed by its firm or subcontracts with independent architectural and/or engineering firm(s). The DB contractor shall be solely liable for design errors and/or omissions and should be insured as the A-E firm against design errors and omissions.

Section 00555, DESIGN CONCEPT DOCUMENTS identifies project documents furnished herewith to be used as the basis for the project design and construction documents. The successful Offeror shall be required to complete the design and construction documentation, and construct the project in compliance with these completed requirements.

2.0 OUTLINE DESCRIPTION OF THE DB PHASE**2.1 PROPOSAL PHASE**

The Proposal Phase includes the period from the time from the issuance of the Request for Proposals (RFP) through the selection process and the final award of the DB contract.

The proposals to be submitted include a Management/Technical Proposal and a Cost/Price Proposal. The contents and organization of the proposal is described in SECTION 00110 - PROPOSAL PREPARATION. The Government will evaluate and award the DB contract to a single Offeror based upon the criteria which are outlined in SECTION 00120 - PROPOSAL EVALUATION AND CONTRACT AWARD.

2.2 DESIGN PHASE

The successful DB contractor shall develop and submit for formal review three submittals and the final design. The DB contractor is encouraged to develop and submit multiple cost saving proposals for innovative design and construction alternatives.

2.2.1 The Design Phase will consist of four parts as follows:

Pre-design meeting will be conducted to distribute master plan and schematic floor plans to the DB contractor, finalize and clarify technical information, and clarify other necessary information.

Part 1 will be the basic services required to develop the first submittal which represents: survey, site master plan, force protection perimeter, and mobilization plan. The review of the survey, master plan, force protection plan, mobilization plan will be accomplished in a charrette meeting. If there is no major change to the plans submitted by the contractor, the government PDT members shall decide and advise the contracting officer to issue a Clearance for Construction letter to commence with the site clearing and force protection perimeter. Otherwise, the PDT shall decide another charrette meeting with quickest turn around time possible to avoid the delay of the construction.

Part 2 will be the basic services to complete 100% complete drawings and specifications for site preparation work, utility construction, paving, foundation, and structural diaphragm of all work and

approximately 35% complete drawings and specifications of all other required construction documents.

The review of part 2 design will be accomplished in a 5 half-day charrette meeting. If there is no major change to the design submitted by the contractor, the government PDT members shall decide and advise the contracting officer to issue a Clearance for Construction letter to commence with the site clearing and force protection perimeter. Otherwise, the PDT shall decide another charrette meeting with quickest turn around time possible to avoid the delay of the construction.

Part 3 shall include all design services required to complete the second design submittal: Approximately 65% complete drawings and specifications of all other required construction documents.

Part 4 shall include all design services required to complete the second design submittal: Approximately 99% complete drawings and specifications of all other required construction documents.

3.0 BUILD PHASE

The Build Phase will be initiated with the clearance for construction letter for site preparation, security perimeter, and mobilization.

The rest of construction is authorized after the 35% Design Charrette meeting.

4.0 PROJECT SCHEDULE

The following is a schedule recommended by the government based upon the overall time constraint of the contract. The contractor shall be required to submit a complete schedule for design and construction that meets or exceeds the overall time goals of the Government for this project.

Notice to Proceed	following Award of Contract (upon written notification)
Pre – work and design Meeting	within 7 days from NTP
Site Survey/Master Plan/Force Protection Mobilization plan Charrette meeting	within 20 days from Notice to Proceed
35% Design Charrette Meeting	within 45 days following Notice to Proceed
65% Design Charrette Meeting	within 75 days following Notice to Proceed
Completing foundation works	within 100 days following NTP
99% Design Submittal	within 100 days following NTP
Total Design and Construction Period	360 Days (performance period includes design and construction phases)

All days are in calendar days.

2.0 PRODUCTS**2.1 DRAWINGS AND OTHER DATA TO BECOME PROPERTY OF THE GOVERNMENT**

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

3.0 EXECUTION (NOT APPLICABLE)

-- End of Section --

2. General written design requirements within RFP narrative.
3. General guidance from referenced publications herein.

1.5 MANDATORY CRITERIA

Portions of the design criteria documents provide mandatory criteria. Mandatory criteria consists of drawings, schematics, specifications, and other requirements which shall not be altered or modified for proposal submittal or subsequent final design except for minor adjustments for coordination or except for cost reduction proposals as specified in Section 00150 - THE DESIGN BUILD PROCESS. Non-mandatory criteria shall be considered minimum requirements and may be enhanced, improved, or substituted to better suit design requirements or to improve evaluation consideration. Mandatory requirements are as listed below. All other design criteria shall be considered non-mandatory.

Work Plan

Boundary survey plan

Topographic survey plan- Not Required

Any mandatory criteria referenced within Project Program.

Any other criteria listed herein which is listed, shown or implied as mandatory.

1.6 ADDITIONAL DOCUMENTS/CRITERIA FURNISHED BY THE GOVERNMENT

The following documents will be furnished to the Design/Build Contractor when requested by the Offeror or Contractor:

Design Criteria published by the Government such as Technical Manuals (TM), Engineer Manuals (EM), Engineer Technical Letters (ETL) and other documents related to the design referenced herein which are not available on the Internet, including the CCB website.

Commercial design criteria and specifications will not be furnished by the Government.

Conversion of electronic media to other formats shall be the responsibility of the Design Build Contractor.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION (Not Applicable)

-- End of Section --

Section 00600 - Representations & Certifications

CLAUSES INCORPORATED BY REFERENCE

52.203-2	Certificate Of Independent Price Determination	APR 1985
52.203-11	Certification And Disclosure Regarding Payments To Influence Certain Federal Transactions	SEP 2007
52.204-3	Taxpayer Identification	OCT 1998
52.209-5	Certification Regarding Debarment, Suspension, Proposed Debarment, And Other Responsibility Matters	DEC 2001
52.222-22	Previous Contracts And Compliance Reports	FEB 1999
52.222-38	Compliance With Veterans' Employment Reporting Requirements	DEC 2001
52.230-1	Cost Accounting Standards Notices And Certification	JUN 2000
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
252.247-7022	Representation Of Extent Of Transportation Of Supplies By Sea	AUG 1992

CLAUSES INCORPORATED BY FULL TEXT

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 \$31.0 M

(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)

AI 26.6

AI 26.6 Projected Afghan and Third Country National (TCN) Employment (5 Nov 07)

Projected Afghan Employment

Collecting & Reporting Employment Statistics

The purpose of this clause is to collect data on the projected number of Afghans employed for the term of the contract. Offerors are required to identify in the space provided below the total projected number that will be directly employed in the performance of this contract.

Employment is the total number of Afghan persons expected to be on the payroll (contractors, subcontractors, & sub-subcontractors) employed full or part time who received pay for my part of the term of the contract. Temporary and intermittent employees are included, as are any workers who are on paid sick leave, on paid holiday, R&R leave or who work during only part of the pay period." Enter into spaces provided in item #1. Next enter in the spaces provided in item #2 what is the average number employed throughout the term of the contract. Item #3 An "Afghan-Based Company" is a company (including a subsidiary company) whose principal place of business is located within Afghanistan.

1. Total Afghan (Afghan Residents) Employed:

Afghan: Men _____

Afghan: Females _____

Total: _____

2. Average Afghans (Afghan Residents) Employed:

Afghan: Men _____

Afghan: Females _____

Total: _____

1. Is your company an "Afghan Based" company? Yes ___ No ___. If no, what country is your company registered/incorporated: _____

2. Afghan Company Certification. The offeror ___ is or ___ is not an Iraqi owned firm. If the firm is Afghan owned, the Ministry of Trade registration/license number is:

_____.

(End)

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
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
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 2007
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
52.215-13	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
52.215-19	Notification of Ownership Changes	OCT 1997
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	MAR 2007
52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999
52.222-29	Notification Of Visa Denial	JUN 2003
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
52.222-50	Combating Trafficking in Persons	AUG 2007
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	DEC 2007
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
52.232-27	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 1997) - 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	JUN 2007
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
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	SEP 2007
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
252.229-7000	Invoices Exclusive of Taxes or Duties	JUN 1997
252.231-7000	Supplemental Cost Principles	DEC 1991
252.232-7003	Electronic Submission of Payment Requests and Receiving Reports	MAR 2008
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

52.232-34 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 to receive that information 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/>

<http://www.hq.usace.army.mil/depr/asp/library/efar.asp>

<http://acquisition.gov/comp/far/index.html>

<http://www.arnet.gov/far>

(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, AF

(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 September 26, 2002, December 12, 2002 and May 28, 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:

NOT APPLICABLE

(End of clause)

Section 00800 - Special Contract Requirements

CLAUSES INCORPORATED BY REFERENCE

52.211-13	Time Extensions	SEP 2000
52.236-4	Physical Data	APR 1984
52.246-12	Inspection of Construction	AUG 1996
252.232-7003	Electronic Submission of Payment Requests and Receiving Reports	MAR 2008

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

The Contractor shall be required to (a) commence work under this contract within 10 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 31 March 2011. See paragraph 7.0 of Section 01010 (Scope of Work). 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 \$6,310.00 for each calendar day of delay until the work is completed or accepted for each phase of the work. Phase I is to be completed by 31 December 2009 and Phase II is to be completed by 31 December 2010.

(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: no items have been identified.

(End of clause)

AI 22.1

AI 22.1 Prohibition Against Human Trafficking, Inhumane Living Conditions, and Withholding of Employee Passports (5 Nov 07):

All contractors (“contractors” herein below includes subcontractors at all tiers) are reminded of the prohibition contained in Title 18, United States Code, Section 1592, against knowingly destroying, concealing, removing, confiscating, or possessing any actual or purported passport or other immigration document, or any other actual or purported government identification document, of another person, to prevent or restrict or to attempt to prevent or restrict, without lawful authority, the person’s liberty to move or travel, in order to maintain the labor or services of that person, when the person is or has been a victim of a severe form of trafficking in persons.

Contractors are also required to comply with the following provisions:

- 1) Contractors shall only hold employee passports and other identification documents discussed above for the shortest period of time reasonable for administrative processing purposes.
- 2) Contractors shall provide all employees with a signed copy of their employment contract, in English as well as the employee’s native language that defines the terms of their employment/compensation.
- 3) Contractors shall not utilize unlicensed recruiting firms, or firms that charge illegal recruiting fees.
- 4) Contractors shall be required to provide adequate living conditions (sanitation, health, safety, living space) for their employees. Fifty square feet (50 sf) is the minimum acceptable square footage of personal living space per employee. Upon contractor’s written request, contracting officers may grant a waiver in writing in cases where the existing square footage is within 20% of the minimum, and the overall conditions are determined by the contracting officer to be acceptable. A copy of the waiver approval shall be maintained at the respective life support area.
- 5) Contractors shall incorporate checks of life support areas to ensure compliance with the requirements of this Trafficking in Persons Prohibition into their Quality Control program, which will be reviewed within the Government’s Quality Assurance process.
- 6) Contractors shall comply with international laws regarding transit/exit/entry procedures, and the requirements for work visas. Contractors shall follow all Host Country entry and exit requirements.

Contractors have an affirmative duty to advise the Contracting Officer if they learn of their employees violating the human trafficking and inhumane living conditions provisions contained herein. Contractors are advised that contracting officers and/or their representatives will conduct random checks to ensure contractors and subcontractors at all tiers are adhering to the law on human trafficking, humane living conditions and withholding of passports.

The contractor agrees to incorporate the substance of this clause, including this paragraph, in all subcontracts under his contract.

(End)

AI 25.1**AI 25.1 ARMED PERSONNEL – INCIDENT REPORTS**

- a. General Information DFARS 225.7402-4 requires the clause at 252.225-7040, Contractor Personnel Authorized to Accompany U.S. Armed Forces Deployed Outside the United States, in solicitations and contracts when contract performance requires that contractor personnel be available to deploy with or otherwise provide support in the theater of operations to U.S. military forces deployed outside the United States in (1) contingency operations; (2) humanitarian or peacekeeping operations; or (3) other military operations or exercises designated by the combatant commander.
- b. Government Support DFARS 252.225-7040 and DOD Instruction 3020.41, Contractor Personnel Authorized to Accompany the US Armed Forces requires the contracting officer to address, among other items, Government support and security in the “terms of the contract.” The Statement of Work (SOW) may be used to address these requirements. The SOW’s language should be tailored to meet the needs of the specific acquisition. The requiring activity is responsible to coordinate requests for life support with FOB commanders (w/command and control of the Mayor’s Cell) to determine if the requested support is available. Examples of Life Support that may be required/authorized include, but are not limited to: (1) deployment in-processing centers; (2) training; (3) transportation to operation area; (4) transportation within operation area; (5) physical security; (6) force protection; (7) organizational clothing and individual protective equipment; (8) emergency medical care; (9) Dining facilities; (10) billeting; (11) postal service; (12) phone service; (13) emergency notification of next of kin; (14) laundry; (15) religious services; and (16) fuel. The Contracting Officer will issue contractor personnel a Letter of Authorization (LOA) which is required in order to process through the deployment processing center. See paragraph 6.2.7.4.2 of DOD-I 3020.41 for information on preparing the LOA.
- c. Weapons and Weapons Firing Contractor personnel may be authorized to carry weapons in accordance DFARS 252.225-7040(j) and DOD Instruction 3020.41 paragraphs 6.3.4 and 6.3.5. Deputy Commander USCENTCOM is the approval authority for all security service and personal protection arming requests in Iraq and Afghanistan. Authority to approve or deny requests has been delegated to the MNF-I Commander for Iraq and in Afghanistan to the Commanding General, Combined Joint Task Force – 82, (effective 16 July, 2007) with authority to re-delegate to the flag officer level.
- d. Armed Personnel – Incident Reports: All Contractors in the Afghanistan theater of operations shall comply with and shall ensure that their personnel supporting Coalition forces are familiar with and comply with all applicable orders, directives, and instructions issued by the International Security Assistance Force (ISAF) Commander or relating to force protection and safety.

Contractors shall provide an initial report of all weapons firing incidents to the National Operations Center (NOC) as soon as practical based upon the situation and shall submit a written report to a NOC within 48 hours. The initial report will include the name of the company, where the incident occurred, time when the incident occurred, a brief description of the events leading up to the incident, and a

point of contact for the company. A follow-up, comprehensive written report of events surrounding the firing of weapons will be provided to the NOC within 96 hours. Reports shall be submitted to the NOC, Operations Section (or as otherwise directed).

Contractors will also provide first aid and request MEDEVAC of injured persons, and remain available for Coalition response forces based upon the situation. In the event contractor personnel are detained by US or Coalition Forces, prolonged detention due to lack of proper identification can be alleviated by contractor personnel possessing on their person information that includes the Contractors name, the contract number, a POC in the Contractor management, and the phone number of the NOC.

AI 25.2

AI 25.2 Fitness for Duty and Limits on Medical/ Dental care in Afghanistan (5 Nov 07).

The contractor shall perform the requirements of this contract notwithstanding the fitness for duty of deployed employees, the provisions for care offered under this section, and redeployment of individuals determined to be unfit. The contractor bears the responsibility for ensuring all employees are aware of the conditions and medical treatment available at the performance. The contractor shall include this information and requirement in all subcontracts with performance in the theater of operations.

The contractor shall not deploy an individual with any of the following conditions unless approved by the appropriate CENTCOM Service Component (ie. ARCENT, CENTAF, etc.)

Surgeon: Conditions which prevent the wear of personal protective equipment, including protective mask, ballistic helmet, body armor, and chemical/biological protective garments; conditions which prohibit required theater immunizations or medications; conditions or current medical treatment or medications that contraindicate or preclude the use of chemical and biological protectives and antidotes; diabetes mellitus, Type I or II, on pharmacological therapy; symptomatic coronary artery disease, or with myocardial infarction within one year prior to deployment, or within six months of coronary artery bypass graft, coronary artery angioplasty, or stenting; morbid obesity (BMI \geq 40); dysrhythmias or arrhythmias, either symptomatic or requiring medical or electrophysiologic control; uncontrolled hypertension, current heart failure, or automatic implantable defibrillator; therapeutic anticoagulation; malignancy, newly diagnosed or under current treatment, or recently diagnosed/treated and requiring frequent subspecialist surveillance, examination, and/or laboratory testing; dental or oral conditions requiring or likely to require urgent dental care within six months' time, active orthodontic care, conditions requiring prosthodontic care, conditions with immediate restorative dentistry needs, conditions with a current requirement for oral-maxillofacial surgery; new onset (< 1 year) seizure disorder, or seizure within one year prior to deployment; history of heat stroke; Meniere's Disease or other vertiginous/motion sickness disorder, unless well controlled on medications available in theater; recurrent syncope, ataxias, new diagnosis (< 1year) of mood disorder, thought disorder, anxiety, somatoform, or dissociative disorder, or personality disorder with mood or thought manifestations; unrepaired hernia; tracheostomy or aphonia; renalithiasis, current; active tuberculosis; pregnancy; unclosed surgical defect, such as external fixeter placement;

requirement for medical devices using AC power; HIV antibody positivity; psychotic and bipolar disorders. (Reference: Mod 8 to USCENTCOM Individual Protection and Individual/Unit Deployment Policy, PPG-Tab A: Amplification of the Minimal Standards of Fitness for Deployment to the CENTCOM AOR).

In accordance with military directives (DoDI 3020.41, DoDI 6000.11, CFC FRAGO 09-1038, DoD PGI 225.74), resuscitative care, stabilization, hospitalization at Level III (emergency) military treatment facilities and assistance with patient movement in emergencies where loss of life, limb or eyesight could occur will be provided. Hospitalization will be limited to emergency stabilization and short-term medical treatment with an emphasis on return to duty or placement in the patient movement system. Subject to availability at the time of need, a medical treatment facility may provide reimbursable treatment for emergency medical or dental care such as broken bones, lacerations, broken teeth or lost fillings.

Routine and primary medical care is not authorized. Pharmaceutical services are not authorized for routine or known prescription drug needs of the individual. Routine dental care, examinations and cleanings are not authorized.

Notwithstanding any other provision of the contract, the contractor shall be liable for any and all medically-related services or transportation rendered. In accordance with OUSD(C) Memorandum dated January 4, 2007, the following reimbursement rates will be charged for services at all DoD deployed medical facilities. These rates are in effect until changed by DoD direction.

Inpatient daily rate: \$1,918.00. Date of discharge is not billed unless the patient is admitted to the hospital and discharged the same day.

Outpatient visit rate: \$184.00. This includes diagnostic imaging, laboratory/pathology, and pharmacy provided at the medical facility.

(End)

AI 25.3

AI 25.3 Compliance with Laws and Regulations (5 Nov 07).

The Contractor shall comply with, and shall ensure that its personnel and its subcontractors and subcontractor personnel at all tiers obey all existing and future U.S. and Host Nation laws, Federal or DoD regulations, and Central Command orders and directives applicable to personnel in Iraq and Afghanistan, including but not limited to USCENTCOM, Multi-National Force and Multi-National Corps fragmentary orders, instructions and directives.

Contractor employees performing in the USCENTCOM Area of Operations are under the jurisdiction of the Uniform Code of Military Justice (UCMJ). Under the UCMJ, U.S. commanders may discipline contractor

employees for criminal offenses. Contractors shall advise the Contracting Officer if they suspect an employee has committed an offense. Contractors shall not permit an employee suspected of a serious offense or violating the Rules for the Use of Force to depart Iraq or Afghanistan without approval from the senior U.S. commander in the country.

(End)

AI 25.4**AI 25.4 Quarterly Contractor Census Reporting (12 Nov 07).**

The prime contractor will report upon contract award and then quarterly thereafter, not later than January, 1 April, 1 July and 1 October, to JCCLJ2J5J7@pco-iraq.net for Iraq and to BGRMPARC-A@swa.army.mil for Afghanistan the following information for the prime contract and all subcontracts under this contract:

- (1) The total number of contract employees performing on the contract who receive any support benefits, including but not limited to billeting, food, use of exchanges, laundry by host nation, US Nationals, and Third Country Nationals;
- (2) The total number of prime contract employees performing on the contract by host nation, US Nationals, and Third Country National;
- (3) The total number of subcontractor employees performing on the contract by subcontractor, host nation, US Nationals, and Third Country National;
- (4) The company names and contact information of its subcontractors at all tiers; and
- (5) The name of all company POCs who are responsible for entering and updating employee data in the Synchronized Predeployment & Operational Tracker (SPOT) IAW DFAR 252.225-7040 DOD class deviation 2007-O0004 or DFAR DOD class deviation 2007-O0010.

(End)

SPOT IMPLEMENTATION

CLASS DEVIATION 2007-O0010, IMPLEMENTATION OF THE SYNCHRONIZED PREDEPLOYMENT AND OPERATIONAL TRACKER (SPOT) TO ACCOUNT FOR CONTRACTOR PERSONNEL PERFORMING IN THE UNITED STATES CENTRAL COMMAND AREA OF RESPONSIBILITY.

(i) "Performance in the United States Central Command Area of Responsibility (USCENTCOM AOR)" means performance of a service or construction, as required by the contract. For supply contracts, production of the supplies or associated overhead functions are not covered, but services associated with the acquisition of the supplies are covered (e.g., installation or maintenance).

(ii) If a contract requires performance in the USCENTCOM AOR, but some personnel performing the contract are authorized to accompany the U.S. Armed Forces, and other personnel performing the contract are not authorized to accompany the U.S. Armed Forces, include in the solicitation and contract both the clause at DFARS 252.225-7040 and the clause provided by Class Deviation 2007-O0010. Paragraph (b)(1) of each clause limits the applicability of the clause to the appropriate personnel. There are differences between the two clauses, primarily in Government support to contractor personnel (e.g., security protection and limited medical treatment) and potential applicability of the Uniform Code of Military Justice to contractor employees that are authorized to accompany the U.S. Armed Forces.

(iii) The requirements of paragraph (g) of the clause in Class Deviation 2007-O0010 are not applicable to subcontracts for which the period of performance of the subcontract is less than 30 days.

(iv) In exceptional circumstances, the head of the agency may authorize deviations from the requirements of Class Deviation 2007-O0010, in accordance with FAR Subpart 1.4 and DFARS Subpart 201.4.

(v) Registration in SPOT.

(A) Register for a SPOT account at <https://spot.altess.army.mil> .

(B) The customer support team must validate user need. This process may take 2 business days. Company supervisors will be contacted to determine the appropriate level of user access.

(vi) Access to SPOT. Upon approval, all users will access SPOT at <https://spot.altess.army.mil> .

(vii) SPOT Questions. Refer SPOT application assistance questions to the Customer Support Team at (717) 506-1368 or spot@technisource.com .

(End clause)

DBA

DEFENSE BASE ACT INSURANCE RATES – LIMITATION – FIXED-PRICE (APR 2008)

(a) The U. S. Army Corps of Engineers (USACE) has entered into a contract with **CNA/Continental Insurance Company** to provide all Defense Base Act (DBA) insurance to USACE contractors at a contracted rate. The rates for this insurance are as follows:

Services @ \$3.50 per \$100 of compensation;

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

Security @ \$10.30 per \$100 of compensation;

Aviation @ \$17.50 per \$100 of compensation.

(b) 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.

(1) Compensation of Covered Employees: _____

(2) Defense Base Act Insurance Costs: _____

(3) Total Cost: _____

(c) Bidders/Offerors shall include a statement as to whether or not local nationals or third country nationals will be employed on the resultant contract.

(d) CNA Insurance is utilizing Rutherford International as their managing Broker. The primary POC is the USACE DBA Program Administrator is Ramoan Jones, (703) 813-6571 ramoan.jones@rutherford.com. The alternate POC is Sara Payne, Senior Vice President, (703) 813-6503 sara.payne@rutherford.com.

**WORKERS COMPENSATION INSURANCE (DEFENSE BASE ACT) –
CONSTRUCTION (APR 2008)**

- (a) This clause supplements FAR Clause 52.228-3.
- (b) 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 **CNA/Continental Insurance Company** 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 **\$7.25 per \$100 of compensation for construction.**
- (c) The contractor agrees to insert a clause substantially the same as this 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.
- (d) Should the rates for DBA insurance coverage increase or decrease during the performance of this contract, USACE shall modify the contract accordingly. However, the revised rates will not be applicable until the Contractor's or Subcontractor's DBA Insurance policy is due to be renewed.
- (e) Premiums will be reimbursed only if coverage is purchased through the USACE DBA Pilot Program administered by CNA Insurance and their Managing Broker, Rutherford International.

SECTION 01010 SCOPE OF WORK

1.0 GENERAL

The project consists of the design, site-adaptation, and construction of a new campus facility for the Afghanistan National Police (ANP), the National Police Training Center (NPTC), to be located in the Maydan Wardak Province in Afghanistan. Refer to site coordinates and Right of Entry within Appendix A for site location. This project is defined as the design, material, labor, and equipment to construct buildings, ranges, roads, parking, utilities and other infrastructure features for 1,000 ANP students and 500 support staff. Due to the critical requirement to provide facilities adequate to train 1,000 Afghan National Police by 30 April 2010 and up to 2,000 ANP by 31 March 2011, the site has been divided into Phase I and Phase II requirements. Phase I shall also include several facilities and equipment for the future operation of Phase II facilities. Phase II facilities shall be completed no later than (NLT) 31 March 2011. (Numbers below in *italics* are facility numbers, from the site plans.)

Phase I activities & facilities to be completed by 30 April 2010 will include but not be limited to:

- Site survey and Master Planning for both Phase I and Phase II facilities within the Right of Entry (ROE).
- Demining for entire site within the ROE per demine area plan in Appendix A.
- Stone Force Protection wall and eighteen (18) guard towers enclosing both the Phase I and Phase II footprint.
- Three (3) Entry Control Points into the compound with a Primary Reception Center (159) building and parking & Guard Shack with drop arm at road.
- Concrete Bunkers for 1,000 students and 250 support staff.
- Eastern hillside construction of five (5) guard towers. (005)
- Development of raw water sources capable of providing water for both Phase I and Phase II facilities (i.e. ground source water wells); installation of three (3) water well pump(s) and three (3) well houses; potable water booster pumps and associated controls; installation of a water distribution system; construction of ground storage tanks. (142 & 143A, B & C)
- Sanitary sewer collection system (no holding tanks allowed) and waste water treatment plant capable of providing treatment for Phase I and Phase II facilities. (144)
- Prime power plant capable of providing power for Phase I and Phase II facilities and electrical distribution system. (137)
- Site Grading, gravel road network (for future pavement under Phase II), drainage structures within the ROE. Phase I paved roads and concrete sidewalks.
- Helipad. (146)

- Multi purpose track and reviewing stands. (147)
- Four (4) Solid waste collection points for dumpsters.
- Training Ranges Construction and Safety Fan Development. (300 – 303)
- Range security fencing with force protection lighting for facilities.
- Monument Sign (exposed aggregate concrete with bronze letters, graphics & lighting. (006)
- INL Training Team Compound facilities; (five buildings, stone perimeter wall, 2 gates, water storage & generator). (121 – 125)
- One (1) Medical Clinic, one centrally located between the Phase I and Phase II site. (104)
- One (1) Central Issue Warehouse with roll-up doors and windows (128)
- One (1) Central Receiving Warehouse with roll-up doors and windows. (129)
- One (1) Department of Public Works Building and Warehouse. (132)
- Vehicle Maintenance Facility, POL storage, and wash rack. (133)
- Ammunition Supply Point (ASP) capable of providing required munitions storage for both Phase I and Phase II facilities. (140)
- Arms Storage Building capable of providing required arms storage for both Phase I and Phase II facilities. (141)
- Four (4) classroom buildings capable of training 1000 students. (109 - 112)
- Seven (7) student barracks, each w/attached life support (latrine, showers, ablution, laundry) capable of housing 900 ordinary rank students. (114 – 120)
- One (1) barracks w/attached life support (latrine, showers, ablution, laundry) capable of housing a combined 100 Senior, High, Middle Rank, and separated female students. (107)
- Two (2) barracks w/attached life support (latrine, showers, ablution, laundry) capable of housing 250 ANP HQ staff and Instructors. (105 & 106)
- One (1) Student and Faculty Dining Facility (DFAC) capable of seating 500 at one sitting. (126)
- Refueling Point & Fuel Storage. (135 & 136)
- Fire Station. (134)
- One (1) Communication Building capable of providing the necessary Communications equipment for both Phase I and Phase II facilities. (103)

- One (1) Combined Administration and HQ Building. (100)
- One (1) Morale, Welfare, and Recreation (MWR) community building. (131)
- Phase I Spare parts and facilities O&M training.
- Fenced New Recruit Compound for up to 500 students (two Barracks, administration, medical clinic, MWR building, all heated by cogen heat. (228 – 232)

All Phase II facilities to be completed by 31 March 2011 will include but not be limited to:

- Eight (8) two-storey concrete masonry unit stucco on CMU, on pre-engineered, long span steel frame student barracks w/attached life support and laundry. (211 – 214) (216 – 219)
- One (1) two-storey stucco on CMU, on pre-engineered, long span steel frame, student barracks w/attached life support and laundry for Senior rank and separated female barracks. (209)
- Two (2) two-storey stucco on CMU, on pre-engineered, long span steel frame, barracks w/attached life support for HQ Staff / Instructors. (207 & 208)
- One (1) concrete masonry Headquarters building. (200)
- Four (4) Two storey CMU stucco Classroom buildings. (204 – 206) (210)
- Three (3) one storey CMU Classroom Toilet facilities. (204A, B & C)
- One (1) DFAC capable of seating 500 in one sitting. (215)
- Gymnasium. (221)
- Auditorium. (222)
- Parade Ground & Adjacent Green. (233 & 233A)
- Volleyball Court. (226)
- Gray water collection system, tank, distribution system, and hydrants, collected from Barracks 216 through 219. (236)
- Concrete Bunkers for 2,000 students and 500 support staff.
- Phase II roads and concrete sidewalks.
- Live Fire Driving Course Construction (304)
- Spare parts, facilities operations and maintenance training.

The contractor shall perform a geotechnical investigation for all building foundations. 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 CQM TRAINING REQUIREMENT

Before project design and construction can commence, 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	Pervaiz
e-mail: mharis@afghanreconstruction.org	e-mail: adpzmuj@yahoo.com
Telephone: 0700 08 0602	Telephone: 0700 61 3133

2.0 LOCATION

All work under this task order is for the design, site-adaptation, and construction of NPTC facilities in Maydan Wardak Province, Afghanistan. Approximate coordinates are:

Northwest Corner:	Latitude: 34.11' 13.68"	Longitude: 68 48' 17.45"
Southwest Corner:	Latitude: 34.10' 12.9"	Longitude: 68.47' 45.7"
Northeast Corner:	Latitude: 34.10' 58.05"	Longitude: 68.49' 58.28"
Southeast Corner:	Latitude: 34.09' 46.44"	Longitude: 68.49' 34.05"

Altitude: The Site sits at approximately 2,250 meters elevation and has an incline to the substantial hillside behind to which the firing ranges are to be oriented into.

2.1 CONTRACTOR FACILITIES

The Contractor shall provide and maintain all Field Office facilities, housing, equipment and servicing as defined in Section 01060, paragraph 1.13 Special Facilities and Services.

2.2 REQUIREMENTS

Work shall be executed in accordance with the Technical Requirements in Section 01015 and all solicitation requirements.

2.3 DESIGN & SPECIFICATIONS

The Contractor shall prepare complete designs and specifications for all buildings and systems for review and approval by the Government. All designs and specifications created by the Contractor shall become the property of the Government and may be used in the future by the Government for construction of similar facilities without further compensation to the Contractor. The Contractor shall provide all Design Analysis, Specifications and Working Drawings for the entire facility for the 35%, 65%, 99%, and 100%. In addition to printed full-sized copies, the Contractor shall provide electronic versions of all design documentation in AUTOCAD 2006 (version) to the AED in Kabul and the Resident Office. Files shall be arranged on a CD with Phase I and Phase II facilities clearly identified as a separate subdirectories, 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.

3.0 UNEXPLODED ORDNANCE (UXO) - UXO REMOVAL AND CLEARANCE

The contractor is responsible for the clearance or removal of mines and unexploded ordnance (UXO) from the site prior to the commencement of construction.

The contractor shall search for, identify and clear all mines and unexploded ordnance (UXO) from the entire site (as identified in Appendix A) as necessary to construct both Phase I and Phase II facilities.

The contractor may only provide clearance/removal services via UN Mine Action Center (MAC) accredited entities, and clearance shall be accomplished to the anticipated foundation depth as indicated in the contract. Clearance/removal may only be undertaken in accordance with International Mine Action Standards (IMAS). When mines and/or UXO's are identified, the Contractor shall place them in a location in accordance with IMAS. The work shall proceed in phases, concurrently with other construction efforts as determined by the contractor. Work will not commence until in any area that has not been cleared.

The contractor shall provide the Government a clearance certificate approved by the MAC indicating that the site is clear of mines and UXO's and is available for construction operations to proceed.

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

If a UXO/mine is encountered during project construction, the Contractor shall immediately stop work in the affected area and immediately notify the Contracting Officer.

4.0 SUMMARY OF WORK/CONTRACTOR REQUIREMENTS

The Contractor shall design and construct the facilities as a design-construct contract and shall be in accordance with the requirements stated in Section 01015: TECHNICAL REQUIREMENTS and as contained in this and other task order Sections. Refer to attachment following this section for more specifics for required spaces. The design and construction work shall include but not be limited to that shown within attached table and described herein.

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 ventilation for all the facilities. All toilets shall be eastern style except those for facilities as identified for Corps of Engineers personnel and the INL compound where western style toilets are required. All eastern toilets shall face north or south.

All standard construction amenities and details such as heating, lighting, site drainage, utility connections, etc. shall be implied as a design and construction requirement. Concrete walkways are required to connect all buildings, facilities, and features such as parking lots, power plants, etc. 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 written acceptance of the project.

The design and construction work shall include the following approximate sizing of facilities:

Guard Towers (23 each) (18 on compound & 5 on hill)	7 SM
Guard Shacks (4 each)	9 SM
Guard Houses (3 each)	17.28 SM
MWR Buildings (2 each)	600 SM
DPW Shop Building (1 each)	500 SM
Solid Waste Collection Points (2 each)	9 SM
Fire Station (1 each)	462 SM
Primary ECP Reception Building (1 each)	88 SM
Helipad (1 each)	184 SM
Barracks:	
- Pre-engineered long span Student Barracks (7 each)	1650 SM
- Pre-engineered long span Student Barracks-High Rank / Separated Female Section (1 each)	1650 SM
- Pre-engineered long span Staff / ANP Instructors Barracks (2 each)	1650 SM
- Pre-engineered long span Recruit Barracks (2 each)	1650 SM
- CMU stucco (on pre-engineered long span frame) two-storey Student Barracks (8 each)	3,300 SM
- CMU stucco (on pre-engineered long span frame) two-storey Student Barracks- High rank and separate female section (1 each)	3,500 SM
- CMU stucco(on pre-engineered long span frame) two - storey Barracks- HQ Staff and Instructors w / separate female Section (2 each)	3,500 SM

Classrooms:	
- Pre-engineered long span classroom bldgs, single storey (4 each, 250 Students each)	1,650 SM
- CMU stucco (on pre-engineered long span frame) two-storey classroom bldgs (4 each, 500 students each)	3,500 SM
- Toilet facilities near Phase II Classrooms (2 large) (1 small)	405 SM total
Dining Facilities	
- Dining Facilities capable of serving 500 in one sitting (2 each)	1,562 SM
- INL Training Team Dining Facility (see below)	
International Compound	
- INL Training Team Barracks (1 each)	1,264 SM
- INL Training Team Dining Facility (1 each)	547 SM
- INL-ITTC Training Team Interpreters Barracks (1 each)	1,840 SM
- Attached/Adjacent INL-ITT MWR Facility	200 SM
- INL Office	240 SM
- USACE Office/Quarters @ INL Compound	240 SM
Administration & Headquarters Buildings:	
- Pre-engineered long span metal Phase I Admin-HQ Building	800 SM
- Pre-engineered long span metal Phase I Recruit Admin	400 SM
- CMU stucco (on pre-engineered long span frame) Phase II Admin-HQ Building	900 SM
Vehicle Maintenance Facility	617 SM
POL Building	25 SM
Power Plant Building	720 SM
Gymnasium	1,060 SM
Auditorium	1,600 SM
Central Receiving Warehouse	1650 SM
Central Issue Facility	2,500 SM
Arms Storage Building	346 SM
Ammunition Supply Point	600 SM
Training Center Medical Clinic (1 each)	740 SM
Recruit Compound Medical clinic (1 each)	740 SM
Gravel Road	apx. 14.5 km
Paved Road from Main Highway through Phase I and Phase II inside walled compound, placed atop 10.5 km of gravel road identified above	approx. 10.5km
Ranges	
- RPG/Multi-purpose Range (1 each)	800 M length 200 M width
- Pistol Range (1 each)	50 M length 50 M width
- Rifle Range (2 each)	600 M length 200 M width
- Live Fire Driving Course (1 each)	500 M length 400 M width

4.1 SITE PLANNING

The NPTC site Right of Entry footprint is approximately 5.96 square kilometers. The walled compound shall include approximately 300,000 square meters. See paragraph 2 for grid coordinates which extend to the edge of the ring road. The Site Plan shall include all locations of construction, office/storage, containers, laydown and construction debris removal area, and mobilization area. The development of the site plan will include participation in two design charette's that will be conducted at the Corps of Engineers Headquarters Office in Kabul. The first charette shall be scheduled by the Government to occur within seven (7) calendar days of notice to proceed. The site plan shall be submitted to the Government no later than twenty-four (24) days after Notice to Proceed. Site specific adaptations of the provided Conceptual Site Plan shall be submitted to the Government. The master plan shall consider the siting for the above structures as well as the siting for future potential ANP structures (including a mosque). The infrastructure design loads and construction shall be for an estimated student and support staff population of 4,000 personnel.

4.2 SITE SPECIFIC SURVEYS & SUBMITTALS

The Contractor shall perform a geotechnical investigation as defined in Section 01015, perform a topographic survey of the site; adapt the programmatic Conceptual Site Plan to the conditions applicable for specific locations; prepare a complete grading and drainage plan with existing grades, proposed grades, and building finished floor elevations based on the technical requirements; prepare a landscaping plan; prepare a water distribution layout plan; and prepare a wastewater collection layout plan. If there is a requirement for on-site demolition, the Contractor shall prepare a demolition plan. The finish floor elevation of all facilities and slabs shall be a minimum of 50 mm above flood elevations or river banks, whichever is at the highest elevation. The contractor will provide drawings and details to describe any adaptations to the standard designs provided. At a minimum, submittals shall include: the geotechnical investigation report; drawings, details and calculations associated with well construction; and drawings, details and calculations associated with sanitary sewer. The schedule for delivery of site-specific submittals is included above at paragraph 4.1.1, General Requirements for Facilities.

4.3 DEMOLITION, GRADING & DRAINAGE

Site demolition may required prior to construction of new work. Grading at the site is required and shall conform to requirements within references herein.

Native crushed stone 100 mm thick shall be placed around all buildings, from the building wall or building landscaping out 2m and all areas of anticipated foot or vehicle traffic to reduce erosion and to provide dust control. Concrete walkways shall be installed between buildings and parking areas.

4.3.1 Storm Drainage System

The contractor shall conduct a thorough topographic survey and prepare a complete drainage plan for the entire site taking into account storm water runoff impacts to the site from up-gradient. The contractor shall implement a site drainage strategy that minimizes erosion to storm water diversion structures and negative impacts to the local community. A stone lined cement reinforced storm water channel shall be placed parallel and at reasonable distance exterior to the force protection wall so as to act as an anti vehicle trench. Design shall be to drain and not hold water after rainfall.

4.4 WATER SYSTEM

Design and install a potable water system, to include no less than three (3) ground well water sources, water well pumps with buildings, hydro-pneumatic water storage tanks, water purification, service booster pumps with building, ground storage tank(s) (GST), and an underground pipe distribution system, sized for the entire Phase I and Phase II build out Master Plan of 4,000 occupants. Water main shall be laid-out as a loop connecting all three wells, to maintain constant pressure. Ground storage volume shall be a minimum of one day's storage equal to the Average Daily Demand (ADD). Assume that the well shall be constructed to deliver a minimum 345-414 kPa 50-60 pounds per square inch (psi) at a flow rate that is twice the required daily demand. The storage tanks shall provide capacity for a minimum of 100 percent of the required daily demand based on 155 L/capita/day (41 gal/capita/day). The distribution system shall be designed to provide a minimum 276 kPa (40 psi) at ground level at all points in the systems. Minimum pressures of 207 kPa (30 psi), under peak domestic flow conditions, can be tolerated in small areas as long as all peak flow requirements can be satisfied. Maximum water pressures in distribution mains and service lines shall not exceed 520 kPa (75 psi) at ground elevation. Maximum pressure of 100 psi can be allowed in small, low lying areas not subject to high flow rates and surge pressures. Per customer, fire flow and irrigation systems shall not be included in design calculations. Provide enclosed water well houses. Provide chain link fence with a gate around well houses and the fence with barbed wire.

4.4.1 Geology / Hydrogeology

Conduct water exploration to site and develop potable water supply wells for sufficient quantity and quality. Place two (2) test/pilot wells at the site to determine subsurface water quality and water availability. One test well boring will include collection and preservation of intact samples (split spoon or core samples) every five (5) meters. Intact samples and drill cuttings will provide for evaluation of a continuous well log and well construction design. Contractor shall draft a lithologic well log using an accepted standard classification system such as ASTM D2487-00, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

The Contractor shall utilize the test / pilot wells for pump test calculations and water quality analysis. Water quality analysis should meet or exceed World Health Organization (WHO) Guidelines for drinking-water quality for water quality standards. The Contractor shall determine placement and well design for water supply points and shall preserve and protect the test wells for future monitoring use. If a well or borehole is identified for abandonment, the Contractor shall follow proper abandonment procedures and provide documentation.

Produce a geotechnical report detailing field subsurface investigation procedures, field test results and laboratory test results for water quality, water supply well design and construction and foundation placement.

Refer to Section 01010, Technical Requirements, paragraph 2.4.2.2 for information on additional water quality requirements.

4.4.2 Well Houses

Construct three (3) permanent insulated water well houses with a concrete slab floor at each new well site. Contractor shall furnish a chlorination and filtration shelter as per chlorine and filtration manufacturer's installation requirements. The Contractor shall provide manufacturer's catalog information and shop drawings to the Contracting Officer for approval. The floor of the well houses shall slope away from the casing approximately 3mm per 300mm (1/8" per foot) and shall have a drain to the outside for water overflows. 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 usually with a lockable roof hatch which shall be insulated. 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. The entry door shall be lockable, insulated, and made of heavy-duty metal and frame.

4.4.3 Water Tanks

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 day's demand. The storage volume requirement is based on 4,000 personnel. The storage facility shall be located above the drainage areas and locations subject to flooding as approved by the contracting Officer. Overflow and air vents shall be screened so that birds, rodents, and debris cannot enter the reservoir.

Contractor shall provide a water tank with sufficient capacity to support the new development. Booster pumps will be provided as required. Total volume of the tank shall be a minimum storage volume of a full day's demand. The contractor shall verify storage volume requirements based on final design population.

4.5 SANITARY SEWER SYSTEM

Sanitary sewer collection and treatment system shall be designed and constructed by Contractor and shall be constructed to accommodate both Phase I and Phase II facilities to a total facility population of 4,000. Sewer collection system shall consist of gravity sewer pipe and necessary appurtenances such as manholes, cleanouts and building service connections plus other standard fittings. The sewerage system may require the use of a sewage lift station & force main to overcome irregular terrain, natural or manmade barriers or other obstructions that cannot be traversed using a gravity system. However, the contractor must maximize the design for optimum efficiency using gravity flow. The sanitary sewer collection system shall connect to the proposed wastewater treatment facility described in Section 01015 of this technical requirement. The sanitary sewer system shall be designed to accommodate future expansion. System capacity shall be calculated based on a hydraulic waste load that is equivalent to 80 percent of the Required Daily Demand for the water system as specified in these technical requirements, or as 140 liters per capita per day (lpcd), whichever is greater. A geotechnical investigation of the proposed sewage treatment site is required and the contractor shall design the sewage treatment system to be compatible with site and soil conditions. Wastewater treatment shall be an aerated stabilization pond system and sewer piping with manholes and cleanouts. A cost effective pre-fabricated packaged system w/conventional activated sludge, (aeration tanks with sedimentation) method may be used. The sewage collection system and wastewater treatment system and effluent disposal shall be designed to accommodate the total facility compound population as specified in the Scope of Work *plus* 25% and verified by the contractor.

4.5.1 Installation Package Waste Water Treatment Plant

Package plant units are generally modularly constructed steel units assembled onsite from factory-supplied, pre-assembled components. These systems provide treatment within a range of about 40,000 liters per day up to approximately 4 million liters/day. These systems combine aeration, settling, and solids treatment in a single multi-compartment tank.

- (a) Site Survey. The Contractor shall conduct a topographic survey to determine existing site characteristics. The Contractor shall conduct a utility survey to determine the locations of any nearby water lines, wells, sanitary sewers, storm sewers and electrical lines.
- (b) Sanitary system layout. The Contractor shall design a sanitary system layout following requirements of Section 01015 this contract. Pipe, fittings, and connections shall conform to the respective specifications and other requirements as listed in Contract Section 01015 and all of its referenced codes.
- (c) Septic system design. The Contractor shall design a package system all tank geometry, hydraulic loading, inlet and outlet configurations, number of compartments and related site preparation and earthwork. Design will be per specifications provided in Section 01015.

4.5.2 Gray Water System

Install a gray water collection system, 11,500 liter tank, and distribution pump and piping with hydrants. Gray water shall be collected from sink and shower drains from Barracks 216 through Barracks 219. Irrigation hydrants shall be provided adjacent to Parade Ground 233, Green Space 233A, and Sports Field 147.

4.6 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 (particle sizes and distribution, liquid and plastic limit test, and moisture and density test, etc). Information in the report shall include, but not limited to: existing geotechnical (e.g. surface and subsurface) conditions, location of subsurface exploration logs on site plan, exploration point, allowable soil bearing capacity and foundations recommendations, bearing capacity, pavement design criteria (e.g. CBR values, K values), ground-water levels, and construction materials (e.g. concrete cement, asphalt, and aggregates). Two copies of the detailed geotechnical report shall be submitted to the Contracting Officer.

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

4.7 TRANSPORTATION

4.7.1 Road Network & Sidewalks

The Contractor shall design and construct the entire road and parking network. The roads shall be designed to carry traffic of a 7 ton three-axle vehicle. A storm drainage system shall also be included. The road layout shall provide access to entry control points, parking lots, buildings, fuel points, generator yard, sewage treatment plant, and trash collection points. Road design shall be as per Section 01015, Technical Requirements. Roadways and sidewalks are required and shall be designed and constructed based upon recommendations from geotechnical analysis as required herein. All roads shall be graded with a stone base with minimum width of roadway of 7 meters and the road network within the compound and connecting to the main road and shall have an asphalt surface; finished surface shall be 50 mm of asphalt with 50 mm wear course. Road construction shall include the installation of all required drainage structures. The Contractor shall install a paved width of 14 meters at the entrance into the Ring Road for a length of approximately 50 meters. The Government's intent is to create a "rolling" entry and exit and to create a standoff distance from nearby structures. (Inside the fence – also include a compacted gravel road access to the towers on the hill.)

The Contractor shall design and provide landscaping for the compound. Design and provide a network of concrete sidewalks to connect the buildings. Sidewalks shall be wide enough to be used as fire-lane/ service roads. Provide outdoor benches, lighting, and gathering areas. Sidewalks 1.5m will be placed along primary roads within the compound.

4.7.2 Vehicle Refueling Point

The Contractor shall provide for a total capacity 40,000 liters of diesel storage and 10,000 liters of MOGAS storage; complete with concrete containment floor and walls, power, and dispensing pumps.

The Contractor shall design and construct a low profile vehicle re-fueling point, as specified in Section 01015, capable of storing 40,000 liters of diesel and 10,000 liters of MOGAS. The fuel point shall consist of one 25,000 liter tank of diesel and another dual compartment 25,000 liter tank, of which, 15,000 liter would be used for diesel and 10,000 liters would be used for MOGAS. 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. Provide a 50 mm diameter drain pipe with a valve that thru the wall that may be opened or closed to drain water that may have cumulated 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. Provide capability to re-fuel the tanks from outside the compound. The fuel point facility shall be paved and sloped for proper drainage. Bollards will be installed to protect the tanks from vehicles; Provide electrical service to the tank units as per the manufacturer's recommendations;

The fuel tanks and fueling dispensers shall be approved by the Contracting Officer. The tank shall be equipped with all standard items with the following items:

- a) The system shall include two diesel dispensers with dual hoses and one gasoline dispenser with dual hoses;
- b) One of the two tanks shall be a dual compartment tank;

- c) All tanks shall be factory pre-wired; meeting UL Standards 142 and 2085, and UFC Appendix IIF, Ballistic Protection; Internal tank lining.
- d) the pump package shall be submersible pump, grounding, and overflow protection,

The Contractor shall design and construct the 8.6sm fuel point facility building. The building shall consist of reinforced concrete foundation and floor slab; reinforced concrete masonry walls; a steel-framed sloping roof; metal door; and three horizontal sliding windows, with one facing the fueling point and one on each perpendicular wall. The building shall be ventilated and have diesel heating.

4.7.3 Vehicle Maintenance Facility

Design and construct a 617 SM Vehicle Maintenance Facility. The facility shall contain three (3) drive-in maintenance bays with six (6) overhead doors (5mx4m) with three doors on one side and three doors opposite to facilitate the ability to drive thru. Provide pits 1.2 m wide opening and safety concrete curbing for working under the vehicle for one (1) bay. The maintenance facility shall have a storage area, toilet, parts room, mezzanine, office area, battery storage room, communications closet, and a tool room. Provide a yard hydrant and exterior sloped outward concrete paved area and sufficient drainage for use in an exterior vehicle wash area. Vehicle Wash area shall be large enough for the largest vehicle used on site. Provide electrical power in all interior rooms and maintenance bays. Provide a minimum of one dual electrical outlet per interior wall for office spaces. Provide one dual outlet every 5m of wall in the bay area. Provide exterior lighting sufficient to work on vehicles at night and provide compressed air service inside the building. Provide a minimum of 150mm thick concrete floor slab where vehicles will be used in the bays. Provide a 35 SM office with multiple ceiling fans. Provide a 25 SM minimum POL storage building adjacent to the maintenance facility. Provide a 50 SM storage room in the facility. Provide a 25 SM tool room. Provide paved parking for 100 light vehicles and 50 medium sized vehicles.

Provide a 2 SM communications closet room. Include a 15 SM battery storage room with an emergency eye wash and epoxy coated floors and provide sufficient air-change ventilation of the room. Provide enough racks to support battery storage. Design and install one welding exhaust system and one vehicle exhaust system to exhaust welding fumes and tailpipe CO2 to the outside. Vehicle exhaust system is equipped with four hose reels. Bollards shall be installed at each vehicle door both inside and outside of the overhead door frames. The building will have Diesel Heat. Split pack air conditioning shall be provided in the office.

4.7.4 Helipad

Design and construct a reinforced concrete helipad with asphalt apron; concrete and asphalt shall be constructed to the same standard as the paved roads. 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. Helipad will be sloped outward from center to provide proper drainage. Provide painted "H" graphic as shown on the drawing in the appendices. Provide a standard airfield windsock adjacent to the helipad so that aircrews can judge wind direction and speed. Provide low level perimeter lighting with wiring in buried conduit around the helipad for night operations; provide switch on an elevated post near the windsock.

4.8 SITE ELECTRICAL POWER PLANT, DISTRIBUTION, AND FUEL SYSTEM

4.8.1 Power System

The contractor shall design a power system for supply and distribution to the entire site (all master planning buildings) to include generators with fuel storage, and underground electrical distribution. Building type shall be Pre-Engineered metal buildings on concrete slab with equipment pads with reinforced CMU walls. Reference the enclosed design. All electrical design and installation shall meet NEC (NFPA 70) requirements. Electrical receptacles shall be provided as indicated in section in 01015, Technical Requirements. Conductors and circuits shall be sized for the specific loads. All wiring shall be run and pulled through conduits. The power plant shall include prime power generators, switchgear, and all appurtenances necessary to meet the electrical demand for both Phase I and Phase II facilities.

4.8.2 Power Plant Building

Design and construct the generator building in accordance with the drawings contained in Appendix B. Building shall be pre-engineered long span metal building. Windows shall be extruded aluminum. Exterior doors shall be insulated hollow metal. Interior doors shall be hollow metal except PVC shall be used for interior doors at toilet rooms. Heating system for the building shall be a cogeneration system using recovered heat from the generators. The ventilation and cooling systems shall be powered by electricity.

4.8.3 Generators

Contractor shall provide generators based on the N+2 concept. Where 'N' would be the required number of generator(s) and '2' being the 'stand-by' units. Generation shall supply 125% of the maximum calculated demand load of both Phase I and Phase II sites plus the stand-by generators in reserve. Each generator is not to exceed 1MW (1,000kW); in the event more than one generator is required to handle the entire load, the generators shall be provided with a synchronizer-switch, so that when total power demanded from one generator reaches 90% of the generators maximum, an additional generator shall automatically start and supplement the running generators, sharing the load between the generators equally. The contractor shall fill fuel tanks full at the completion of Phase I activities and continually refill again thru the end of Phase II and Form 1354 signature. The contractor shall evaluate and then integrate cogeneration heating into the power plant and the fenced recruit compound.

4.8.4 Electrical Power Fuel Supply

The Contractor shall provide bulk fuel storage capacity based on 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 the December 31 Phase I 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(s). A steel roof shall cover the tanks and be of adequate slope to divert rain and snow from entering into the containment. Provide a 50 mm diameter drain pipe with a valve thru the wall to drain water that may have accumulated inside after a heavy rain or snowfall. 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. Fuel shall be able to be delivered from both inside and outside the walled compound.

If the contractor cannot provide permanent power on schedule, temporary power shall be provided to the facilities.

4.8.5 Lighting

General lighting shall be provided as indicated and shall meet recommendations from IESNA for each building type and function within each building. Design and installation shall meet NFPA 70 (NEC) requirements.

Exterior lighting shall be high intensity discharge luminaries on 10 meter high minimum spun aluminum or galvanized steel poles. If to be installed on an existing installation, type of luminaries shall match existing predominant type within installation.

Searchlights shall be provided as indicated and shall be equivalent to the following:

- prison grade
- nickel reflectors (bullet resistant)
- 65 million candlepower (1,000 watts)
- manual operation from below with one hand
- zenon lamp
- weatherproof design

4.9 FORCE PROTECTION MEASURES

The Contractor shall design and construct force protection measures to include masonry or stone walls, primary and secondary Entry Control Points (ECPs), guard towers, guard houses, illumination system, and communication systems. The designer shall incorporate force protection setbacks for new facilities to maximum extent possible as permitted by size of the site and the requirements of the user. Force protection design shall be in accordance with Joint Security Directorate Antiterrorism/Force Protection Guide, March 2002.

4.9.1 Perimeter Wall

The NPTC walled compound is 856m (North) x 802m (South) x 964m (East) x 664m (West). Design and construct a Force Protection Perimeter stone wall (approx. 2,287 meters). For range safety include approximately 2,600 meters of chain link fence. Provide three (3) gates minimum into compound; with guard towers at approx. 200 meter maximum intervals. Provide a Guard Tower at each opening in the perimeter (one at the main gate, one each corner, and one at the alternate gate); and a Reception Building at the main gate. See Section 01015 for additional Force Protection requirements.

Native stone masonry walls shall be constructed around the compound perimeter of the site. The height of the walls shall measure at least 2.5 meters from the inside and outside grades. The wall shall be topped with barbed wire outriggers and single-coil concertina style razor wire. The ground grade shall slope away from the wall for at least 5 meters and shall be kept a minimum of 2.5 meters below the top of wall for a minimum distance of 10 meters. The wall shall be designed to keep all pedestrian and truck traffic outside the compound and from having a visual line of site into the compound.

4.9.2 Gates

Gates shall be K4 sliding type. Gate shall be a minimum 3 M tall, with 0.5 M of high tension razor wire mounted on top. Gate shall be constructed of 100 mm x 100 mm x 5 mm square steel tubing, faced with 5mm steel plate. The design and construction of the gates shall insure that it is dimensionally stable, square, true and planar. Sliding Gate shall not rack or deflect when open, closed, or in motion. Gate tracks shall be anchor mounted to galvanized steel stanchions. Provide a locking mechanism that holds the gate closed. Provide reinforced grade beam across gateway flush with pavement to lock gate with flush mounted vertical sliding bolts, bolts shall be 50 mm dia solid steel. The sliding gate will also have a built-in personnel gate with its own locking mechanism.

4.9.3 Primary Entry Control Point

The Primary ECP shall include a lighted paved entrance, manually operated sliding steel gate; a guard shack, a guard house; vehicle drop arm barrier; cable lift barriers; hesco barriers; and jersey barriers placed in serpentine pattern to prevent high speed vehicle entry into the compound. Provide a rejection lane after vehicle inspection and before entering the compound. Also included is a Reception Building.

4.9.4 Secondary Entry Control Points

The two (2) Secondary ECP's shall include a paved entrance, manually operated, sliding steel gate; a guard shack; vehicle drop arm barrier; cable lift barriers; and and passive anti-ram barriers. Provide a rejection lane after vehicle inspection and before entering the compound.

4.9.5 Guard Towers

The Contractor shall design and construct guard towers at each inside corner of the force protection walls, at the main gate, at the two secondary gates, and at 200 meter intervals along the force protection wall. Guard towers shall be a minimum of 3m x 3m in size. The guard tower shall be designed and located so that the outside of the perimeter wall can be observed from two sides of the tower windows. The floor height shall be elevated as to allow the window sill to be 0.5m above the top of the wall. The guard tower shall be constructed of reinforced CMU walls with a metal door and horizontal sliding windows with metal window frame, 1400mm high x 1200mm wide. Glazing for the windows shall be a 16mm thick laminated glass. Windows shall be located on all 4 sides to provide a 360 degree viewing area. Windows shall not be screened. The guard tower must meet force protection requirements. The tower shall be supported on reinforced concrete footings. Footings shall be located below the frost line or a minimum of 800 mm, whichever is greater.

The roof shall have a gutter and downspout system to evacuate rain accumulation. The down spout shall run the entire height of the tower and drain at the finished ground level to a splash block. Entry to the tower shall be through a lockable security door. Guard Tower shall have heating-using split pack heat pump units. Ceiling fans will be provided to augment ventilation. Guard towers shall be provided with general lighting and shall be fitted with one 360-degree omni-directional searchlight. One weather-resistant duplex receptacle shall be provided as required for general use. The area in the immediate exterior vicinity of the guard tower shall be provided with an all weather non-slip surface and shall be graded to sufficiently drain away from structure.

Do not use white lights inside guard towers. Use red, blue, or black lenses in interior guard tower lighting. Power and back-up power for towers shall be provided via buried conduits from the main power plant.

For communications, provide rigid metal conduit, two RJ-45 phone jacks with Category 5e, four pair UTP cable back to a protected entrance terminal in the telephone terminal cabinet. Force Protection measures also include the requirements of UFC 4-010-01, Design: Minimum DoD Antiterrorism Standards for Buildings, 8 Oct 2003 and UFC 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings, 8 Oct 2003 and Joint Security Directorate Antiterrorism/Force Protection Guide, March 2002.

4.9.6 Guard Shack

The guard shack shall be a 9 SM building consisting of a 200 mm reinforced concrete foundation and floor slab, reinforced concrete masonry walls and a steel framed, sloping roof with a metal door and horizontal sliding windows with metal window frame, 800mm high x 1,000mm wide. The floor finish shall be sealed concrete. The exterior wall finish shall be stucco and the interior finish shall be plaster. The finished ceiling shall be either gypsum wallboard or plaster. Provide mineral fiber insulation in the ceiling space. Glazing for the windows shall be an 16mm thick laminated glass. The roof shall have a minimum of 2:12 slope with metal roofing. The building shall have 4 horizontal sliding windows, one located in each wall. (In addition to a guard shack at each ECP, provide a Guard Shack and a drop arm at the highway access road.)

4.9.7 Guard House

Guard House shall be a 17.28 SM building with a 200 mm reinforced concrete slab and ceiling. Walls shall be fully grouted CMU. Provide metal roof and eaves to match other building on compound. A general space shall be provided for 2 guards within each Guard House. Windows shall be sliding 13 mm laminated glass in steel frames. All other spaces mentioned in standard design shall be provided elsewhere within the site. Areas in immediate outside vicinity of guard hut shall be provided with an all weather non-slip surface and shall be graded to sufficiently drain away from building and pedestrian areas. Building shall have concrete slab with foundation below frost line. Category 5e dual RJ-45 outlets for voice and data and duplex receptacles shall be provided. Provide built in counter with 2 file drawers and pencil drawers. Provide electric wall mounted heat units. Area in immediate outside vicinity of guard house shall be lighted. Provide bullet-proof entry doors.

4.9.8 Primary Entry Control Point Reception Building

At the primary entry control point (ECP), the Reception Building shall be approximately 88 SM and design shall be 200 mm reinforced concrete slab and ceiling. Walls shall be fully grouted CMU. Provide metal roof and eaves to match other building on compound. The functional areas within this facility are a waiting area with toilet and sink, a guard room with shower, toilet and sink and a reception office. Windows shall be sliding 16 mm laminated glass in steel frames. Areas in immediate outside vicinity of guard hut shall be provided with an all weather non-slip surface and shall be graded to sufficiently drain away from building and pedestrian areas. Building shall have concrete slab with foundation below frost line. Communication/Data and duplex receptacles shall be provided. Provide electric wall mounted split-pack heat pump units. Area in immediate outside vicinity of guard house shall be lighted. Provide bullet-proof entry doors. Provide paved parking for one hundred (100) vehicles.

4.9.9 Concrete Bunkers

Provide Concrete Bunkers though out compound; with seating for 3,000 persons. Site and grade so that water cannot stand inside bunkers. Provide 150 mm base course of gravel within bunkers and within 1m surrounding.

4.9.10 Trash Points

The Contractor shall design, in locations convenient for easy removal and of high use, trash collection points. It shall be located inside the compound walls. The trash points shall be 3m x 3m concrete pads with a 1.8 meter tall chain link fence around the perimeter. One side shall have two 1.5 m wide entrance gates. Trash Points shall have a metal roof covering. Each DFAC will have its own trash point of sufficient size to store 2 days trash.

4.10 BARRACKS

All barracks shall have minimum 1-hour fire rated corridors and 20 minute fire rated and labeled doors and hardware.

4.10.1 Phase I Student Barracks

Design and construct seven (7) 1,650 SM pre-engineered metal, long span barracks with integrated toilet, shower and ablution area. See Appendix B for conceptual drawing. Toilets shall be oriented appropriately according to local custom. Provide ceiling fans with diesel heat and fuel storage.

4.10.2 Phase I Senior, Middle Rank, & Separated Female Barracks

Design and construct one (1) 1,650 SM pre-engineered metal, long span barracks with integrated toilet, shower and ablution area. See Appendix B for conceptual drawing. Toilets shall be oriented appropriately according to local custom. Provide ceiling fans with diesel heat and fuel storage.

4.10.3 Phase I ANP Staff & Instructors Barracks

Design and construct two (2) 1,650 SM pre-engineered metal, long span barracks with integrated toilet, shower and ablution area. See Appendix B for conceptual drawing. Toilets shall be oriented appropriately according to local custom. Provide ceiling fans with diesel heat and fuel storage.

4.10.4 Phase I Recruit Barracks

Design and construct two (2) 1,650 SM pre-engineered metal, long span barracks with integrated toilet, shower and ablution area. Shall be the same design as the Phase I Student Barracks. See Appendix B for conceptual drawing. Toilets shall be oriented appropriately according to local custom. Provide ceiling fans and cogen heat from the adjacent power plant.

4.10.5 Phase II Student Barracks

Design and construct eight (8) 3,300 SM two storey, pre-engineered metal, long span barracks

with CMU exterior walls with stucco finish. Provide with integrated toilet, shower and ablution areas. See Appendix B for conceptual drawing. Toilets shall be oriented appropriately according to local custom. Provide ceiling fans with diesel heat and fuel storage.

4.10.6 Phase II Senior, Middle, & Separated Female Barracks

Design and construct one (1) 3,500 SM two storey, pre-engineered metal, long span barracks with CMU exterior walls with stucco finish. Provide with integrated toilet, shower and ablution areas. See Appendix B for conceptual drawing. Toilets shall be oriented appropriately according to local custom. Provide ceiling fans with diesel heat and fuel storage.

4.10.7 Phase II ANP Staff & Instructors Barracks

Design and construct two (2) 3,500 SM two storey, pre-engineered metal, long span barracks with CMU exterior walls with stucco finish. Provide with integrated toilet, shower and ablution areas. See appendix B for conceptual drawing. Toilets shall be oriented appropriately according to local custom. Provide ceiling fans with diesel heat and fuel storage.

4.11 CLASSROOM BUILDINGS

4.11.1 Phase I Classrooms

Design and construct a total of four pre-engineered metal, long span buildings. Design and construct four (4) 1,650 SM facilities with ten (10) each classrooms each which need to be designed for 25 ANP each. All four (4) buildings will have sealed concrete slab floors, and janitor closet. Provide ceiling fans with diesel heat and fuel storage.

4.11.2 Phase II Classrooms

Design and construct a total of four (4) two storey 3,500 SM CMU pre-engineered steel, long span buildings with CMU exterior walls with stucco finish. Design and construct with ten (10) classrooms per floor for 25 ANP each. All four buildings will have instructors' offices. Provide ceiling fans with diesel heat and fuel storage.

4.11.3 Phase II Classroom, Toilet, Sink & Ablution Buildings

The Contractor shall design and construct separate men's and women's toilet, sink, and ablution buildings adjacent to the classrooms. See Appendix B19 for layout. Construct two (2) 162 SM buildings for the men, and one (1) 81 SM building for the women. The male buildings are shown as 204A & B on the site plan, and the female building is shown as 204C on the site plan. The buildings will incorporate the following special features into the building:

All sinks shall be trough type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse.

Diesel heating to maintain 20 C indoors during winter shall be provided.

All toilets shall be eastern style with wall-mounted hose bib on the right side of the occupant as the individuals faces the stall door. Urinals are not required. Face all toilets in the North/South axis for cultural reasons.

Floor drainage for the buildings shall be accomplished using a sloping floor leading to trench drains. Electric hot water heaters shall be installed to provide hot water to the showers and sinks. The buildings shall be constructed with exhaust fans to ventilate to the outside environment and insulated piping to prevent freezing of water pipes in winter. Exhaust fans shall be switched so that they operate whenever the lights are on. Provide electric heat.

All water lines inside of the buildings shall be galvanized steel and mounted behind the wall with an easily accessible chase for ease of repairs. Chases will have separate switched lighting, and will have a plastic/fiberglass locked entrance doors. All hot water and cold water piping shall be insulated and provided with stainless steel protective covers. Provide a janitor room with a mop sink in both the men's and women's building.

Ablution areas shall contain hot and cold water spigots, with a low elevation faucet mounted below the control valves. Ablution areas shall be provided with low flow water devices.

4.11.3.1 Other Toilets in Other Facilities

Toilets in other facilities shall also conform to the same standards above, as well as include the same features as shown on Appendix B19.

4.12 PHASE I AND PHASE II DINING FACILITIES

Design and construct two (2) 1,562 SM pre-engineered metal, long span, column free, Dining Facilities (DFAC) within the compound. These facilities shall provide cafeteria-style feeding of short order and regular style meals for a total population of 3,000 served over 3 sittings. Spaces include dining areas and kitchen facilities outfitted with propane-burning (inside DFAC), built-in stoves in accordance with local practice. Additional details shall be created by the Contractor as required, but shall conform to the requirements of this RFP and are subject to the approval of the COR.

For the dining area, floor trench drains no less than 100mm wide shall be incorporated into the dining area with the floor sloped to drain. Fire protection is to be provided by multiple fire extinguishers at easily accessible locations. Provide Hand wash stations in the entry vestibule shall be provided in the ratio of 1:40 personnel expected to eat in the DFAC. Trough type sinks shall be used. Provide a 1m high ceramic tile wainscot in the dining area room for future cleaning of the area and to include a hose bib for water hoses. Include a janitor room with a mop sink. Provide ceiling fans and split systems capable of maintaining 25 C indoor conditions during the summer and maintaining 22 C during the winter. Floor trench drains no less than 100mm wide shall be provided for the length of the dining room area.

All drains must be stainless steel with P-Trap & Vent Pipe extending through roof to prevent sewer gas from entering the buildings. Provide an adequate grease trap with clean out manhole to collect discharge from the kitchen area prior to discharging into the sewer system.

The Contractor shall design and construct a chain-link fenced storage yard for food and install facilities for the storage areas of both dry goods and refrigerated items.

For the kitchen area, spaces include kitchen facilities outfitted with propane-burning cooking appliances. The stove is a commercial grade propane type appliance. Provide Propane Storage for four (4) weeks operation assuming all stoves are in operation at the highest fuel consumption rate. Provide full propane tanks when Phase I is turned over.

Kitchen shall be covered with terrazzo tile flooring. Walls in kitchen shall be ceramic tile up to the ceiling except where fire brick is called for by code. Provide a ceiling in the propane cooking line-up not less than 5 meters high with clerestory operable windows with screens on all four walls to be able to vent the smoke and heat out of the cooking area. Install a large wash basin with a low rim height designed for washing very large pots.

Provide sixteen 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 two 14 gauge stainless steel worktables in the dining facility. 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 2,000 mm x 90 mm.

Provide Dish Table with preparation sink. Dish table shall be 1.9mm (14 gauge) stainless steel. 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. Provide a janitor room with a mop sink.

Provide 1.6mm (16 gauge) stainless steel pass through counter tops at the opening between the kitchen and dining area. Edges shall be turned down 3 cm 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, three (3) on each side of the wall. Anchor angles to wall with masonry expansion sleeves and stainless steel screws. Counter tops are to be 60cm wide x length of opening shown. Provide 90 minute fire rated, coiling stainless steel shutters for each opening. Shutters will drop when heat from fire releases the fusible link, and also by manual switching at kitchen exit doors. (2 spare fusible links shall be provided for each coiling shutter.

The Contractor shall provide space and electrical outlets for future installation of walk-in refrigerators and walk-in freezers. Trench type floor drains no less than 100mm wide shall be installed in the kitchen cooking and dishwashing areas. 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 in response to kitchen cleaning practices of the local national staff. Also, access needs to be provided to the solids collector for routine emptying.

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.

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 large portable tanks 60 liter sized. 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. 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. Provide and fill up 20 large (44KG) type cylinder type gas bottles for ease of handling emergency type conditions and provide fittings to connect to these types of gas tanks.

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. 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.

Motorized dampers shall be provided to change outdoor/return air mix and to allow summer/winter operation. Exhaust ventilation in the 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 excessive steam and moisture loading due to the use of large pots and propane burning stoves in the kitchen. Exhaust sizing should accommodate all propane stoves running simultaneously. 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 (50%) and from adjoining dining areas (50%).

The heating and ventilation unit(s) shall provide the dining room with 100 percent outside filtered air for ventilation during periods of high-heat, e.g., summer. During winter heating, diesel heat shall provide a minimum of 20 m³/h / person of outside ventilation air. 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 heating and ventilation unit(s) shall provide the kitchen with 100 percent filtered outside air for ventilation in the summer and heating with minimum outside air in the winter. The 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.

Diesel Heat will be provided for the Phase I and II dining facilities. Ceiling fans shall also be provided in the dining area.

4.13 INTERNATIONAL COMPOUND FACILITIES

Contractor shall provide an international compound consisting of a stone force protection wall with two separate 2.4 m sliding steel gates, parking for 50 vehicles, and with all utilities to

include water, sewer, and electricity connected to base utilities. Water filtration shall be of western standard. All buildings, except as noted below, shall be constructed of insulated pre-engineered metal buildings on concrete slabs. Reinforced Windows shall be 6 mm laminated glazing set in heavy duty aluminum frames. Provide HVAC as specified for each building.

4.13.1 Barracks

Contractor shall construct separate cmu masonry barracks with sloped metal roof, with latrines for the INL Training Team (INL) and for the Interpreters (ITT). Barracks shall have minimum 1-hour fire rated corridors and 20 minute fire rated and labeled doors and hardware. Each barracks facility shall include a laundry room with Janitor closet. Barracks shall be provided with split pack cooling and heating. Within each barracks provide an attic storage area the length of the barracks building. Provide shower, sink and toilet facilities for 100 persons @ 1/10. 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 heating and cooling units at all facilities. Provide ceiling fans in all sleeping rooms. Provide two (2) 3mx3m concrete pad trash collection points for temporary solid waste storage. Bunkers will be provided for all personnel adjacent to barracks.

a. INL Barracks

The following space requirements shall be met for the INL Barracks: Sleeping rooms for ten (10) individuals @15 SM net per sleeping area, and 90 personnel @ 7.5 SM net per sleeping area. The contractor shall construct the INL laundry facilities to include utilities to support the installation of ten commercial washers, minimum 30 pounds capacity and ten commercial dryers.

b. ITT Barracks

Interpreter/support staff barracks shall have 150 personnel @ 7.5 SM net per sleeping area. The contractor shall construct the ITT laundry facilities to include utilities to support the installation of fifteen commercial washers, minimum 30 pounds capacity and fifteen commercial dryers. Attached to, or adjacent to the ITT barracks provide one (1) Morale, Welfare and Recreation (MWR) section @ 200 SM. MWR section shall include small kitchen and janitor's closet.

4.13.2 INL Dining Facility

Facility shall be a western style kitchen for INL forces in the compound with commercial grade tables and commercial grade metal stackable chairs for 80 occupants. Stoves and ovens shall be commercial propane. Kitchen shall be sized to prepare food for approximately 150 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 547 SM minimum. Provide an adequate grease trap with clean out manhole 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. Provide electric wall mounted split-pack heating and cooling units. Provide ceiling fans in dining area.

4.13.3 Admin Facility

Provide a 240 SM cmu masonry office building with eleven (11) offices and one (1) conference room @ 12 SM each. Heat and cool with split pack units throughout. Provide two full bathrooms with a toilet, lavatory, and shower. Provide janitor's closet with mop sink. Provide a communications room and a secure weapons locker as shown in Appendix B-35. The facility will be similar in design to the USACE Offices & Quarters building.

Force protection walls shall be installed as necessary to provide a safe and secure living environment. 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. Facility shall be connected to the standby generator.

4.13.4 USACE Facility

Contractor shall install a 240 SM cmu masonry USACE Offices & Quarters facility as per the attached Special Clauses Section 1060, and Appendix B-35. Provide and connect to temporary septic tank for use until the wastewater treatment plant is ready.

4.14 COMMUNICATIONS BUILDING & GENERAL COMMUNICATIONS

The facility will serve as the installation's center for telecommunications, switching, and automation networking (including internet service) and shall have year-round climate control via split pack A/C and heating in all rooms for the sensitive electronic equipment. The A/C shall be sized to accommodate eight (8) personnel with eight (8) computers and twelve (12) radios. The communication building shall have an uninterruptible power supply (UPS) room with ventilation to outdoors. Power to the building shall meet the ultimate demand load plus 20% spare capacity, but shall not be less than a 250 amp service. A grounding grid tested to 5 ohms or less shall be distributed throughout the UPS and equipment rooms.

Provide a communications room having raceways/duct backs going to all facilities except guard houses and towers; those to be used in the future will have a pull sting. Manhole/hand hole systems shall have no more than 150 meters between access points. All voice telephone wiring, data and emergency wiring, including any planned or future fiber optical runs, will originate and/or terminate in this communications center.

Provide a 3m x 5m roof covered concrete pad outside the UPS room with a backup generator with an adjacent 2m x 3m concrete pad with a spill dike for a 2,000 liter or larger fuel tank. Backup generator shall be sized to meet the ultimate demand load of the communications building, plus 20% spare capacity. A 15cm diameter or larger conduit shall connect the generator pad to the UPS room and shall use long sweep elbows totaling no more than 180 degrees for any bends. Backup generator for Communications building shall be in addition to the generator required in paragraph 4.5 above. When sizing the generator, ensure it is de-rated for altitude and temperature in accordance with manufacturer's recommendations for the site conditions

All buildings (except guard houses and towers) shall have a communication closet to house all telephone and computer network equipment and all distribution boxes shall be routed to the communications closet. Each communications closet shall be lockable, with key access

controlled by the communications manager/officer. All Barracks shall have 50-pairs of 24 AWG copper UTP cable from the main distribution cable/s, installed from the Communications Building. In parallel with each copper telephone cable shall be a six-strand SM fiber optic OSP (outside plant) cable. Each office will have at least two phone outlets using category 5e, RJ-45 outlets or better and at least two outlets for computer connections. There shall be a 25-pair 24 AWG copper UTP cable ringing the base perimeter to connect all guard towers and houses with redundant paths so that communications are maintained even if a cable is cut. Inter-building telephone and data cabling shall be RUS PE89 24AWG, Gel filled, and RUS type PE 90, single mode fiber optic cable..

In any communication related office or room requiring raised flooring, IF used, the raised flooring shall be all steel interchangeable square panels 600mm X 600 mm, with 450 mm clear space below finish floor. Assembly shall be designed for the highest earthquake zone. Design shall be bolted stringer capable of withstanding a 12,500 lb. uniform load and a 500 lb. rolling load. Provide Four (4) panel lifting devices. Provide bonded anti-static raised floor assembly and flooring.

Provide two (4) spare 100 mm pvc conduits with 600 mm radius from floor adjacent to open wall area to 1,500 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.

Provide NIPR Net LAN drops (category 5e RJ-45 dual voice/data) in each of the living areas for all barracks and all offices of the Headquarters building.

4.15 FIRE STATION

Design and construct a 520 SM Fire Station. Design shall be for an open bay facility, insulated pre-engineered metal 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 and conference room for 15 people. Entire building will be provided Diesel Heat with A/C in the office area. Provide ceiling fans in all occupied spaces. All floors in building shall be terrazzo tile, except garage and utility-type rooms, which shall be sealed concrete. Construct building using insulated prefabricated metal structure with CMU to 2,000 mm A.F.F. Provide two bollards at each roll-up door jamb.

4.16 MORALE & WELFARE

4.16.1 MWR Community Buildings

Design and construct a minimum of two (2) 600 SM pre-engineered metal MWR facilities. Both will have concrete slab floors, windows, and a Diesel Heat system with sufficient interior installation capable of maintaining a minimum temperature of 20 C in the winter. The MWR Buildings will include a small communication closet and a janitor closet.

4.16.2 Gymnasium

Design and Construct a 1,356 square meter, pre-engineered, long span metal, multi-use athletic facility/ Gymnasium. The facility must include or meet the following requirements: Have a minimum 6-meter ceiling clearance; 4 double access doors with emergency push bars

and kick plates (one double door in each corner of the facility); Weight room, storage room, one 3-meter by 3.6-meter or larger garage door; Gymnasium style lighting, diesel heating, ventilation, and water fountains. Wall mounted power outlets will be required.

The contractor will be responsible for procuring and installing appropriate gymnasium flooring systems for volleyball. The Contractor will be responsible for installing permanent pole sleeves, with removable volleyball court poles and nets. The pole sleeves will have caps that can be installed when the flooring system is not being used for tennis or volleyball. The entire concrete surface of the gymnasium will be covered with appropriate flooring material. The contractor will procure and install a Gymnasium Divider system (Folding Wall, Accordion, or Pull down style with winches; either will be acceptable) to section off the Gymnasium as shown on the attached Gymnasium Floor Plan in Appendix B.

4.16.3 Auditorium

Design and Construct a 1,600 square meter, pre-engineered, long span metal, multi-use athletic facility/ Gymnasium. The facility must include or meet the following requirements: Have a minimum 8-meter ceiling clearance; 8 double access doors with emergency push bars and kick plates (two double doors in each corner of the facility); audio visual projection room, storage room, auditorium style lighting, heating, and ventilation. Wall mounted power outlets will be required as necessary for providing visual overhead production.

4.17 OUTDOOR RECREATION

4.17.1 Soccer Field with Reviewing Stands

Construct Sports Field with reviewing stands soccer field and standard 400 meter asphalt track. Provide heavy-duty aluminum stands (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.

Develop turf as described below in part 4.17.3, Green Space.

4.17.2 Volleyball Court

Provide an outdoor volleyball court; 28 m by 19 m reinforced concrete 150 mm thick, and double as a drill pad when not used for sport.

4.17.3 Green Space

Existing soil is eroded and denuded hardpan. Areas for green spaces, athletic fields and parade grounds need to be graded flat, disked, and tilled to a depth of 300 mm. Tilled ground shall be aerated; improved with shredded organic material, straw, and fertilizer. Improved soil will be graded flat again and enough soil put aside to provide 2cm coverage of soil. Soil will be seeded with a blend of native grass species, and covered with 2 cm of soil. The grass seed blend will be composed of native grass species which can tolerate the local extremes of the site. Irrigate grass according to the seed supplier's instructions. After the turf is established it shall be irrigated with recovered gray water, and fertilized and maintained according to the seed supplier's instructions.

4.18 ARMORIES

4.18.1 Arms Storage

Construct arms storage building (346 SM). 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 on-center (OC). Install split-pack heating and a/c unit in office with 52-inch ceiling fan. Provide wood racks for storing long arms vertically. The area shall have four equal separate spaces with walls and a heavy duty metal doors and framed lockable door to each 8 RPGs, 8 Machine Guns, and all long-arm weapons for each person assigned to a training unit. No windows shall be installed. Entrance into the building will be via high security door.

4.18.2 Ammunition Supply Point

Design and construct an Ammunition Supply Point. Facility shall be a minimum of 600 SM. Munitions Storage Igloo Type A, shall be constructed per Army Standard Magazine STO 33 15 74. The ASP shall be located remotely within the Garrison and will consequently require a perimeter fence with concertina wire and security lighting. The ASP shall be shall have concrete slab with foundation extending below the frost line; finish floor shall be above grade. The double entry doors to be bullet-proof and earthen berms and overhead earth will be of sufficient size to provide protection to the rest of the compound in the event of an explosion or fire.

4.19 LOGISTICS

4.19.1 Central Issue Facility

Design and construct a 2,500 SM pre-engineered, long span metal building capable of supporting 250 ANP students with all their equipment issue. Building will have concrete slab floors, windows, and Diesel Heat with sufficient interior insulation capable of maintaining a minimum temperature of 12.7 C in the winter. Split pack air conditioning for offices shall be provided to meet a temperature of 25 C in the summer. Facility shall include one (1) 14 SM office for the logistics chief and one 30 SM conference room area. It will include open bay office space of 60 SM. It will include space for seating of 125 students awaiting issue of equipment.

4.19.2 Department of Public Works (DPW) Building

Design and construct a 500 SM pre-engineered, long span metal DPW Shop Building. Building shall have a combination of private and large open area offices, break room, conference room, shop, and storage area with double roll up doors. The building will have Diesel Heat. Building will also have a fenced yard (500 SM) with gravel surface for materials storage.

4.19.3 Central Receiving Warehouse

Construct a 1,650 SM pre-engineered, long span metal Central Receiving Warehouse with office space. Design shall be for open bay facilities, using insulated modular construction. Provide Split Pack Heat Unit in office with 52-inch ceiling fan. Provide two 5 meter X 5 meter

high roll-up doors. Provide four bollards at each roll-up door jamb (two inside and two outside).

4.20 MEDICAL CLINICS

Both the police training center and recruit compound medical clinics shall be of similar pre-engineered building design, and be 740 SM. The police center medical clinic will and spacing. Features identified below are applicable to each medical clinic. (Recruit compound medical clinic shall utilize cogen heat.)

The triage room will be of sufficient size to perform surgery on four (4) personnel simultaneously. The approximate size of the room will be not less than 60 SM. The four areas each a minimum of 8 square meters will be separated by a CMU wall that is at least 2 meters high and extending 2 meters from the structural wall. Dual electrical outlets will be placed on the structural wall and the wall separating the beds. Thus each area will be supported by two (2) dual outlets or four (4) outlets total. Each of the four operating areas will be supported by a minimum 25 amp dedicated circuit at the circuit panel. Lighting will be standard locally available fluorescent lighting with plastic covers to reduce dust accumulation. Room will include two sinks for washing hands.

The clinic will include four (4) exam rooms. Each exam room will contain one (1) sink, four (4) electrical outlets supported by a dedicated circuit breaker, and shall be a minimum of 14 SM each. Each room will have a standard door with locking hardware.

Provide one (1) 14 square meter room for X-Ray. Each wall must contain a dual electrical outlet (2 outlets). Construct an alcove 2 M from which the operator can run the X-Ray machine with a minimum of one dual electrical outlet. Lead shielding shall be 3 mm (1/16 inch) lead or lead equivalent up to 2100 mm (7 feet) above the finished floor. Where possible lead shielding shall be applied to exterior side of the walls. All, grilles, registers, and diffusers shall be located at ceiling height or in ceiling. Thermostat transmission lines shall be routed to avoid penetration of shielding. Additional information on shielding design requirements can be found in NCRP Report No.49.

Provide 80 SM open area room for male patients to recover from surgery or other treatments. Provide 10 dual electrical outlets equally spaced along the walls for this room. Electrical circuits will support not more than 4 electrical outlets in this room. Provide a 20 SM room for female patients. Each patient room will have at least one sink for washing hands.

The medical clinic will contain a minimum of four (4) offices. Three (3) offices will be private offices each a minimum of 14 SM. The fourth office is for general administration area. It may be split into more than one office and shall support up to six (6) administrative workers. This officer shall be a minimum of 36 SM, and must connect to the waiting room through a counter type opening. The counter type opening will have a solid window that restricts patients from entering the administrative area. Each office will contain one (1) sink and four (4) electrical outlets supported by a dedicated circuit breaker.

Provide 50 SM waiting room with standard lighting. Provide a standard dual electrical outlet on each of the 4 walls. Provide a counter type opening in the wall so that administrative personnel can assist and monitor personnel in the waiting area.

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

Supply room will be a minimum of 15 SM. It will have dual electrical outlets on each wall.

Janitor Closet. Provide a minimum 4 SM janitor closet Janitor closet will include a faucet, trough type sink, and floor drain. A minimum of one (1) janitor closet per floor is required if the medical clinic is built multi-level.

Provide one 25 SM room for use as a conference room. Install one dual electric outlet per wall.

Provide one (1) 10 SM Chai (tea) room. Room must have an automatic electric vent fan capable of removing steam to the outside of the building.

Each latrine will have an eastern style toilet and lavatory sink, mirror, toilet paper dispenser, paper towel dispenser and a lockable door. Provide a minimum of two male and two female latrines. Electric hot water heaters shall be installed to provide hot water to the showers and sinks. Shower stalls shall be large enough to allow room to dress and undress between an outer and inner shower curtain. Stalls shall be no less than 2 m x 1.5 m and shall have a solid door on the outside. Showers shall contain a mixing valve for hot and cold water mixing. There shall be a fixed shower head nozzle attached directly to the pipe. The building shall be constructed with exhaust fans to ventilate steam to the outside environment and, where required, insulated piping to prevent freezing of water pipes in winter. Accessories shall include but not limited to; toilet paper holders, soap dishes, curtains and curtain rods, robe hooks, mirrors, paper towel dispenser, metal shelf, and grab bars. The drain areas shall be recessed below the floor level 200mm and lined with ceramic tile. The ceramic tile shall extend up the wall past the water spigots to a height of 2 meters above the finished floor. All water supply plumbing shall be exposed PVC pipes or galvanized metal. Bathrooms will have floor drains with p-traps and clean-outs for maintenance.

Provide a double swinging door entrance to the facility with a ramp entrance. Provide a double swinging door for the entrance of the triage room. Interior doors will be metal and all doors will have hardware with locks. Exterior doors will be all weather metal doors. Floor tiles shall be terrazzo tile throughout the building. The police training center clinic will have diesel heat and the recruit compound clinic will have cogen heat; both facilities shall have split-pack air conditioning.

4.21 ADMINISTRATION & HEADQUARTERS

4.21.1 Phase I Administration & Headquarters Building

The administration building shall be 800 SM pre-engineered, long span metal building, and accommodate the executive and staff functions of the Phase I site. The functions performed in an administrative office are primarily logistical and personnel management. The following net area will be required in the administrative building for office personnel, additional file rooms, storage area, communications closets, restrooms and break areas. This Net Area for these functions is not included in the Net Area charts below but must be included in design.

The Contractor shall design and construct a single-story administrative facility for the Phase I headquarters and staff organizations. Building shall be pre-engineered, long span metal building on sealed concrete slab. The conference room of the NPTC Command Center shall also be located within this building. Space within the building shall be organized to provide functionally separate facilities for the NPTC commander and staff. NPTC Commander’s living quarters shall be adjacent to his office. Office space allocations shall be made according to the following table:

Net Area per Soldier/Police with Break Down by Rank					
	Commander	Senior	High	Middle	Ordinary
Office Type	Private	Private	Semi-Private	Open Bay	None
NSM*/person	18.5	13.9	9.3	7	5

Soldiers/Police in Building					
	Commander	Senior	High	Middle	Ordinary
NPTC	1	3	6	40	25

*NSM = net square meters

The figures above are guidelines and can be tailored as necessary to facilitate design efficiencies.

The Contractor shall provide conference rooms, file rooms, storage areas, restrooms, break areas, and other special spaces in the building in addition to the net area. Construct a conference room to accommodate a large conference table and room for seating of 40 personnel in close proximity to the Commander’s Office. Construct a 70 SM command communications room with a high security door. This must be accessible from the NPTC command center. In addition to standard electrical outlets in the room, provide a dedicated electrical circuit with 8 double receptacle electrical outlets in the appropriate locations to support the assigned communications equipment.

Male and female toilets and sinks in the restrooms shall be provided at a ratio of 1:15 based on the population having office space in the facility. Female restroom will have two toilets. All restrooms in the Administration Building shall have lockable doors.

Provide a weapons storage area to this building for 75 ANP personnel working in the building. The area shall store RPG launcher at a ratio of 1:7 policemen, Machine Guns (PKMs) at a ratio of 1:7 policemen, and all one AK and one 9mm handgun per policeman in the administration building. This room shall have its own separate key and be constructed of solid reinforced concrete (200 mm thick concrete roof slab and solid CMU wall) with no windows, high security door, and explosion-proof lighting. The building will have Diesel Heat. Split pack air conditioning for commander’s office and conference room shall be provided. *Split pack air conditioning for the commander’s quarters is also required, whether it is in this building, or a different facility.*

4.21.2 Phase I Recruit Compound Administration Building.

The recruit administration building shall be 400 SM pre-engineered, long span metal building, and accommodate the executive and staff functions of the recruit compound. Provide ceiling fans and cogen heat from the adjacent power plant. It shall include the same functions as the Phase I Administration & Headquarters building, described above, but at half the size. Office space allocations shall be made according to the following table:

Net Area per person with Break Down by Rank					
	Commander	Senior	High	Middle	Ordinary
Office Type	Private	Private	Semi-Private	Open Bay	None
NSM*/person	18.5	13.9	9.3	7	5

Soldiers/Police in Building					
	Commander	Senior	High	Middle	Ordinary
Recruit Compound	0	1	3	20	12

*NSM = net square meters

The figures above are guidelines and can be tailored as necessary to facilitate design efficiencies.

4.21.3 Phase II Administration & Headquarters Building

The administration building shall be approximately 900 SM, stucco on CMU, on pre-engineered long span steel frame, and accommodate the executive and staff functions of the Phase I and II sites. The functions performed in an administrative office are primarily logistical and personnel management. The following net area will be required in the administrative building for office personnel, additional file rooms, storage area, communications closets, restrooms and break areas. This Net Area for these functions is not included in the Net Area charts below but must be included in design.

The Contractor shall design and construct a single-storey administrative facility for the Phase II headquarters and staff organizations. Flooring shall be terrazzo tile throughout. The conference room of the NPTC Command Center shall also be located within this building. Space within the building shall be organized to provide functionally separate facilities for the NPTC commander and staff. NPTC Commander’s living quarters shall be adjacent to his office. Office space allocations shall be made according to the following table:

Net Area per person with Break Down by Rank					
	Commander	Senior	High	Middle	Ordinary
Office Type	Private	Private	Semi-Private	Open Bay	None
NSM*/person	18.5	13.9	9.3	7	5

Persons in Building					

	Commander	Senior	High	Middle	Ordinary
NPTC	1	3	6	40	25

The figures above are guidelines and can be tailored as necessary to facilitate design efficiencies.

The Contractor shall provide conference rooms, file rooms, storage areas, restrooms, break areas, and other special spaces in the building in addition to the net area. Construct a conference room to accommodate a large conference table and room for seating of 40 personnel in close proximity to the Commander's Office. Construct a 70 SM command communications room with a high security door. This must be accessible from the 70 SM NPTC command center. In addition to standard electrical outlets in the room, provide a dedicated electrical circuit with 8 double receptacle electrical outlets in the appropriate locations to support the assigned communications equipment.

Male and female toilets and sinks in the restrooms shall be provided at a ratio of 1:15 based on the population having office space in the facility. Female restroom will have two toilets. All restrooms in the Administration Building shall have lockable doors.

Provide a weapons storage area to this building for 75 ANP personnel working in the building. The area shall store RPG launcher at a ratio of 1:7 policemen, Machine Guns (PKMs) at a ratio of 1:7 policemen, and one AK and one 9mm handgun per policeman in the administration building. This room shall have its own separate key and be constructed of solid reinforced concrete (200 mm thick concrete roof slab and solid CMU wall) with no windows, high security door, and explosion-proof lighting. The building shall have diesel heat. Split pack air conditioning for offices and conference room shall be provided.

4.21.4 Parade Ground

Construct an 80m x 20m parade field. The parade field will be generally level but have sufficient slope (1%) to facilitate drainage off the field. Refer to paragraph 4.17.3 for information on establishing and maintaining turf.

4.21.5 Monument Sign

Provide and install 6 m wide x 3.5 m tall x 0.8 m thick exposed aggregate concrete monument sign. Provide and install bronze lettering in Dari and Pashto as shown on Appendices C9 – C11. Provide and install nighttime lighting concealed behind short rough hewn stone walls. Provide and install 2 (two) 1.5 m x 1.5 m factory fabricated baked enamel graphic on rust free metal panels, which shall be inset 20 mm on both sides of the sign. Foundation and connections shall be constructed as per the design of a licensed structural engineer. Site sign as directed by the Contracting Officer's Representative (COR). Do not install lighting, lettering or graphics until the NPTC is occupied by Police, to prevent vandalism.

4.22 RANGES

4.22.1 Phase I Pistol Range & Multipurpose Range

The Contractor shall be responsible for the completion of a 50m x 50m pistol range and 800m multi purpose (RPG, machine gun) range complete with shaded pavilion for each range,

reviewing stands, and range control towers. Fencing around range complex shall be minimum length required to control and protect range support facilities.

Erosion control structures shall be installed (drainage ditches, pipe culverts, washes, and small bridges as required). Contractor shall clear, level, and grade smooth the range sites. A compacted dirt berm will be constructed as the "back-stop" and sides of each range. It is anticipated that the contractor will excavate into the existing hillside for the 800m multi purpose range to create the necessary berms for both ranges. Boundary markers will be placed on each range to mark right and left limits. The firing lines shall consist of a 1.25m high berm with a 2m plateau on top which is centered on the zero meter line.

One (1) trash collection point shall be located at the entrance gate to the range complex. Lighting on the road to and at the ranges, buildings, and towers, and between the fence and road surrounding the entire range complex shall be installed. A gravel road with parking at each range shall be provided, extending to the live fire driving course.

4.22.2 Phase I Rifle Ranges

The Contractor shall be responsible for the completion of two (2) 200m x 600m rifle ranges complete with shaded pavilion, reviewing stands, and range control towers for each range. It is anticipated that the contractor will excavate into the existing hillside for the two 600m rifle ranges to create the necessary berms for both ranges.

Design and construct sewer lines, septic tank, and absorption field for a six person open pit latrine. A soil investigation will be necessary to determine size and depth of absorption field.

Erosion control structures shall be installed (drainage ditches, pipe culverts, washes, and small bridges as required). Contractor shall clear, level, and grade smooth the range sites. A compacted dirt berm will be constructed as the "back-stop" and sides of each range. Boundary markers will be placed on each range to mark right and left limits. The firing lines shall consist of a 1.25m high berm with a 2m plateau on top which is centered on the zero meter line.

The Contractor shall install, within the chain link fenceline of the range perimeter, a gravel road with drainage structures extending behind the ranges.

4.22.3 Live Fire Driving Course

Design and construct a 2.5 km driver's training course that includes parking, backing up, driving up a hill, driving down a hill, turns, and rough terrain. Road surface will be gravel except in areas that are subject to erosion; those areas will be paved.

5.0 GENERAL CRITERIA

5.1. HEATING, VENTILATION, and AIR-CONDITIONING (HVAC)

Environmental control of the facilities shall be achieved by HVAC equipment proposed by the contractor and approved by the U.S. Government. All occupied structures constructed in Phase I and II will have diesel heat, except for the recruit compound which will have cogen heat from the adjacent power plant. Air conditioning shall be provided for a limited number of

facilities, as described throughout Part 4 of this specification. All remaining occupied areas shall have ceiling fans and/or ventilation features to adequately ventilate and circulate air.

5.2 LIFE SAFETY

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

5.3 INTERIOR ELECTRICAL

All electrical design and installation shall meet NEC (NFPA 70) requirements. Electrical receptacles shall be provided as indicated. Conductors and circuits shall be sized for the specific loads. Generated voltage shall be or 220/380v 50Hz. Contractor shall design all interior electrical systems as described in section 01015, Technical Requirements, and shall design and install any required exterior lighting, as described in section 01015.

5.4 FENCING AND WALLS

Construct perimeter walls, fences and gates before the rest of the construction, to secure and maintain the site.

6.0 SPECIAL CONCERNS FOR CONTRACTOR ADHERENCE

6.1 SPARE PARTS

The Contractor shall provide a twelve (12) months supply of all spare parts for all facilities and all systems as recommended by the various manufacturer's instructions. Prior to purchase the contractor shall forward the lists of spare parts with pricing, by vendor to the Government for approval. A set budget amount of \$110,000.00 has been established for spare parts.

6.2 SITE AND TRANSPORTATION SECURITY

The contractor shall develop a site security plan and program to provide year round security for the NPTC 24 hours-a-day throughout the performance of the Contract. There will be licensed armed guards manning each watch tower, the main entry gate and roving patrols of the compound, adjacent hills and observation posts at all times. Tower guards will maintain perimeter security to include thwarting any attempted theft, vandalism or attacks. Roving guards will patrol vehicle staging areas making sure unauthorized personnel are not present, and prevent damage or sabotage of grounds and/or equipment. Roving patrols will also patrol the adjacent hills to prevent snipers or any other terrorist activity that might threaten the site. Gate guards will thoroughly inspect vehicles entering the compound for explosives, contraband and unauthorized personnel. Gate guards will also check for proper identification and conduct physical searches of personnel entering and leaving the site.

The contractor is expected to perform all required actions to protect the NPTC compound from theft and vandalism and personnel from physical harm.

The contractor shall establish and implement methods in writing to ensure that all keys issued by the contractor are not lost or misplaced and are not used by unauthorized persons. The contractor shall develop procedures covering key control that will be included in their quality control system. The NPTC Managers will keep a master log of all keys and provide a copy to the contracting officer's representative (COR) for verification.

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

Contractor personnel who are armed will be properly authorized to carry arms in Afghanistan. Armed contractor personnel must be properly trained and qualified on each weapon they will be authorized to use.

The contractor will operate a 24-hour central security operations center with communication capability to each guard on duty and the ability to notify all NPTC personnel of increased threats and protective actions to take. The contractor will use force protection condition levels with corresponding levels and codes for uniforms, weapons and vehicle movements. The contractor will use road movement safety restriction codes for frequently traveled roads in the vicinity of NPTC. Force protection conditions and vehicle route status will be publicized to the site population.

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

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

The contractor will develop a training plan for each aspect of the security operations to ensure all employees receive initial and periodic training to maintain certification, proficiency and safety. This training will include but not limited to weapons qualification, vehicle operations, IED, site security, entry control and safety.

The contractor shall provide a sufficient number of trained personnel to meet the required security level for the NPTC beginning on the date of mobilization.

6.3 FACILITIES USE TRAINING

Due to the size and technologies utilized for the construction of the NPTC The Contractor shall provide facilities use training to properly educate identified local national staff in the proper care, use, and maintenance of all facilities. Facilities Use Training shall occur for a period of three months after completion of Phase I and shall occur again for three months upon completion of Phase II.

6.4 ADDITIONAL CHECKLIST

- a. Provide at all exterior doors at all buildings concrete stoops with walk-off grates having removable galvanized steel grates and dirt wells provide boot scraper for boot cleaning. Door hardware will include locks.
- b. All exterior walls will be insulated and rated R-13 & all roofing systems shall be rated R-30.
- c. Provide a janitor room with a mop sink on each floor of all building facilities.
- d. Provide storage in all Barracks at .5 SM per person in each barracks.
- e. All buildings shall have sloped metal roofs, with metal eaves, and soffits. All exterior entry ways to be covered and protected by rain gutters and diverters as to not have water falling on the entry ways to all buildings. See Section 010115 for roof specifications and warranty.
- f. Barracks shall be spaced far enough apart to minimize noise (minimum 15 meters between barracks).
- g. Where applicable facility construction shall maximize the use of local construction material and techniques while meeting all RFP and seismic requirements.
- h. All Barracks and Admin areas 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.
- i. The toilet/shower facilities shall be located with toilets facing North/South away from Mecca, for cultural reasons.
- j. Do not provide urinals for cultural reasons.
- k. Showers shall contain a valve for hot and cold water mixing. There shall be a showerhead mounted high on the wall and an additional spigot mounted below the control valves. 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.
- l. All sinks for the buildings and the central toilet/shower facilities shall be 1.8m wide trough type constructed poured in place concrete 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. Provide the following Ablution Area toilet/shower/sink per occupant ratios for all facilities unless other wise noted (such as men and women's classroom toilet, sink and ablution buildings)
 - 1) Sink ratio 1:12
 - 2) Shower Ratio 1:12
 - 3) Toilet Ratio 1:12
 - 4) Ablution Area 1:12

- n. Install carbon monoxide (CO) monitors in large occupancy areas, sleeping areas and enclosed facilities. If all the windows and doors are closed and there is no provision for intake air, 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. All facilities will have fire extinguishers provided for fire protection and suppression.
- o. Reversible 3-speed motor ceiling fans (minimum 52-inch blades) shall be designed and installed barracks areas, one- and two-man bedrooms, apartments, dining rooms, supply and storage areas, classrooms and offices.
- p. No conex boxes will be allowed for facilities of any sort.
- q. All shower areas, and toilet areas shall have light switch activated exhaust fans.
- r. For DFAC's the Contractor shall provide space and electrical outlets for future installation of walk-in refrigerators and walk-in freezers.
- s. Upon completion of all phases of work the Contractor shall provide "key racks" clearly identifying all keys to the facility and their specific building. Contractor shall provide 4 sets of keys for each building and provide four separate key box locations.
- t. 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.
- u. Barracks complexes shall be arranged to allow for common area (central plaza) for class assembly.
- v. 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.
- w. Install 2 (two) 10 meter tapered metal flagpole with base constructed of 600 mm reinforced concrete; imbed 2,000 mm, with stainless steel pulleys top and bottom w/10 mm nylon line and 100 mm ball on top. Provide base hinge and latch to tilt pole for maintenance.
- x. All buildings shall have windows, unless security requirements preclude them. All rooms on exterior walls shall have windows. All sleeping rooms in barracks shall have windows.
- y. All buildings with water supply shall have a water meter and shut off valve installed in a locked cabinet or closet area inside the building.
- z. All exterior entry ways to be covered and protected by rain gutters and diverters as to prevent water from falling on the entry ways to all buildings. No water shall drain across walkways, stairs etc.
- aa. 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 1,000 mm away.

- bb. The building design shall incorporate insulation and exterior window shading techniques to reduce building heat loss and heat gain. The Contractor shall include energy efficient environmental control in the design analysis. All buildings will have Diesel Heat w/ceiling fans unless otherwise noted.
- cc. The contractor shall prepare and install permanent signage in Dari and Pashtun to educate students and staff on the proper use of facilities equipment. Of special consideration will be the toilet, shower, sink, and ablution areas along with the refueling station, wash rack, vehicle maintenance, and warehouse facilities.
- dd. All designs, drawings, specifications, notes, and other works developed in the performance of this contract shall become the sole property of the Government and may be used on any other design without additional compensation to the Contractor. The Government shall be considered the "person for whom the work was prepared" for the purpose of authorship in a copyrightable work under 17 U.S.C. 201(b). With respect thereto, the Contractor agrees not to assert or authorize others to assert any rights or to establish any claim under the design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish all retained works on the request of the Contracting Officer. Unless otherwise provided in the contract, the Contractor shall have the right to retain copies of all works beyond such period.
- ee. Provide vestibules at main entrances and main exits of buildings to prevent loss of heated or conditioned air.

7.0 COMPLETION OF WORK

All work required under this contract shall be completed **NLT March 31, 2011**.

Review Section 00150 for Schedule requirements. The Design 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 layouts, landscape, and grading plan and site plans, the Contractor may commence Site Work. Contractor will prosecute the work diligently, and complete the entire work, ready for use. 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 stated in the task order documents.

Refer to Appendix D for a list of submittals and deliverables for the Required Performance Period.

-- End of Section --

SECTION 01015 TECHNICAL REQUIREMENTS

1.0 GENERAL

1.1 COMPLIANCE

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. See Appendix D, Design Review Checklists US for additional design guidance in ensuring a quality design.

1.2 MINIMUM REQUIREMENTS & ALTERNATIVES

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. 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)

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/mines 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/mines or potential UXO/mines, the contractor shall immediately notify the COR, mitigate any delays to scheduled or unscheduled contract work, and clear/remove the UXO/mines. The contractor may only provide clearance/removal services via UN MAC accredited entities. Clearance/removal may only be undertaken in accordance with IMAS. The Contractor assumes the risk of any and all personal injury, property damage or other liability arising out of or resulting from any Contractor action taken hereunder.

NOTE: 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

1.4.1.2 Explosives Safety

1.4.1.2.1 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.

1.4.1.3 Activity Hazard Analysis (AHA) briefings

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

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.

1.4.1.3 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 suppl, Energy-Efficient Design of Low-Rise Residential Buildings
 ASME - American Society for Mechanical Engineering
 ASTM - American Society for Testing and Materials
 AASHTO – American Association of State Highway and Transportation Officials
 AASHTO – A Policy on Geometric Design of Highways and Streets, latest edition.
 AASHTO – Model Drainage Manual
 AWS - American Welding Society
 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
 National Electrical Safety Code (NESC), Institute of Electrical and Electronic Engineers (IEEE C2), 2002 ed
 NFPA 10, Portable Fire Extinguishers, 2007 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, 2007 edition
 NFPA 75, Standard for the Protection of Information Technology Equipment
 NFPA 90A, Air Conditioning and Ventilating Systems, 2002 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 5-802-1 Economic Studies
 TM 5-822-2 - General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas
 TM 5-822-5 - Pavement Design for Roads, Streets, Walks and Open Storage Areas (Incl C1)
 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 3-240-03N, Operation and Maintenance: Wastewater Treatment System Augmenting Handbook, 16 Jan 2004
 UFC 3-240-04a, Wastewater Collection, 16 Jan 2004
 UFC 3-240-09A Domestic Wastewater Treatment 22 June 2007
 UFC 3-250-01FA pavement Design for Roads, Streets, Walks and open Storage Areas
 UFC 3-250-3 Standard Manual Practice for Flexible Pavements, May 01
 UFC 3-260-02, Pavement Design for Airfields, 30 June 2001
 UFC 1-300-09N, Design Procedures, 25 May 2005
 UFC 3-310-01, Structural Load Data, 25 May 2005
 UFC 3-400-01, Design: Energy Conservation, 5 July 2002
 UFC 3-400-02, Design: Engineering Weather Data, 28 Feb. 2003
 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 3-420-01, Design: Plumbing Systems, 25 Oct. 2004
 UFC 3-420-02FA, Design: Compressed Air, 15 May 2003
 UFC 3-430-01FA, Heating and Cooling Distribution Systems, 27 July 2003
 UFC 3-430-05FA, Design: Gas Distribution, 15 May 2003
 UFC 3-450-01, Design: Noise and Vibration Control, 15 May 2003
 UFC 3-460-01, Design: Petroleum Fuel facilities, 16 Jan 2004
 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
 UL Standards (as applicable)
 Underwriters' Laboratories (UL) Fire Protection Equipment Directory (2002)
 UL 710, Exhaust Hood for Commercial Cooking Equipment, latest edition
 UL 737, Fireplace Stoves, latest edition
 UL 752, Bullet Resisting Equipment, 2000 or later

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.

2.0 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.

The site plan shall show geometric design of the site, including applicable dimensions of all exterior facilities, mechanical equipment, pavements, utilities, etc. Required facilities are described in the following sections of this specification. All roads and areas where tractor-trailer vehicles will travel shall be designed for the worst case turning radius. Design and construction of roads and pavements shall be based on recommendations from geotechnical investigation required herein.

All site plans and master plans shall be drawn in the following projection and datum for incorporation into the U.S. Army Corps of Engineers GIS system:

WGS 1984 UTM Zone 42 S

2.3.2 Demolition

Clearing and grubbing is required prior to grading. Grading at the site is required and shall conform to requirements within references herein.

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.

Native crushed stone 100 mm thick shall be placed around all buildings, from the building wall or building landscaping out 2m and all areas of anticipated foot or vehicle traffic to reduce erosion and to provide dust control. Concrete walkways shall be installed between buildings and parking areas.

2.3.4 Paving

2.3.4.1 Roads

Paved roads design are required within the base camp area. 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 hot mix flexible asphalt concrete wearing surface 7.3 meters (24 feet) wide, unless otherwise noted, graded for proper drainage, provided with necessary drainage structures and completed with prescribed surfaces in accordance with applicable sections of TM 5-822-2 and TM 5-822-5 standards. The compound (cantonment area) roads sections shall have 200 mm (8 inch) compacted base course minimum and shall be surfaced wearing course with a minimum 50 mm (2 inch) hot mix asphalt concrete, unless otherwise noted. Contractor shall notify the Contracting Officer immediately if initial site survey determines that area hydrology requires major drainage structures or bridges. Also, the Contracting Officer shall be immediately notified if the required lengths of road or preexisting conditions are determined to be substantially or materially different than the above-described conditions/estimates. The Contractor shall construct gravel subbase roads, complete site grading and installation of all required drainage structures, to serve the Base Bid Contract.

2.3.4.2 Bridges and Site Grading Plan

Preliminary investigation indicates existing drainage areas and wadi crossing. Bridges, culverts, gabion crossings, concrete wadi crossings or other related structures shall be constructed as required over rivers, creeks and wadis that contain water and deep drainages that fill with water during storm events. 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. Subgrade 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 Masonry Wall 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 2500 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 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 sliding type. Vehicle gates shall be a pair of 3.65 m wide x 2.4 m high leaves, 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 minimum 2.5 mm 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 diameter solid steel. The design of the gates shall insure that it is dimensionally stable, square, true and planar. 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. Provide side gate door for individual access through the sliding gate with a peek hole.

2.3.5.2.1 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.

2.3.5.2.2 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.

2.3.5.3 Vehicle Barriers

2.3.5.3.1 Active Barrier - Drop Arm Gates

The height of the beam shall be a minimum of 30 inches 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.

2.3.5.3.2 Active Barrier - Cable Lift Gate

Cable Lift Gates will be provided in addition to the sliding gates. Cable lift gate will normally be in the raised (deployed) position. Cable lift gate shall be certified to stop a 6,800 KG truck travelling 80 KPH. Shall be able to be balanced by counterweights so it can be manually raise or lowered by one man in seconds. Deployed height will be at least 1 M. Cables shall be a minimum of 25mm diameter braided steel.

2.3.5.3.3 Passive Barriers - Concrete

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.

2.3.5.3.4 Passive Barriers – Hesco Barriers

Hesco barriers shall be made of geo-textile fabric shall be 2mm (0.08") non-woven polypropylene and bound with 8 gauge galvanized steel wire mesh size 7.62 cm (3") grid. The coil hinges and joining pins shall be 8 gauge hardened steel. Fill material shall be a mixture of sand and gravel. The gravel shall not be more than 1.8 cm (¾") in size. The materials shall be compacted in lifts no greater than 25 cm (10").

Bastions shall be provided with suitable foundations as recommended by the manufacturer depending on the height, and filled with a sand & gravel mixture. Provide a gravel base at least 50 cm (20") deep, and extending around the bottom edge of the barrier by at least 50 cm (20"), for proper support and drainage. The gravel base material shall have no stones large than 2.5 cm (1"), due to the risk of becoming projectiles in a blast.

Protection from UV light shall be provided with an application of a protective coating such as UV CAM, cement slurry not greater than 0.3 cm (1/8") thick. The cement slurry is a mixture of cement powder and water, mixed to a proportion of 1:1, but this may be adjusted to suit the application method. Sand may also be added as necessary.

Submittal Requirements:

- a. The manufacturer of this product must have been in this business for at least 5 years.
- b. Installers must be certified by the manufacturer.
- c. Welded mesh and wire must be ASTM A641 Class 3
- d. Geo-textile shall be ASTM D4632, D6241, D4355, D4751 & D4491.
- e. Structural calculations must be prepared by a licensed engineer and must be submitted and approved by the Government prior to installation

2.4 CIVIL UTILITIES

2.4.1 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.

2.4.2 Water

2.4.2.1 General Water

Infrastructure design (groundwater wells, booster pumps, storage tanks, transmission piping and distribution piping networking) and construction shall serve the demand based on full build out population of the ANA base camp. 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. The required Average Daily Demand (ADD) approximation is derived from 155 liters per capita per day (lpcd) equivalent to 41 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) outside water hydrant (hose spigot) for

any building or facility for which a water supply is provided for landscaping purposes.

2.4.2.2 Water Quality Sampling and Analysis

Immediately following demining activities, the contractor shall initiate well investigation and development. 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.

WATER QUALITY ANALYSIS LIST

Physical Characteristics

Color	Temperature
Threshold odor number	pH value
Turbidity	

Chemical Characteristics (Expressed as mg/L)

Arsenic	Total Hardness as CaCO(3)
Barium	Cadmium
Chromium	Copper
Lead	Mercury
Selenium	Silver
Zinc	Sulphates as SO(4)
Fluoride as F	Chlorides as C1
Manganese as Mn (dissolved and total)	Conductivity
Iron as Fe (dissolved and total)	Nitrites as NO(2)
Total Dissolved Solids	Nitrates as NO(3)
Total coliform/fecal coliform (bacteria)	

2.4.2.3 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) to discharge any well water overflow to the outside via a drain outlet. Top of the concrete slab (finish floor elevation) of well house shall be 300 mm or 12 inches above the expected high water mark or flood plain level and be about 30 meters from the edge of a stream or drainage channel bank. The well house design should be such that the well pump, motor and drop pipe could be removed readily via a roof hatch that shall be insulated and lockable with a hasp and lock. 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 entry door shall be a heavy duty insulated metal door and frame and lockable. The well shall be protected from unauthorized use by providing a surrounding security fence with a lockable gate. Provide outriggers, barbed wire and concertina wire on fence and gate.

2.4.2.4 Water Storage Tank and Well Pump Sequence of Operation:

High High, High and Low Level Switches and level transmitters shall be installed in the Water Storage Tank at predetermined levels. The Level Switches shall be similar to Varec LH23-1201 Switch-Tek Mini Level Flow Switch or equal. The High High Level Switch shall set off an alarm to signify a failure of the Well Pump instrumentation and the Water Tank is in danger of overflowing. The Low Level Switch will activate the Well Pump and provide power to a Normally Open Electrically Operated Valve located on the Water Tank nozzle.

The High Level Switch will shut off power to the Normally Open EOVS so the valve will close. The Well Pump Controller will be located near the Well Pump and shall consist of a Non Reversible Magnetic Starter with Fused Disconnect Switch sized for the pump motor and a Hand Off Automatic Switch (HOA) switch. The HOA switch will be placed in the Hand or Off position only when maintenance is being performed on the Well Pump or the Water Tank or the High High Level Alarm has been activated on the Water Storage Tank and the tank is in danger of overflowing. Otherwise the HOA switch is normally in the automatic position. A shutdown switch will also be located near the Water Tank. This switch will also be utilized only if the Tank is Overflowing. A pressure switch will be located in the Well Pump discharge line to stop the Well Pump at a designated design setting. This pressure switch shall be overridden when the HOA switch is in the Hand or Off mode.

The contractor shall account for surges and air in system due to the frequent starting/stopping of the Well Pump in the piping design.

2.4.2.5 Raw Water Disinfection

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

2.4.2.6 Service Booster Pumps (Direct-Pressure System)

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.

2.4.2.7 Ground Water Storage Tank (GST)

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.

2.4.2.8 Disinfection & Chlorination System

Use hypochlorite compounds for disinfection. A hypo-chlorinator shall be used to feed a sodium hypochlorite solution of 5-15% available chlorine into the system. Hypochlorite compound may be a liquid or solid form. The hypo chlorination system shall consist of a chemical solution tank for hypochlorite, diaphragm-type pump, power supply, water pump, pressure switch and storage tank (optional hydro-pneumatic/storage). The pump shall feed a hypochlorite solution in proportion to the water demand. The hypo-chlorinator shall have a pumping rate, liters per day (lpd) (gallons per day (gpd)) adequate to deliver 5 percent (%) available hypochlorite solution adjustable to the quantity of water being produced from the source. Dosage rate will vary somewhat depending on actual pump production rate and available residual chlorine in the system. Contractor shall determine the required dosage rate milligrams per liter (mg/l) to maintain the required chlorine residual (usually 0.2-0.4mg/l) in the distribution system. Chlorine solution tank shall be large enough

to hold a three days supply of hypochlorite solution. A fresh solution shall be prepared every two or three days because the solution may lose its strength over time and this will affect the actual chlorine feed rate. The hypochlorite shall be stored in a cool dry place. Sodium hypochlorite can lose from two to four percent of its available chlorine content per month at room temperature. Contractor shall verify required minimum residual chlorine in accordance with local requirements verified and approved by the Contracting Officer. The chlorination system shall have the capability for manually adjusting the dosage rate and be installed in such a manner that the system can be easily disconnected and bypassed in the event of health safety or routine maintenance and repair. Disinfection of water mains shall be in accordance with AWWA standard C651-86 and disinfection of storage facilities in accordance with AWWA standard C652-86.

2.4.2.8.1 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.

2.4.3 Water Distribution System

2.4.3.1 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 (100psi). 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.

2.4.3.2 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, et al. DI fittings shall be suitable for 1.03MPa (150psi) pressure unless otherwise specified. Fittings for mechanical joint pipe shall conform to AWWA C110. Fittings for use with push-on joint pipe shall conform to AWWA C110 and C111. Fittings and specials shall be cement mortar lined (standard thickness) in accordance with C104. Polyvinyl Chloride (PVC) pipe shall conform to ASTM D 1785. Plastic pipe coupling and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. PVC screw joint shall be in accordance with ASTM D 1785, et al, Schedules 40, 80 and 120. PVC pipe couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. Pipe less than 80mm (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.

2.4.3.3 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.

2.4.3.4 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.

2.4.3.5 Leakage Test

Reference AWWA C600 (DI) pipe or AWWA C605 (PVC) - 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. Leakage and pressure testing shall not be conducted until thrust block curing is complete.

2.4.3.6 Bacteriological Disinfection

2.4.3.6.1 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 and shall produce not less than 25 ppm of free chlorine residual throughout the line at the end of the retention period. Valves on the lines being disinfected shall be opened and closed several times during the contact period. The line shall then be flushed with clean water until the residual chlorine is reduced to less than 1.0 ppm. During the flushing period, each fire hydrant on the line shall be opened and closed

several times.

2.4.3.7 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.

2.4.3.8 Acceptance Requirements

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

2.4.3.9 Time for making Tests

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

2.4.3.10 Concurrent Tests

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

2.4.3.11 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 et al. The valves and valve boxes shall be constructed to allow a normal valve key to be readily used to open or close the valve. Provide traffic-rated valve boxes. Provide concrete pad, 1 meter (3'-4") square, for all valve boxes.

2.4.3.11.1 Vacuum and Air Release Valves

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

2.4.3.11.2 Blow-Off Valves

The Contractor shall provide 40-50mm (1-5/8" – 2") blow-off valves at ends of dead end mains. Valves should be installed at low points in the mains where the flushing water can be readily discharged to natural or manmade drainage ditches, swales or other.

2.4.3.12 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. Thrust blocking shall follow AWWA C600 with concrete cured to exceed 17.25MPa (2,500psi) compressive strength.

2.4.3.13 Building Water Service Connections and Service Lines

Service connections and service line pipe will be installed in as direct a path as possible from the distribution main to the building served and will enter the building on the side closest to the distribution main. Service line connections will be installed below the frost depth. If the distribution main pipe diameter and wall thickness is adequate, smaller service lines may be connected to the main by direct drilling and tapping. Larger service connections (greater than 2 inch (50mm)) may necessitate the installation of tees or special branch connections. Service connections being made under pressure will use a tapping machine, tapping valve and sleeve. The Contractor shall install all base bid and future service connections on the main water supply pipe. Service connection points for future service shall be valved, plugged and terminated at the road ROW LINE or UTILITY EASEMENT LINE as applicable (**within the base bid areas at a point closest to the future facilities**). Contractor shall clearly identify all future service connection points. Future water service lines to future buildings will be installed by others. Service piping shall extend to a point (1.5m) from the building or facility, then connected to the building plumbing 1.5m point outside the building.

2.4.4 Sanitary Sewer

2.4.4.1 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 system construction shall include service to all buildings as described in the Scope of Work Section 01010. Sanitary sewer collection, pumping, treatment and effluent disposal and sludge treatment facility, shall be designed to accommodate the full base "build-out" population, (current proposed). Contractor shall design sanitary sewer collection system using approved field survey data and finished floor elevations. Depending upon the topography and building location, the most practical location of sanitary sewer lines is along one side of the street. In other cases they may be located behind buildings midway between streets. Main collection sewers will follow the most feasible route to the point of discharge. The sewer collection system shall be designed to accommodate the initial occupancy and a reasonable expansion capability. 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:

- a. Follow slopes of natural topography,
- b. Avoid routing sewers through areas which require extensive restoration or underground demolition,
- c. Avoid areas of high groundwater and placement of sewer below the groundwater table,

- d. Locate manholes at change in direction, size or slope of gravity sewers,
- e. Use straight sections between manholes, curved alignment shall not be permitted,
- f. Locate manholes at intersections of streets where possible,
- g. Avoid placing manholes where the tops will be submerged or subject to surface water inflow,
- h. Evaluate alternative sewer routes where applicable,
- i. 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.

2.4.4.2 Protection of Water Supplies

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

- a. Sanitary sewers shall be located no closer than 15m (50 feet) horizontally to water wells or reservoirs to be used for potable water supply.
- b. Sanitary sewers shall be no closer than 3 m (10 feet) horizontally to potable water lines; where the bottom of the water pipe will be at least 300mm (12 inches) above the top of the sanitary sewer, horizontal spacing shall be a minimum of 1.8 m (6 feet).
- c. Sanitary sewers crossing above potable water lines shall be constructed of suitable pressure pipe or fully encased in concrete for a distance of 2.7m (9 feet) on each side of the crossing. Pressure pipe will be as required for force mains in accordance with local standards and shall have no joint closer than 1 meter (3 feet) horizontally to the crossing, unless the joint is encased in concrete.

2.4.4.3 Quantity of Wastewater

The Contractor shall verify the average daily flow considering both resident (full occupancy) and non-resident (8hr per day) population. The average daily flow will represent the total waste volume generated over a 24-hour period, and shall be based on the total population of the facility and usage rate of 41 gallons per capita day (water usage). The wastewater flow rate shall be calculated as approximately 80% of water volume and usage rate as specified in Part 2.3.6.2.. Design criteria guideline shall be based on average influent wastewater characteristics as BOD of 200mg/l, SS of 200mg/l.

2.4.4.4 Gravity Sewer

Sanitary sewers shall be designed to flow at 90 to 95 percent full. Sanitary sewer velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps) or 2.0 feet per second (fps) at the ADD flow rate and a minimum velocity of 0.8 to 1.05 mps (2.5-3.5fps) at the peak diurnal flow rate. In no case shall the velocity drop below 0.3 mps, (1.0 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.

Table 1. Minimum Slopes for Sewers.

Sewer Size	Minimum Slope in Meters per 100 Meters
100 mm	1.00
150 mm	0.62
200 mm	0.40
250 mm	0.28
300 mm	0.22
350 mm	0.17
375 mm	0.15
400 mm	0.14
450 mm	0.12
525 mm	0.10
600 mm	0.08

2.4.4.5 Manholes

The Contractor shall provide standard depth manholes (MH), (depth may vary) an inside dimension of 1.2 meters (4 feet). Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover following AASHTO M199 or ASTM C478. 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, ASSHTO HS20-44 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.

2.4.4.5.1 Manhole Design Requirements

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

2.4.4.5.2 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.

2.4.4.5.3 Pipe Connections

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

2.4.4.5.4 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. Unplasticized polyvinyl chloride (U-PVC) for water supply shall conform to BS, EN, 1452-2:2000. the

minimum pipe pressure requirement is 150 psi or 10.0 bar. Non-pressure rated underground drainage and sewerage pipe shall meet BS EN 1401-1; 1998.

2.4.4.5.5 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.

2.4.4.5.6 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.

2.4.4.5.7 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.

2.4.4.5.8 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.

2.4.4.5.9 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.

2.4.4.6 Crown

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

2.4.4.7 Building Sewer Service Connections and Service Lines

Service connections and service piping shall be installed in as direct a path as possible from the main sanitary or service lateral. Service connection standard fittings shall extend to the road ROW LINE or UTILITY EASEMENT LINE and the standard "wye" fitting or "MH w/ stub out" shall be plugged and clearly identified for the future service connection. The Contractor shall install all base bid and future connection fittings on the main collector line. Future service piping to future buildings will be installed by others. Sanitary sewer service piping shall extend to a point (1.5m) from the building then connected if the building plumbing at the 1.5m point outside the building. 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."

2.4.4.8 Cleanouts

Cleanouts must be installed on all sewer-building connections to provide a means for inserting cleaning rods

into the underground pipe. Install manufactured wye fittings. Preferably the cleanout will be of the same diameter as the building sewer, and never be smaller than 100 mm (4 inch). Inspection chambers will not be permitted.

2.4.4.9 Field Quality Control

2.4.4.9.1 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.

2.4.4.9.2 Deflection Testing

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

2.4.5 Package Wastewater Treatment Plant

Package waste water treatment plants shall be designed in accordance with Department of Defense Handbook, Wastewater treatment System Design Augmenting Handbook, Feb 97, with Notice 1, Jan 99, Section 6: Package Plants and Small flow treatment systems.

2.4.5.1 Site Survey

The Contractor shall conduct a topographic survey to determine existing site characteristics. The Contractor shall conduct a utility survey to determine the locations of any nearby water lines, wells, sanitary sewers, storm sewers and electrical lines.

2.4.6 Gray Water Storage Systems

Systems shall be designed and installed in accordance with UFC 3-240-03, 16 January 2004 edition.

2.4.7 Storm Sewer Systems

Oil/water separators shall be utilized for all drains from industrial sites and garage maintenance facilities. Separators shall be installed as close as possible from the drain location. Storm sewer system shall not be mixed with sanitary sewer system and shall be in accordance with UFC 3-240-03, latest edition.

3.0 ARCHITECTURAL REQUIREMENTS

3.1 GENERAL

All material approved shall become standardized material to be used throughout the facilities under contract. Different sub-contractors shall not use different material or standards under the contract. Intent of the project is to use locally procured materials (unless specified otherwise) and labor to the maximum extent possible while satisfying seismic building code. Conflicts between criteria shall be brought to the attention of the Contracting Officer for resolution. In such instances, the Contractor shall furnish all available information with justification to the Contracting Officer. All building exterior walls shall be constructed with reinforced CMU, insulated concrete sandwich panels, reinforced concrete or approved equivalent, except for the guard towers and guard houses which shall be fully grouted CMU walls, with concrete ceiling and floors.

3.1.1 Design Criteria

The Codes, Standards, and Regulations listed herein shall be used in the construction of this project. The publications shall be the [referenced [most recent] editions. Standards other than those mentioned may be accepted provided they meet the minimum requirements and the contractor shall submit proof of equivalency to the Contracting Officer for approval.

IBC- International Building Code

NFPA-101- National Fire Protection Association, Life Safety Code.

3.1.2 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 may not be feasible. The facility shall comply with all other safety requirements of NFPA 101. 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.

3.2 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. Information regarding force protection may be found herein and at the following link: www.tisp.org/files/pdf/dodstandards.pdf

3.3 PRE-ENGINEERED METAL BUILDING SYSTEMS

Metal building systems shall comply with the requirements of the MBMA Low Rise Building Systems Manual-2002. Facilities designated as long-span, shall have no interior columns.

3.4 THERMAL PERFORMANCE OF EXTERNAL BUILDING ASSEMBLIES

External building assemblies shall meet the requirements of TI-800, Design Criteria, UFC 3-400-01 Design:

Energy Conservation, and ASHRAE Standard 90.1, latest editions, but shall meet the following minimum requirements:

Assembly	Minimum Thermal Value
Exterior walls (above grade)	RSI 1.936 (R 13)
Ceilings/roof	RSI 3.345 (R 30)
Floor (over unheated space)	RSI 3.345 (R 19)
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)

RSI measured in m²-K/W, R measured in sqft-F-hr/BTU.

3.5 CONCRETE

Place 150 mm (6") 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.

3.6 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 190 mm or 290 mm wide x 390 mm x 190 mm high as shown on drawings. **All cells shall be fully grouted in exterior and shear walls.** They shall be installed in running bond level and plumb. Mortar joints shall be 10 mm on all sides between CMU. Joints shall be struck with a concave tool to provide a smooth recessed curved surface. Install only quality units. The surface shall be free of chips, cracks, or other imperfections that would detract from the overall appearance of the finished wall. Defective CMU or mortar shall be rejected.

3.7 METAL

3.7.1 Metal Window Sills

Galvanized metal window sills, 1 mm (20 gauge), shall be installed on the exterior of all windows. The metal window sills shall have a turn down of 50 mm over the exterior masonry and stucco. Metal sills shall extend from side to side of the masonry opening in a single piece. Extend the metal 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.

3.7.2 Metal Fascia & Soffit

No wood fascias and/or soffits are allowed. Use metal fascias and soffits throughout. Extend roof decking out over fascia a minimum of 20 mm. Provide a 40 mm drip flashing over edge of roof decking so that it extends past bottom of decking on all sides of the building. Provide continuous soffit venting of all overhangs at both bottom and top of roof slope.

3.7.3 Steel Cook Top (Dining Facilities)

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.

3.7.5 Pass-Through Counter Top (Dining Facilities)

Provide 1.6 mm (16 gauge) stainless steel, 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 600 mm wide x length of opening shown.

3.7.6 Fire Counter Shutter (Dining Facilities)

Fire Counter Shutters shall be installed in conjunction with the Pass-Through Counter Tops described in the paragraph above. Fire counter shutters shall be used to separate the kitchens from the dining areas, and shall be U.L labeled for gypsum board, masonry and steel openings, and rated at 90 minutes in full compliance with NFPA-80 standards. Finish of shutter, guides and hoods shall be stainless steel. System shall be activated by 74° C (165° F) fusible links, and by electrical switches located near exit doors. Bottom bar sliding bolt locks shall be provided to secure the shutters in the down position; bolts shall be operated from the kitchen side of the shutter.

3.8 CARPENTRY

3.8.1 Wood Purlins

If Contractor chooses to utilize wood instead of metal purlins, provide and install roof purlins of natural wood, locally available material 1 meter on center securely wedged between steel H structural joists. Tightly fit 30 mm boards over roof structure and nail into wood purlins. New roofing shall extend a minimum of 300 mm past the exterior surface of the wall.

3.9 ROOFING AND WEATHERPROOFING

3.9.1 Sloped Roofs

On sloping roofs provide and install .85 mm (22 gauge) galvanized steel in either corrugated or standing seam design. Metal roofing shall be anchored to the steel "Z" purlins or wood deck sub-surface using exposed fasteners at 300 mm on center at all seams and at 600 mm on center in the panel field. Fasteners shall be placed at the top of the corrugation taking care not to dent panel. Roof sealant or adhesive shall be placed over each anchor head. Roofing system shall include all edge, ridge and penetration flashings necessary for a watertight installation and as described in this section. Roofing shall be galvanized mil finish. Panels shall be overlapped two corrugations side to side and be continuous sheets from ridge to eave. Provide continuous ridge vents on all gable roofs.

3.9.2 Low Slope Roofs

Provide and install 3 ply built up roofing over concrete deck. Contractor may propose to the Contracting Officer an alternate roofing system with justification for consideration and alternate pricing. Concrete roof deck shall slope a minimum of 21mm per meter and/or 2% slope.

3.9.2.1 Insulation Material

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.

3.9.2.2 Insulation Installation

Comply with insulation manufacturer's instructions and recommendations for handling, installing, and bonding or anchoring insulation to substrate. Insulation boards shall be installed loose, without glue, in staggered manner. Attention should be paid not to leave separation along edges. Where overall insulation thickness is 50 mm (2 inches) or greater, install required thickness in two layers with joints of second layer offset from joints of first layer a minimum of 300 mm (12 inches) each direction. Trim surface of insulation where necessary at roof drains so completed surface is flush with drain ring. Polyester felt or geotextile shall be installed over insulation layers as a filter layer to prevent the passage of fines in gravel layer to lower strata.

3.9.2.3 Composition Flashing and Stripping

- a. Install composition flashing at cant strips, at other sloping and vertical surfaces, at roof edges, and at penetrations through roof. Install composition flashing in accordance with membrane manufacturers specifications. Nail or provide other forms of mechanical anchorage of composition flashing to vertical surfaces as recommended by manufacturer of primary roofing materials.
- b. Install composition stripping where metal flanges are set on roofing. Provide not less than two plies of woven glass-fiber fabric, each set in a continuous coating of roofing cement and extended onto the deck 100 mm to 150 mm (4 inches and 6 inches), respectively. Except where concealed by aggregate surfacing or elastic flashing, apply a heavy coating of roofing cement over composition stripping.
- c. Roof Drains: Fill clamping ring base with a heavy coating of roofing cement. Set built up roofing membrane in to the clamping ring base and fix the drain top on it.
- d. Allow for expansion of running metal flashing and edge trim that adjoins roofing. Do not seal or bond built-up roof membrane or composition flashing and stripping to metal flanges that are over 914 mm (3 feet) in length.
- e. Counterflashings, cap flashings, expansion joints and similar work to be coordinated with built-up roofing work, are specified in other sections of these specifications.
- f. Roof Accessories: Miscellaneous sheet metal accessory items, including insulation vents and other devices and major items of roof accessories to be coordinated with built-up roofing work.

3.9.3 Flashing and Sheet Metal

3.9.3.1 Materials

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

3.9.3.2 Steel Sheet, Zinc-Coated (Galvanized)

Zinc coated steel conforming to ASTM A 525, DIN BS or EN Standards.

3.9.3.3 Aluminum wall capping and expansion joint profiles.

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

3.9.3.4 General

Downspouts shall be designed and fabricated on site. Unless otherwise specified or indicated, exposed edges shall be folded back to form a 13 mm (1/2 inch) hem on the concealed side, and bottom edges of

exposed vertical surfaces shall be angled to form drips. Bituminous cement shall not be placed in contact with roofing membranes other than built-up roofing.

3.9.3.5 Wall, Floor, Ceiling Expansion Joints over Plaster

Expansion joints shall be provided as specified in ASTM, DIN 18339, BS or EN Standards.

3.9.3.6 Connections and Jointing

3.9.3.6.1 Soldering

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

3.9.3.6.2 Seaming

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

3.9.3.6.3 Cleats

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

3.9.3.7 Downspouts

Downspouts shall be installed as indicated. Downspouts shall be rigidly attached to the building. Supports for downspouts shall be spaced according to manufacturer's recommendations.

3.9.3.8 Flashing

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

3.9.3.8.1 Through-wall Flashing

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

3.9.3.8.2 Lintel Flashing

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

3.9.3.8.3 Sill Flashing

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

3.9.3.9 Wall Capping

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

3.9.4 Sealants

3.9.4.1 Interior Sealant

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

3.9.4.2 Exterior Sealant

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

3.9.4.3 Floor Joint Sealant

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

3.9.4.4 Primers

Provide a non-staining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

3.9.4.5 Backstops

Backing shall be 25 to 33 percent oversize for closed cell and 40 to 50 percent oversize for open cell material, unless otherwise indicated. Install backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified.

3.9.4.6 Cleaning Solvents

Provide type(s) recommended by the sealant manufacturer except for aluminum and bronze surfaces that will be in contact with sealant.

3.9.4.7 Surface Preparation

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

3.9.4.8 Masking Tape

Masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent

finish surfaces from primer or sealant smears. Masking tape shall be removed within 10 minutes after joint has been filled and tooled.

3.9.4.9 Primer

Immediately prior to application of the sealant, clean out loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's instructions. Do not apply primer to exposed finish surfaces.

3.9.4.10 Bond Breaker

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

3.9.4.11 Sealants

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

3.9.4.12 Protection

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

3.9.4.13 Final Cleaning

Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.

- a. Masonry and Other Porous Surfaces: Immediately scrape off fresh sealant that has been smeared on masonry and rub clean with a solvent as recommended by the sealant manufacturer. Allow excess sealant to cure for 24 hour then remove by wire brushing or sanding.
- b. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent-moistened cloth.

3.10 WINDOWS

3.10.1 Materials

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

(Note: No wood Windows will be allowed.)

- 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 Weatherstripping: Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weatherstripping 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.

3.10.2 Hardware

Provide the manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

3.10.3 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 5mm laminated single glazed.

3.10.4 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.

3.10.5 Finishes

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

3.10.6 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.

3.10.7 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.

3.10.8 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.

3.10.9 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.

3.11 DOORS

All exterior doors shall be heavy duty metal doors with metal frames and all Interior door shall be hollow metal doors with hollow metal frames.

All glazed doors shall have 6 mm laminated 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. 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.

3.11.1 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.

3.11.2 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. Doors shall be 44.5 mm thick, unless otherwise indicated. Doors shall be constructed using heavy gauge steel with minimum thickness of 1.2 mm.

3.11.2.1 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.

3.11.2.2 Welded Frames

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

3.11.2.3 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.

3.11.3 Accessories

3.11.3.1 Louvers

a. 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.

b. 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.

3.11.3.2 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.

3.11.3.3 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.

3.11.3.4 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.

3.11.3.5 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.

3.11.3.6 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.

3.11.3.6.1 Wall Anchors

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

- 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

3.11.3.6.2 Floor Anchors

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

3.11.3.7 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.

3.11.4 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.

3.11.4.1 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.

3.11.4.2 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.

3.11.4 Installation

a. 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.

b. Doors

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

c. Fire and Smoke Doors/Frames

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

d. 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.

3.11.5 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:

- a. 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.
- b. 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.
- c. 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.
- d. 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.

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

Provide bollards at all overhead door corners to protect against vehicles damaging the door frames.

3.12 GLAZING

ASTM C 1036, or ASTM C 1172 or equal.

3.12.1 Tempered 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.

3.12.2 Laminated Glass

Shall be 6-mm thick glass for all single pane exterior windows, skylights and glazed doors which consist of two nominal 3-mm annealed glass panes bonded together with a minimum of a 0.75-mm polyvinyl-butyl interlayer. For insulating glass units, use 6 mm laminated glass for the inner pane as a minimum per the Unified Facilities Criteria, DoD Minimum Antiterrorism Standards for Buildings. Laminated glass shall comply with ASTM C 1036, or ASTM C 1172 or equal.

3.12.3 Insulated Glass

All exterior glazing shall be insulated, constructed of two panes of laminated glass separated by hermetically sealed 12mm airspace.

3.12.4 Glazing Accessories

3.12.4.1 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.

3.12.4.2 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.

3.12.4.2.1 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.

3.12.4.2.2 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.

3.12.4.3 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.

3.12.4.4 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.

3.12.4.5 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.

3.12.4.6 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.

3.12.4.7 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.

3.12.4.8 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

All finishes, colors and materials in existing building and new buildings shall match. See Section 01335 for color submittals required. Provide color boards with all materials for COR approval prior to ordering materials.

3.13.1 Exterior Walls

The exterior of concrete/masonry buildings shall be stucco and/or plaster conforming to ASTM C926. A temperature of between 4 and 27 degrees C shall exist for a period of not less than 48 hours prior to application of plaster and for a period of at least 48 hours after plaster has set. Control joints shall be designed for expansion and contraction of plaster work due to thermal exposure. Control joints shall comprise of back to back casing beads. Install new stucco in 2 coats. The first coat shall be a scratch coat approximately 1 cm thick. Allow 7 days to cure. The second coat shall be finish stucco, 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. Patching shall match existing work in texture and color. All exterior color finish shall be integral with the stucco finish. No painted stucco shall be permitted due to minimize future maintenance. Color to be selected by the Contracting Officer from the color board provided by the Contractor.

3.13.2 Interior Walls

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

3.13.3 Ceilings

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.

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

3.13.4 Roof Trim

Paint all exposed fascia, and soffit with 2 coats of gloss enamel, white.

3.13.5 Exterior Ferrous Materials

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.

3.13.6 Exterior Trim

Exposed 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

3.13.7 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.

3.13.7.1 Dry Areas

Floors in administration areas, living quarters, corridors, and all rooms unless otherwise stated shall be 300 mm x 300 mm terrazzo tile or ceramic 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.

3.13.7.2 Wet Areas

Floors in wet areas shall be 300 mm x 300 mm terrazzo tile or ceramic 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.

3.13.7.2.1 Walls

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.

3.13.7.2.2 Ablution Areas

The abluion 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 or ceramic 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 or ceramic tile.

3.13.7.2.3 Kitchen

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 terrazzo tile or ceramic tile.

3.13.7.2.4 Other Floors

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 Specialties

a. 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.

b. Toilet Paper Holders

Toilet paper holders, stainless steel, shall be installed approximately 200 mm above floor in Eastern Toilets 600 mm above floor.

c. 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. Provide a shower curtain with support rings for each shower stall.

d. Grab Bars

Stainless steel grab bars, heavy duty, 18 gauge, two each 900 mm and 1050 mm long, 40 mm diameter shall be mounted behind and beside all eastern toilets, and bathtubs as they occur.

e. Paper Towel Dispensers

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

f. Light Duty Metal Shelf

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

g. Robe Hooks

Robe hooks on all toilet and shower stalls required.

4.0 STRUCTURAL

4.1 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. The following facilities shall be structurally designed by the contractor: Battalion HQ Building, BOQ Facilities (BOQ Facility Type A, BOQ Facility Type B), Barracks (Type A), Barracks (Type B), Shower /Toilet, Battalion Storage, Motor Pool, Communications Building, Bunkers and the Reception Building.

4.2 DESIGN

Design shall be performed and design documents signed by a registered professional architect and/or engineer. Calculations shall be in SI (metric) units of measurements. All components of the 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, pre-engineered panel, shotcrete 3-D panels, or reinforced concrete unless otherwise stated in sections 1010 or 1015.

All required documents, including drawings, specifications, and design analysis, shall be prepared in accordance with Section 01335 Submittal Procedures for Design Build Projects. Specific submittal requirements in these sections supplement the requirements of Section 01335.

The design analysis shall include detailed calculations and any additional information required, and the information listed below, when applicable.

All structures and all parts of the structures shall be designed and constructed to support safely all loads without exceeding the allowable stress for the materials of construction in the structural members and connections.

4.3 STANDARDS

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

Concrete	210.0 kg./sq.cm (f'c) cylinder strength @ 28 days (ASTM-. C 31M)
Steel Reinforcement	4218.0 kg./sq.cm(Fy= 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 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 (Fy = 36,000psi)
Welding	AWS (American Welding Society) D1.1-2002.

4.4 DEAD AND LIVE LOADS

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

4.5 WIND LOADS

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

4.6 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 $S_s = 1.28g$ and $S_1 = 0.51g$.

4.7 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 Shotcrete 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 ration of 0.50. 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).

4.8 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 CMU exterior and sheer walls shall be fully grouted and reinforced.**

4.9 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.

4.9.1 Steel 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.

4.9.2 Steel Roof Joists

Steel roof joists shall be placed according to the roof design and roof manufacturer specifications. Steel 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.

4.9.3 Open Web Steel Joists

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.

4.10 WOOD

Structural lumber shall comply with AITC OT-01. Grades and species of framing and board lumber shall comply with WWPA G-5. Wood framing shall be in accordance with AF&PA T10. Members shall be closely fitted, accurately set to required lines and levels, and rigidly secured in placed. Floor platform framing lumber shall be treated in accordance with AWPA C2 with waterborne preservatives listed in AWPA P5 to a retention level of 6.4 kg per cubic meter (0.40 pcf). Plywood shall conform to PSI, underlayment grade with exterior glue, or B-C (plugged) exterior grade, 19 mm thick, 1200 mm wide, and be tongued and grooved. Any surface roughness at nail heads or joints shall be lightly sanded to blend with the undisturbed surface. For new floors receiving a vinyl finish flooring, a separate layer of fully-sanded underlayment shall be properly installed before the vinyl flooring is installed. Exterior grade treated plywood conforming to AWPA C9 should be used in exterior locations. Bolts, nuts, and other fasteners shall be appropriately sized and spaced for the

job in accordance with referenced publications. Fasteners in contact with preservative treated wood, masonry or concrete shall be zinc-coated.

No exterior wood shall be used on any part of the building exterior, i.e. doors, windows, fascia, etc.

4.11 EARTHWORK AND FOUNDATION PREPARATION

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

4.11.1 Capillary Water barrier

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

4.11.2 Satisfactory Materials

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

4.11.3 Unsatisfactory Materials

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

4.11.4 Clearing and Grubbing

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

4.11.5 Stripping

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

4.11.6 Excavation and Compaction of Fill

Excavate to contours, elevation, and dimensions indicated. Reuse excavated materials that meet the specified requirements for the material type required at the intended location. Keep excavations free from water. Excavate soil disturbed or weakened by Contractor's operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be removed as directed. Refill with satisfactory material and compact to at least 95 percent of the maximum dry density, as determined by the Modified Proctor laboratory procedure. ASTM D 1557 shall be used for producing the Modified Proctor moisture-density curve, unless the soil to be compacted includes

more than 30% retained on the 19 mm (3/4") sieve. In this case, the Contractor must replace the ASTM D 1557 laboratory compaction procedure with AASHTO T 180, Method D, corrected with AASHTO T 224.

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

4.11.6.1 Trench 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.

4.11.7 Structures with Spread Footings

Ensure that footing subgrades have been inspected and approved by the Contracting Officer prior to concrete placement. Fill over excavations with concrete during foundation placement.

5.0 GEOTECHNICAL

5.1 SOIL INVESTIGATION

Existing geotechnical information is not available at the project site. Any site-specific geotechnical data required to develop foundations, materials, earthwork, and other geotechnical related design and construction activities for this project shall be the Contractor's responsibility. The Contractor shall develop all pertinent geotechnical design and construction parameters by appropriate field and laboratory investigations and analyses. The Contractor shall produce a detailed geotechnical report containing field exploration and testing results, laboratory testing results (particle sizes and distribution, liquid and plastic limit test, and moisture and density test, etc.). Information in the report shall include, but not limited to: existing geotechnical (e.g. surface and subsurface) conditions, location of subsurface exploration logs on site plan, exploration point, allowable soil bearing capacity and foundations recommendations, bearing capacity, pavement design criteria (e.g. CBR values, K values), ground-water levels, and construction materials (e.g. concrete cement, asphalt, and aggregates). Two copies of the detailed geotechnical report shall be submitted to the Contracting Officer.

5.2 DEFINITIONS

For purposes of this specification, a major structure is defined as any structure that meets any of the following criteria:

- a. Reinforced concrete framed structures with a building footprint in excess of 1,000 sq. m.,
- b. Steel framed structures with a building footprint in excess of 3,000 sq. m.,
- c. A structure that has a height equal to or greater than one and a half stories,

- d. Steel or concrete tanks in excess of 350 cubic meters. A minor structure is any structure that does not meet any of the four major structure criteria above.

5.3 MINIMUM REQUIREMENTS

5.3.1 Structures

As a minimum for major structures, the Contractor shall advance three (3) borings or test pit within the building footprint of any major structure. For minor structures, depending on the foundation size, the Contractor shall advance one (1) to three (3) test pits within the building footprint, advancing one test pit for every 225 SM within the building footprint. The depths of these explorations shall be sufficient to determine the subsurface conditions within the influence of the structure's foundation system.

5.3.2 Pavements

As a minimum for airfield pavements, the Contractor shall excavate three (3) test pits for pavements less than or equal to 5,000 sq. m. and one (1) test pit for each additional 5,000 sq. m. of pavement or fraction thereof. As a minimum for all other pavements such as hard stands and parking lots, except roads, the Contractor shall excavate three (3) test pits for pavements less than or equal to 7,500 sq. m. and one (1) test pit for each additional 5,000 sq. m. of pavement or fraction thereof. As a minimum for roads, the Contractor shall excavate three (3) test pits for pavements less than or equal to 200 linear meters and one (1) test pit for each additional 200 linear meters or fraction thereof.

5.4 GEOTECHNICAL REPORT

The Contractor shall produce a detailed geotechnical report containing the field exploration and testing results, laboratory testing results, evaluations, recommendations, calculations and descriptive supporting text. Information in the report shall include, but not be 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.

5.5 GEOTECHNICAL QUALIFICATIONS

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

5.6 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 or geotechnical firm and shall be submitted with the final design.

6.0 MECHANICAL

6.1 GENERAL

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

6.2 SPECIALIST SUB-CONTRACTORS QUALIFICATIONS

The ventilation, and air-conditioning works shall be executed by an air-conditioning specialist sub-contractor experienced in the design and construction of ventilation and air conditioning equipment to include conventional compression systems, indirect and direct evaporative cooling systems and knowledge in fabricating specialized units consisting of supplemental direct expansion (DX) cooling coils in satisfying the specified indoor design conditions. The HVAC design shall be prepared using recognized HVAC load analysis programs such as Trane "Trace" or Carrier "HAP". The HVAC specialist shall submit the complete HVAC analysis at the 65% design submittal. The HVAC analysis shall clearly state what types of systems are to be used and how the system will satisfy the specified indoor design conditions. Provide related psychrometric charts showing the air wet bulb and dry bulb temperatures at each section of the heat/cool unit.

Provide complete, edited specifications using the UFGS specs for evaporative cooling. The edited specifications shall be submitted along with the 65% design submittal. The specifications shall be coordinated with the manufacturer of the evaporative cool/heat units.

6.3 CODES, STANDARDS AND REGULATIONS

The equipment, materials and works covered under the ventilation and air-conditioning services shall conform to the referenced standards, codes and regulations listed in Paragraph 1.8 except where otherwise mentioned under each particular clause.

6.4 DESIGN CONDITIONS

6.4.1 Outside Design Conditions

(Contractor shall verify the ambient conditions with available and reliable local weather data.)

Sur Pol/Shekhabad area :

Latitude – (approx.) 34.187 deg. North
 Longitude – (approx.) 68.805 deg. East
 Elevation – (approx.) 2210 M (7250 ft.)
 Summer – (approx.) 30.5C (87F) Dry Bulb (DB) & 8.3C (47F) Wet Bulb (WB)
 Winter – (-11.1 deg C / 12 deg F)
 Daily Range – (data unknown)

6.4.2 INDOOR DESIGN CONDITION

Facility Type	Cooling	Heating	Type of HVAC System	Remarks
Barracks	Ceiling Fans	20C (68F)	Diesel Heat	
BOQ	Ceiling Fans	20C (68F)	Diesel Heat	
Battalion HQs Brigade HQs	27.8C (82F)	20C (68F)	Split Pack Cooling w/Diesel Heat	* Note 1
Comm Facility	25.6C (78F)	20C (68F)	Split Pack Cooling w/Diesel Heat	
Toilets, Showers & Laundry	Mech Vent	20C (68F)	Diesel Heat	
Storage & Maint	Mech Vent	12.7C (55F)	Diesel Heat	
DFACs	Ceiling Fans	20C (68F)	Diesel Heat	
INL Barracks	27.8C (82F)	20C (68F)	Split Pack Cooling w/Diesel Heat	
Power Plant Admin Area & Control room	25.6C (78F)	20C (68F)	Split Pack Cooling w/Diesel Heat	* Note 2
Guard Tower, Guard Houses, Reception Fac	Ceiling Fans	20C (68F)	Electric Heat	

Note 1	Command Centers & Commander Offices shall be provided with split pack heat pump units.
Note 2	Generator Bay to be provided filtered air ventilation only.
Note 3	Fenced Recruit Compound and Power Plant shall be heated by means of cogeneration energy from the electrical generators.

6.4.3 NOISE LEVEL

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

6.4.4 INTERNAL LOADS

- a. Occupancy: Use ASHRAE standards to calculate sensible and latent heat from people
- 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.
- d. Building Pressurization: 1.3 mm W.G. (0.05 in W.G.); Maintain negative pressure in latrine areas

6.4.5 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:

<u>Assembly</u>	<u>Minimum Thermal Value</u>
Exterior Walls (above grade)	RSI 2.288 (R 13)
Ceiling/Roof Assembly	RSI 5.28 (R 30)
Floor (over unheated space)	RSI 5.28 (R 30)
Exterior Doors	RSI 0.25 (R 1.43)
Exterior Windows/Door Glazing	RSI 0.308(R 1.75)

6.4.6 SEISMIC REQUIREMENTS

All mechanical and plumbing equipment and piping shall be installed to meet the seismic requirements as defined by the International Building Code and seismic response coefficients as identified in Paragraph 4 Structural.

6.5 NEW AIR CONDITIONING & HEATING EQUIPMENT

Environmental control of the facilities shall be achieved by air conditioning and heating equipment as listed below and approved by the U.S. Government.

6.5.1 Unitary (ductless split) Heat Pump Units

Ductless split units shall be unitary in design and factory manufactured ready for installation. Heat pump units shall provide cooling during summer and heating during winter. Evaporator unit shall consist of a DX evaporator cooling coil, blower, supplemental electric heater elements and washable filter all mounted in a housing finished for exposed installation. Cooling coil condensate piping shall route to and discharge to the sanitary sewer system. The condensing unit will contain compressor, condenser coil, and all internal controls/fittings complete to include a weatherized housing. Outdoor condensing unit shall be mounted on steel supports or on a concrete pad. Copper refrigerant suction and liquid piping shall be sized, insulated and installed in accordance to unit manufacture recommendations. Unit temperature control shall include wall mounted adjustable thermostat, blower on-off-auto switch and heating-cooling change over control.

6.5.2 Diesel Heat

This is a package unit, consisting of modules: a furnace heater fitted with a diesel atomized burner; intake hood, fan blower, mixing box with return and outside air dampers, pre and final filters, all mounted on a steel chassis with a double-wall 500 liter above ground fuel tank mounted outside. The diesel burner shall conform to UL 296, and the heater shall be suitable for Type I (duct system, UL 727) or Type II (direct diffusion, UL 731). The Heating Unit shall have an outer casing with factory baked enamel finish suitable for installation outdoors or indoors. The outer casing shall be constructed of 1.3mm (18gage) metal panels adequately reinforced and provided with easily removable access panels located for access to all internal parts of the unit's equipment. Cabinet panels shall be insulated with minimum 12mm (1/2 inch) multi-density, fiberglass insulation with exposed edges sealed or tucked under flanges to prevent introduction of fibers into the airstream.

The Heating Unit shall be installed with sheet-metal ducts of calculated size to evenly distribute the heated/cooled air to all conditioned parts of the building. For small rooms, flexible metal branch ducts may be used from the central duct system. Flexible ducts must be limited to 3 meters in length. Exterior ducts shall be insulated; interior ducts generally will not be insulated when they are installed within the conditioned space. Duct air velocity shall be between 3.0 and 6.0 m/s. Minimum galvanized duct sheet-metal thickness shall be 0.85 mm (22g). Duct sheet-metal quality shall be according to SMACNA (Sheet Metal and Air Conditioning Contractors' National Association) manual for air conditions ducts. Supply and return ducts shall be provided for each room and space.

The design shall provide automatic pressure relief of 50% of the supply volume when in cooling mode. If a direct evaporative unit can satisfy the specified indoor conditions, then all the air can be discharged through the building openings.

The Heating Units shall have a factory permanently mounted metal name-plate which clearly shows: Rated diesel fuel input (lt/h), electrical input (i.e. 380 V, 10 A, 3-ph), certified heat output (tkW or Btu/h), Blower capacity (m³/h) at pressure (KPa).

Contractor shall procure and install duct work to supply warm air to all areas of each building which are retrofitted under this Contract. Contractor shall specifically design the duct-work to meet the requirements of each individual building.

The contractor shall be responsible for all the materials, equipment, labor and supplies to design and construct an underground piping/fuel delivery system for the diesel fired heating units. The system shall incorporate all necessary pumps, valves, manifolds and valve chambers as required by the approved design. Fuel oil piping shall be doubled walled with leak detection and alarm system. The fuel oil piping system shall incorporate tamper proof features such as alarm systems and fuel pump shut out features in the event the fuel lines are breeched. The contractor shall be responsible for ensuring the pipes are placed in excavated trenches with proper bedding material and thrust blocks. Bedding material shall be select granular material as required by the approved design.

This system shall contain adequate shut off valves, pipes, and pumps to allow isolation and continued operations and insure that repairs can be performed without disruption to the entire base in the event that

maintenance is required. All below grade valve chambers shall be constructed with reinforced concrete and steel lids.

The contractor shall insure that there is adequate redundancy in the manifold/pumping system to allow for redundant pump(s) to insure that the system is pressurized at all times and fuel available. All pipes above ground shall be fully insulated to prevent freezing. All below grade pipes shall be installed at the minimum depth to ensure they are below the frost line. These depths may vary from project site. It shall be the contractor's responsibility to determine this minimum depth to prevent freezing at their respective sites.

The contractor shall be responsible for designing, supplying and installing all electrical components necessary to make the system operational. These shall include but are not limited to pumps, wiring, disconnects, etc and shall be the contractor's responsibility.

Main power supply and panel connections are available near the fuel tank farm. The contractor shall be responsible for all work, including the final tie in at the generator plant. The contractor shall be responsible for proper coordination with the Operations and Maintenance Contractor to ensure that the tie-ins at the power plant are completed as required to make the system operational.

6.6 COGENERATION

Cogeneration involves optimizing the utilization of energy sources. The Fenced Recruit Compound and the Power Plant shall be heated with waste heat from the electrical generators.

The heat is produced during the combustion process of the generator engines. The heat of the exhaust shall be harnessed through the use of gas-liquid heat exchange units, which are part of the engine-cooling loop. The cooling loop also circulates through cavities in the engine blocks and receives heat directly. The cooling loop then circulates through liquid-liquid heat exchangers, which transfer heat to the facilities in the recruit compound.

The cooling loop water shall be used to heat building spaces through the use of hydronic heaters. The hot water is circulated through coils and a fan blows air through the coils to heat the air and keep the building room temperature as desired.

The contractor shall employ a subcontractor with at least 5 years experience in cogeneration heating to design and install this system.

6.7 DUCTWORK

Air shall be distributed from Air Handling Units (AHUs) to achieve proper airflow throughout the facility by means of air distribution ductwork. Air distribution system shall be comprised of supply and return 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.

6.7.1 Duct Insulation

Duct insulation shall be provided for all supply ductwork that is not located in the conditioned space and for return ductwork not located within the conditioned space. All ductwork exterior to the building shall be insulated with a minimum RSI=0.88 (R5).

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.

6.7.2 Diffusers, Registers & Grilles

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.

6.7.3 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 and where required to facilitate air balancing and shall be shown on the design drawings.

6.7.3 Wall Penetrations

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

6.7.4 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, and shall include lockable housing that allows viewing of settings without permitting access. For units serving more than one area, the thermostat shall be located near the return of the space with the highest heat generation.

6.7.5 Air Filtration

All supply air shall be filtered using manufacturer's standard washable filters mounted inside the unit. In addition, all outdoor air intakes shall be equipped with 50 mm (2 inch) thick washable filters.

6.8 VENTILATION AND EXHAUST SYSTEMS

All fans shall be used for building ventilation and pressurization with capacities to 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 motorized or gravity 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.

Supply intake openings shall be provided with motorized dampers which are interlocked with the exhaust fan. The dampers open or close when the exhaust fan is on or off respectively.

Maintenance shops and similar spaces that use solvents and oils shall be provided with mechanical exhaust air systems. Exhaust fans shall be centrifugal wall mounted type. Intake openings shall be provided with motorized dampers which are interlocked with the exhaust fans. Provide minimum of 16 ACH. The systems shall consist of centrifugal fan, ductwork, exhaust grills, and interlock controls. Comply with Industrial Ventilation UFC 3-410-04N.

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. Provide minimum of 250 cfm per linear foot of hood length or 75 cfm per square area of hood per International Mechanical Code. 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.

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. Each air intake shall be provided with a motorized damper which is interlocked with the exhaust fan.

6.8.1 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 COLD STORAGE ROOMS

6.9.1 Submittals

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.

6.9.2 Walk-In Coolers

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.

6.9.3 Piping

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

6.9.4 Electrical

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

6.9.5 Protection and Packing

Preservation and packing materials shall be commercial grade.

6.9.6 Thermometer

Provide a recording thermometer.

6.9.7 Temperature Alarm

Provide temperature alarm with connector to remote temperature alarm.

6.9.8 Condensing Unit

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.

6.9.9 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.

6.9.9.1 Drainage

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.

6.9.9.2 Installation

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:

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

6.9.9.3 Operations and Maintenance

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.

6.9.10 Clean-Up

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

6.9.11 Completion of Work

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.

6.10 TEST ON COMPLETION

6.10.1 Completion of Work

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

6.10.2 Tests and Readings

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

- a. Ambient DB and WB temperatures
- b. Room Inside Conditions:
 1. Inside room DB & WB temperatures
 2. Air flow supply, return and/or exhaust
 3. Plot all temperatures on psychrometric chart
- c. 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. The following readings shall be taken:
 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.
- d. Electric Motors: The following shall be recorded 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 equipment shall be designed and installed to operate on the secondary power standard required herein. The existing power distribution system may require modifications or upgrades to support the additional power required by the evaporative cooling unit with supplemental DX cooling coil. The Contractor is responsible to field verify all the conditions and provide complete shop drawings showing any incidental power upgrades. All electrical work shall comply with the National Electric Code.
- b. All thermostats shall be wall mounted 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 or in the return duct 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.

6.12 CEILING FANS

6.12.1 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.

6.12.2 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.

7.0 PLUMBING

7.1 SCOPE OF WORK

7.1.1 General

The Contractor shall design and build domestic cold and hot water systems, waste, drain and vent systems, waste-oil collection and storage and fuel-oil storage and distribution systems required in the facilities identified in Section 1010 Scope of Work and as described herein. The Contractor shall also be responsible for complete design and construction of all domestic and special plumbing systems required for full and safe operations in the Generator Plant, Water Storage and other facility or structures required in this contract.

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

7.1.2 Sub-Contractors Qualifications

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

7.1.3 Standard Products

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

7.1.4 Seismic Requirements

All mechanical and plumbing equipment and piping shall be installed to meet the seismic requirements as defined by the International Building Code and seismic response coefficients as identified in Paragraph 4 Structural.

7.2 CODES, STANDARDS AND REGULATIONS

The design and installation of equipment, materials and work covered under the plumbing services shall conform to the standards, codes and regulations listed in paragraph 1.8 except where otherwise indicated under particular clause(s) and in accordance with design specifications set provided in this package. The publications to be taken into consideration shall be those of the most recent editions. Standards other than those mentioned herein may be accepted provided that the standards chosen are internationally recognized and meet the minimum requirements of the specified standards. The Contractor shall submit proof of equivalency if requested by the Contracting Officer.

7.3 PLUMBING SYSTEMS REQUIREMENTS

7.3.1 Water

Domestic cold and hot water shall be provided in the facilities to serve the water usage and plumbing fixtures provided for the facility. Water service to each facility shall enter the building in a mechanical, toilet, storage, or similar type space. The building service line shall be provided with a shut off valve installed either outside in a valve pit or inside the mechanical room or similar spaces. Water piping shall not be installed in or under the concrete foundation. All water piping shall be routed parallel to the building lines and concealed in all finished areas. Insulation shall be provided where required to control sweating of pipes or to provide protection from freezing.

7.3.2 Piping Materials

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

7.3.3 Plumbing Fixtures

The following typical plumbing fixtures shall be provided:

a. Water Closets

- (1) Eastern Water Closet with flush tank assembly. . Provide acid resisting fired porcelain enameled cast iron water closet complete with rotating No-Hub 'P' trap and No-Hub coupling to meet piping requirements. Eastern Style water closet shall be furnished with integral non-skid foot pads and bowl

wash down non-splashing flushing rim. The water closet shall be completely self supporting requiring no external mounting hardware and shall be flush with floor. The Eastern Style water closet shall incorporate waterproofing membrane flashing flange. Provide a cold water spigot 300mm above finished floor on the right (from a perspective of standing inside of the cubicle and looking out) sidewall of the cubicle. Spigot shall have a flexible hose and spray nozzle such that the occupant can wash over the water closet. Toilets shall be oriented north and south. Toilets shall not face east or west.

- (2) Western Water Closet with flush tank assembly. Western water closets shall be installed in facilities for embedded western troops, and individual water closets shall be installed in buildings that westerners will frequently use. Quality standard shall be the same as the eastern water closet.

b. Lavatories

- (1) Lavatories in Host Nation facilities. All sinks shall be trough type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse. Faucets shall be chrome plated brass single lever mixing type. Provide maintenance access to waste piping and P-traps from under the sink. Lavatories inside the prison cells shall be tamper-proof with integral spout, soap depression, and outlet connection to slip 40mm OD tubing.

- (2) Lavatories in International/Embedded Troop facilities. Enameled cast iron, wall or counter mounted. Brass fittings provided for water supplies.

- c. Janitor's Sink. 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. Include a stainless steel shelf and three mop holders.
- d. Shower. 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. The shower head shall be heavy duty type and securely fastened to the wall.
- e. Emergency Shower and Eye Wash Assembly. Provide emergency shower and or eye wash assembly in Power Plant 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).
- f. Service Sink . Standard trap type, enameled cast iron. Service sinks provided in maintenance areas shall be metallic, and in battery rooms acid resistant.
- g. Kitchen Sink. 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.
- h. Ablution Trench. See building floor plans for size and construction of trench and number of stations. Provide trench drain with brass grating and strainer. Provide each station with hot and cold water valves with manual mixing. Faucet handles shall be copper alloy.
- i. Grease Interceptor . 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. Kitchen use only.
- j. 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.

- k. Floor or Shower Drain: 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.
- l. Floor Trench : Floor trench shall be concrete construction with a cast iron grate. The cast iron grate shall be sectionalized and hinged so that it can easily be opened to clean out the trench. The floor trench shall be provided with perforated aluminum pan inserts which can be removed to clean out large food particles. The floor trench drain shall be an adjustable perforated or slotted chromium plated bronze, nickel-bronze, or nickel brass strainer consisting of a grate and threaded collar. This style of floor trench shall be installed in the kitchen area of the DFACs in response to kitchen cleaning practices of the local national staff.
- m. 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.
- n. Drinking Water Fountain: Non-refrigerated with enamel cast iron or corrosion resistant bowl with brass fittings and faucets.
- o. Provide P-Traps per International Plumbing Code IPC for all fixture drains, floor and trench drains, and shower drains. P-traps shall have minimum of 50 mm water seal.
- p. Large Pot sink, provide clean-up spray nozzle with hose assembly.

7.3.4 Hot Water

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

7.3.5 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. In cases where the pressure of the water coming into the tank will violate manufacturer recommendations, a pressure reducer shall be installed in the line before the water heater. Also, all water heaters shall be equipped with a blow-off valve that will empty into a nearby floor drain or to the exterior of the building.

(Gas (natural or liquid propane) powered hot water generators shall be provided to satisfy large hot water requirements when economically justifiable and practical.)

7.4 WASTE, DRAIN AND VENT SYSTEM

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

Every trap and trapped fixture shall be vented in accordance with the IPC.

7.5 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.

7.5.1 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 200 psig maximum for 125 psig normal units. High-pressure system (above 200 psig) 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.

7.5.2 Waste and Hazardous Drainage

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.

7.5.3 Petroleum Contaminated Drainage

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.

7.5.4 Generator Fuel Storage/Distribution

Fuel Oil Storage and Distribution shall be provided to support operation of diesel engine generators at the Power Plant, 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 30-day 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.

7.5.4.1 Fuel Filling System

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).

7.5.5 Vehicle Fuel Point

Vehicle Fuel Point (Storage/Dispensing). Fuel storage and distribution shall be provided to support the vehicles. The fuels shall be stored in one or more above-ground horizontal steel tank as per capacity scheduled given below.

40,000 liters of Diesel and 10,000 liters of MOGAS

The Contractor shall install a vehicle re-fueling point, capable of storing 40,000 liters of diesel and 10,000 liters of MOGAS. The fuel point shall consist of one 25,000 liters tank of diesel and another dual compartment 25,000 liters tank, of which, 15,000 liters would be used for diesel and 10,000 liters would be used for MOGAS. The re-fueling point shall include fuel dispensers, and a concrete pad.

The fuel storage tanks shall be pre-engineered and fully assembled code compliant package system. The packaged fuel storage tanks shall be mounted on a concrete pad. Standard tank features shall be dual wall fire rated tanks, internal tank lining, electronic dispensers, submersible pump, low mount fill with containment, mechanical gauge, leak monitor, overfill prevention valve, emergency venting, grounding, fire extinguisher, electrical control system with "E-stop" and Flameshield & Fireguard options.

The dispensing unit shall be dual twin type and provided with a self-contained electric motor and pumping unit located in the storage tank. Provide a meter for each dispenser. Equip fuel dispensers with an in-line filtration system capable of sediment removal to 10 mg/L or less. Dispenser and nozzle shall be securable by means of standard padlock. Card and key lock access is not required. Surround fueling islands with a concrete slab graded at a minimum of 1 percent slope away from island and fuel storage tanks. Provide bollards completely around each fuel dispenser and tanks from damage by vehicles and trucks.

Following the tank tightness test, each storage tank shall be leak tested in accordance with the manufacturer's written test procedure if the manufacturer's test procedure is different from the tightness tests already performed. Each storage tank shall be completely filled with the proper fuel at the time of turnover to the Government.

7.6 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.

8.0 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 code.

8.3 LIFE SAFETY

Facilities features will be provided in accordance with NFPA 101, among other references, to assure protection of occupants from fire or similar emergencies.

8.4 FIRE PROTECTION EQUIPMENT

All fire protection equipment shall be listed by Underwriters' Laboratories (UL) or approved by Factory Mutual (FM) or equivalent and shall be listed in the current UL Fire Protection Equipment Directory or Factory Mutual Approval Guide or equivalent.

8.5 FIRE ALARM AND DETECTION

Smoke detection – see electrical section for more fire alarm and detection details. Smoke detectors are required for each building. Smoke detectors shall have back up battery power and be installed according to all applicable fire protection codes. Fire alarm evacuation systems shall be provided as required by NFPA 101 and UFC 3-600-01 and listed herein.

8.6 WATER SUPPLY FOR FIRE PROTECTION

A dedicated fire protection water supply is unavailable. Therefore, alternate methods of design and construction are being instituted.

8.7 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).

9.0 ELECTRICAL

Contractor shall design and construct all electrical systems for the facilities to be provided. This includes design, construction, all necessary labor, equipment, and material for a fully functional system.

9.1 GENERAL

Contractor shall design and construct all electrical systems for the facilities to be provided. This includes design, construction, all necessary labor, equipment, and material for a fully functional system.

9.2 DESIGN CRITERIA

9.2.1 Applicable Standards

- a. Design shall be in the required units as stipulated herein.
- b. Conflicts between criteria and/or local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, all available information shall be furnished to the Contracting Officer for approval.
- c. All electrical systems and equipment shall be installed in accordance with the requirements set forth in the documents referenced herein.
- 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 the National Fire Protection Association (NFPA) and the International Electrical Testing Association Inc. (NETA).
- e. ANSI/IEEE C57.12.22-1993 (R1998) - American National Standard for Transformers— Pad-Mounted, Compartmental-Type, Self- Cooled Three-Phase Distribution Transformers With High-Voltage Bushings,

2500 kVA and Smaller: High Voltage, 34 500 Grd Y/19 920 Volts and Below; Low Voltage, 480 Volts and Below.

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.

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 Equipment

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.

9.3.4 Design Conditions

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

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

9.3.5 Restrictions

Aluminum conductors shall only be used for overhead lines as approved by the Contracting Officers Representative. 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.

(Aluminum conductors may only be used in lightning protection systems for metal buildings.)

9.4 DESIGN REQUIREMENTS

9.4.1 Generator Power System

The contractor shall provide a power plant building sized to contain the required generators and their associated switchgear. The building shall also contain space for future planned generators as well as their associated switchgear in the switchgear lineup. The switchgear lineup shall contain the manufacturer's recommended circuit breakers including one for each generator, a tie breaker, one for each feeder and a utility breaker sized for the total load of the site. The contractor shall provide all required conduit stub ups to connect all equipment (both present and planned) to the switchgear lineup. If the generators supply power at less than the distribution voltage, the contractor shall provide padmounted stepup transformers and the required conduits to connect the generators to their respective transformer and the transformers to the switchgear lineup.

The generator power system, whether serving as the prime source or as a backup source of power, shall be configured as an (N+1) system with the N representing the number of generators needed to supply the site's total load and the (+1) representing the number of additional generators of the same size required as spares. The site's total load is defined as the site's total demand load + 25% spare capacity. The generators may supply power at the utilization voltage of the facilities served or at a higher distribution voltage. If the site requires a higher distribution voltage, step-up pad-mounted transformers shall be provided when utilization voltage generators are provided. The generator system shall also include a "black start" generator to supply power to the power plant until the main generator(s) come online.

Generators shall be derated as necessary for the ambient temperature and altitude of the site. Each generator shall be provided with a load bank matched to 40% of its rated capacity (with load steps every 20% of the load bank's rating) to prevent the generator from "wet stacking" under low load conditions.

The generator power system shall be provided with a make-before-break, 4-pole, automatic transfer switch (ATS) rated for the capacity of the system. The ATS shall be capable of automatically and manually transferring the site's distribution system to generator power upon loss of local utility power and transferring back automatically and manually to local utility power upon its restoration.

The generator power system shall be equipped with synchronizing/paralleling equipment to allow the generators to share the load of the site. When generator power is required at least one (1) generator shall be online at all times. When the site's load reaches 90% of the online generator's capacity, the standby generator(s) shall start. The generator that synchronizes first shall come online and share the load equally. When the site's load drops below 80% of the online generators' combined capacity, the generator(s) shall drop off line, one at a time, keeping a minimum of one generator operating online.

Whenever a generator starts, it shall go through a cool down cycle prior to shutdown. All relaying shall be automatically reset for automatic restart and stopping of generators as the load increases or decreases. Load sharing by the standby generator(s) shall be adjustable between 50% and 95% of the load on the online generator(s). Sequence of operation shall be time clock controlled at smaller sites (2 or 3 generators) and shall be PLC controlled at larger sites. A properly sized main switchboard shall be provided to distribute the power produced by the generator(s) to the facilities on the site.

Generator fuel storage capacity shall be based on usage at total load for a minimum of 30 days. Fuel storage shall either be in aboveground single wall steel tank(s) with containment pit or underground double wall with leak detection.

Power plant and generators shall be compatible with the requirements of cogenerated heating as described in the mechanical section of this specification.

9.4.1.1 Temporary Electrical Service

Contractor shall be responsible for providing necessary temporary electrical service to all facilities which may be built / occupied prior to the completion of the Power Plant. Temporary service to each facility shall meet all

required electrical demands of that facility plus 20% for spare capacity and shall be operational until such time the Base Power Plant and the exterior power distribution system is in place and becomes operational.

9.4.2 Site Primary & Secondary Power Distribution System

Contractor shall design and construct exterior manhole ductbank Primary and Secondary Power Distribution System, to include pad mounted transformer sub-stations and all building/facility service entrance cables from transformer sub-stations. The Contractor shall design and construct any other required systems described in section 01015 not provided as part of the design drawings and specifications to ensure a complete and usable facilities, to include electrical systems required for scope of work described under the Civil section of 01015. The contractor shall construct in accordance with the contract design drawings, specifications, and section 01015: (a) Interior Secondary Distribution System (b) Lighting and power branch circuitry, (c) Premise telephone and network/data wiring and (d) Interior Fire Detection and Alarm System. The site power distribution system shall be designed for the ultimate demand loads plus 20% spare capacity.

Primary (15kV 'Delta') and secondary power distribution (380/220V 'Wye') 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, sectionalizer or recloser, as necessary. Minimum of 3 fuses, with appropriate rating, shall be provided as spares at each fused cut-out location.

The Contractor shall complete a power system analysis for the entire site and provide site power load calculation to determine the total site power requirements, and the power production requirement for the power plant. The Contractor shall perform load calculations to determine the number of required transformers to feed all facilities in this project, to include future facilities. All power system analysis and load calculations shall be submitted as part of the 35% Design Analysis, and revised/updated for each design submittal.

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. Spare conduit for all concrete encasement with secondary services, under paved areas and road crossings is required to be concrete encased. 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 50mm (2 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 Transformer Substations

Transformer substations shall be strategically located close to the loads. Dedicated transformer substations shall be provided for large loads. Transformers shall be Primary 'Delta' and Secondary 'Wye' connected.

Primary side load-break disconnecting means shall be provided with all transformers. All transformers shall be sized for known projected demand loads, plus (+) 20% spare capacity for future growth. Transformer substations shall be dead-front, loop-feed, pad-mounted, compartmental, self-cooled type. Transformers shall come complete from manufacturer; use of third-party transformer housings or add-on transformer housings shall not be permitted. Transformers shall have no exposed live components.

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

9.4.2.3 Conductors

All cable and wire conductors shall be copper (except those used for lightning protection, which shall be aluminum). Conductor jacket or insulation shall be color coded to satisfy local utility requirements. Conductors shall be sized in accordance with this RFP and the listed codes and standards.

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

9.4.2.3.1 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.

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

9.4.6.1 Receptacles

General purpose receptacles shall be duplex, grounding (earthed) type, "flush" or "semi-flush" wall mounted type, color ivory and installed 500 mm above finished floor (AFF). In office or similar areas receptacles shall be provided at every 1.8 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. Receptacles near sinks or lavatories shall be switch operated and Ground Fault Circuit Interrupter (GFCI), or Residual Current Disconnect (RCD) type, with the trip setting of 30 milliampere or less.

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

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

9.4.4 Lighting

Light Fixtures: Lighting fixtures shall be a standard manufacturer's product. Fluorescent light fixtures shall be power factor corrected and equipped with standard magnetic ballast(s). All light fixtures shall be capable of receiving standard lamps used locally. Light fixtures shall be mounted at 2.7M, minimum, AFF. Fixtures may be pendant or ceiling mounted, depending on the ceiling height. All fixtures shall be fully factory wired. Lighting levels shall be as follows:

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

9.4.4.1 Exterior Lighting

Exterior lighting shall be HID (metal halide or high pressure sodium) as referenced.

9.4.4.1 High Ceilings

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

9.4.4.2 Standard 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 in medical facilities where magnetic ballast(s) shall be required. 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.

9.4.4.3 Emergency "EXIT" Light Fixtures

Emergency "EXIT" light fixture shall be provided in accordance with NFPA requirements. Fixtures shall be single sided and for wall and/or ceiling mounting. Unit shall illuminate continuously and be provided with self-contained nickel cadmium battery pack, to operate on floated-battery or trickle charge circuit. Fixture shall operate satisfactorily for 90 minutes during a power outage. Unit shall have test/reset and lamp failure indication buttons. Primary operating voltage shall be appropriate for the available secondary voltage. Lettering "EXIT" shall be color red and not less than 6 inches (150 mm) in height and on matte white background. Illumination shall be via LEDs.

9.4.4.4 Above Mirror Lights

Above mirror lights shall be provided in toilet rooms.

9.4.4.5 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/reset and lamp failure indication buttons. Primary operating voltage shall be 220 volts.

9.4.4.6 Light Switch

Light switch shall be single pole. Minimum of one light switch shall be provided in every room. Lighting in large rooms/areas may be controlled from multiple switches. Lighting contactors may be used to operate lighting in open or large bay areas. Rooms with multiple entrances shall have multi-way switches.

9.5 GROUNDING AND BONDING

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

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.

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.

9.6 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. Conductors and aerials shall be aluminum to prevent galvanic damage to metal roofs and metal tanks. Medical clinic lightning protection requirements shall also meet the requirements in UFC 4-510-01.

Aluminum conductors and air terminals shall be used on metal buildings to prevent the galvanic damage associated with copper conductors and aerials.

Ammo Supply Point and all fueling areas shall also implement static electricity controls in accordance with standards listed in this document.

9.7 ENCLOSURES

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

(IEC Classification IP54) or better shall be used.

9.8 FIRE DETECTION & ALARM SYSTEM

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

9.9 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.

9.10 SCHEDULES

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

9.11 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.

10.0 COMMUNICATIONS SYSTEM

10.1 GENERAL

Design and construction of communication center building shall be proved by the government in close coordination with Communication and Signal engineers, The contractor will be responsible to provide raceway, conduit, manhole, pass- through, depressions and others embedded elements under and inside the structure elements within the foundation foot print of the building.

10.1.1 Applicable Specifications

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

United States Department of Agriculture, Rural Utilities Service

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

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

RUS Bulletin 1753F-151 (2001) Construction of Underground Plant, Parts II & III

RUS Bulletin 1753F-201	(1997) Acceptance Test and Measurements Of Telecommunications Plant
RUS Bulletin 1753F-208	(1993) Specifications for Filled Telephone Cables with Expanded Insulation (PE-89)
RUS Bulletin 1753F-401	(1995) Standards for Splicing Copper and Fiber Optic Cable (PC-2)
RUS Bulletin 1753F-601	(1994) Specifications for Filled Fiber Optic Cables (PE-90)
RUS Bulletin 1753E-001	(1996) RUS General Specification for Digital, Stored Program Controlled, Central Office Equipment, RUS Form 522.
RUS Publication IP 344-2	(2006) List of Materials Acceptable for use on Telecommunications Systems of RUS Borrowers
RUS Bulletin 345-65	(1978) Shield Bonding Connectors (PE-33)
RUS Bulletin 345-83	(1982) REA Specification for Gas Tube Surge Arrestors (PE-80)
RUS Bulletin 1753E-001	(1996) RUS General Specification for Digital Stored Program Controlled Central Office Equipment, (Form 522)
ANSI TIA/EIA 606-A	(2002) Administration Standard for Telecommunications Infrastructure
ANSI TIA/EIA 607-A	(2002) Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications

10.1.2 Communication Systems Design

The communications system each building is to be designed, and constructed by the Contractor. The design and construction of the systems shall be in accordance with the references and the requirements contained herein and to be proved by the government. The contractor is only responsible for the wiring and the connection to a patch panel.

10.2 SPLICES

10.2.1 Copper Splices

25 pair modules shall be used on copper splices 25 pairs or greater and discrete connectors shall be used on lesser count cable splices. The copper splice closures shall be flash tested with nitrogen in accordance with the manufacturer's recommendations before encapsulation. The encapsulant shall fill all of the splice interstices. The copper splicing connectors, bonding hardware, splice closures and encapsulant shall be on the RUS list of material acceptable for use on RUS projects, IP 344-2. Bonding and grounding shall be in accordance with the RUS standards. The copper splice closure shall be installed by the copper splicer only. The copper cable splicer (s) shall have 7 years documented unsupervised experience in the installation of the splice closure being used and 7 years experience splicing RUS type cable.

10.2.2 Fiber Optic Splices

The fiber optic splice closure shall be equipped with splice trays that properly hold the fusion splice protectors (stainless steel rod with heat shrink tube). The splice loss shall be .02dB or less as measured by the fusion splicing machine and .2dB as measured by an OTDR. The fiber optic splice closure shall be flash tested with nitrogen in accordance with the manufacturer's recommendations and also be listed in RUS IP 344-2. All bonding hardware shall also be listed in RUS IP 344-2. Bonding and grounding shall be in accordance with

the RUS standards. The fiber optic splice closure shall be installed by the fiber optic splicer only. The fiber optic cable splicer (s) shall have 7 years documented unsupervised experience in the installation of the splice closure being used and with RUS cable. The fiber optic splice shall also have a minimum of 7 years documented unsupervised experience with fusion splicing machines and a minimum of three years with the particular make and model of the machine that will be used.

10.3 PROTECTED ENTRANCE TERMINALS

Building Protected Entrance Terminal, 25, 50 or 100 Pair.

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

Protected Entrance terminal, 6 or 12 pair. The PETS shall consist of blocks with two well type heavy duty gas tube protector units. The six pair shall consist of three units where as the 12 pair will consist of 6 units. Every building with terminated cable shall be equipped with gas tube protectors. The station cables will be terminated on a category 5e 110 "station" block and jumpers shall be installed between the PET and the "station" block to connect dial tone to the outlet.

10.4 PATCH PANELS

10.4.1 Copper Patch Panels

Copper Patch Panels, Category 5e - All Buildings with Data Outlets

Provide one patch panel port per data outlet plus 20% spare. The largest patch panel allowed shall be 48 port and the smallest 12 port. Where the 12 port is used, it shall be a category 5e, 12 port patch panel mounted on an 89 type block frame for the station cables. The 24 or 48 port patch panel shall be mounted on a swing down bracket mounted on the backboard. Cable guides and wire management bars shall be provided. Provide one category 5e patch cord, (RJ45-RJ45) per patch panel port. The Patch cords shall meet the minimum performance requirements specified in EIA/TIA-568B.1, EIA/TIA-568B.2 and EIA/TIA-568B.3.

10.5 OUTSIDE PLANT CABLE

The outside plant cable (cable size and cable counts) shall be engineered and installed in accordance with the referenced standards. The OSP cable engineering shall be approved at TAC before any cable is ordered. Under no circumstances will home runs from each building to the communications building be allowed; normal telephone cable distribution engineering standards will be used, meaning that large cables will be installed from the vault splices and the cables will get smaller as the buildings are provided service.

10.5.1 Headquarters & Admin Buildings

50 pairs copper, 12 strands single mode fiber optic cable. Copper and fiber shall be installed in the building, terminated and tested. All outlets except wall outlets in the building shall be dual RJ 45, category 5e, one white labeled voice and one blue labeled data. An additional 50 pair copper and 12 strand fiber optic cable shall be installed in the command center constructed on the buildings. The cables shall be part of the consolidated 100 pair copper, 24 strand fiber optic "Command Center" cables installed from the respective MDFs to the command centers in the buildings. The command centers shall have dual category 5e, RJ 45 outlets installed on the walls at 1.5 meter intervals.

10.5.2 Barracks

12 pairs copper and 6 strands fiber optic cable, installed, terminated and tested in the building. All outlets except wall outlets in the building shall be dual RJ 45, category 5e, one white labeled voice and one blue labeled data.

10.5.2.1 Open Bay Barracks

12 pairs copper and 6 strands fiber optic cable installed, terminated and tested in the building. All outlets except wall outlets in the building shall be dual RJ 45, category 5e, one white labeled voice and one blue labeled data.

10.5.2.2 Other Barracks Type B

25 pairs copper and 6 strands fiber optic cable installed, terminated and tested in the building. All outlets except wall outlets in the building shall be dual RJ 45, category 5e, one white labeled voice and one blue labeled data.

10.5.3 Storage Buildings

12 pairs copper and 6 strands fiber optic cable allocated in the cable plant and accessible in the closest manhole/handhole to the building.

10.5.6 Communications Building

All cables originate from this building.

10.5.7 MWR buildings

25 pairs copper, 12 strands single mode fiber optic cable. Copper and fiber shall be installed in the building, terminated and tested. All outlets except wall outlets in the building shall be dual RJ 45, category 5e, one white labeled voice and one blue labeled data.

10.5.8 Guard Houses

25 pairs copper installed and terminated in the building. 12 strands fiber optic cable allocated in the cable plant and accessible in the closest manhole/handhole to the building. Copper to be fully tested and fiber to be tested to ensure no fractures occurred during installation. The 25 pair cable "perimeter cable" from the MDF shall be connected from each guard house, tower and gate house and back to the MDF.

10.5.9 Guard Towers

25 pairs copper installed and terminated in the building. 6 strands fiber optic cable allocated in the cable plant and accessible in the closest manhole/handhole to the building. Copper to be fully tested and fiber to be tested to ensure no fractures occurred during installation. The 25 pair cable "perimeter cable" from the MDF shall be connected from each guard house, tower and gate house and back to the MDF.

10.5.10 Gate Houses

25 pairs copper and 6 strands fiber, installed, terminated and tested. The 25 pair cable "perimeter cable" from the MDF shall be connected from each guard house, tower and gate house and back to the MDF.

10.5.11 Reception building

6 pairs copper installed and terminated in the building. 6 strands fiber optic cable allocated in the cable plant and accessible in the closest manhole/handhole to the building. Copper to be fully tested. Fiber to be tested to ensure no fractures occurred during installation.

10.5.12 Other Buildings

All buildings not included above but included in the master plan (future) except the fire station, the medical clinic, the training building, Brigade Headquarters and Garrison Headquarters, shall be considered to have requirements of 12 copper cable pairs and 6 fiber strands for planning purposes. The fire station and medical clinic should have plans for 50 copper pairs, and 12 fiber strands each, the training building should be planned for 25 copper cable pairs and 12 fiber strands, the DPW should have 50 pairs copper, 12 strands fiber and the Garrison Headquarters should have 300 pairs copper and 12 strands fiber.

10.6 TELEPHONE/COMPUTER NETWORK SYSTEM

Each Corps, Brigade, and Battalion HQ building office, room shall have telephone and computer data outlets. Telephone/data System shall include cross-connect boxes, duplex RJ-45 telephone outlets with a minimum of 4 pair Category 5 Enhanced (CAT 5e) cable terminating at each outlet (jack). 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. See paragraphs 10 thru 10.3.2 below for additional requirements for communications systems.

In accordance with sections 01010 and 01015, all office spaces that require telephone and data services shall be connected to the outside cable plant infrastructure in accordance with EIA/TIA 568 & 758A standards and shall have inside cable plant infrastructure in accordance with EIA/TIA 569 standards.

10.7 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.

-- End of Section --

SECTION 01060

SPECIAL CLAUSES

1.0 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 Notice to Proceed (NTP) 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 walled area, areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to a condition consistent with the post construction NPTC. Gravel used to traverse unpaved areas shall be removed and all such areas restored unless otherwise directed by the Contracting Officer.

1.3.2 Protection and Maintenance of Traffic

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

1.3.2.1 Use of Existing Roads as Haul Routes

The Contractor shall be responsible for coordinating with the base authorities for use of any existing roads as haul routes. Construction, and routing of new haul roads, and/or upgrading of existing roads to carry anticipated construction traffic shall be coordinated with the Base authorities and is the sole responsibility of the Contractor.

1.3.2.2 Employee Parking

The Contractor's employees shall not 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 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.

1.7 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. Electricity required for final testing systems will be furnished by the Government. [The Government will provide permanent high voltage electricity to a point indicated by the Contracting Officer for use by the Contractor in the performance of final testing of systems.] 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.]

1.8 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. 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".

1.9 SPECIAL FACILITIES AND SERVICES TO BE FURNISHED BY THE CONTRACTOR

1.9.1 USACE Offices & Quarters Facility

The Contractor shall provide a 240 SM facility with Offices in one suite, and quarters in an adjoining suite. See appendix B-35 for the conceptual layout.

1.9.1.1 Quarters

Within the INL/US Mentors compound the Contractor shall provide and furnish complete life support services to include western style food service, a four person office, and six bedrooms to accommodate four permanent Corps of Engineers project personnel and two bedrooms for

visitors. Contractor shall install blast mitigation measures to include the interior roofing of the office and quarters.

Six bedrooms will be designed and constructed for one individual in each room @ 12 SM each. Heat and cool with split pack units throughout. Provide two full bathrooms with a toilet, lavatory, and shower. All facilities, fixtures, closets/cabinets, desks, chairs, beds and equipment shall be in new condition to be accepted by the government representative. The Contractor shall fully maintain and repair the facility provided. Office and bedroom furniture will be provided by the contractor. The facilities cannot be portable facilities, such as a prefabricated trailer. The facilities shall be of steel permanent type and firmly secured to a foundation at the project site. Force protection walls shall be installed as necessary to provide a safe and secure living environment. 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 and equipment furnished and/or installed by the Contractor under this clause shall remain the property of the Afghanistan 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. Facility shall be connected to the standby generator. The life support services shall be completed within 210 days after NTP.

1.9.1.2 Field Offices

Provide an Air Conditioned/Heated field office facility sufficient for four (4) persons shall include all utilities, indoor toilet facilities, a conference room, kitchen/dining area with sink, stove, refrigerator, and storage room. Four offices will be designed and constructed @ 12 SM each. Heat and cool with split packs throughout. Provide one full bathrooms with a toilet, lavatory, and shower. The Field Office Facility shall be located at the INL Trainers' Site. The layout of the office facility shall be approved by the Contracting Officer. The facility, including electrical diagrams, shall be provided no later than 15 days after completion of the Contractors on site office and bed down facility, or at a time determined by the COR. Office furniture shall include 4 desks, 8 chairs, 1 conference table with 6 chairs, 2 self storage units, 4 four drawer file cabinets, and 3 tables.

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 as depicted in Appendix _____. Bunker shall have bench seating.

1.9.2 Services for the Office

- a. Provide and maintain all utility systems required to support the facilities. Provide heat and air conditioning to the facilities and a standby generator in case of power outage.
- 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 diameter 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.

1.9.3 Equipment

Immediately upon completion of both the AED office and life support facilities for AED personnel and through the period of performance for this Contract, 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 160 days after award of this contract. This equipment shall not become Government property at the completion of this contract.

The contractor shall provide one laser printer (with network interface card (NIC) (similar to: HP Color LaserJet 5550dtn, wide carriage printer capable of printing on 11"X17" paper). The Contractor shall provide four cellular telephones with unlimited service through the local provider. The contractor shall maintain the printer, fax, and phones as required, including maintenance kits, toner cartridges, other consumable supplies and paper. Provide four (4) each two-way radios, and charge stands. This equipment shall not become Government property at the completion of this contract.

1.10 PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR)

1.10.1 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.

1.10.2 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.

1.11 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.

1.12 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.

1.12.1 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.

1.12.2 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.

1.12.3 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.

1.13 HAZARDOUS MATERIALS

Should the Contractor encounter asbestos or other hazardous materials, during the construction period of this contract, the Contractor 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.

1.14 SPARE PARTS

1.14.1 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.

1.14.2 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.

1.14.3 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.

1.14.3.1 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.

1.14.3.2 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.

1.14.3.3 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.

1.14.3.4 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 0.03 CM (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.

1.14.4 Warranty

All spare parts provided by the Contractor under this clause are subject to the general warranty clauses of this contract.

1.14.5 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.

1.15 OPERATION AND MAINTENANCE (O&M) DATA

1.15.1 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.

1.15.2 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.

1.15.3 Operation and Maintenance (O&M) Data

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

1.15.4 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.

1.15.5 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.

1.15.6 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. 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.

1.15.7 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 resubmittals supplementing incorrect or incomplete data shall be made within thirty (30) calendar days after receiving notice by the Contracting Officer. All costs arising from these resubmissions shall be borne by the Contractor.

1.16 INSTRUCTIONS AND TRAINING FOR OPERATION AND MAINTENANCE

1.16.1 General

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

Title	Duration of Training
Mechanical Systems	90 Days
Electrical Systems	90 Days

1.16.2 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.

1.16.3 Arrangements

The training shall be for not less than the periods of time specified, six (6) days per week, and eight (10) 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 session, 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.

1.16.4 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.

1.16.5 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 160 calendar days after award of this contract. The plan will be reviewed and coordinated with the content of the O&M manuals.

1.16.6 Plan

The Contractor shall submit seven (7) copies of his proposed training plan to the Contracting Officer for approval not later than ninety (90) calendar days prior to start of any training. The plan shall include the following; (a) a weekly outline showing overall form and design of training presentation; (b) a day-by-day schedule showing time intervals, the major and subordinate subjects to be covered in each, the name of the instructor(s) and qualification summary of each, and identification of related handouts; (c) summary of the number of hours of classroom and on-the-equipment training; (d) a list of reference materials to be provided by the Contractor to the trainees; and (e) a list and description of the training materials to be used, such as text, visual aids, mock-up, tools, etc. The Contractor shall be responsible for furnishing all training materials except the following: The Government will provide space, chairs, and tables for classroom training, and three (3) sets of the five (5) sets of O&M Manuals required by the Contractor per Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD of the specifications. Provision of these manuals is solely for reference purposes, and in no way relieves the Contractor from providing all instruction and materials necessary for training personnel designated by the Government. All costs for resubmission of training plans, training materials, etc., as requested by the Contracting Officer shall be borne by the Contractor. Resubmittals shall be made within twenty (20) days of notice from the Contracting Officer.

1.16.7 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.

1.17 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.

1.18 TIME EXTENSIONS

1.18.1 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	5 Days
February	5 Days
March	2 Days
April thru December	2 Days

1.18.2 Time Extensions

1.18.2.1 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.

1.18.2.2 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.

1.19 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.

1.20 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.

1.21.1 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.

1.22.2 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.

1.22.2.1 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.

1.22.2.2 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 driver's 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.

1.22.3 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.

1.22.4 Security Plan

The Contractor shall submit to the Contracting Officer, within ten (10) calendar days after award of this contract, a detailed proposed personnel and vehicular access Security 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 a high level of

effective security twenty-four (24) hours a day seven (7) days a week.

1.23 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.

1.24 PUBLIC RELEASE OF INFORMATION

1.24.1 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.

1.24.2 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.

1.25 ATTACHMENTS

TAC FORM 61 - Accident Prevention Program Hazard Analysis

TAC FORM 356 - Operation and Maintenance Training Validation Certificate

2.0 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.

2.8.1 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

QUALITY CONTROL SYSTEM (QCS)

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**PROJECT SCHEDULE****1.0 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.

2.0 PRODUCTS (Not Applicable)**3.0 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 fourteen (14) 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 Network Analysis System

- a. **Schedule Requirements.** The design network analysis schedule shall be updated at least monthly or submitted as part of the design submittals, whichever occurs first. When the construction network analysis schedule is submitted and accepted by the Contracting Officer, it will then be considered the "Baseline Network Analysis Schedule". The Baseline Network Analysis Schedule will then be used by the contractor for planning, organizing, and directing the work; reporting progress; and requesting payment for work accomplished. The contractor shall update the schedule monthly and shall be submitted with the payment requests to reflect the status of the work. Submittal and acceptance of the Baseline Network Analysis Schedule for Design and Baseline Network Analysis Schedule and accurate updated schedules accompanying the pay requests are both conditions precedent to processing pay requests. Only bonds will be paid prior to acceptance of the Baseline Schedule.
- b. **Software:** The scheduling software to be used on this project shall be compatible to Primavera Project Planner (P3) by Primavera Systems, Inc. The contractor shall provide electronic files in a format that is compatible with the Contracting Officer's current software version. The contractor shall provide to the Government one licensed copy of the same version of the software that the contractor is using to prepare schedules for this project. Software that is not compatible to Primavera Project Planner (P3) by Primavera Systems, Inc. will not be accepted for use on this project.
- c. The contractor shall designate a part time Scheduler that will be responsible for the development, preparation, and maintenance of an accurate, computerized Network Analysis Schedule. Part-time is defined as the Scheduler performing on-site coordination, attending project meetings, and updates in addition to other duties in a typical work week. The Scheduler shall have previous experience in developing, creating, and updating at least two computer schedules of similar size and complexity to this project. A resume for the Scheduler shall be submitted to the Contracting Officer for acceptance. If, at a later date, the Contracting officer considers the contractor's Scheduler to be less competent than necessary or objects to the quality of the schedule presented, the contractor shall propose a new Scheduler.
- d. **Format:** The network system shall consist of time scaled logic diagrams and specified reports. The logic diagrams shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned. Diagrams shall be work phase/work area and sorted by early start date and will show a continuous flow from left to right with no logic (relationship lines) from right to left. With the exception of the contract award, project start, and project completion milestone activities, no activities will be open-ended; each activity will have a predecessor and successor ties. The diagram shall clearly show the activities of the critical path. Once an activity exists on the schedule, it may not be deleted and must remain in the logic. No more than 20 percent of the activities may be critical or near critical. Critical will be defined as having zero days of Total Float. "Near Critical" will be defined as having Total Float in the range of 1 to 14 days. Show the following information on the diagrams for each activity:
 - i. Activity ID
 - ii. Activity Description
 - iii. Original Duration in Work Days
 - iv. Remaining Duration
 - v. Actual Duration in Work Days
 - vi. Early Start Date
 - vii. Early Finish Date
 - viii. Total Float

The minimal number of construction activities in the final network diagram shall be 500. Skip numbering shall be used on the network to allow insertion of additional activities for contract modifications and logic changes.

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.

-- End of Section --

SECTION 01335

SUBMITTAL PROCEDURES FOR DESIGN-BUILD PROJECTS

1.0 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/> Design-Instructions-Manual.pdf
Transatlantic Programs Center
201 Prince Frederick Drive
Winchester, Virginia 22602

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 DESIGN SUBMITTALS

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

As a minimum, design submittals shall be submitted at the following intervals:

Concept design - 35%

General design - 65%

Final design review (99%):

Cleared For Construction review - 100%

For design reviews the standard Corps of Engineers method of review is through DrChecks through Projnet <https://www.projnet.org/projnet/binKornHome/index.cfm>

All of AED Design Submittal reviews shall be done through DrChecks_{SM}.

The Afghanistan Engineer District will complete a review at each of the above design stages and document all comments in DrChecks_{SM}. Each of the DrChecks_{SM} comments shall be reviewed by the appropriate Design-Build Contractor discipline to ensure that the comment has been adequately addressed. A Design-Build Contractor response to any DrChecks_{SM} comment of "will comply" is not sufficient. Responses shall describe how the comment was addressed, the applicable drawings sheet which the comment was incorporated and any additional comments and references to the adequacy for the rebuttal.

Minimum submission requirements for each phase submittal are further defined in Paragraph 3.9 DESIGN STAGES.

1.2.2 CONSTRUCTION SUBMITTALS

1.2.2.1 Contractor Furnished Government Approved Construction Submittals (GA)

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".

In addition, GA construction submittals are required for the following:

MECHANICAL FEATURES

EQUIPMENT SUBMITTALS: Manufacturer's standard catalog data, installation, Operation and Maintenance (O&M) Manuals for water tanks, control valves, pipe insulation, water pumps, air handling units, condensers, variable air volume (VAV) boxes.

TESTING RESULTS: For water tanks, water pumps (including instrumentation), water piping, sprinkler systems, and oxygen systems, submit six (6) copies of each test containing the following information in bound letter-size booklets:

- 1) The date the tests were performed.
- 2) A list of equipment used, with calibration certifications.
- 3) A copy of measurements taken.
- 4) The parameters to be verified.
- 5) The condition specified for the parameter.
- 6) The inspection results, signed, dated, and certified by the installer. The certification shall state that required procedures were accomplished, that the procedures were conducted in compliance the plans and specifications.
- 7) A description of adjustments performed.

Individual reports shall be provided for storage tank tests, piping tests, system performance tests, high level alarm test, and the system leak tests. Drawings shall be folded blue lines, with the title block visible.

ELECTRICAL FEATURES

PRODUCT DATA and SHOP DRAWINGS: generators (and its auxiliaries), load bank, transformers, substations, panels/switchboards/motor control centers, lightning protection, receptacles, circuit breakers.

DESIGN DATA: lightning protection and grounding.

TEST DATA: Lightning protection and grounding.

ARCHITECTURAL FEATURES

PRODUCT DATA/CATALOGUE CUTS/SHOP DRAWINGS/SCHEDULES: Specialty doors and frames (fire rated, sound rated, bullet resistant, security, overhead rolling); door hardware; windows; metal roofing (including fasteners, flashing, and accessories); building insulation; fire-rated and water-resistant gypsum board; and other specialty products (bullet resistant glazing/panels).

COLOR BOARD: Architectural finishes

PRODUCT DATA/CATALOGUE CUTS/INSTALLATION INSTRUCTIONS: Exterior Insulation and Finish System (EIFS)

SHOP DRAWINGS: Casework/Cabinetry

1.2.2.2 For Information Only Construction Submittals (FIO)

All Design-Build Contractor construction submittals not requiring Designer of Record or Government Approval will be For Information Only. These construction submittals shall be checked, stamped, signed and dated by the Design-Build Contractor's Quality Control Engineer, certifying that such submittal complies with the contract requirements. All Design-Build 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.

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. The contractor shall submit all required documentation with submittals. The U.S. Army Corps of Engineer (USACE) will not accept partial submittals.

1.3.2 Responsibility for Errors or Omissions

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

1.3.2.1 Government Review

Government review, clearance for construction, or approval of post design construction submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory.

1.3.3 Substitutions

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

1.3.4 Additional Submittals

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 incomplete or not in strict conformance with the contract documents, no part of the time lost due to such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor.

1.3.6 Stamps

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

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

I certify that this submittal accurate, is in strict conformance with all contract requirements, has been thoroughly coordinated and cross checked against all other applicable disciplines to prevent the omission of vital information, that all conflicts have been

resolved, and that repetition has been avoided and, it is complete and in sufficient detail to allow ready determination of compliance with contract requirements by the Contracting Officer.

Name of CQC System Manager: _____

Signature of CQC System Manager: _____

Date: _____

1.4 ENGLISH LANGUAGE

All specifications, drawings, design analysis, design calculations, shop drawings, catalog data, materials lists, and equipment schedules submitted shall be in the English language. However, the local language of host country shall be added to project as-built drawings.

1.5 UNITS OF MEASUREMENT

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

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

1.5.1 Drawings

1.5.1.1 Site Layout

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

EXAMPLE: Masonry openings shall be a U.S. module to suit a standard U.S. door. The dimensions of the opening shall be given in SI units. Metric dimensions for site plans shall be in meters and fraction thereof. Dimensions for all other drawings shall be in millimeters using hard metric designations (example: 12 meters = 12 000). Hard metric is defined as utilizing standard metric products and the use of measurements in increments of fifty (50) and one hundred (100) millimeters.

1.5.1.2 Georeference

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

1.5.2 Design Calculations

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

1.5.3 Specifications

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

1.6 WITHHOLDING OF PAYMENT FOR SUBMITTALS

1.6.1 Design Submittals

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

1.6.2 Construction Submittals

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. In event under separate clause of the contract, the 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.

2.0 PRODUCTS

2.1 GENERAL

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

2.2 PROJECT NARRATIVE

The Project Narrative shall be a bound set and shall contain the contract RFP, Sections 0101 and 01015. (add additional RFP sections that you need). The RFP Section 01010 and 01015 shall be the latest version. Any subsequent changes to the RFP shall be clearly marked and highlighted with explanation for the changes.

The Project Narrative shall also contain the general description of the project and a discussion of the design approach and design features for the project.

2.3 DESIGN ANALYSIS

2.3.1 Submittal

A design analysis, written in the English Language with SI units of measure shall be submitted for review by the Government. The design analysis is a written explanation of

the project design which is expanded and revised (updated) as the design progresses. The design analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the final drawings and specifications. The design analysis contains the criteria for and the history of the project design, including criteria furnished by the Government, letters, codes, references, conference minutes, and pertinent research. Design calculations, computerized and manual, are included in the design analysis. Narrative descriptions of design solutions are also included. Written material may be illustrated by diagrams and sketches to convey design concepts. Catalog cuts and manufacturer's data for all equipment items, shall be submitted. 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.

2.3.2 Format

Format of design analysis shall closely match the standard format referenced within the request for proposal (RFP).

2.4 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.

2.4.1 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.

2.4.1.1 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.

2.4.1.2 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.

2.5 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 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.

2.5.1 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.

2.5.2 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>.

2.5.3 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.

2.5.4 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.

2.5.5 Industry Standards

2.5.5.1 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 (AFCEA), 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.

2.5.5.2 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.

2.5.6 Incorporation of Government review comments

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

2.6 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.

2.6.1 Drawing Size

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 half size (11 inches by 17 inches) to save paper and for ease of review. All final contract drawing sets shall be prepared with full size sheets. Drawings shall be trimmed to size if necessary.

2.6.2 Computer Assisted Design and Drafting (CADD)

Computer Assisted Design and Drafting (CADD) is required for all work related to this contract. The CADD deliverables shall meet the requirements of the AEC CAD Standard Release 2.0. Emphasis is on drawings meeting sheet layout standards, level/layer naming standards and sheet naming conventions. CAD standards may be found at the following link: <https://tsc.wes.army.mil/products/standards/aec/aecstdweb.asp>. Transatlantic Programs Center Design Instructions Manual, Chapter 22 entitled COMPUTER ASSISTED DESIGN AND DRAFTING. The Contractor shall furnish the digital as-built drawing files in .DWG file format utilizing AutoDesk AutoCAD revision 2004 or later. Drawings prepared in any convention other than CADD, must have approval of the Contracting Officer.

2.6.3 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.

2.6.4 Half-Size Reduction

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

2.6.5 Symbols and Abbreviations

Symbols and abbreviations shall be in accordance with AEC CAD Standard Release 2.0 or later /or conform to the symbols used with a CADD program such AutoDesk AutoCAD release 2004 or greater.

2.6.6 Design Discipline Designation Format

Referencing AEC CAD Standard Release 2.0, the drawing package shall be divided into the following proposed divisions as shown in chronological order:

Use the following for AEC CAD Standard Release 2.0:

<u>Discipline Designation</u>	<u>Discipline</u>
C	Civil
A	Architectural
S	Structural
P	Plumbing
M	Mechanical
E	Electrical
F	Fire Protection

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 release 2000 or later:

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

2.6.7 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.

2.6.8 Title and Revision Block

Title and revision block shall match FIGURES 1 through 5 furnished in the RFP component entitled "1335a-Attachments-AED".

2.6.9 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

2.6.10 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.

2.6.11 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.

2.6.12 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.

2.6.12 Sheet page numbers

At initial submission of drawings, all plan sheets shall be numbered sequentially from 1 to "x", with "x" being the total number of drawings. See Paragraph 2.6.6 Design Discipline Designation Format guidance and "1335a-Attachments-AED, Figure 1 – AED Title Block sheet number/description" for further Sheet Reference Number requirements. Additional drawings not yet developed can be "reserved" in the Index and included in the initial numbering, or can be added later and named as follows.

For an Architectural sheet ADDED immediately after this page,

Sheet Reference Number
A-009
Sheet 09 of 43

the page would be numbered as below:

Sheet Reference Number
A-009A
Sheet 09A of 43

Other architectural, or other discipline, drawings would be likewise added and annotated on the Index sheet and on the individual drawing Sheet Reference Number Block.

2.6.13 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.

2.6.14 Specifications Placed on the Drawings

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

2.6.15 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.

2.6.16 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.

2.6.17 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.

2.6.18 Revisions

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

3.0 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 monthly 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 Construction Submittal Register (ENG Form 4288)

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

3.3 TRANSMITTAL FORM (ENG Form 4025)

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

3.4 PROGRESS SCHEDULE

The Contractor shall prepare and submit a design progress schedule to the Contracting Officer. The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The progress schedule shall show, as a percentage of the total design price, the various items included in the contract and the order in which the Contractor proposes to carry on the work, with dates on which he will start the features of the work and the contemplated dates for completing same. Significant milestones such as review submittals shall be annotated. The Contractor shall assign sufficient technical, supervisory and administrative personnel to insure the prosecution of the work in accordance with the progress schedule. The Contractor shall correct the progress schedule at the end of each month and shall deliver Submittal section AED (3) copies to the Contracting Officer. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.5 SCHEDULING

3.5.1 Design Submittals

Adequate time (a minimum of fourteen (14) 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)

Two (2) half-size hard copies and one (1) soft copy of all design submittals shall be transmitted to the Government using one of the following addresses, by means of ENG Form 4025:

AFGHANISTAN ENGINEER DISTRICT

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

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

or

(2) U.S. Postal Service:

U.S. Army Corps of Engineers
Afghanistan Engineer District (CEAED-EC)
Attn.: Qalaa House
APO AE 09356

3.6.1.2 Resident/Area Engineer Office

Design submittals shall be provided to the Area and/or Resident Engineer Office on the same date as these submittals are delivered to the AED address in Para. 3.6.1.1. At the Pre-Construction meeting, the Contractor will be furnished the Area and/or Resident Office address(es) to which these submittals shall be provided. At a minimum, two (2) half size hard copies, one (1) full size hard copy and one (1) soft copy (CD-ROM) of each design submittal shall be delivered to the designated address which will be specified at the Pre-Construction Meeting.

3.6.1.3 Deliverables "Cleared for Construction"

Once the Design Documents have been "Cleared for Construction" by the Contracting Officer, the Design-Build Contractor shall clearly identify each document by annotating it as "Cleared for Construction". One (1) softcopy (CD-ROM) and two (2) complete hardcopies of all documents (with drawings in half-size) shall be submitted to the Government as follows:

AFGHANISTAN ENGINEER DISTRICT

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

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

or

(2) U.S. Postal Service:
U.S. Army Corps of Engineers
Afghanistan Engineer District (CEAED-EC)
Attn.: Qalaa House
APO AE 09356

Two (2) complete half-size hardcopies and (1) softcopy (CD-ROM) of plans and specifications shall be furnished to the Area and/or Resident Engineer as designated at the Pre-Construction Meeting.

3.6.1.4 Editable CADD Format As-Builts

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.

In accordance with Section 01060, Paragraph 1.14, PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR), four (4) sets of the Government approved As-Builts (4 full size paper copies and 4 soft copies) shall be submitted to the Contracting Officer.

3.6.1.5 Digital Transmission of Design Submittals

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

- a. USE OF FILE TRANSFER PROTOCOL (FTP) SERVER. The Design-Build contractor will download all design files on either its own File Transfer Protocol (FTP) Server, the Corps FTP Server or as otherwise directed. Afghanistan Engineer District (AED) prefers that the contractor provide the soft copy of design submittals be burned to CD-ROM and submitted as such. The procedure to be followed will be established at the Pre-Construction Conference and the appropriate log-in and password information will be exchanged between the Government and the Design-Build Contractor.

NOTE: AED accepts AutoCad release 2004 or higher drawing file format as the standard due to the fact that the local region does not support Microstation.

- b. TRANSLATED OR CONVERTED FILES DRAWING FILES. Digital drawing files shall be prepared as indicated in the paragraph entitled COMPUTER ASSISTED DESIGN AND DRAFTING (CADD). Under NO circumstances shall the Design-Build Contractor translate (or convert) the files from AutoDesk AutoCAD to Bentley Microstation.
- c. NOTIFICATION. The Design-Build Contractor shall notify all recipients by email that the Design submittal has been downloaded to the designated FTP server or electronically provided on a CD and is ready for Government review. This email shall include a scanned copy of the ENG Form 4025 signed by the Design-Build Contractor's Contractor Quality Control (CQC) Organization. It shall also include an updated digital copy of TAC Form 122-E. The Government will use the digital submittal as an advance copy pending receipt of an official hardcopy version in accordance with the paragraph entitled SUBMITTAL PROCEDURE. Subsequent to a

period of demonstrated successful performance, the Government may elect to eliminate the requirement to submit an official hardcopy version.

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

- d. RETURN OF GOVERNMENT REVIEWED SUBMITTALS. Subsequent to the Government review, the Eng Form 4025 with comments (if applicable) will be returned to the Design-build Contractor digitally by email. Hardcopies of these documents will subsequently be submitted to the Design-Build Contractor via the United States Postal Service (USPS). The Government may elect to stop sending hardcopies if it deems that digital transmission of design submittals is progressing satisfactorily.
- e. SUPPLEMENTAL ACTIONS. All supplemental actions, resubmittals, and subsequently scheduled submissions shall be performed by the Design-Build contractor as indicated within this paragraph.

AED: As-builts shall be prepared and submitted in .DWG format utilizing AutoDesk AutoCad release 2004 or higher format.

3.6.2 Post Design Construction Submittals

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

AFGHANISTAN ENGINEER DISTRICT

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

or

(2) U.S. Postal Service:
U.S. Army Corps of Engineers
Afghanistan Engineer District (CEAED-EC)
Attn.: Qalaa House
APO AE 09356

Submittals of Operations and Maintenance (O & M) Manuals in sets of (3) three 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.: Chief, Engineering Branch

or

(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:

Section 01015	"Technical Requirements"
Section 01335	"Submittal Procedures for D-B Projects"
Section 02831	"Chain-Link Fence"
Section 02710	"Subdrainage System"
Section 03300	"Concrete For Building Construction"
Section 04200	"Masonry"

3.6.3.2 Numbering procedures for transmittal on ENG FORM 4025

Each Specification Section will have various requirements for submittals (design information, product data, test reports, procedures, etc.) to the Government for Approval (GA) or For Information Only (FIO). Items from different Sections cannot be submitted on the same ENG Form 4025. When furnishing one or more items from the same Section at a given time, a single ENG Form 4025 can be used to identify and submit these items. Block 'b' of the 4025 entitled "DESCRIPTION OF ITEM SUBMITTED" should provide an accurate and unique description of each item being proposed by the Contractor. Item numbers (block "a" of the 4025 entitled "ITEM NO.") will be automatically generated in QCS for each ENG Form 4025. QCS will track and automatically generate the "ITEM NO." for all following ENG Form 4025s for the same Section number. To illustrate, a transmittal for the 35% Design Submittal required by Section 01335 might have the following Items:

- ITEM NO. 1 Topographic Information
- ITEM NO. 2 Geotechnical Report
- ITEM NO. 3 Foundation Design
- ITEM NO. 4 35% Plans
- ITEM NO. 5 Outline of Construction Specifications to be used

If this was the first submittal furnished by the Contractor for Section 01335, then a Transmittal Number of 01335-1 would be generated using QCS. As new transmittals are generated in QCS, the last digit of the transmittal is increased incrementally, as follows:

- Transmittal No. 01335-2
- Transmittal No. 01335-3
- Transmittal No. 01335-4

and so forth. The first transmittal submitted from each Specification Section will be "-1", in other words, there will never be a Transmittal No. 01335-0

The above illustration is true for all other Specification Sections included in the Request for Proposal or in the Construction Specifications compiled by the Design-Build Contractor in the prosecution of work under the RFP.

For design reviews the standard Corps of Engineers method of review is through DrChecks through projnet <https://www.projnet.org/projnet/binKornHome/index.cfm>
All of AED Design Submittal reviews shall be done through DrChecks_{SM}.

3.6.3.3 Design Submittal and Resubmittal Naming Conventions

Should the Contractor be required to resubmit any transmittal (i.e, a code of "C" or "E" has been given by the Government for one or more of the ITEM Numbers in the 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.

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, include: 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.

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

The Contractor shall thoroughly review each submittal prior to submission to the Contracting Officer to assure it is complete, correct and unified. This review shall be for the purposes of eliminating errors, interferences, and inconsistencies, and of incorporating design criteria, review comments, specifications, and any additional information required. The Contractor will give evidence of such review of all items in each submittal ENG Form 4025, by annotating Column "g" (titled "For Contractor Use Code") of this Form with the letter "A," Approved as Submitted. Design submittals submitted to the Contracting Officer without evidence of the above requirements or the Contractor's certified approval will be returned for resubmission. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7.4 Government Review

Within 14 days after Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated in calendar dates. The Contractor shall update this schedule monthly. After receipt, the Government will be allowed fourteen (14) days to review and comment on all Design Submittals, 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 Design-Build Contractor may be liable for liquidated damages owed to the Government for returned design submittals due to deficiencies.

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, the Design-Build Contractor will be notified that DrChecks_{SM} is open for his review and he is to begin review and response to all comments. The Contracting Officer will indicate whether the design submittal has or has not been cleared for construction using the following action codes in Block "I" of the Transmittal's ENG Form 4025:

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. The Design-Build Contractor's Quality Control Organization will annotate Block "g" entitled "FOR CONTRACTOR USE CODE" of Eng Form 4025-R using the action codes listed on the reverse side of the form.

Design submittals Cleared for Construction by the Contracting Officer shall not relieve the Contractor from responsibility for any design errors or omissions and any liability associated with such errors, nor from responsibility for complying with the requirements of this contract.

3.7.4.1 Incorporation of Government Review Comments

If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after close of review period in order that the comment can be resolved. The Contractor shall furnish disposition of all comments in DrChecks_{SM}, with the next scheduled submittal. The disposition shall identify action taken with citation of location within the relevant design document. Generalized statements of intention such as "will comply" or "will revise the specification" are not acceptable. The Contractor is cautioned that if he believes the action required by any comment exceeds the requirements of this contract, that he should flag the comment in DrChecks_{SM} as a scope change, and notify the COR in writing immediately. If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period may be extended 7 days. Submittals date revisions must be made in writing at least five (5) days prior to the submittal. During the design review process, comments will be made on the design submittals that will change the drawings and specifications. The Government will make no additional payments to the Contractor for the incorporation of comments. Review comments are considered part of the design-build process.

The Contractor will be furnished comments from the various design sections of the Corps of Engineers, Afghanistan Engineer District (AED) and / or Europe District (EUD) and / or Transatlantic Programs Center (TAC), as well as from other concerned agencies involved in the review process. The review will be for conformance with the technical requirements and parameters of the contract documents. The Contractor shall either incorporate each comment or, if the Contractor disagrees technically and does not intend to comply with the comment(s), the contractor shall clearly outline, with ample justification, its reasons for its noncompliance within five (5) days after receipt of the comment(s). Additionally, the Contractor is cautioned in that if it believes the action required by any comment exceeds the requirements of this contract, that he should take no action and notify the Contracting Officer in writing immediately. The disposition of all comments shall be furnished in DrChecks_{SM} as soon as possible, but no later than the date of the next submittal or

resubmittal, whatever the particular case may require. The review comments and the submittal material for each design review will become the basis for any ensuing design work. Copies of the design review comments with the action taken on each comment noted, shall be bound in all succeeding volumes of the design analysis.

3.7.4.2 Conferences

As necessary, conferences will be conducted between the Design-Build contractor and the Government to resolve review comments.

A review conference may be held at the completion of AED review and subsequent Design-Build contractor response for each design submittal. The review conference will be held at the Corps District Office in Kabul, Afghanistan. The Contractor shall bring the personnel that developed the design submittal to the review conference.

3.7.4.3 Design Deficiencies

Design deficiencies noted by the Government shall be corrected prior to the start of design for subsequent features of work which may be affected by, or need to be built upon, the deficient design work.

3.7.5 Design Discrepancies

The Design-Build Contractor shall be responsible for the correction of incomplete design data, omissions, and design discrepancies which become apparent during construction. The Design-Build Contractor shall provide the Contracting Officer with a proposed recommendation for correcting a design error, within three (3) calendar days after notification by the Contracting Officer. The Contracting Officer will notify the Design-Build Contractor of any detected noncompliance with the foregoing requirements. The Design-Build Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Design-Build Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Design-Build Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor. Should extensions of design, fabrication plans and/or specific manufacturer's details be required as a result of a Government issued Change Order, the Government will make an equitable adjustment in accordance with Contract Clause 52.243-4 entitled CHANGES.

3.8 Phased or "Fast-Track" Design

3.8.1 General

If approved by the Government, design and construction sequencing may be effected on an incremental basis as each approved phase or portion (e.g., demolition, geotechnical, site work, exterior utilities, foundations, substructure, superstructure, exterior closure, roofing, interior construction, mechanical, electrical, etc.) of the design is completed.

3.8.1.1 Design Phases

Complete or partial design phasing may or may not have been specified by the Government elsewhere in this contract. For construction sequencing or phasing that the Government has not specifically mandated, the Design-Build Contractor may submit a proposed phasing plan. Design phasing proposed by the Design-Build Contractor shall be submitted to the Government for approval in accordance with TAC Form 122-E CONTRACTOR FURNISHED DESIGN DOCUMENTS.

3.8.2 Sequence of Design-Construction (Fast-Track)

After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements and obtain Government review of each submission. The contractor may begin construction on portions of the work for which the Government has reviewed the final design submission and has determined satisfactory for purposes of beginning construction. The Contracting Officer will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the Government, the initial submission failed to meet the minimum quality requirements as set forth in the contract.

3.8.3 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 Review (65%), Final (99%) design stages, and at the 100% Cleared for Construction stage. The requirements of each design stage are listed hereinafter. The Contractor shall clearly label and date all design submittals to reflect the current design stage and date of submission to the Government to avoid confusion between current and previous submittals.

The design submittals shall reflect the current stage, whether it be Design Submittal 35% Design Submittal; 65% Design Submittal; 99% Design Submittal; or 100% Design Submittal.

Any resubmittals shall follow the following naming convention: 35% Design Resubmittal #1; 35% Design Resubmittal #2; 35% Design Resubmittal #3, and so forth for all other later Design Resubmittals.

The Contractor use the above nomenclature and date of submission to the Government for Plan Cover Sheets; title blocks for all drawings; all Specification Cover Sheets; all specification pages; all Design Analysis Cover Sheets and associated pages; and similar labeling for all other documents included in the design submittal.

See the attachment titled "01335a_Attachments_AED.pdf" for required Title Block Required Annotations drawing guidance.

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%)

The review of this submittal is primarily to ensure that the Contractor has taken an inventory of the existing conditions at each proposed site, has established the most desirable functional relationships between the various project elements, has provided the technical solution as to how the functional and technical requirements will be met, and to show Contractor compliance (or justify noncompliance) with the design parameters and/or requirements. Refer to requirements herein for specific submittal requirements. As a minimum, the following documents shall be submitted:

- a. Complete site topographic survey and Grading Plan.
- b. Geotechnical Report, indicating appropriate information for various site characteristics, soil parameters as determined by certified lab tests, assumed building foundation loads and associated settlement estimates, and a recommendation of the foundation systems to be constructed. Other RFP Section 1010 and 1015 requirements for this report shall also be included.
- c. Preliminary Design Analysis, Preliminary Design Calculations, and full plans and specifications for those features of work the Contractor will request Partial Clearance for Construction after Government review of this 35% Submittal.
- d. Remaining features of work shown on 35% design complete Plans;
- e. Outline of Construction Specification Sections to be used and those Specification items requiring Government Approval (GA).
- f. Full design analysis, drawings, specifications and other GA construction submittal information for project components with long ordering, fabrication and delivery times.

3.9.2 Preliminary Review Submittal (65%)

The review of this submittal is primarily to insure that the contract documents and design analysis are proceeding in a timely manner and that the design criteria is being correctly interpreted. The submittal shall consist of the following:

- a. Design Analysis
- b. Draft Construction Specifications (all anticipated sections, edited to include only applicable requirements).
- c. Construction Drawings, with full plans and specifications for those features of work the Contractor will again request a Partial Clearance for Construction on after successful and satisfactory Government review.
- d. Environmental permits, as required. When environmental permits are not required, the Contractor shall provide a statement with justification to that effect.

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 all Government review comments. The Contractor shall submit the following documents for this 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 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, edited to include all pertinent features of work and removal of all specifications unrelated to the RFP work. All GA Construction Submittals shall be included.
- 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 all past design reviews. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.
- d. All AED DrChecks_{SM} comments from prior reviews (and any resubmittals at these design levels) completely addressed and incorporated into project design, plans and specifications.

3.9.4 "Cleared for Construction" Design Review Submittal (100%)

After the Final Design Review Submittal (99%) 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, specifications, and design analysis shall be submitted at this stage and all other subsequent stages of the design process.
- e. All AED DrChecks_{SM} comments from prior reviews (and any resubmittals at these design levels) must be completely addressed and incorporated into project design, plans and specifications.

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, Paragraph 1.14, 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:

Fire Protection	Medical Design
Acoustical Design	Interior Design
Educational Design	Security
Telecommunications	Audio Visual, PA, TV, etc.
Geotechnical Design	Hardened Structures
Asbestos Abatement	X-Ray Shielding
EMF Shielding	Site grading

3.10.2 Conduct of Work

3.10.2.1 Performance

Perform the work diligently and aggressively, and promptly advise the Contracting Officer of all significant developments.

3.10.2.2 Telephone Conversations

Prepare a summary, and promptly furnish a copy thereof to the Contracting Officer, of all telephone conversations relating to the design work under this contract.

3.10.2.3 Cooperation with Others

Cooperate fully with other firms, consultants and contractors performing work under the program to which this contract pertains, upon being advised by the Contracting Officer that such firms or individuals have a legitimate interest in the program, have need-to-know status, and proper security clearance where required.

3.10.2.4 Technical Criteria

All designs, drawings, and specifications shall be prepared in accordance with the contract documents and with the applicable publications referenced therein. As soon as possible, the Design-Build Contractor shall obtain copies of all publications applicable to this contract. Availability of publications (where to purchase) is contained in Specification Section 01420 entitled: SOURCES FOR REFERENCE PUBLICATIONS. Any deviations from the technical criteria contained in the contract documents or in the applicable publications, including the use of criteria obtained from the user or other sources, must receive prior approval of the Contracting Officer. Where the technical criteria contained or

referred to herein are not met, the Design-Build Contractor will be required to conform his design to the same at his own time and expense.

3.10.3 Design Priorities

The design of this project shall consider the remote location and harsh environment 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.

Semi permanent Construction. Buildings and facilities shall be designed and constructed to serve a life expectancy of more than 5 years but less than 25 years, to be energy efficient, and to have finishes, materials, and systems that require a moderate degree of maintenance using the life-cycle cost approach.

Temporary Construction. Buildings and facilities shall be designed and constructed to serve a life expectancy of 2 years or less using low-cost construction, with finishes, materials, and systems that are selected with maintenance factors being a secondary consideration.

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.

3.10.3.4 Overseas Work

Use of construction materials or techniques shall be utilized which are suitable for overseas work in harsh climates and environments.

3.10.4 Topographic Surveys, Easements, and Utilities

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for detailed topographic mapping, available easements, and utility information for the project.

3.10.4.1 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 GOVERNMENT APPROVED CONSTRUCTION SUBMITTALS (Required During Construction)

3.12.1 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, or other project components noted elsewhere in this Section.

3.12.1.1 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.

3.12.1.2 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.

3.12.2 Incomplete Design

The Design-Build Contractor shall not use construction submittals as a means to supplant and/or supplement an incomplete design effort.

3.12.3 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.

3.12.4 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.

3.12.5 Government Review

Upon completion of review of construction submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Two (2) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Design-Build Contractor.

3.13 FOR INFORMATION ONLY SUBMITTALS

These construction 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.

3.14 ATTACHMENTS

The following attachment titled "01335a_Attachments_AED.pdf" 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-R - Submittal Register

Figure 1 – From AEC CADD Standards; AED Title Block - sheet number/ descriptions

Figure 2 - From AEC CADD Standards; AED Title Block - A-E logo/designed by/reviewed by/submitted by

Figure 3 - From AEC CADD Standards Revision; AED Title Block – Revisions Block dimensioning

Figure 4 - From AEC CADD Standards; AED Title Block – Revisions Block Required Notations

Figure 5 - From AEC CADD Standards; Finished Format Size

-- End of Section -

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

- a. A soft metric measurement is indicated by an SI value which is a mathematical conversion of the I-P value shown in parentheses (e.g. 38.1 mm (1-1/2 inches)). Soft metric measurements are used for measurements pertaining to products, test values, and other situations where the I-P units are the standard for manufacture, verification, or other controlling factor. The I-P value shall govern while the metric measurement is provided for information.
- b. A soft metric measurement is also indicated for products that are manufactured in industry designated metric dimensions but are required by law to allow substitute I-P products. These measurements are indicated by a manufacturing hard metric product dimension followed by the substitute I-P equivalent value in parentheses (e.g., 190 x 190 x 390 mm (7-5/8 x 7-5/8 x 15-5/8 inches)).

1.3.3 Neutral

A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

1.4 COORDINATION

Discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the drawings shall be brought to the attention of the Contracting Officer for resolution.

1.5 RELATIONSHIP TO SUBMITTALS

Submittals for Government approval or for information only shall cover the SI or I-P products actually being furnished for the project. The Contractor shall submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise instructed or approved. The Contractor shall use ASTM SI 10 and ASTM E 621 as the basis for establishing metric measurements required to be used in submittals.

-- End of Section --

SPECIFICATION SECTION 01451**CONTRACTOR QUALITY CONTROL****1.0 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.

2.0 PRODUCTS (Not Applicable)**3.0 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:

- a. 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.
- b. 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.
- c. 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 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.

3.4.4 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

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

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

1.0 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:

- a. Sections 1.1 through 3.12.1, which are the standard safety specifications for work in Europe District and;
- b. 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 an organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

- a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily quality control report.
- b. Conduct mishap investigations and complete required reports. Maintain an accident/injury log such as the OSHA Form 300 or host nation equivalent, and Daily Production reports for prime and sub-contractors.
- c. Maintain applicable safety reference material on the job site.
- d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- e. Implement and enforce accepted APPS and AHAs.
- f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.
- g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

- 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, 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 COR IMMEDIATELY.

2.0 PRODUCTS

Not used.

3.0 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. Existing horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.2.5 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 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. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

3.5.4 Trenching Machinery

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

3.6 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

3.7 ELECTRICAL

3.7.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.7.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70 or European Union equivalent.

3.8 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 06.I of USACE EM 385-1-1. Any potential for a hazard in the confined space requires a permit system to be used.

- a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures). All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.
- b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.
- c. Ensure the use of rescue and retrieval devices in confined spaces greater than 1.5 m (5 feet) in depth. Conform to Sections 06.I.08, 06.I.09 and 06.I.10 of USACE EM 385-1-1.
- d. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.
- e. Include training information for employees who will be involved as entrants and attendants for the work. Conform to Section 06.I.07 of USACE EM 385-1-1.
- 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.

3.10.2 Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workers remove debris or perform other work in the immediate area.

3.10.3 Protection of Structures

Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the COR. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

Interior concrete or masonry walls shall be demolished from the top down unless a Registered Engineer can demonstrate that an alternate method poses no additional safety hazards

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 --

SPECIFICATION SECTION 01770

CLOSEOUT PROCEDURES

1.0 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 2 full-size, 2 half-size paper drawing sets, and 4 digital CD copies made of complete AUTOCAD drawings and PDF drawings. Digital files shall be well indexed in the similar fashion as paper documents.

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.

2.0 PRODUCTS

Not used.

3.0 EXECUTION

Not used.

-- End of Section --

SECTION 01780A
CLOSEOUT SUBMITTALS

1.0 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

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 three sets 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 be according to Section 01770. 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	Where Used
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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.
 8. Cross-reference to warranty certificates as applicable.
 9. Starting point and duration of warranty period.
 10. Summary of maintenance procedures required to continue the warranty in force.
 11. Cross-reference to specific pertinent Operation and Maintenance manuals.
 12. Organization, names and phone numbers of persons to call for warranty service.
 13. 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 the situation and determine a 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 4. All other work to be initiated within 3 work days and work continuously to completion or relief.

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.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION (NOT USED)

-- End of Section -

SECTION 01781**OPERATION AND MAINTENANCE DATA****1.0 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.

2.0 PRODUCTS

Not used.

3.0 EXECUTION

3.1 TRAINING

Unless provided for elsewhere, the Contractor shall provide 60 calendar days of 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 sessions and provide the five(5) DVD copies to the Government.

-- End of Section --