SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W5J9LE-11-B-0005	2. TYPE OF SOLICITATION [X] SEALED BID (IFB) [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 30-Jun-2011	PAGE OF PAGES 1 OF 63

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO. ANA11-008a

7. ISSUED BY CODE W5J9LE	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
AFGHANISTAN DISTRICT SOUTH (AES) US ARMY CORPS OF ENGINEERS APO AE 09355 TEL: FAX:	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME EVAN B CARTER	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)*

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):*

Kandaks (East) - Camp Hero

The Government intends to award one Firm Fixed Price Contract. Project title: Kandaks (East) Camp Hero, Kandahar Province, Afghanistan.

The magnitude of this construction project is between $25,000,000 and $100,000,000.

This acquisition is unrestricted/full and open. There is no scheduled site visit for this project. Bidders may conduct their own independent site visits on their own schedule and at their own risk.

This solicitation is subject to availability of funds.

The point of contact for this solicitation is Evan Carter, USACE-AES, US phone: 540-722-6611, email: evan.b.carter@usace.army.mil.

11. The Contractor shall begin performance within 10 calendar days and complete it within 550 calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* 52-211-10 *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 1 copies to perform the work required are due at the place specified in Item 8 by 02:00 PM *(hour)* local time 02 Aug 2011 *(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 [X] 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 consummates 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)* TEL: EMAIL:
30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY
		31C. AWARD DATE

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BID SCHEDULE

SECTION 00010
BIDDING SCHEDULE

The Contractor shall provide a price for all items.

ITEM	DESCRIPTION	QTY	UNIT	Unit Price	AMOUNT
0001	**GENERAL**				
0001AA	Mobilization/Demobilization	1	LS	XXX	$_____
0001AB	Security	1	LS	XXX	$_____
0001AC	Site Survey/Existing Conditions Map	1	LS	XXX	$_____
0001AE	Geotechnical Investigation	1	LS	XXX	$_____
0001AF	As-Built Drawings	1	LS	XXX	$_____
0002	**SITE DEVELOPMENT/ IMPROVEMENTS**				
0002AA	Site Grading and Stormwater Management	1	LS	XXX	$_____
0002AB	Water Well	1	LS	XXX	$_____
0002AC	Well House and Water Well System	1	LS	XXX	$_____
0002AD	Water Distribution System	1	LS	XXX	$_____
0002AE	Wastewater Treatment Plant	1	LS	XXX	$_____
0002AF	Wastewater Collection System	1	LS	XXX	$_____
0002AG	Underground Electrical Distribution System	1	LS	XXX	$_____
0002AH	Road Network	1	LS	XXX	$_____
0002AJ	Concrete Sidewalks	1	LS	XXX	$_____

0002AK	Motor Pool Areas	1	LS	XXX	$_____
0002AL	Site Communication System	1	LS	XXX	$_____
0002AM	Vehicle Wash Rack	3	EA	$_____	$_____
0002AN	Vehicle Refueling Point	2	EA	$_____	$_____
0002AP	Trash Collection Point	22	EA	$_____	$_____
0002AQ	Volley Ball Courts	4	EA	$_____	$_____
0003	**FORCE PROTECTION**				
0003AA	Perimeter Wall	1	LS	XXX	$_____
0003AB	Guard Towers	19	EA	$_____	$_____
0003AC	Entry Control Point	1	LS	XXX	$_____
0003AD	Personnel Bunkers	150	EA	$_____	$_____
0004	**FACILITIES**				
0004AA	Arms Storage Bldg.	5	EA	$_____	$_____
0004AB	POL Storage Bldg.	7	EA	$_____	$_____
0004AC	Fuel Operators Bldg.	2	EA	$_____	$_____
0004AD	Ammunition Supply Point	1	EA	$_____	$_____
0004AE	NCO Barracks	12	EA	$_____	$_____
0004AF	Enlisted Barracks	22	EA	$_____	$_____
0004AG	Large Latrine/Laundry Bldg.	10	EA	$_____	$_____
0004AH	Officers Barracks	6	EA	$_____	$_____
0004AJ	Battalion Storage Building	7	EA	$_____	$_____
0004AK	Small Latrine	3	EA	$_____	$_____
0004AL	Battalion Headquarters Building	5	EA	$_____	$_____
0004AM	Administration Building	1	EA	$_____	$_____
0004AN	Large Dining facility	1	EA	$_____	$_____

0004AP	Small Dining facility	1	EA	$_____	$_____
0004AQ	Vehicle Maintenance facility	7	EA	$_____	$_____
0004AR	Training Classroom Building	6	EA	$_____	$_____
0004AS	Post Exchange Building	1	EA	$_____	$_____
0004AT	MWR Building	1	EA	$_____	$_____
0004AU	Medical Clinic	1	EA	$_____	$_____
0004	**DBA INSURANCE**	1	LS	XXX	$_____
The amount listed by the offeror on this CLIN is the estimated DBA insurance premium (estimated payroll of the offeror and its subcontractors times the applicable rate(s)). The DBA insurance premium amount varies with payroll and the nature of services and will, therefore, be taken into account during price evaluation of offers. The actual amount paid by the government under this CLIN will be based on the amount of the Rutherfoord invoice, stamp "paid" and submitted by the offeror after contract award. In the event of recalculation of the premium by CNA based on actual payroll amounts, the contracting officer will adjust this CLIN by contract modification to reflect the actual premium amounts paid.					
0005	**REIMBURSEMENT FOR ACTUAL PERFORMANCE AND PAYMENT BONDS PREMIUMS**	1	LS	XXX	$_____ Not to Exceed
	(see schedule note 8 of additional information)				
	SCHEDULE TOTAL:				$_____

SCHEDULE NOTES

1. Solicitation is subject to availability to funds.

2. Offeror shall submit prices on all items. Scope of work on each item is described in Section 01010.

3. Only one contract for the entire schedule will be awarded under this solicitation. This project will be awarded as a single contract.

4. Costs associated with this project shall include design and construction costs, site development, and utility installation.

5. A/E Design: Design costs shall consist of design analysis, drawings, and specifications for all facilities where a standard design has not been provided by the Government. The cost of all design shall be paid for under the bid item in which the design work is associated.

6. ORDER of WORK: See Section 00150.

7. PERIOD OF PERFORMANCE AND LIQUIDATED DAMAGES: See Section 00150 for performance schedule. Period of performance is defined as the number of calendar days from receipt of notice to proceed. Liquidated Damages are included in this contract. See FAR Clause 52.211-12.

8. Notwithstanding the Contract Clause entitled “Payments Under Fixed-Price Construction Contracts,” the Contractor shall not be reimbursed an amount which exceeds the dollar amount set forth in **bid item 0005**.

9. Abbreviations:

LM = Linear meters
SM = Square meters
EA = Each
LS = Lump Sum
m^2 = square meters
kPa = kilopascals
m = meters
cm = centimeters
l = liters
kVA = kilo volt amps

-END OF SECTION-

INSTRUCTION TO BIDDERS

INSTRUCTIONS TO BIDDERS

INFORMATION TO BIDDERS

OFFERORS are required to complete and submit the following:

Standard Form 1442 Back (signed),
Bid Schedule,
Section 00600, Representations and Certifications,
Offer guarantee

BID SUBMISSION

Bids can be submitted by mail, FedEX/DHL/UPS or delivered in person.

Electronic submission of bids will not be accepted.

Bids submitted by FedEX/DHL/UPS shall be sent to:

Evan Carter
US Army Corps of Engineers
Kandahar, Afghanistan
USACE – AES
APO, AE 09355

Bids submitted by mail shall be sent to: Evan Carter
USACE-AES
APO AE 09355

Bids delivered in person: Bids can be delivered in person to **FOB Lindsey**. Contractors that choose this method of submitting their bids that have a Kandahar Air Field (KAF) badge can access the base without an escort and deliver their bid to the U.S. Army Corps of Engineers (USACE) Castle 1 Building. Contractors shall contact Mr. David Alexander at 079-610-8172 (roshan) prior to arrival to coordinate delivery of the bid proposal since building access is restricted.

If the Contractor does not have a KAF badge, they shall contact Mr. David Alexander and he will meet the individual at the FOB Lindsey front gate to pick up the bid package.

DIRECTIONS TO FOB LINDSEY FROM KAF

Departing ECP 5 heading east from KAF; turn right.
Follow the hard surface road straight thru the market (approximately 1/2 k).
Bear left after the market staying on the hard surface road.

Then turn right to go over the bridge.
(The ANA Camp Hero will be directly in front of the bridge).
Turn left after the bridge and the entrance to Camp Lindsey will be directly in front.

Transit time is approximately 10 minutes to the front gate at FOB Lindsey.

ENVELOPE(S) PURSUANT TO FAR 14.201-5

Envelope (s) shall be plainly marked with the following information:
Solicitation No. **W5J9LE-11-B-0005**_____
Opening Date _____
Number of each amendment, which has been received
_____

BID CLOSING

All bids are due no later than 2 August 2011 at 2:00 pm local time.

BID OPENING

The bid opening will be held at **FOB Lindsey on 2 August 2011 at 2:00 pm local time** at the USACE Castle 1 Building, 2nd floor conference room.

To gain access to the base at FOB Lindsey, contractors will need either a KAF Badge or they will need to submit the Visitor Badge Application located at the end of this section.

Contractors with KAF Badge:

Contractors that possess a KAF badge that desire to attend the bid opening can access FOB Lindsey without an escort. They should report to USACE Castle 1 building in sufficient time to be seated in the conference room by 2:00 pm local time. They shall contact Mr. David Alexander **at 079-610-8172** to obtain access to the building.

Contractors without a KAF Badge:

Contractors that do not possess a KAF Badge shall fill out a Visitor Badge Application form provided with this solicitation and as a separate document and submit via email to Mr. David Alexander at david.c.alexander@usace.army.mil. The application shall be submitted a **minimum of four days** prior to the bid opening date.

On the day of bid opening, contractors shall report to the front gate at FOB Lindsey no later than 1:15pm local time. They shall contact Mr. David Alexander at 079-610-8172 once they arrive. Mr. Alexander will escort individuals to the Force Protection office. **Each contractor will be required to present either their Passport or Tazkera to show proof of identity**. Individuals will complete the check in process at the Force Security Office and then be escorted to the USACE Castle 1 Building.

Note: Electronic devices are not allowed on FOB Lindsey and will be collected at the Front Gate. Contractors are reminded to contract Mr. Alexander prior to turning in their cell phones or other devices.

PRICE BASIS

Bidders are advised that only bids submitted on a firm price basis will be considered, and that bids submitted on any other than firm price basis will be rejected. (FAR 14.201-2 (a))

Bid price alterations, i.e., crossed-out or white-out changes on the bid will not be accepted unless the change (s) is/are initialed by the person authorized to sign bid package.

BID QUANTITIES

Bids for less than specified quantities of each item in Section 00010 of the Schedule will not be considered. Failure to submit a unit price for each item where required in the Schedule will be considered as a material deviation from the requirements of the solicitation, and the bid will be rejected. (FAR 14.201-5)

ARITHMETIC DISCREPANCIES

Please use no more than 2 decimal places for the unit price or extended price amounts (i.e. $100.12). Also, please properly extend each line item. Please do not round off your extended price. Rounding results in arithmetic discrepancies. If you want your extended prices to not have decimal places, then use whole dollar amounts for your unit prices.

Please refer to EFARS Clause 52.214-5000 APPARENT CLERICAL MISTAKES (MAR 1995) on how the Government will resolve arithmetic discrepancies found on the face of the bidding schedule.

BIDDER INQUIRIES

All bidder inquiries shall be submitted by email to Mr. Evan Carter at evan.b.carter@usace.army.mil, with a courtesy copy to TAS.Contracting@usace.army.mil Inquiries will be accepted up to **7 calendar days prior** to the bid closing date.

BONDING REQUIREMENTS

BID GUARANTEE

Bidders are required to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids. The amount of the bid guarantee shall be $3,000,000. See FAR Clause 52.228-1 BID GUARANTEE (SEP 1996) for specific requirements.

Original signatures are required on the Standard Form 24 (bid bond). The bid bond amount is $3,000,000. Since the bid bond amount is known, Contractors are HIGHLY encouraged not to wait on obtaining their bid bond. Contractors need to ensure they factor in adequate delivery time to Afghanistan when sending items via mail or FedEx/DHL/UPS.

PERFORMANCE AND PAYMENT BOND REQUIREMENTS

The Contractor awarded this contract is required to provide performance and payment bonds. See FAR Clause 52.228-15 PERFORMANCE AND PAYMENT BONDS – CONSTRUCTION (OCT 2010). Please note that the penal amount of performance and payment bonds at the time of contract award shall be <u>30 percent</u> of the original contract price.

DETERMINATION OF RESPONSIBILITY REQUIREMENTS

1. To ensure award is made to a responsible bidder, a determination of responsibility will be conducted. The apparent low bidder will be contacted by the Contracting Officer and will be required to provide the requested responsibility information within 3 days. As part of this responsibility determination, the Contracting Officer will utilize the guidance contained in FAR 9.104-1 which states to be determined responsible, a prospective contractor must:
    a. Have adequate financial resources to perform the contract or the ability to obtain them.
    b. Be able to comply with the required or proposed delivery or performance schedule.
    c. Have a satisfactory performance record.
    d. Have a satisfactory record of integrity and business ethics.
    e. Have the necessary organization, experience, accounting and operational controls, and technical skills, or the ability to obtain them.
    f. Has the necessary production, construction, and technical equipment and facilities, or the ability to obtain them.
    g. Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

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52.214-3	Amendments To Invitations For Bids	DEC 1989
52.214-4	False Statements In Bids	APR 1984
52.214-5	Submission Of Bids	MAR 1997
52.214-6	Explanation To Prospective Bidders	APR 1984
52.214-7	Late Submissions, Modifications, and Withdrawals of Bids	NOV 1999
52.214-18	Preparation of Bids-Construction	APR 1984
52.214-19	Contract Award-Sealed Bidding-Construction	AUG 1996
52.214-35	Submission Of Offers In U.S. Currency	APR 1991

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52.214-34 SUBMISSION OF OFFERS IN THE ENGLISH LANGUAGE (APR 1991)

Offers submitted in response to this solicitation shall be in the English language. Offers received in other than English shall be rejected.

(End of provision)

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)

52.233-2 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 Coprs of Engineers, Kandahar, Afghanistan, APO AE 09355.**

(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)

52.252-1 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://acquisition.gov/comp/far/index.html

(End of provision

52.252-5 AUTHORIZED DEVIATIONS IN PROVISIONS (APR 1984)

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

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

(End of provision)

SECTION 100 DBA

DEFENSE BASE ACT INSURANCE RATES – LIMITATION – FIXED-PRICE (APRIL 2011)

(a) The U.S. Army Corps of Engineers (USACE) has entered into a contract with **CNA Insurance** to provide all Defense Base Act (DBA) insurance to USACE, C-3 and the 408th CSB contractors and subcontractors at a contracted fixed rate. The fixed rates for this insurance are as follows:

Service	$3.50	per $100 of employee remuneration
Construction	$4.25	per $100 of employee remuneration
Security	$10.00	per $100 of employee remuneration
Aviation	$17.00	per $100 of employee remuneration

(b) Bidders/Offerors should **compute the total compensation or total payroll**, (salary, plus overseas recruitment incentive and post differential, but ***excludes*** per diem, housing allowance, travel expenses, temporary quarters allowance, education allowance and other miscellaneous post allowances to include fee or profit) to be paid to employees who will be covered by DBA insurance. Compute the cost of DBA Insurance by utilizing the spaces provided below for the base period and whatever extension there may be thereafter, if applicable.

(1) Compensation of Covered Employees: _____
(Total Payroll Not Total Contract Value) Ex: If total Payroll is $100,000.00

(2) Applicable DBA Rate: _____
(Use appropriate Rate) Ex: If a Service, the rate is $3.50/$100 or 3.5%

(3) Total DBA Cost: _____
(Amount of DBA Premium) Ex: $100 K multiplied by 3% is $3,000.00

(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 Rutherfoord International as their managing Broker. The primary POC is the USACE DBA Program Administrator is Nikki Houngmany, (703) 813-6571 usace@rutherfoord.com. The alternate POC is Sara Payne, Senior Vice President, (703) 813-6503 sara.payne@rutherfoord.com.

(e) Labor Category/Job Classification Definitions:

SERVICE: White-collar" workers providing IT, engineering/consulting services, and restaurant services. Security consultants are included in this category if they are only providing risk assessment services and no form of armed protection.

CONSTRUCTION: "Blue-collar" workers providing services such as carpentry, electrical, plumbing, mechanical, concrete/asphalt, de-mining, roofing, landscaping, janitorial, trash removal, Port-a-John/septic cleaning, pest exterminating, auto repair/dismantling, drivers/couriers, and heavy equipment operation and maintenance. Construction site supervisors/managers and life support service providers are included in this category as well as all Unskilled and Manual Labor Day Laborers. * *Most work will fall into this category**

SECURITY: Personal Security Detail (PSD) and Static or Convoy Guarding of property or personnel.

AVIATION: Pilot and Crew of any aircraft excluding ground personnel who provide maintenance or services and stay on the ground.

Section 00600 - Representations & Certifications

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

(a) The offeror certifies that --

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

(i) Those prices,

(ii) The intention to submit an offer, or

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

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

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

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

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

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

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

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

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

(End of clause)

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52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (SEP 2007)

(a) Definitions. As used in this provision--``Lobbying contact'' has the meaning provided at 2 U.S.C. 1602(8). The terms ``agency,'' ``influencing or attempting to influence,'' ``officer or employee of an agency,'' ``person,'' ``reasonable compensation,'' and ``regularly employed'' are defined in the FAR clause of this solicitation entitled ``Limitation on Payments to Influence Certain Federal Transactions'' (52.203-12).

(b) Prohibition. The prohibition and exceptions contained in the FAR clause of this solicitation entitled ``Limitation on Payments to Influence Certain Federal Transactions'' (52.203-12) are hereby incorporated by reference in this provision.

(c) Certification. The offeror, by signing its offer, hereby certifies to the best of its knowledge and belief that no Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on its behalf in connection with the awarding of this contract.

(d) Disclosure. If any registrants under the Lobbying Disclosure Act of 1995 have made a lobbying contact on behalf of the offeror with respect to this contract, the offeror shall complete and submit, with its offer, OMB Standard Form LLL, Disclosure of Lobbying Activities, to provide the name of the registrants. The offeror need not report regularly employed officers or employees of the offeror to whom payments of reasonable compensation were made.

(e) Penalty. Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by 31 U.S.C. 1352. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure required to be filed or amended by this provision, shall be subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.209-5 CERTIFICATION REGARDING RESPONSIBILITY MATTERS (APR 2010)

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

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

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

(B) Have ( ) have not ( ), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) contract or subcontract; violation of Federal or State antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating Federal criminal tax laws, or receiving stolen property (if offeror checks “have”, the offeror shall also see 52.209-7, if included in this solicitation); and

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

(D) Have [ballot], have not [ballot], within a three-year period preceding this offer, been notified of any delinquent Federal taxes in an amount that exceeds $3,000 for which the liability remains unsatisfied.

(1) Federal taxes are considered delinquent if both of the following criteria apply:

(i) The tax liability is finally determined. The liability is finally determined if it has been assessed. A liability is not finally determined if there is a pending administrative or judicial challenge. In the case of a judicial challenge to the liability, the liability is not finally determined until all judicial appeal rights have been exhausted.

(ii) The taxpayer is delinquent in making payment. A taxpayer is delinquent if the taxpayer has failed to pay the tax liability when full payment was due and required. A taxpayer is not delinquent in cases where enforced collection action is precluded.

(2) Examples. (i) The taxpayer has received a statutory notice of deficiency, under I.R.C. Sec. 6212, which entitles the taxpayer to seek Tax Court review of a proposed tax deficiency. This is not a delinquent tax because it is not a final tax liability. Should the taxpayer seek Tax Court review, this will not be a final tax liability until the taxpayer has exercised all judicial appeal rights.

(ii) The IRS has filed a notice of Federal tax lien with respect to an assessed tax liability, and the taxpayer has been issued a notice under I.R.C. Sec. 6320 entitling the taxpayer to request a hearing with the IRS Office of Appeals contesting the lien filing, and to further appeal to the Tax Court if the IRS determines to sustain the lien filing. In the course of the hearing, the taxpayer is entitled to contest the underlying tax liability because the taxpayer has had no prior opportunity to contest the liability. This is not a delinquent tax because it is not a final tax liability. Should the taxpayer seek tax court review, this will not be a final tax liability until the taxpayer has exercised all judicial appeal rights.

(iii) The taxpayer has entered into an installment agreement pursuant to I.R.C. Sec. 6159. The taxpayer is making timely payments and is in full compliance with the agreement terms. The taxpayer is not delinquent because the taxpayer is not currently required to make full payment.

(iv) The taxpayer has filed for bankruptcy protection. The taxpayer is not delinquent because enforced collection action is stayed under 11 U.S.C. 362 (the Bankruptcy Code).

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

(2) Principal, for the purposes of this certification, means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a division or business segment; and similar positions).

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

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

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

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

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.209-7 INFORMATION REGARDING RESPONSIBILITY MATTERS (JAN 2011)

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

Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative Proceedings, Civilian Board of Contract Appeals Proceedings, and Armed Services Board of Contract Appeals Proceedings). This includes administrative proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include agency actions such as contract audits, site visits, corrective plans, or inspection of deliverables.

Federal contracts and grants with total value greater than $10,000,000 means--

(1) The total value of all current, active contracts and grants, including all priced options; and

(2) The total value of all current, active orders including all priced options under indefinite-delivery, indefinite-quantity, 8(a), or requirements contracts (including task and delivery and multiple-award Schedules).

Principal means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a division or business segment; and similar positions).

(b) The offeror ( ) has ( ) does not have current active Federal contracts and grants with total value greater than $10,000,000.

(c) If the offeror checked “has” in paragraph (b) of this provision, the offeror represents, by submission of this offer, that the information it has entered in the Federal Awardee Performance and Integrity Information System (FAPIIS) is current, accurate, and complete as of the date of submission of this offer with regard to the following information:

(1) Whether the offeror, and/or any of its principals, has or has not, within the last five years, in connection with the award to or performance by the offeror of a Federal contract or grant, been the subject of a proceeding, at the Federal or State level that resulted in any of the following dispositions:

(i) In a criminal proceeding, a conviction.

(ii) In a civil proceeding, a finding of fault and liability that results in the payment of a monetary fine, penalty, reimbursement, restitution, or damages of $5,000 or more.

(iii) In an administrative proceeding, a finding of fault and liability that results in--

(A) The payment of a monetary fine or penalty of $5,000 or more; or

(B) The payment of a reimbursement, restitution, or damages in excess of $100,000.

(iv) In a criminal, civil, or administrative proceeding, a disposition of the matter by consent or compromise with an acknowledgment of fault by the Contractor if the proceeding could have led to any of the outcomes specified in paragraphs (c)(1)(i), (c)(1)(ii), or (c)(1)(iii) of this provision.

(2) If the offeror has been involved in the last five years in any of the occurrences listed in (c)(1) of this provision, whether the offeror has provided the requested information with regard to each occurrence.

(d) The offeror shall post the information in paragraphs (c)(1)(i) through (c)(1)(iv) of this provision in FAPIIS as required through maintaining an active registration in the Central Contractor Registration database at http://www.ccr.gov (see 52.204-7).

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

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

The offeror represents that --

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

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

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

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.222-38 COMPLIANCE WITH VETERANS' EMPLOYMENT REPORTING REQUIREMENTS (SEP 2010)

By submission of its offer, the offeror represents that, if it is subject to the reporting requirements of 38 U.S.C. 4212(d) (i.e., if it has any contract containing Federal Acquisition Regulation clause 52.222-37, Employment Reports on Veterans), it has submitted the most recent VETS-100A Report required by that clause.

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.225-20 PROHIBITION ON CONDUCTING RESTRICTED BUSINESS OPERATIONS IN SUDAN--CERTIFICATION (AUG 2009)

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

Business operations means engaging in commerce in any form, including by acquiring, developing, maintaining, owning, selling, possessing, leasing, or operating equipment, facilities, personnel, products, services, personal property, real property, or any other apparatus of business or commerce.

Marginalized populations of Sudan means--

(1) Adversely affected groups in regions authorized to receive assistance under section 8(c) of the Darfur Peace and Accountability Act (Pub. L. 109-344) (50 U.S.C. 1701 note); and

(2) Marginalized areas in Northern Sudan described in section 4(9) of such Act.

Restricted business operations means business operations in Sudan that include power production activities, mineral extraction activities, oil-related activities, or the production of military equipment, as those terms are defined in the Sudan Accountability and Divestment Act of 2007 (Pub. L. 110-174). Restricted business operations do not include business operations that the person (as that term is defined in Section 2 of the Sudan Accountability and Divestment Act of 2007) conducting the business can demonstrate--

(1) Are conducted under contract directly and exclusively with the regional government of southern Sudan;

(2) Are conducted pursuant to specific authorization from the Office of Foreign Assets Control in the Department of the Treasury, or are expressly exempted under Federal law from the requirement to be conducted under such authorization;

(3) Consist of providing goods or services to marginalized populations of Sudan;

(4) Consist of providing goods or services to an internationally recognized peacekeeping force or humanitarian organization;

(5) Consist of providing goods or services that are used only to promote health or education; or

(6) Have been voluntarily suspended.

(b) Certification. By submission of its offer, the offeror certifies that the offeror does not conduct any restricted business operations in Sudan.

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

52.225-25 PROHIBITION ON ENGAGING IN SANCTIONED ACTIVITIES RELATING TO IRAN--CERTIFICATION (SEP 2010)

(a) Definition.

Person--

(1) Means--

(i) A natural person;

(ii) A corporation, business association, partnership, society, trust, financial institution, insurer, underwriter, guarantor, and any other business organization, any other nongovernmental entity, organization, or group, and any governmental entity operating as a business enterprise; and

(iii) Any successor to any entity described in paragraph (1)(ii) of this definition; and

(2) Does not include a government or governmental entity that is not operating as a business enterprise.

(b) Certification. Except as provided in paragraph (c) of this provision or if a waiver has been granted in accordance with FAR 25.703-2(d), by submission of its offer, the offeror certifies that the offeror, or any person owned or controlled by the offeror, does not engage in any activities for which sanctions may be imposed under section 5 of the Iran Sanctions Act of 1996. These sanctioned activities are in the areas of development of the petroleum resources of Iran, production of refined petroleum products in Iran, sale and provision of refined petroleum products to Iran, and contributing to Iran's ability to acquire or develop certain weapons.

(c) Exception for trade agreements. The certification requirement of paragraph (b) of this provision does not apply if--

(1) This solicitation includes a trade agreements certification (e.g., 52.225-4, 52.225-11 or comparable agency provision); and

(2) The offeror has certified that all the offered products to be supplied are designated country end products or designated country construction material.

(End of provision)

CLAUSES INCORPORATED BY FULL TEXT

252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (JAN 2009)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries subject to this provision include: Cuba, Iran, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial

interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclosure such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

252.225-7031 SECONDARY ARAB BOYCOTT OF ISRAEL (JUN 2005)

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

(1) Foreign person means any person (including any individual, partnership, corporation, or other form of association) other than a United States person.

(2) United States means the 50 States, the District of Columbia, outlying areas, and the outer Continental Shelf as defined in 43 U.S.C. 1331.

(3) United States person is defined in 50 U.S.C. App. 2415(2) and means--

(i) Any United States resident or national (other than an individual resident outside the United States who is employed by other than a United States person);

(ii) Any domestic concern (including any permanent domestic establishment of any foreign concern); and

(iii) Any foreign subsidiary or affiliate (including any permanent foreign establishment) of any domestic concern that is controlled in fact by such domestic concern.

(b) Certification. If the offeror is a foreign person, the offeror certifies, by submission of an offer, that it--

(1) Does not comply with the Secondary Arab Boycott of Israel; and

(2) Is not taking or knowingly agreeing to take any action, with respect to the Secondary Boycott of Israel by Arab countries, which 50 U.S.C. App. 2407(a) prohibits a United States person from taking.

(End of provision)

252.225-7042 AUTHORIZATION TO PERFORM (APR 2003)

The offeror represents that it has been duly authorized to operate and to do business in the country or countries in which the contract is to be performed.

(End of provision)

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

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

(b) Representation. The Offeror represents that it:

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

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

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)

Section 00700 - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-7	Anti-Kickback Procedures	OCT 2010
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	OCT 2010
52.203-13	Contractor Code of Business Ethics and Conduct	APR 2010
52.204-9	Personal Identity Verification of Contractor Personnel	JAN 2011
52.204-10	Reporting Executive Compensation and First-Tier Subcontract Awards	JUL 2010
52.214-26	Audit and Records--Sealed Bidding	OCT 2010
52.214-27	Price Reduction for Defective Certified Cost or Pricing Data - Modifications - Sealed Bidding	OCT 2010
52.214-28	Subcontracting Certified Cost Or Pricing Data--Modifications--Sealed Bidding	OCT 2010
52.222-37	Employment Reports on Veterans	SEP 2010
52.222-50	Combating Trafficking in Persons	FEB 2009
52.225-13	Restrictions on Certain Foreign Purchases	JUN 2008
52.225-14	Inconsistency Between English Version And Translation Of Contract	FEB 2000
52.228-2	Additional Bond Security	OCT 1997
52.228-3	Worker's Compensation Insurance (Defense Base Act)	APR 1984
52.228-11	Pledges Of Assets	SEP 2009
52.228-12	Prospective Subcontractor Requests for Bonds	OCT 1995
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	OCT 2010
52.232-27	Prompt Payment for Construction Contracts	OCT 2008
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
52.236-4	Physical Data	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
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-17	Layout of Work	APR 1984
52.236-21	Specifications and Drawings for Construction	FEB 1997
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
52.244-6	Subcontracts for Commercial Items	DEC 2010
52.246-21	Warranty of Construction	MAR 1994
52.248-3	Value Engineering-Construction	OCT 2010
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 2008
252.203-7002	Requirement to Inform Employees of Whistleblower Rights	JAN 2009
252.203-7003	Agency Office of the Inspector General	SEP 2010
252.204-7000	Disclosure Of Information	DEC 1991
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.222-7002	Compliance With Local Labor Laws (Overseas)	JUN 1997
252.225-7005	Identification Of Expenditures In The United States	JUN 2005
252.225-7041	Correspondence in English	JUN 1997
252.227-7022	Government Rights (Unlimited)	MAR 1979
252.229-7000	Invoices Exclusive of Taxes or Duties	JUN 1997
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
252.243-7001	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

CLAUSES INCORPORATED BY FULL TEXT

52.209-6 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (DEC 2010)

(a) Definition. Commercially available off-the-shelf (COTS) item, as used in this clause--

(1) Means any item of supply (including construction material) that is--

(i) A commercial item (as defined in paragraph (1) of the definition in FAR 2.101);

(ii) Sold in substantial quantities in the commercial marketplace; and

(iii) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace; and

(2) Does not include bulk cargo, as defined in section 3 of the Shipping Act of 1984 (46 U.S.C. App. 1702), such as agricultural products and petroleum products.

(b) The Government suspends or debars Contractors to protect the Government's interests. Other than a subcontract for a commercially available off-the-shelf item, the Contractor shall not enter into any subcontract, in excess of $30,000 with a Contractor that is debarred, suspended, or proposed for debarment by any executive agency unless there is a compelling reason to do so.

(c) The Contractor shall require each proposed subcontractor whose subcontract will exceed $30,000, other than a subcontractor providing a commercially available off-the-shelf item, to disclose to the Contractor, in writing, whether as of the time of award of the subcontract, the subcontractor, or its principals, is or is not debarred, suspended, or proposed for debarment by the Federal Government.

(d) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party (other than a subcontractor providing a commercially available off-the-shelf item) that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the Excluded Parties List System). The notice must include the following:

(e) Subcontracts. Unless this is a contract for the acquisition of commercial items, the Contractor shall include the requirements of this clause, including this paragraph (e) (appropriately modified for the identification of the parties), in each subcontract that--

(1) Exceeds $30,000 in value; and

(2) Is not a subcontract for commercially available off-the-shelf items.

(End of clause)

52.228-1 BID GUARANTEE (SEP 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.-

(c) The amount of the bid guarantee shall be **$ 3,000,000.00**.-

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.-

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of provision)

52.228-14 IRREVOCABLE LETTER OF CREDIT (DEC 1999)

(a) “Irrevocable letter of credit” (ILC), as used in this clause, means a written commitment by a federally insured financial institution to pay all or part of a stated amount of money, until the expiration date of the letter, upon presentation by the Government (the beneficiary) of a written demand therefor. Neither the financial institution nor the offeror/Contractor can revoke or condition the letter of credit.

(b) If the offeror intends to use an ILC in lieu of a bid bond, or to secure other types of bonds such as performance and payment bonds, the letter of credit and letter of confirmation formats in paragraphs (e) and (f) of this clause shall be used.

(c) The letter of credit shall be irrevocable, shall require presentation of no document other than a written demand and the ILC (including confirming letter, if any), shall be issued/confirmed by an acceptable federally insured financial institution as provided in paragraph (d) of this clause, and--

(1) If used as a bid guarantee, the ILC shall expire no earlier than 60 days after the close of the bid acceptance period;

(2) If used as an alternative to corporate or individual sureties as security for a performance or payment bond, the offeror/Contractor may submit an ILC with an initial expiration date estimated to cover the entire period for which financial security is required or may submit an ILC with an initial expiration date that is a minimum period of one year from the date of issuance. The ILC shall provide that, unless the issuer provides the beneficiary written notice of non-renewal at least 60 days in advance of the current expiration date, the ILC is automatically extended without amendment for one year from the expiration date, or any future expiration date, until the period of required coverage is completed and the Contracting Officer provides the financial institution with a written statement waiving the right to payment. The period of required coverage shall be:

(i) For contracts subject to the Miller Act, the later of--

(A) One year following the expected date of final payment;

(B) For performance bonds only, until completion of any warranty period; or

(C) For payment bonds only, until resolution of all claims filed against the payment bond during the one-year period following final payment.

(ii) For contracts not subject to the Miller Act, the later of--

(A) 90 days following final payment; or

(B) For performance bonds only, until completion of any warranty period.

(d) Only federally insured financial institutions rated investment grade or higher shall issue or confirm the ILC. The offeror/Contractor shall provide the Contracting Officer a credit rating that indicates the financial institution has the required rating(s) as of the date of issuance of the ILC. Unless the financial institution issuing the ILC had letter of credit business of less than $25 million in the past year, ILCs over $5 million must be confirmed by another acceptable financial institution that had letter of credit business of less than $25 million in the past year.

(e) The following format shall be used by the issuing financial institution to create an ILC:

_____

[Issuing Financial Institution's Letterhead or Name and Address]

Issue Date _____

IRREVOCABLE LETTER OF CREDIT NO. _____

Account party's name _____

Account party's address _____

For Solicitation No. _____(for reference only)

TO: [U.S. Government agency]

[U.S. Government agency's address]

1. We hereby establish this irrevocable and transferable Letter of Credit in your favor for one or more drawings up to United States $_____. This Letter of Credit is payable at [issuing financial institution's and, if any, confirming financial institution's] office at [issuing financial institution's address and, if any, confirming financial institution's address] and expires with our close of business on _____, or any automatically extended expiration date.

2. We hereby undertake to honor your or the transferee's sight draft(s) drawn on the issuing or, if any, the confirming financial institution, for all or any part of this credit if presented with this Letter of Credit and confirmation, if any, at the office specified in paragraph 1 of this Letter of Credit on or before the expiration date or any automatically extended expiration date.

3. [This paragraph is omitted if used as a bid guarantee, and subsequent paragraphs are renumbered.] It is a condition of this Letter of Credit that it is deemed to be automatically extended without amendment for one year from the expiration date hereof, or any future expiration date, unless at least 60 days prior to any expiration date, we notify you or the transferee by registered mail, or other receipted means of delivery, that we elect not to consider this Letter of Credit renewed for any such additional period. At the time we notify you, we also agree to notify the account party (and confirming financial institution, if any) by the same means of delivery.

4. This Letter of Credit is transferable. Transfers and assignments of proceeds are to be effected without charge to either the beneficiary or the transferee/assignee of proceeds. Such transfer or assignment shall be only at the written direction of the Government (the beneficiary) in a form satisfactory to the issuing financial institution and the confirming financial institution, if any.

5. This Letter of Credit is subject to the Uniform Customs and Practice (UCP) for Documentary Credits, 1993 Revision, International Chamber of Commerce Publication No. 500, and to the extent not inconsistent therewith, to the laws of _____ [state of confirming financial institution, if any, otherwise state of issuing financial institution].

6. If this credit expires during an interruption of business of this financial institution as described in Article 17 of the UCP, the financial institution specifically agrees to effect payment if this credit is drawn against within 30 days after the resumption of our business.

Sincerely,

_____

[Issuing financial institution]

(f) The following format shall be used by the financial institution to confirm an ILC:

_____
[Confirming Financial Institution's Letterhead or Name and Address]

(Date) _____

Our Letter of Credit Advice Number _____

Beneficiary: _____ [U.S. Government agency]

Issuing Financial Institution: _____

Issuing Financial Institution's LC No.: _____

Gentlemen:

1. We hereby confirm the above indicated Letter of Credit, the original of which is attached, issued by _____ [name of issuing financial institution] for drawings of up to United States dollars _____/U.S. $_____ and expiring with our close of business on _____ [the expiration date], or any automatically extended expiration date.

2. Draft(s) drawn under the Letter of Credit and this Confirmation are payable at our office located at _____.

3. We hereby undertake to honor sight draft(s) drawn under and presented with the Letter of Credit and this Confirmation at our offices as specified herein.

4. [This paragraph is omitted if used as a bid guarantee, and subsequent paragraphs are renumbered.] It is a condition of this confirmation that it be deemed automatically extended without amendment for one year from the expiration date hereof, or any automatically extended expiration date, unless:

(a) At least 60 days prior to any such expiration date, we shall notify the Contracting Officer, or the transferee and the issuing financial institution, by registered mail or other receipted means of delivery, that we elect not to consider this confirmation extended for any such additional period; or

(b) The issuing financial institution shall have exercised its right to notify you or the transferee, the account party, and ourselves, of its election not to extend the expiration date of the Letter of Credit.

5. This confirmation is subject to the Uniform Customs and Practice (UCP) for Documentary Credits, 1993 Revision, International Chamber of Commerce Publication No. 500, and to the extent not inconsistent therewith, to the laws of _____ [state of confirming financial institution].

6. If this confirmation expires during an interruption of business of this financial institution as described in Article 17 of the UCP, we specifically agree to effect payment if this credit is drawn against within 30 days after the resumption of our business.

Sincerely,

_____

[Confirming financial institution]

(g) The following format shall be used by the Contracting Officer for a sight draft to draw on the Letter of Credit:

SIGHT DRAFT

_____

[City, State]

(Date) _____

[Name and address of financial institution]

Pay to the order of _____ [Beneficiary Agency] _____ the sum of United States $_____.
This draft is drawn under Irrevocable Letter of Credit No. _____.

_____

[Beneficiary Agency]

By: _____

(End of clause)

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

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

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

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

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

(b) Mandatory submission of Contractor's EFT information. (1) The Contractor is required to provide the Government with the information required to make payment by EFT (see paragraph (j) of this clause). The Contractor shall provide this information directly to the office designated in this contract to receive that information (hereafter: “designated office”') **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** 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)

52.236-13 ACCIDENT PREVENTION (NOV 1991)

(a) The Contractor shall provide and maintain work environments and procedures which will

(1) safeguard the public and Government personnel, property, materials, supplies, and equipment exposed to Contractor operations and activities;

(2) avoid interruptions of Government operations and delays in project completion dates; and

(3) control costs in the performance of this contract.

(b) For these purposes on contracts for construction or dismantling, demolition, or removal of improvements, the Contractor shall-

(1) Provide appropriate safety barricades, signs, and signal lights;

(2) Comply with the standards issued by the Secretary of Labor at 29 CFR Part 1926 and 29 CFR Part 1910; and

(3) Ensure that any additional measures the Contracting Officer determines to be reasonably necessary for the purposes are taken.

(c) If this contract is for construction or dismantling, demolition or removal of improvements with any Department of Defense agency or component, the Contractor shall comply with all pertinent provisions of the latest version of U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, in effect on the date of the solicitation.

(d) Whenever the Contracting Officer becomes aware of any noncompliance with these requirements or any condition which poses a serious or imminent danger to the health or safety of the public or Government personnel, the Contracting Officer shall notify the Contractor orally, with written confirmation, and request immediate initiation of corrective action. This notice, when delivered to the Contractor or the Contractor's representative at the work site, shall be deemed sufficient notice of the noncompliance and that corrective action is required. After receiving the notice, 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. The Contractor shall not be entitled to any equitable adjustment of the contract price or extension of the performance schedule on any stop work order issued under this clause.

(e) The Contractor shall insert this clause, including this paragraph (e), with appropriate changes in the designation of the parties, in subcontracts.

(End of clause)

52.243-4 CHANGES (JUN 2007)

(a) The Contracting Officer may, at any time, without notice to the sureties, if any, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract, including changes--

(1) In the specifications (including drawings and designs);

(2) In the method or manner of performance of the work;

(3) In the Government-furnished property or services; or

(4) Directing acceleration in the performance of the work.

(b) Any other written or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating

(1) the date, circumstances, and source of the order and

(2) that the Contractor regards the order as a change order.

(c) Except as provided in this clause, no order, statement, or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for an adjustment based on defective specifications, no adjustment for any change under paragraph (b) of this clause shall be made for any costs incurred more than 20 days before the Contractor gives written notice as required. In the case of defective specifications for which the Government is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.

(e) The Contractor must assert its right to an adjustment under this clause within 30 days after

(1) receipt of a written change order under paragraph (a) of this clause or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting to the Contracting Officer a written statement describing the general nature and amount of the proposal, unless this period is extended by the Government. The statement of proposal for adjustment may be included in the notice under paragraph (b) above.

(f) No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

(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://acquisition.gov/comp/far/index.html

(End of clause)

52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

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

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

(End of clause)

252.203-7000 REQUIREMENTS RELATING TO COMPENSATION OF FORMER DOD OFFICIALS (JAN 2009)

(a) Definition. Covered DoD official, as used in this clause, means an individual that--

(1) Leaves or left DoD service on or after January 28, 2008; and

(2)(i) Participated personally and substantially in an acquisition as defined in 41 U.S.C. 403(16) with a value in excess of $10 million, and serves or served--

(A) In an Executive Schedule position under subchapter II of chapter 53 of Title 5, United States Code;

(B) In a position in the Senior Executive Service under subchapter VIII of chapter 53 of Title 5, United States Code; or

(C) In a general or flag officer position compensated at a rate of pay for grade O-7 or above under section 201 of Title 37, United States Code; or

(ii) Serves or served in DoD in one of the following positions: Program manager, deputy program manager, procuring contracting officer, administrative contracting officer, source selection authority, member of the source selection evaluation board, or chief of a financial or technical evaluation team for a contract in an amount in excess of $10 million.

(b) The Contractor shall not knowingly provide compensation to a covered DoD official within 2 years after the official leaves DoD service, without first determining that the official has sought and received, or has not received after 30 days of seeking, a written opinion from the appropriate DoD ethics counselor regarding the applicability of post-employment restrictions to the activities that the official is expected to undertake on behalf of the Contractor.

(c) Failure by the Contractor to comply with paragraph (b) of this clause may subject the Contractor to rescission of this contract, suspension, or debarment in accordance with 41 U.S.C. 423(e)(3).

(End of clause)

252.225-7045 BALANCE OF PAYMENTS PROGRAM--CONSTRUCTION MATERIAL UNDER TRADE AGREEMENTS (OCT 2010) ALTERNATE II (DEC 2010)

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

Caribbean Basin country construction material means a construction material that---

(1) Is wholly the growth, product, or manufacture of a Caribbean Basin country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a Caribbean Basin country into a new and different construction material distinct from the materials from which it was transformed.

Commercially available off-the-shelf (COTS) item--

(1) Means any item of supply (including construction material) that is--

(i) A commercial item (as defined in paragraph (1) of the definition of ``commercial item'' in section 2.101 of the Federal Acquisition Regulation);

(ii) Sold in substantial quantities in the commercial marketplace; and

(iii) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace; and

(2) Does not include bulk cargo, as defined in section 3 of the Shipping Act of 1984 (46 U.S.C. 40102), such as agricultural products and petroleum products.

Component means any article, material, or supply incorporated directly into construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the end product (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the construction material.

Designated country means--

(1)) A World Trade Organization Government Procurement Agreement (WTO GPA) country (Aruba, Austria, Belgium, Bulgaria, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan (known in the World Trade Organization as ``the Separate Customs Territory of Taiwan, Penghu, Kinmen, and Matsu'' (Chinese Taipei)), or the United Kingdom);

(2) A Free Trade Agreement country (Australia, Bahrain, Canada, Chile, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Morocco, Nicaragua, Peru, or Singapore);

(3) A least developed country (Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, East Timor, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Tanzania, Togo, Tuvalu, Uganda, Vanuatu, Yemen, or Zambia); or

(4) A Caribbean Basin country (Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, or Trinidad and Tobago).

Designated country construction material means a construction material that is a WTO GPA country construction material, a Free Trade Agreement country construction material, a least developed country construction material, or a Caribbean Basin country construction material.

Domestic construction material means--

(1) An unmanufactured construction material mined or produced in the United States; or

(2) A construction material manufactured in the United States, if--

(i) The cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic; or

(ii) The construction material is a COTS item.

Free Trade Agreement country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a Free Trade Agreement country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a Free Trade Agreement country into a new and different construction material distinct from the material from which it was transformed.

Least developed country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a least developed country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country has been substantially transformed in a least developed country into a new and different construction material distinct from the materials from which it was transformed.

South Caucasus/Central and South Asian (SC/CASA) state means Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, or Uzbekistan. SC/CASA state construction material means construction material that--

(i) Is wholly the growth, product, or manufacture of an SC/CASA state; or

(ii) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in an SC/CASA state into a new and different construction material distinct from the material from which it was transformed.

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

WTO GPA country construction material means a construction material that--

(1) Is wholly the growth, product, or manufacture of a WTO GPA country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a WTO GPA country into a new and different construction material distinct from the materials from which it was transformed.

(b) This clause implements the Balance of Payments Program by providing a preference for domestic construction material. In addition, the Contracting Officer has determined that the WTO GPA, Free Trade Agreements, and other waivers relating to acquisitions in support of operations in Afghanistan apply to this acquisition. Therefore, the Balance of Payments Program restrictions are waived for SC/CASA state and designated country construction materials.

(c) The Contractor shall use only domestic, SC/CASA state, or designated country construction material in performing this contract, except for—

(1) Construction material valued at or below the simplified acquisition threshold in part 2 of the Federal Acquisition Regulation;

(2) Information technology that is a commercial item; or

(3) The construction material or components listed by the Government as follows:

(Contracting Officer to list applicable excepted materials or indicate “none”.)

(d) The Contractor shall inform its government of its participation in this acquisition and that it generally will not have such opportunity in the future unless its government provides reciprocal procurement opportunities to U.S. products and services and suppliers of such products and services.

(End of clause)

252.225-7997 ADDITIONAL REQUIREMENTS AND RESPONSIBILITIES RELATING TO ALLEGED CRIMES BY OR AGAINST CONTRACTOR PERSONNEL IN IRAQ AND AFGHANISTAN (DEVIATION 2010-O0014)(AUGUST 2010)

(a) The Contractor shall report to the appropriate investigative authorities, identified in paragraph (c) below, any alleged offenses under—

(1) The Uniform Code of Military Justice (chapter 47 of title 10, United States code) (applicable to contractors serving with or accompanying an armed force in the field during a declared war or a contingency operation); or

(2) The Military Extraterritorial Jurisdiction Act (chapter 212 of title 18, United States Code).

(b) The Contractor shall provide to all contractor personnel who will perform work on a contract in Iraq or Afghanistan, before beginning such work, information on the following:

(1) How and where to report an alleged crime described in paragraph (a) of this clause.

(2) Where to seek victim and witness protection and assistance available to contractor personnel in connection with an alleged offense described in paragraph (a) of this clause.

(c) The appropriate investigative authorities to which suspected crimes shall be reported include the following officials--

(i) US Army Criminal Investigative Division at http://www.cid.army.mil/reportacrime.html;

(ii) Air Force Office of Special Investigations at
http://www.osi.andrews.af.mil/library/factsheets/factsheet.asp?id=14522;

(iii) Navy Criminal Investigative Service at http://www.ncis.navy.mil/Pages/publicdefault.aspx;
or

(iv) To the command of any supported military element or the command of any base.

(d) Personnel seeking whistleblower protection from reprisals for reporting criminal
acts shall seek guidance through the DoD Inspector General hotline at (800) 424-9098
or www.dodig.mil/HOTLINE/index.html. Personnel seeking other forms of victim or witness
protections should contact the nearest military law enforcement office.

(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:

See page one of the Appendix for index of facilities

(End of clause)

252.246-7004 SAFETY OF FACILITIES, INFRASTRUCTURE, AND EQUIPMENT FOR MILITARY OPERATIONS (OCT 2010)

(a) Definition. Discipline Working Group, as used in this clause, means representatives from the DoD Components, as defined in MIL-STD-3007F, who are responsible for the unification and maintenance of the Unified Facilities Criteria (UFC) documents for a particular discipline area.

(b) The Contractor shall ensure, consistent with the requirements of the applicable inspection clause in this contract, that the facilities, infrastructure, and equipment acquired, constructed, installed, repaired, maintained, or operated under this contract comply with Unified Facilities Criteria (UFC) 1-200-01 for--

(1) Fire protection;

(2) Structural integrity;

(3) Electrical systems;

(4) Plumbing;

(5) Water treatment;

(6) Waste disposal; and

(7) Telecommunications networks.

(c) The Contractor may apply a standard equivalent to or more stringent than UFC 1-200-01 upon a written determination of the acceptability of the standard by the Contracting Officer with the concurrence of the relevant Discipline Working Group.

(End of clause)

52.228-15
52.228-15 PERFORMANCE AND PAYMENT BONDS--CONSTRUCTION (OCT 2010)

(a) Definitions. As used in this clause—

Original contract price means the award price of the contract; or, for requirements contracts, the price payable for the estimated total quantity; or, for indefinite-quantity contracts, the price payable for the specified minimum quantity. Original contract price does not include the price of any options, except those options exercised at the time of contract award.

(b) Amount of required bonds. Unless the resulting contract price is $150,000 or less, the successful offeror shall furnish performance and payment bonds to the Contracting Officer as follows:

(1) Performance bonds (Standard Form 25). The penal amount of performance bonds at the time of contract award shall be **30 percent** of the original contract price.

(2) Payment Bonds (Standard Form 25-A). The penal amount of payment bonds at the time of contract award shall be **30 percent** of the original contract price.

(3) Additional bond protection. (i) The Government may require additional performance and payment bond protection if the contract price is increased. The increase in protection generally will equal **30 percent** of the increase in contract price.

(ii) The Government may secure the additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.

(c) Furnishing executed bonds. The Contractor shall furnish all executed bonds, including any necessary reinsurance agreements, to the Contracting Officer, within the time period specified in the Bid Guarantee provision of the solicitation, or otherwise specified by the Contracting Officer, but in any event, before starting work.

(d) Surety or other security for bonds. The bonds shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in Treasury Department Circular 570, individual sureties, or by other acceptable security such as postal money order, certified check, cashier's check, irrevocable letter of credit, or, in accordance with Treasury Department regulations, certain bonds or notes of the United States. Treasury Circular 570 is published in the Federal Register or may be obtained from the U.S. Department of the Treasury, Financial Management Service, Surety Bond Branch, 3700 East West Highway, Room 6F01, Hyattsville, MD 20782. Or via the internet at http://www.fms.treas.gov/c570/.

(e) Notice of subcontractor waiver of protection (40 U.S.C. 3133(c)). Any waiver of the right to sue on the payment bond is void unless it is in writing, signed by the person whose right is waived, and executed after such person has first furnished labor or material for use in the performance of the contract.

(End of clause)

252.225-7995

252.225-7995 CONTRACTOR PERSONNEL PERFORMING IN THE UNITED STATES CENTRAL COMMAND AREA OF RESPONSIBILITY(DEVIATION 2011-O0004) (APR 2011)

(a) Definition. As used in this clause—

“Chief of mission” means the principal officer in charge of a diplomatic mission of the United States or of a United States office abroad which is designated by the Secretary of State as diplomatic in nature, including any individual assigned under section 502(c) of the Foreign Service Act of 1980(Public Law 96-465) to be temporarily in charge of such a mission or office.

(b) General. (1) This clause applies when contractor personnel are required to perform in the United States Central Command (USCENTCOM) Area of Responsibility (AOR) and are not covered by the clause at DFARS 252.225-7040,Contractor Personnel Authorized to Accompany U.S. Armed Forces Deployed Outside the United States.

(2) Contract performance may require work in dangerous or austere conditions. Except as otherwise provided in the contract, the Contractor accepts the risks associated with required contract performance in such operations.

(3) Contractor personnel are civilians.

(i) Except as provided in paragraph (b)(3)(ii) of this clause, and in accordance with paragraph (i)(3) of this clause, contractor personnel are only authorized to use deadly force in self defense.

(ii) Contractor personnel performing security functions are also authorized to use deadly force when use of such force reasonably appears necessary to execute their security mission to protect assets/persons, consistent with the terms and conditions contained in the contract or with their job description and terms of employment.

(4) Service performed by contractor personnel subject to this clause is not active duty or service under 38 U.S.C. 106.

(c) Support. Unless specified elsewhere in the contract, the Contractor is responsible for all logistical and security support required for contractor personnel engaged in this contract.

(d) Compliance with laws and regulations. The Contractor shall comply with, and shall ensure that its personnel in the USCENTCOM AOR are familiar with and comply with, all applicable—

(1) United States, host country, and third country national laws;

(2) Treaties and international agreements;

(3) United States regulations, directives, instructions, policies, and procedures; and

(4) Force protection, security, health, or safety orders, directives, and instructions issued by the USCENTCOM Commander; however, only the Contracting Officer is authorized to modify the terms and conditions of the contract.

(e) Preliminary personnel requirements.

(1) Specific requirements for paragraphs (e)(2)(i) through (e)(2)(vi) of this clause will be set forth in the statement of work or elsewhere in the contract.

(2) Before contractor personnel depart from the United States or a third country, and before contractor personnel residing in the host country begin contract performance in the USCENTCOM AOR, the Contractor shall ensure the following:

(i) All required security and background checks are complete and acceptable.

(ii) All personnel are medically and physically fit and have received all required vaccinations.

(iii) All personnel have all necessary passports, visas, entry permits, and other documents required for contractor personnel to enter and exit the foreign country, including those required for in-transit countries.

(iv) All personnel have received theater clearance, if required by the Combatant Commander.

(v) All personnel have received personal security training. The training must, at a minimum—

(A) Cover safety and security issues facing employees overseas;

(B) Identify safety and security contingency planning activities; And

(C) Identify ways to utilize safety and security personnel and other resources appropriately.

(vi) All personnel who are U.S. citizens are registered with the U.S. Embassy or Consulate with jurisdiction over the area of operations on-line at http://www.travel.state.gov.

(3) The Contractor shall notify all personnel who are not a local national or ordinarily resident in the host country that—

(i) Such employees, and dependents residing with such employees, who engage in conduct outside the United States that would constitute an offense punishable by imprisonment for more than one year if the conduct had been engaged in within the special maritime and territorial jurisdiction of the United States, may potentially be subject to the criminal jurisdiction of the United States (see the Military Extraterritorial Jurisdiction Act of 2000 (18 U.S.C. 3261 et seq.);

(ii) Pursuant to the War Crimes Act, 18 U.S.C. 2441, Federal criminal jurisdiction also extends to conduct that is determined to constitute a violation of the law of war when committed by a civilian national of the United States;

(iii) Other laws may provide for prosecution of U.S. nationals who commit offenses on the premises of United States diplomatic, consular, military, or other Government missions outside the United States (18U.S.C. 7(9)).

(f) Processing and departure points. The Contractor shall require its personnel who are arriving from outside the area of performance to perform in the USCENTCOM AOR to—

(1) Process through the departure center designated in the contract or complete another process as directed by the Contracting Officer;

(2) Use a specific point of departure and transportation mode as directed by the Contracting Officer; and

(3) Process through a reception center as designated by the Contracting Officer upon arrival at the place of performance.

(g) Registration of Contractor personnel and private security contractor equipment.

(1) The Contractor is required to register in the automated webbased Synchronized Predeployment and Operational Tracker (SPOT) following the procedures in paragraph (g)(4) of this clause.

(2) Prior to deployment of contractor employees, or, if already in the USCENTCOM AOR, upon becoming an employee under this contract, the Contractor shall enter into SPOT, and maintain current data, including actual arrival date and departure date, for all contractor personnel, including U.S. citizens, U.S. legal aliens, third-country nationals, and local national contractor personnel, who are performing this contract in the USCENTCOM AOR as follows:

(i) In all circumstances, this includes any personnel performing private security functions.

(ii) For personnel other than those performing private security functions, this requirement excludes anyone—

(A) Hired under contracts valued less than $100,000;

(B) Who will be performing in the CENTCOM AOR less than 30 continuous days; or

(C) Who, while afloat, are tracked by the Diary Message Reporting System

(3) Weapons, armored vehicles, helicopters, and other military vehicles used by personnel performing private security functions under this contract must be entered into SPOT, and the currency of such information must be maintained.

(4) Follow these steps to register in and use SPOT:

(i) SPOT registration requires one of the following login methods:

(A) A Common Access Card or a SPOT-approved digital certificate; or

(B) A Government-sponsored SPOT user ID and password or an Army Knowledge Online (AKO) account
.
(ii) To register in SPOT:

(A) Contractor company administrators should register for a SPOT account at https://spot.altess.army.mil; and

(B) The customer support team must validate user need. This process may take two business days. Company supervisors will be contacted to validate Contractor company administrator account requests and determine the appropriate level of user access.

(iii) Upon approval, all users will access SPOT at https://spot.altess.army.mil/.

(iv) Refer SPOT application assistance questions to the Customer Support Team at 717-458-0747 or SPOT.helpdesk@us.army.mil. Refer to the SPOT Enterprise Suite Resource Center at http://www.resource.spot-es.net/ for additional training resources and documentation regarding registration for and use of SPOT.

(5) The Contractor shall submit aggregate contractor personnel counts at a minimum quarterly or as directed by the Contracting Officer by category (i.e. U.S. third country national or local national) of those contractor personnel who are on contracts valued greater than $100,000, but performing less that 30 days in the AOR (e.g. day laborers).

(6) The Contractor shall ensure that all contractor personnel in the database have a current DD Form 93, Record of Emergency Data Card, on file with both the Contractor and the designated Government official. The Contracting Officer will inform the Contractor of the Government official designated to receive the data card.

(h) Contractor personnel. The Contracting Officer may direct the Contractor, at its own expense, to remove and replace any contractor personnel who fail to comply with or violate applicable requirements of this contract. Such action may be taken at the Government's discretion without prejudice to its rights under any other provision of this contract, including termination for default or cause.

(i) Weapons.

(1) If the Contracting Officer, subject to the approval of the USCENTCOM Commander, authorizes the carrying of weapons—

(i) The Contracting Officer may authorize an approved Contractor to issue Contractor-owned weapons and ammunition to specified employees; or

(ii) The **(N/A - USACE DOES NOT ISSUE WEAPONS TO CONTRACTORS)** may issue Government-furnished weapons and ammunition to the Contractor for issuance to specified contractor employees.

(2) The Contractor shall provide to the Contracting Officer a specific list of personnel for whom authorization to carry a weapon is requested.

(3) The Contractor shall ensure that its personnel who are authorized to carry weapons—

(i) Are adequately trained to carry and use them—

(A) Safely;

(B) With full understanding of, and adherence to, the rules of the use of force issued by the USCENTCOM Commander; and

(C) In compliance with applicable Department of Defense and agency policies, agreements, rules, regulations, and other applicable law;

(ii) Are not barred from possession of a firearm by 18 U.S.C. 922; and

(iii) Adhere to all guidance and orders issued by the USCENTCOM Commander regarding possession, use, safety, and accountability of weapons and ammunition.

(4) Upon revocation by the Contracting Officer of the Contractor's authorization to possess weapons, the Contractor shall ensure that all Government-furnished weapons and unexpended ammunition are returned as directed by the Contracting Officer.

(5) Whether or not weapons are Government-furnished, all liability for the use of any weapon by contractor personnel rests solely with the Contractor and the Contractor employee using such weapon.

(j) Vehicle or equipment licenses. Contractor personnel shall possess the required licenses to operate all vehicles or equipment necessary to perform the contract in the area of performance.

(k) Military clothing and protective equipment.

(1) Contractor personnel are prohibited from wearing military clothing unless specifically authorized by the USCENTCOM Commander. If authorized to wear military clothing, contractor personnel must wear distinctive patches, arm bands, nametags, or headgear, in order to be distinguishable from military personnel, consistent with force protection
measures.

(2) Contractor personnel may wear specific items required for safety and security, such as ballistic, nuclear, biological, or chemical protective equipment.

(l) Evacuation. (1) If the Chief of Mission or USCENTCOM Commander orders a mandatory evacuation of some or all personnel, the Government will provide to United States and designated third country national contractor personnel the level of assistance provided to private United States citizens.

(2) In the event of a non-mandatory evacuation order, the Contractor shall maintain personnel on location sufficient to meet contractual obligations unless instructed to evacuate by the Contracting Officer.

(m) Notification and return of personal effects. (1) The Contractor shall be responsible for notification of the contractor personnel designated next of kin, and notification as soon as possible to the U.S. Consul responsible for the area in which the event occurred, if the individual—

(i) Dies;

(ii) Requires evacuation due to an injury; or

(iii) Is isolated, missing, detained, captured, or abducted.

(2) The Contractor shall also be responsible for the return of all personal effects of deceased or missing contractor personnel, if appropriate, to next of kin.

(n) Mortuary affairs. Mortuary affairs for contractor personnel who die in the area of performance will be handled in accordance with DoD Directive 1300.22, Mortuary Affairs Policy.

(o) Changes. In addition to the changes otherwise authorized by the Changes clause of this contract, the Contracting Officer may, at any time, by written order identified as a change order, make changes in place of performance or Government-furnished facilities, equipment, material, services, or site. Any change order issued in accordance with this paragraph shall be subject to the provisions of the Changes clause of this contract.

(p) Subcontracts. The Contractor shall incorporate the substance of this clause, including this paragraph (p), in all subcontracts that require subcontractor personnel to perform in the USCENTCOM AOR.

(End of clause)

Section 00800 - Special Contract Requirements

CLAUSES INCORPORATED BY REFERENCE

52.211-13	Time Extensions	SEP 2000
52.236-5	Material and Workmanship	APR 1984
52.242-14	Suspension of Work	APR 1984
52.246-12	Inspection of Construction	AUG 1996

CLAUSES INCORPORATED BY FULL TEXT

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

The Contractor shall be required to (a) commence work under this contract within **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 **550 calendar days** from notice to proceed. The time stated for completion shall include final cleanup of the premises.

(End of clause)

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

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $3,410.00 for each calendar day of delay until the work is completed or accepted.

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

(End of clause)

252.236-7004 PAYMENT FOR MOBILIZATION AND DEMOBILIZATION (DEC 1991)

(a) The Government will pay all costs for the mobilization and demobilization of all of the Contractor's plant and equipment at the contract lump sum price for this item.

(1) **60 percent** of the lump sum price upon completion of the contractor's mobilization at the work site.

(2) The remaining **40 percent** upon completion of demobilization.

(b) The Contracting Officer may require the Contractor to furnish cost data to justify this portion of the bid if the Contracting Officer believes that the percentages in paragraphs (a) (1) and (2) of this clause do not bear a reasonable relation to the cost of the work in this contract.

(1) Failure to justify such price to the satisfaction of the Contracting Officer will result in payment, as determined

by the Contracting Officer, of --

(i) Actual mobilization costs at completion of mobilization;

(ii) Actual demobilization costs at completion of demobilization; and

(iii) The remainder of this item in the final payment under this contract.

(2) The Contracting Officer's determination of the actual costs in paragraph (b)(1) of this clause is not subject to appeal.

C3 CLAUSES

C3 CLAUSE 952.222-0001 PROHIBITION AGAINST HUMAN TRAFFICKING, INHUMANE LIVING CONDITIONS, AND WITHHOLDING OF EMPLOYEE PASSPORTS (JUL 2010)

(a) All contractors ("contractors" refers to both prime contractors and all 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.

(b) 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 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 and Host Nation laws regarding transit/exit/entry procedures, and the requirements for visas and work permits.

(c) 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.

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

C3 CLAUSE 952.223-0001 REPORTING KIDNAPPINGS, SERIOUS INJURIES AND DEATHS (JUL 2010)

Contractors shall notify the Contracting Officer, as soon as practicable, whenever employee kidnappings, serious injuries or deaths occur.

Report the following information:

Contract Number
Contract Description & Location
Company Name

Reporting party:
Name
Phone number
e-mail address

Victim:
Name
Gender (Male/Female)
Age
Nationality
Country of permanent residence

Incident:
Description
Location
Date and time

Other Pertinent Information

C3 CLAUSE 952.225-0001 ARMING REQUIREMENTS AND PROCEDURES FOR PERSONAL SECURITY SERVICES CONTRACTORS AND FOR REQUESTS FOR PERSONAL PROTECTION (AUG 2010)

(a) ***General.*** Contractor and its subcontractors at all tiers that require arming under this contract agree to obey all laws, regulations, orders, and directives applicable to the use of private security personnel in Iraq and Afghanistan, including U.S. CENTCOM, United States Forces – Iraq (USF-I) and United States Forces – Afghanistan (USFOR-A) Commander orders, instructions and directives. Contractors will ensure that all employees, including employees at any tier of subcontracting relationships, who will seek individual authorization to be armed under the provisions of this contract (requests for blanket authorization for groups or organizations will not be approved), comply with the contents of this clause and with the requirements set forth in the following:

(1) DODI 3020.50, Private Security Contractors (PSCs) Operating in Contingency Operations;
(2) DODI 3020.41, Program Management for Acquisition and Operational Contract Support in Contingency Operations;
(3) DFARS 252.225-7040, Contractor Personnel Supporting a Force Deployed Outside the United States;
(4) Class Deviation 2007-O0010, Contractor Personnel in the United States Central Command Area of Responsibility
(5) USFOR-A, FRAGO 09-206, Outlines Management of Armed Contractors and Private Security Companies Operating in the Combined Joint Operating Area - Afghanistan (CJOA-A)
(6) USF-I OPORD 10-01, Annex C, Appendix 13

(7) U.S. CENTCOM Message, USCENTCOM Policy and Delegation of Authority for Personal Protection and Contract Security Service Arming of DoD Civilian Personnel and Contractors for Iraq and Afghanistan, dated 23 Dec 2005
(8) U.S. CENTCOM Message, Modification to USCENTCOM Civilian and Contractor Arming Policy and Delegation of Authority for Iraq and Afghanistan, dated 07 Nov 2006
(9) U.S. CENTCOM Message, Modification 3 to USCENTCOM Civilian and Contractor Arming Policy and Delegation of Authority in Iraq and Afghanistan, dated 09 Jun 2009

(b) ***Required Government Documentation*.** An O-6 or GS-15 (or above) from the unit requesting the contractor security shall provide a description of the following to the arming approval authority via the contracting officer representative (COR) in sponsoring each individual request for arming (under paragraph (c) below:

(1) The specific location where the PSC employee will operate;
(2) The persons and/or property that require protection;
(3) The anticipated threat;
(4) The requested weapon type(s), including serial number when possible;
(5) The reason current security/police forces are unable to provide adequate protection; and
(6) Verification, under paragraph (e) below, that background checks have been conducted and that no records were found of convictions or other acts that should be known to the arming authority.

(c) ***Required Contractor Documentation***. Contractors and their subcontractors at all tiers that require arming approval shall provide to the arming approval authority via the COR consistent documentation (signed and dated by the employee and employer as applicable) for each of their employees who will seek authorization to be armed under the contract as follows:

(1) Weapons Qualification/Familiarization. All employees must meet the weapons qualification requirements on the requested weapon(s) established by any DoD or other U.S. government agency, Law of Armed Conflict (LOAC); Rules for the Use of Force (RUF), as defined in the U.S. CENTCOM Policy, dated 23 December 2005; and distinction between the above-prescribed RUF and the Rules of Engagement (ROE), which are applicable only to military forces.

(2) Completed DD Form 2760 (or equivalent documentation) for each armed employee, indicating that the employee is not otherwise prohibited under U.S. law from possessing the required weapon or ammunition.

(3) Written acknowledgement by the individual of the fulfillment of training responsibilities and the conditions for the authorization to carry firearms. This document includes the acknowledgement of the distinctions between the ROE applicable to military forces and RUF that control the use of weapons by DoD civilians, DoD contractors and PSCs.

(4) Written acknowledgement signed by both the armed employee and by a representative of the employing company that use of weapons could subject both the individual and company to U.S. and host nation prosecution and civil liability.

(5) A copy of the contract between the contractor's company and the U.S. Government that verifies the individual's employment and addresses the need to be armed.

(6) One (1) copy of a business license from the Iraqi or Afghani Ministry of Trade or Interior.

(7) One (1) copy of a license to operate as a PSC (or a temporary operating license) from the Ministry of Interior.

(d) The contractor will submit to the COR a communications plan that, at a minimum, sets forth the following:

(1) The contractor's method of notifying military forces and requesting assistance where hostilities arise, combat action is needed or serious incidents have been observed;

(2) How relevant threat information will be shared between contractor security personnel and U.S. military forces; and

(3) How the contractor will coordinate transportation with appropriate military authorities.

(e) Prior to requesting arming approval, the contractor will submit to the COR an acceptable plan for accomplishing background checks on all contractor and subcontractor employees who will be armed under the contract. The contractor shall, at a minimum, perform the following (which will be specifically addressed in its plan and which will be documented and furnished to the COR upon completion):

(1) Use one or more of the following sources when conducting the background checks: Interpol, FBI, Country of Origin Criminal Records, Country of Origin U.S. Embassy Information Request, CIA records, and/or any other records available;

(2) Verify with USF-I or USFOR-A, as applicable, that no employee has been barred by any commander within Iraq or Afghanistan; and

(3) All local nationals and third country nationals will voluntarily submit to full biometric enrollment in accordance with theater biometric policies within 60 days of their arming request. While biometric collection and screening is voluntary, CORs will immediately notify the arming approval authority of any individuals who do not meet this requirement and any arming authorization will be revoked until all requirements are met.

(f) ***Penalties for Non-Compliance***. Failure of contractor or subcontractor employee(s) to comply with the laws, regulations, orders, and rules (including those specified herein) governing the use of force, training, arming authorization, and incident reporting requirements may result in the revocation of weapons authorization for such employee(s). Where appropriate, such failure may also result in the total revocation of weapons authorization for the contractor (or subcontractor) and sanctions under the contract, including termination.

(g) ***Criminal and Civil Liability.*** Arming of contractor or subcontractor employees under this contract may subject the contractor, its subcontractors, and persons employed by the same, to the civil and criminal jurisdiction of the U.S. and Host Nation. "Host Nation" refers to the nation or nations where services under this contract are performed.

(h) ***Lapses in Training or Authorization.*** Failure to successfully retrain an employee who has been properly authorized to be armed under this contract within twelve (12) months of the last training date will constitute a lapse in the employee's authorization to possess and carry the weapon. All unauthorized employees will immediately surrender their weapon and authorization letter to the contractor and will remain unarmed until such time as they are retrained and newly approved by the arming authority. Additionally, the arming authority's authorization letter is valid for a maximum of twelve (12) months from the date of the prior letter (unless authorization is earlier invalidated by a lapse in training).

(i) ***Authorized Weapon & Ammunition Types***. Unless DCDRUSCENTCOM (or a designee) expressly provides otherwise, all arming requests and authorizations for contractor or subcontractor employees under this contract shall be limited to U.S. Government-approved weapons and ammunition. Notwithstanding Host Nation laws or regulations that would allow use of heavier weapons by contract security/PSC, all DoD security service / PSC contractors must have weapons approved by DCDRUSCENTCOM (or a designee) before use. This restriction applies to all weapons in the possession of contractor employees, even if such weapons are required for personal protection. The following weapons and ammunition are currently authorized by the U.S. Government for use in Iraq and Afghanistan:

(1) The M9, M4, M16, or equivalent (e.g. .45 CAL, AK-47).

(2) The M9 or equivalent sidearm will be the standard personal protection weapon unless other weapons are specifically requested and approved.

(3) U.S. government Ball ammunition is the standard approved ammunition.

(j) ***Requirements for Individual Weapons Possession.*** All employees of the contractor and its subcontractors at all tiers who are authorized to be armed under this contract must:

(1) Possess only those U.S. Government-approved weapons and ammunition for which they are qualified under the training requirements of section (c) and subsequently authorized to carry;

(2) Carry weapons only when on duty or at a specific post (according to their authorization);

(3) Not conceal any weapons, unless specifically authorized;

(4) Carry proof of authorization to be armed. Employees not possessing such proof will be deemed unauthorized and must surrender their weapon to their employer; and

(5) IAW USCENTCOM G.O. #1, consumption of alcohol in Iraq or Afghanistan is prohibited. In the event of a suspension or an exception to G.O. #1, employees shall not consume any alcoholic beverage while armed or within eight (8) hours of the next work period when they will be armed. There are no circumstances under which a person will be authorized to consume any alcoholic beverage when armed for personal protection.

(k) ***Weapons/Equipment Restrictions and Responsibilities.*** *Unless otherwise provided, the U.S.* Government will not provide any weapons or ammunition to contractors, their subcontractors, or any employees of the same. The Contractor will provide all weapons and ammunition to those employees that will be armed under the contract. The contractor and its subcontractors at all tiers will also provide interceptor body armor, ballistic helmets, and the Nuclear, Biological, and Chemical (NBC) protective masks to those employees that require such equipment in the performance of their duties.

(l) ***Rules for the Use of Force (RUF).*** In addition to the RUF and ROE training referenced in paragraph (c), the contractor and its subcontractors at all tiers will monitor and report all activities of its armed employees that may violate the RUF and/or otherwise trigger reporting requirements as serious incidents. Prompt reporting demonstrates a desire by the contractor and its subcontractors to minimize the impact of any violations and, therefore, will be given favorable consideration. Violations of the RUF include, though are not limited to:

(1) Taking a direct part in hostilities or combat actions, other than to exercise self-defense;

(2) Failing to cooperate with Coalition and Host Nation forces;

(3) Using deadly force, other than in self-defense where there is a reasonable belief of imminent risk of death or serious bodily harm;

(4) Failing to use a graduated force approach;

(5) Failing to treat the local civilians with humanity or respect; and

(6) Detaining local civilians, other than in self-defense or as reflected in the contract terms.

(m) ***Retention and Review of Records***. The Contractor and all subcontractors at all tiers shall maintain records on weapons training, LOAC, RUF and the screening of employees for at least six (6) months following the expiration (or termination) of the contract. The Contractor and its subcontractors at all tiers shall make these records available

to the Contracting Officer or designated representative, at no additional cost to the government, within 72 hours of a request.

(n) ***Contractor Vehicles.*** Vehicles used by contractor and subcontractor personnel in the course of their security duties shall not be painted or marked to resemble U.S./Coalition or host nation military and police force vehicles.

(o) ***Quarterly Reporting.*** The prime contractor will report quarterly (i.e. NLT 1 January, 1 April, 1 July and 1 October for each quarter of the calendar year) to the Contracting Officer responsible for this contract, and any other organization designated by the Contracting Officer, the following information under this contract:

(1) The total number of armed civilians and contractors;

(2) The names and contact information of its subcontractors at all tiers; and

(3) A general assessment of the threat conditions, adequacy of force numbers, and any problems that might require a change to force levels. Note: this information is in addition to the information the contractor promises to immediately provide under the communications plan referenced at paragraph (d).

C3 CLAUSE 952.225-0002 ARMED PERSONNEL INCIDENT REPORTS (SEP 2010)

(a) All contractors and subcontractors in the United States Forces-Iraq (USF-I) or United States Forces-Afghanistan (USFOR-A) theater of operations shall comply with and shall ensure that their personnel supporting USF-I or USFOR-A forces are familiar with and comply with all applicable orders, directives, and instructions issued by the respective USF-I or USFOR-A Commanders relating to force protection and safety.

(b) **IRAQ**: Contractors shall provide an initial report of all weapons firing incidents or any other serious incidents they or their contractors are involved in to USF-I Contractor Operations Cell (CONOC) as soon as practical, but not later than 4 hours after the incident. The contractor and its subcontractors at all tiers shall submit a written report to CONOC, the Contracting Officer (KO) within 96 hours of the incident. Interim reports shall be submitted between the initial and final report, when necessary to the CONOC at usfic3conoc@iraq.centcom.mil
DSN 318-435-2369, UK# 0044 203 286 9851 or 0044 203 239 5894 or Skype: USFICONOC

(c) **AFGHANISTAN**: Contractors shall immediately report all incidents and use of weapons through their Contracting Officers Representative (CORs) who will notify the Contracting Officer. Contracting Officers are responsible to notify the SCO-A Chief of Operations and the SAR @ USFOR-A (SAR SHIFT DIRECTOR, DSN: 318-237-1761) Information should 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. The PARC-A Chief of Operations in coordination with the SAR will issue guidance for further reporting requirements.

(d) Contractors shall provide first aid and request MEDEVAC of injured persons, and remain available for U.S. or Coalition response forces, based upon the situation. In the event contractor personnel are detained by U.S. 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 contractor's name, the contract number, a contractor management POC, and the phone number of the CONOC/ SAR Watch.

C3 CLAUSE 952.225-0003 FITNESS FOR DUTY AND MEDICAL/DENTAL CARE LIMITATIONS (NOV 2010)

(a) 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. Contractor personnel who deploy for multiple tours, for more than 12 months total must be re-evaluated for fitness to deploy. An examination will remain valid for 15 months from the date of the physical. The contractor bears the responsibility for ensuring all employees are aware of the conditions and medical treatment available at the

performance location. The contractor shall include this information and requirement in all subcontracts with performance in the theater of operations

(b) The contractor shall not deploy an individual with any of the following conditions unless approved by the appropriate CENTCOM Service Component (ie. ARCENT, AFCENT, 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 protective's 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 >/= 40); dysrhythmias or arrhythmias, either symptomatic or requiring medical or electrophysiological 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 10 to USCENTCOM Individual Protection and Individual/Unit Deployment Policy, Tab A: Amplification of the Minimal Standards of Fitness for Deployment to the CENTCOM AOR).

(c) 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.

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

(e) Notwithstanding any other provision of the contract, the contractor shall be liable for any and all medically-related services or transportation rendered. To view reimbursement rates that will be charged for services at all DoD deployed medical facilities please go to the following website: http://comptroller.defense.gov/rates/fy2011.html (change fiscal year as applicable).

C3 CLAUSE 952.225□0004 COMPLIANCE WITH LAWS AND REGULATIONS (JUL 2010)

(a) The Contractor shall comply with, and shall ensure that its employees and its subcontractors and their employees, at all tiers, are aware of and obey all 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 operations and fragmentary orders, instructions, policies and directives.

(b) Contractor employees shall particularly note all laws, regulations, policies, and orders restricting authority to carry firearms, rules for the use of force, and prohibiting sexual or aggravated assault. Contractor employees are subject to General Orders Number 1, as modified from time to time, including without limitation, their prohibition

on privately owned firearms, alcohol, drugs, war souvenirs, pornography and photographing detainees, human casualties or military security measures.

(c) Contractor employees may be ordered removed from secure military installations or the theater of operations by order of the senior military commander of the battle space for acts that disrupt good order and discipline or violate applicable laws, regulations, orders, instructions, policies, or directives. Contractors shall immediately comply with any such order to remove its contractor employee.

(d) Contractor employees performing in the USCENTCOM Area of Responsibility (AOR) may be subject to the jurisdiction of overlapping criminal codes, including, but not limited to, the Military Extraterritorial Jurisdiction Act (18 U.S.C. Sec. 3261, et al) (MEJA), the Uniform Code of Military Justice (10 U.S.C. Sec. 801, et al)(UCMJ), and the laws of the Host Nation. Non-US citizens may also be subject to the laws of their home country while performing in the USCENTCOM AOR. Contractor employee status in these overlapping criminal jurisdictions may be modified from time to time by the United States, the Host Nation, or by applicable status of forces agreements.

(e) Under MEJA, a person who engages in felony misconduct outside the United States while employed by or accompanying the Armed Forces is subject to arrest, removal and prosecution in United States federal courts. Under the UCMJ, a person serving with or accompanying the Armed Forces in the field during a declared war or contingency operation may be disciplined for a criminal offense, including by referral of charges to a General Court Martial. Contractor employees may be ordered into confinement or placed under conditions that restrict movement within the AOR or administratively attached to a military command pending resolution of a criminal investigation.

(f) Contractors shall immediately notify military law enforcement and the Contracting Officer if they suspect an employee has committed an offense. Contractors shall take any and all reasonable and necessary measures to secure the presence of an employee suspected of a serious felony offense. Contractors shall not knowingly facilitate the departure of an employee suspected of a serious felony 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.

C3 CLAUSE 952.225-0005 MONTHLY CONTRACTOR CENSUS REPORTING (JUL 2010)

Contractor shall provide monthly employee census information to the Contracting Officer, by province, for this contract. Information shall be submitted either electronically or by hard-copy. Information shall be current as of the 25th day of each month and received by the Contracting Officer no later than the first day of the following month. The following information shall be provided for each province in which work was performed:

(1) The total number (prime and subcontractors at all tiers) employees.
(2) The total number (prime and subcontractors at all tiers) of U.S. citizens.
(3) The total number (prime and subcontractors at all tiers) of local nationals (LN).
(4) The total number (prime and subcontractors at all tiers) of third-country nationals (TCN).
(5) Name of province in which the work was performed.
(6) The names of all company employees who enter and update employee data in the Synchronized Pre-deployment & Operational Tracker (SPOT) IAW DFARS

C3 CLAUSE 952.225-0009 - MEDICAL SCREENING AND VACCINATION REQUIREMENTS FOR THIRD COUNTRY NATIONALS OR LOCALLY HIRED EMPLOYEES OPERATING IN THE CENTCOM AREA OF RESPONSIBILITY (AOR) (NOV 2010)

(a) Contractors, and subcontractors at any tier shall ensure and provide satisfactory evidence that all locally hired employees, including Local National (LN), Third Country National (TCN), and U.S. employees, working on bases have been screened for and do not currently have active tuberculosis (TB).

(1) Contractors may initially utilize a testing method of either a chest x-ray or TB skin test (TST), depending on the originating country a contracted employee.

(i) Chest x-rays (CXR's), symptom survey, and Body Mass Index (BMI) shall be taken, and TSTs administered within 12 months prior to the start of deployment/employment. Contractors are required to bring in a physical copy of the pre-employment CXR film as it is the only way to verify interval changes should an active case of TB occur.

(A) Third Country Nationals (TCNs) and Local Nationals (LNs) cannot be screened with the TST. They need the pre-employment screening with a quality CXR, Body Mass Index (BMI) and symptom survey

(B) Small-Risk Nationals (SRNs), those with less than 25 TB cases per 100,000 persons annually (mostly expats from Europe and US), can be screened via the TST.

(ii) Annual re-screening for TCNs, and LNs will be performed with a CXR conducted by the Contractors medical provider or local economy provider, who will look for interval changes from prior CXR's and review any changes in the symptom survey.

(iii) SRN's do not require annual TB re-screening. However, for a TB contact investigation, a TST or Interferon Gamma Release Assay (IGRA) is required.

(iv) For a contact investigation, all personnel with a positive TST or IGRA will be evaluated for potential active TB with a symptom screen, exposure history, BMI, and CXR. All cases of suspected or confirmed active TB must be reported to the theater Preventive Medicine (PM) physician and/or TB Consultant as soon as possible. TB reporting is required within 24 hours to the PM POC. Contact tracing, and medical coding have specific requirements. All Small-Risk National (SRN) contract personnel are required to be MEDEVAC'd out of theater, at the contractor's expense, for treatment of active TB, after consultation with the Theater PM or TB Consultant at the USF-I Surgeon's office. For SRN personnel, the contractor is responsible for management and compliance with all prescribed public health actions.

(v) Screening may be performed either by a licensed medical provider from the local economy or by the contractors' licensed medical staffs. Contractors shall maintain medical screening documentation and make it available to the Contracting Officer upon request.

(2) TB screening and documentation is a requirement prior to receiving badges to work in the Iraq Joint Operations Area. A copy of the TB screening documentation shall be provided to the responsible Base Operations Center (BOC) prior to issuance of base access badges.

(b) Contractor employees, including subcontractors at any tier, who work in positions where they are working in food service, water and ice production facilities, shall have current Typhoid and Hepatitis "A" (full series) immunizations in accordance with the Centers for Disease Control and Prevention guidelines (e.g. typhoid vaccination booster is required every 2 years), in addition to the required TB tests. The contractor medical provider must complete a pre-placement examination to include a stool sample test for ova and parasites, and annual medical screening form or equivalent for food service, ice and water production workers.

(c) Proof of individual employee vaccinations shall be provided to the Contracting Officer and COR showing that their employees and their subcontractor employees at any tier have received the above vaccinations. The contractor shall maintain their employees' vaccination records for examination by the

Contracting Officer. The contractor shall ensure that their subcontractors at any tier maintain their respective employees' vaccination records for examination by the Contracting Officer.

(d) The contractor is responsible for management and compliance with all prescribed public health actions regarding TB in the contracted personnel. The contractor also bears the responsibility of ensuring that adequate health management for TB (screening / diagnosis / treatment / isolation) is available at the contractor's chosen health care provider for their contracted and subcontracted personnel.

NOTE: Contractors are reminded of the requirement to comply with their contract and all regulatory guidance (DoD Instructions/Regulations, Federal Acquisition Regulation/Defense Federal Acquisition Regulation Supplement, and FRAGO's) as applicable regarding Medical Screening and Vaccination Requirements.

C3 CLAUSE 952.225-0011 GOVERNMENT FURNISHED CONTRACTOR SUPPORT (JUL 2010)

The following is a summary of the type of support the Government will provide the contractor, on an "as-available" basis. In the event of any discrepancy between this summary and the description of services in the Statement of Work, this clause will take precedence.

U.S. Citizens Accompanying the Force

___APO/FPO/MPO/Postal Services	___DFACs	___Mil Issue Equip
___Authorized Weapon	___Excess Baggage	___MILAIR
___Billeting	___Fuel Authorized	___MWR
___CAAF	___Govt Furnished Meals	_X_Resuscitative Care
_X_Controlled Access (CAC)/ID Card	___Military Banking	___Transportation
___Commissary	___Military Clothing	___All
___Dependents Authorized	___Military Exchange	___None

Third-Country National (TCN) Employees

___APO/FPO/MPO/Postal Services	___DFACs	___Mil Issue Equip
___Authorized Weapon	___Excess Baggage	___MILAIR
___Billeting	___Fuel Authorized	___MWR
___CAAF	___Govt Furnished Meals	_X_Resuscitative Care
_X_Controlled Access (CAC)/ID Card	___Military Banking	___Transportation
___Commissary	___Military Clothing	___All
___Dependents Authorized	___Military Exchange	___None

Local National (LN) Employees

___APO/FPO/MPO/Postal Services	___DFACs	___Mil Issue Equip
___Authorized Weapon	___Excess Baggage	___MILAIR
___Billeting	___Fuel Authorized	___MWR
___CAAF	___Govt Furnished Meals	_X_Resuscitative Care
_X_Controlled Access (CAC)/ID Card	___Military Banking	___Transportation
___Commissary	___Military Clothing	___All
___Dependents Authorized	___Military Exchange	___None

C3 CLAUSE 952.225-0013 CONTRACTOR HEALTH AND SAFETY (NOV 2010)

(a) Contractors shall comply with all National Electrical Code (NEC 2008), Specifications as outlined, and MIL Standards and Regulations. All infrastructure to include, but not limited to, living quarters, showers, and restrooms shall be installed and maintained in compliance with these standards and must be properly supported and staffed to ensure perpetual Code compliance, prevent hazards and to quickly correct any hazards to maximize safety of those who use or work at the infrastructure (NEC Table 352.20). Specifically, the use of magnetic ballasts in lighting for new construction or replacement of existing magnetic ballasts during refurbishment, alterations or upgrades with new magnetic ballasts is prohibited. The government has the authority to enter and inspect contractor employee living quarters at any time to ensure the prime contractor is complying with safety compliance standards outlined in the 2008 National Electric Code (NEC).

(b) The contractor shall correct all deficiencies within a reasonable amount of time of contractor becoming aware of the deficiency either by notice from the government or a third party, or discovery by the contractor. Further guidance on mandatory compliance with NFPA 70: NEC 2008 can be found on the following link http://www.nfpa.org.

C3 CLAUSE 952.225-0016 CONTRACTOR DEMOBILIZATION (NOV 2010)

(a) Full demobilization of contractors and subcontractor(s) in the Iraq/Afghanistan Combined/Joint Operations Area (CJOA) is critical to Responsible Drawdown. The prime contractor is required to submit a demobilization plan to the Contracting Officer a minimum of 30 days prior to the end of the contract performance period or when requested by the Contracting Officer. The demobilization plan shall address, as a minimum, the following procedures detailed below. The procedures outline specific guidance to ensure a timely and responsible exit from theater. Prime contractors are responsible and accountable to ensure their subcontractor(s) at all tiers comply with responsible and timely exit from theater immediately following contract performance completion or termination.

(1) Exit from Iraq: The prime contractor shall follow the exit guidance issued by the United States (U.S.) Embassy Baghdad and shall ensure subcontractor(s) at all tiers also follow the exit procedures. The prime contractor is responsible to remain cognizant of Iraqi laws regarding exit from Iraq. Currently, all foreigners traveling out of Iraqi airports via commercial air transportation must have exit visas. Department of Defense, U.S. Forces-Iraq, Letters of Authorization (LOAs), and/or Embassy Badges are no longer the accepted means of exiting Iraq. All U.S. citizens and foreign national contractors must obtain an Iraqi exit sticker before departing the country. The exit sticker may be obtained from selected police stations or Ministry of Interior (MOI) offices. It is the prime contractor's responsibility to ensure that the most recent exit procedures are followed and to ensure that subcontractor(s) at all tiers are in compliance with exit procedures. Assistance for this procedure may be obtained by e-mailing baghdadregmgt@state.gov or phone 240-553-0581, ext 2782 or ext 2092.

(2) Letter of Authorization (LOA): The prime contractor is responsible for demobilizing its workforce, including subcontractor employees at all tiers, and all contractor owned and subcontractor owned equipment out of theater as part of the prime contractor's exit strategy. This exit strategy must include reasonable timeframes starting with the end of the contract performance period and not exceeding 30 days. The Contracting Officer has the authority to extend selected LOAs up to, but not exceeding 30 calendar days after the contract completion date to allow the prime contractor to complete demobilization of its workforce and contractor owned equipment, as well as subcontractor(s) workforce and owned equipment, out of the Iraq/Afghanistan CJOA. The prime contractor shall notify the Contracting Officer a minimum of 30 days prior to the end of the contract period to request up to a 30-day extension of selected LOAs beyond the contract completion date to complete demobilization. The request shall include at a minimum:

(i) the name of each individual requiring a new LOA;
(ii) the number of days for the LOA (no more than 30 calendar days); and
(iii) justification for the request (e.g., what function the individual(s) will be performing during the demobilization period).

The Contracting Officer may request additional information for an LOA extension. Any LOA extension granted beyond the contract completion date shall not exceed 30 days and the contractor is not entitled to additional compensation for this period. If approved by the contracting officer, this is a no cost extension of an employee's LOA due to demobilization and in no way is an extension of the contract performance period.

(3) Badging: The prime contractor is responsible to ensure all employee badges, including subcontractor employees at all tiers, are returned to the local Access Control Badging Office for de-activation and destruction. The prime contractor shall submit a Badge Termination Report to ensure each record is flagged and the badge is revoked. If a prime and/or subcontractor employee's badge is not returned, the prime contractor shall submit a Lost, Stolen or Unrecovered Badge Report to the appropriate Access Control Badging Office. Contractor employees in possession of a Common Access Card (CAC) shall be
responsible for turning in the CAC upon re-deployment through a CONUS Replacement Center in the U.S. Failure to return employee badges in a timely manner may result in delay of final payment.

(4) Contractor Controlled Facility Space: If the prime contractor has entered into a Memorandum of Understanding with the Installation Mayor or Garrison for site space, buildings, facilities, and/or Containerized Housing Units (CHU) to house prime and/or subcontractor employees (at all tiers), the prime contractor is responsible to notify the Installation Mayor or Garrison Commander of intent to vacate at least 90 calendar days prior to the end of the contract performance period. All United States Government (USG) provided property in the prime contractor's possession must be returned to the USG in satisfactory condition. The prime contractor is responsible and liable for any and all damages to USG property caused by prime and/or subcontractor employees, and shall be further liable for all cleanup, clearing, and/or environmental remediation expenses incurred by the USG in returning prime contractor and/or subcontractor facilities including surrounding site to a satisfactory condition, including expenses incurred in physically moving property, trash, and refuse from such premises, removing/ remediating hazardous wastes on the premises, and repairing structures, buildings, and facilities used by the prime contractor and/or subcontractor. The prime contractor shall provide notification to the Installation Mayor or Garrison Commander to perform an inspection of all facilities as soon as practicable, but no more than 30 days, after the end of the contract period. If damages are discovered, the prime contractor shall make the necessary repairs. The prime contractor shall notify the Installation Mayor or Garrison Commander for re-inspection of the facilities upon completion of the repairs. If the Installation Mayor or Garrison Commander inspects the property, site space, buildings, facilities, and/or CHUs and finds they have not been properly cleaned, cleared, and/or environmentally remediated, or if the prime contractor fails to repair any damages within 30 calendar days after the end of the contract performance period, the final contract payment shall be reduced by the amount of the specified damages/repairs or the expenses incurred by the USG to properly clean, clear, and/or environmentally remediate the premises.
(5) Government Furnished Equipment/Materials: The prime contractor is responsible to return all USG furnished equipment, as defined in Federal Acquisition Regulation (FAR) Part 45, clauses 52.245-1, 52.245-2, and 52.245-5, if included in the contract. Prime contractors who are not in compliance with the FAR, Defense Federal Acquisition Regulation Supplement, Department of Defense Directives and Instructions, United States Forces-Iraq (USF-I) FRAGOs, United States Forces-Afghanistan (USFOR-A) FRAGOs, policies, or procedures will be responsible and liable for damages to the government property. The prime contractor may apply for a "relief of responsibility" from the Contracting Officer anytime during the contract performance period. A joint inventory shall be conducted of the equipment by the prime contractor, USG representative, and the Contracting Officer or their representative, within 10 calendar days after the end of the contract performance period. The prime contractor shall report lost, damaged or destroyed property immediately to the Contracting Officer, but no later than the joint inventory at the end of the contract period. If the prime contractor fails to report lost, damaged or destroyed equipment or materials during the contract performance period, the prime contractor shall be responsible for the replacement and/or repair of the equipment or materials. The replaced equipment shall be new, of the same quality, and shall perform at the same functional level as the missing piece of equipment. If the prime contractor fails to repair and/or replace damaged or missing equipment, the final payment shall be reduced by the appropriate amount of the specified damages or cost to replace missing equipment with new.

(6) Synchronized Predeployment Operational Tracker (SPOT): The prime contractor is responsible to close out the deployment of personnel, including subcontractor employees at all tiers, at the end of the contract completion period

and to release the personnel from the prime contractor's company in the SPOT database. The release of employee information must be accomplished no more than 30 calendar days after the end of the contract completion date.

(7) Accountability of Prime and Subcontractor Personnel: Whether specifically written into the contract or not, it is the expectation of the USG that for any persons brought into the Iraq/Afghanistan CJOA for the sole purposes of performing work on USG contracts, contract employers will return employees to their point of origin/home country once the contract is completed or their employment is terminated for any reason. If the prime contractor fails to re-deploy an employee, or subcontractor employee at any tier, the USG shall notify the applicable U.S. Embassy to take appropriate action. Failure by the prime contractor to
re-deploy its personnel, including subcontractor personnel at any tier, at the end of the contract completion date, could result in the contractor being placed on the Excluded Parties List System (EPLS) and not be allowed to propose on future U.S. contracts anywhere in the world.

(b) CENTCOM Contracting Command (C_3) and external agencies will utilize all available contracting remedies to guarantee compliance with demobilization requirements. Such actions include, but are not limited to withholding payment, issuing a cure notice, issuing a negative Contractor Performance Assessment Reporting System (CPARS) evaluation, reduction of award fee, debarment, reimbursement of U.S. Government expenses, and/or any other legal remedy available to a contracting officer. The USG reserves the right to **withhold payment** from the prime contractor not in compliance with the above procedures included herein. Additionally, the Contracting Officer shall document all unresolved contractor compliance issues in CPARS, which shall have an adverse past performance affect on future contracts with the USG, anywhere in the world.

C_3 CLAUSE 952.236-0001 ELECTRICAL AND STRUCTURAL BUILDING STANDARDS FOR CONSTRUCTION PROJECTS (JUL 2010)

(a) The standards set forth herein are the minimum requirements for the contract. These standards must be followed unless a more stringent standard is specifically included. In such case the most stringent standard shall be required for contract acceptance.

(b) The contractor, in coordination with the Contracting Officer, Base Camp Mayor, Base/Unit Engineers, and requiring activity shall evaluate, upgrade, build, and/or refurbish buildings to a safe and livable condition. This work may include refurbishment, construction, alterations, and upgrades. All work shall be in accordance with accepted standards of quality.

(c) As dictated by the Unified Facilities Criteria (UFC) the contract shall meet:

(1) "the minimum requirements of United States' National Fire Protection Association (NFPA) 70,
(2) 2008 National Electrical Code (NEC),
(3) American National Standards Institute (ANSI) C2, and
(4) United States' National Electrical Safety Code (NESC).

(d) These standards must be met when it is reasonable to do so with available materials. When conditions dictate deviation, then provisions within the International Electrical Code (IEC) or British Standard (BS 7671) shall be followed. Any deviations from the above necessary to reflect market conditions, shall receive prior written approval from a qualified engineer and the Contracting Officer.

(e) The following internet links provide access to some of these standards:

UFC: http://65.204.17.188/report/doc_ufc.html
NFPA 70: http://www.nfpa.org
NESC: http://www.standards.ieee.org/nesc

LOCAL CLAUSES
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.

(End of clause)

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.

(End of clause)

DBA INSURANCE
WORKERS COMPENSATION INSURANCE (DEFENSE BASE ACT) (APRIL 2011)

(a) This Special Contract Requirement supplements FAR Clause 52.228-3 Workers' Compensation Insurance (Defense Base Act).

(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 Insurance** unless the contractor has a DBA self-insurance program approved by the Department of Labor. Proof of this self-insurance shall be provided to the Contracting Officer. The contractor shall submit proof of a valid DBA Insurance policy with CNA Insurance for the Prime and their Subcontractor's at every tier prior to performance of the contract. The current rates under the USACE, C3 and 408th CSB contract are as follows:

Service	$3.50	per $100 of employee remuneration
Construction	$4.25	per $100 of employee remuneration
Security	$10.00	per $100 of employee remuneration
Aviation	$17.00	per $100 of employee remuneration

(c) **Labor Category/Job Classification Definitions:**

SERVICE: White-collar" workers providing IT, engineering/consulting services, and restaurant services. Security consultants are included in this category if they are only providing risk assessment services and no form of armed protection.

CONSTRUCTION: "Blue-collar" workers providing services such as carpentry, electrical, plumbing, mechanical, concrete/asphalt, de-mining, roofing, landscaping, janitorial, trash removal, Port-a-John/septic cleaning, pest exterminating, auto repair/dismantling, drivers/couriers, and heavy equipment operation and maintenance. Construction site supervisors/managers and life support service providers are included in this category as well as all Unskilled and Manual Labor Day Laborers.

SECURITY: Personal Security Detail (PSD) and Static or Convoy Guarding of property or personnel.

AVIATION: Pilot and Crew of any aircraft excluding ground personnel who provide maintenance or services and stay on the ground.

NOTE: More than one rate may be applicable as more than one type of labor may be applicable for a particular contract.

(d) The contractor agrees to insert a Special Contract Requirement substantially the same as this one in all subcontracts (at every tier) to which DBA is applicable. Every subcontractor shall procure its own DBA Insurance coverage directly from CNA Insurance Co.

(e) 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.

(f) CNA's Broker (Rutherfoord International) shall provide proof of confirmation of coverage within 3 working days of receipt of a complete insurance application. This confirmation should be used by the Contracting Officer to issue notice to proceed with performance.

(g) Premiums will be reimbursed only if coverage is purchased through the USACE mandatory requirements DBA contract administered by CNA Insurance and their Managing Broker, Rutherfoord International.

(h) Claims Reporting - The Contractor shall make timely Defense Base Act insurance claims on behalf of each employee who is injured or killed in the course of their employment under this contract, and shall ensure that similar language is in each Subcontractor's contract. The Contractor's Safety Officer shall, in addition to any other duties required to be performed under the contract, perform the following:

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

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

The District/Center Safety and Occupational Health Manager POC is:

Susan R. Fox, Email: Susan.R.Fox@usace.army.mil

(i) The Insurance carrier/Broker will conduct periodic audits of actual contractor payroll amounts. When a return is due for over-payment of premium on a specific audit, such returned premium shall be returned to the U.S. Department of Treasury.

(j) Failure to comply and purchase Defense Base Act (DBA) Insurance in accordance with FAR Clauses 52.228-3 Workers' Compensation Insurance (Defense Base Act), from the U.S. Army Corps of Engineers mandatory Insurance Carrier/Broker (CNA Insurance/Rutherfoord International) for the Prime and all of the Subcontractors at every tier, shall be considered a material breach and could cause your contract to be terminated for default/cause.

(End of clause)

Solicitation no. W5J9LE-11-B-0005

US Army Corps of Engineers
Afghanistan Engineer District South

Afghanistan National Army (ANA)
Kandaks (East), Camp Hero
Kandahar Province, Afghanistan
Project Nr: ANA11-008a

Project Specifications And Drawings

June 2011

THIS IS AN INVITATION FOR BID

SECTION 00150

PROJECT PHASES

1.0 GENERAL

The Contractor shall construct the buildings included in this contract according to the Government issued building designs (included in the Appendices) and to design and construct all other structures, buildings and site features not included in the Government issued designs to provide a fully functioning facility as described in Section 01010 Scope of Work. Any building designs not included as part of this solicitation, but stated as part of this contract, are the responsibility of the Contractor to design as well as build. The facility shall be designed and built by a single Contractor. The Contractor may be a single firm or a team of firms that includes registered Architects and Engineers either employed by or subcontracted to the Contractor. The Contractor shall be responsible for all Contractor furnished designs, whether the Contractor utilizes services of licensed architects and engineers employed by its firm or subcontracts with independent architectural and/or engineering firm(s). The 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. For this specification, the term "Government" is defined as the Contracting Officer for the US Army Corps of Engineers, Afghanistan District South.

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.

No work can begin on any phase of the process until an authorization Clearance for construction for that phase is issued.

1.1 DESIGN PHASE

The successful contractor shall develop and submit for formal review Design Phase Submittals as indicated below and in the project schedule. The Contractor is encouraged to develop and submit multiple cost saving proposals for innovative design alternatives.

1.1.1 THE DESIGN PHASE SUBMITTALS

10% Design Submittal will be the basic services required to develop the preliminary submittal which represents items necessary for wells and subsurface investigation: Geotechnical report, well design and test results, and percolation test locations and results. After approval of the 10% design submittal, the Government may issue a Clearance for Construction (CFC) letter to commence with the construction phase of the well.

65% Design Submittal shall include 100% complete drawings and specifications for site preparation work and utility construction and shall include the incorporation of all review comments from the previous review. The 65% submittal shall also include approximately 65% complete drawings, design analysis and specifications of all other required construction documents.

99% Design Submittal shall include 100% complete drawings, design analysis, and specifications for all required construction. The 99% submittal shall also include the incorporation of all review comments from the previous review.

100% Submittal shall include all design services required to complete the design to 100% including the incorporation of all design review comments.

2.0 CONSTRUCTION PHASE

The Construction Phase shall be initiated by a CFC letter issued by the Contracting Officer.

A CFC will be provided separately by the Contracting Officer for each phase of the work. The Government may give the Contractor authorization for the Build Phase for portions of the work following review and approval of the particular Design Submittal.

Weekly coordination meetings will be held at which, as a minimum, the Contractor's Project Manager, a representative of the Designer, the site Superintendent, and the Contractor's Quality Control Manager shall be present.

3.0 PROJECT SCHEDULE:

The following is an internal design schedule and is subject to modification by the Offeror to suit their particular method of operation. Overall time constraints are required and cannot be changed except by contract modification.

Written Notice to Proceed (NTP)	following Contract Award
DESIGN PHASE	
10% Design Submittal Due	within 60 days following NTP
65% Design Submittal Due	within 120 days following NTP
99% Design Submittal Due	within 150 days following NTP
100% Design Submittal Due	within 180 days following NTP
CONSTRUCTION PHASE	
Clearance For construction	See Section 2.0
Total Design and Construction Period	**550** days (performance period includes design and construction phases)

The order of construction for all buildings and facilities shall be prioritized. The contractor shall construct in accordance with the Construction Priority Schedule in Section 01010.

All work under this contract shall be completed and buildings ready for beneficial occupancy in accordance with the Construction Priority Schedule. The Required Period of Performance is stated in Days following the NTP, as described in Section 01010, Table 7-1.

--END OF SECTION--

SECTION 00555
DESIGN CONCEPT DOCUMENTS

1. GENERAL

This section identifies documents issued with this IFB which establish the concept or basis for the project design. These requirements are minimum standards and may be exceeded by the Offeror. Deviations from these concepts and standards may be approved if considered by the Government to be in its best interests.

The extent of development of these requirements in no way relieves the successful Offeror from the responsibility of completing the design, construction documentation, and construction of the facility in conformance with applicable criteria and codes.

Design drawings and all technical specifications are provided to the contractor as part of this contract of all facilities. Site work and related areas require design. This specification only applies to this site design.

1.1 ENGINEERING AND DESIGN CRITERIA

General design requirements are set forth in this IFB herein. The Specifications Divisions 02 thru 16 is the primary specifications criteria for the design and construction of the project. No design criteria will be furnished by the Afghanistan Engineer District South except that which may be required for design and is not available from commercial sources or from the Construction Criteria Base (CCB) or 'Techinfo' website located at http://www.wbdg.org/ccb/ . The references within CCB must be obtained by the A/E if the criteria are required or desired. All design, unless otherwise specified, shall be based on nationally recognized industry standard, criteria, and practice.

1.2 APPENDIX DOCUMENTS

See Appendices for further technical requirements, criteria, and parameters that are a part of this contract.

1.3 SPECIFICATIONS

Specifications included herein shall be utilized as design criteria and minimum standards for the corresponding construction work. The successful Offeror shall develop complete construction specifications using the criteria included in these specifications.

The Government will provide Division 1 specifications sections as required, to the successful Offeror; and these sections shall be included in the final construction specifications without change. The Contractor shall furnish these specifications on electronic media for the production of construction specifications when requested. These specifications shall be submitted together with other required contractor prepared project construction documents in the 99% Design Submittal of the Design Phase in accordance with Section 00150 THE DESIGN AND CONSTRUCTION PROCESS.

1.4 ORDER OF PRECEDENCE

In case of conflict, duplication, or overlap of design criteria specified in the documents referenced in this section, the following order of precedence shall be followed:

1. Minimum requirements of the IFB.
2. Contract documents.
3. Written requirements supersede drawings, except standard design building drawings must be followed

1.5 MANDATORY CRITERIA

Portions of the design criteria documents provide mandatory criteria in relation to the site work design only. Mandatory criteria consists of drawings, schematics, specifications, and other requirements. 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, upon acceptance by the Government. Mandatory requirements are as listed below. All other design criteria shall be considered non-mandatory.

Work Plan

Boundary survey plan

Topographic survey plan

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

None. All relevant design documents, to include facility drawings and technical specifications are provided by the government as part of this contract. The contractor is responsible for any additional criteria (to include design and specifications) as needed to fulfill the requirements of this contract. The government has provided applicable standards, references, codes and other technical guidelines in section 01015.

-- END OF SECTION --

SECTION 01010
SCOPE OF WORK

1. GENERAL

The project consists of the design and construction of an Afghan National Army Compound at Camp Hero, Kandahar Province, Afghanistan. The garrison project consists of new Transient Kandak, QRF Kandak, Engineering Kandak, Infantry Kandaks, and other common facilities for the brigade including all support facilities, utilities and infrastructure as applicable.

The project includes buildings and facilities that shall be constructed using full design Arch-Span type construction methods according to the standard design plans located in the Appendix of this IFB. The project is defined as the design, materials, labor, and equipment to construct buildings, roads, utilities, and other infrastructure to accommodate a garrison with a design-end population of approximately 4,600 personnel. The work within this contract shall be designed and constructed in accordance with the current International Building Code (IBC), Life Safety Codes (NFPA-101), force protection and security standards.

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

All buildings and facilities must be constructed and become operational following the Construction Priority List specified in the Section 01010. All buildings and facilities are categorized in four (4) priorities. Refer to Section 7, Completion of Work, for general requirements and for the priority listing of buildings and facilities as shown in Table 7.1, Construction Priorities Schedule.

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 CQM TRAINING REQUIREMENT

The Contractor's Quality Control (QC) Manager is required to have completed the U.S. Army Corps of Engineers (USACE) Construction Quality Management (CQM) course, or equivalent, before project design and construction begin or as soon as the class is available. The CQM course will be offered periodically by the USACE Afghanistan Engineer District (AES). Additional approved CQM courses include those offered by the Commercial Technical Training Center (in Jalalabad) and the Champion Technical Training Center (in Kabul). The Quality Assurance Branch of the AES can provide information related to AES offerings of the CQM course, as well as contact information for training centers. Alternative CQM courses, other than those mentioned above, must be approved by the Quality Assurance Branch.

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

1.3 SUBMITTALS REQUIREMENTS

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

1.4 COST ESTIMATE REQUIREMENTS

The Contractor shall prepare a parametric construction cost estimate for AES data collection purposes. The Contractor shall prepare a thorough, well-supported, estimate reflecting the final design features, construction

schedule, conditions, and any construction prioritizing requirements. The cost estimate shall be submitted as part of the 35%, 65%, 100% design submittals.

1.5 LOCATION

All work under this task order is for the Brigade Garrison Project 2 Camp Hero in Kandahar Province, Afghanistan. The approximate geographical location of the project is:

Longitude: 65°53’6” E

Latitude: 31°28’49” N

1.6 GENERAL REQUIRMENTS FOR FACILITIES

All requirements set forth in the Scope of Work (01010), but not included in the Technical Requirements (01015), shall be considered as set forth in both and vice versa.

In general, this project consists of designing and constructing facilities as described in this Section, the Concept Plan, standard design Arch-Span and CMU type building standard designs attached in the Appendix and the requirements stated in Section 01015 - Technical Requirements. In case of any discrepancy between Section 01010 and Section 01015, Section 01010 takes precedence. The USACE construction representative shall be notified immediately of any inconsistencies discovered in this document.

All standard construction amenities such as underground utilities, site grading, plumbing, heating, electrical, etc. shall be implied as a design and construction requirement.

All construction of the Standard Building designs identified in the Appendix of this document shall be done in strict accordance with the plans and specification furnished, with no changes made to any feature of work shown in these design drawings and specifications, unless otherwise specified.

The Contractor shall match existing on-site architectural materials and colors. All construction shall be done in the same style and paint schemes as existing buildings, respective of sustainable construction and design except as indicated. Construction shall provide for institutional (detention) grade vandal-resistant fixtures and valves in showers, toilets, and lavatories. All toilets shall be eastern style and shall face north or south.

The Contractor shall provide boot scrapers for boot cleaning at all building ingress/egress points.

Barracks shall be spaced as far apart from each other as possible given the final site design configuration, as to minimize sound propagation and to increase privacy.

The Contractor shall provide potable water, toilets, ablution areas, electrical, and communications service backbone in buildings as specified, connecting to and integrating with existing systems and shall be responsible for installing all upgrades. Specification of equipment and materials that match stocked items by the facility or central Department of Public Works is highly desirable. The Contractor shall reference the Appendix for building-specific construction details.

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 2 years prior to bid opening.

All other design work not specifically identified in this document shall be the responsibility of the Contractor and it shall be submitted for review in accordance with Section 01335.

1.6.1 LIFE SAFETY

The facilities shall comply with all other safety requirements as required within references. A fire sprinkler system is not required. The Contractor shall equip buildings with wall-mounted CO_2 fire extinguishers at a 1:100 SM density (minimum). Exit signs shall be placed above doors opening to the exterior and labeled in English, Dari, and Pashto. The Contractor shall install hardwired smoke detectors to provide local alarm only. Install carbon monoxide (CO) monitors in large occupancy areas (15 SF per person or greater occupant density) and sleeping areas. . These CO monitors/alarms shall be hardwired for reliability and to prevent pilferage. For other requirements, refer to Section 01015.

1.6.2 LIGHTING

General lighting shall be provided for each building type and function within each building, in accordance with standard drawings in the Appendices. For any design build features that contractor shall adhere to the requirements in Section 01015.

1.6.3 HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

Environmental control of the facilities shall be achieved by natural ventilation, mechanical ventilation, and heating per the standard drawings in the Appendices. Cooling shall be provided in only specified rooms of specified buildings. In the case of design build facilities, for inside design conditions and air cooling and heating requirements for various spaces, see Section 01015.

1.7 UNEXPLODED ORDINANCE (UXO)/ MINES

The Contractor is not responsible for the clearance or removal of mines and unexploded ordnance (UXO) from the site prior to the commencement of construction. No construction activities are to be conducted without review of the written clearance certification for the site. If sub-surface construction activities will be performed on this site the clearance certification must state that the clearance depth was conducted to a minimum depth of 1 m.

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

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

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

UXO Safety/ Demining COR, USACE
tas.uxo.safety@usace.army.mil
Comm: 540-667-6359
Roshan: 079-467-3891

NOTE 2: For construction in excess of 1.0 m (40") in depth on areas previously cleared. If the contract parameters for sub-surface construction exceed the minimum 1.0 m (40") clearance depth the Contractor WILL be responsible for clearance to these depths.

The Contractor may only provide clearance/removal services via UN Mine Action Center for Afghanistan (UNMACA) accredited entities and Clearance/removal may only be undertaken in accordance with International Mine Action Standards (IMAS), Afghanistan Mine Action Standards (AMAS), and applicable U.S. Army Corps of Engineer (USACE) Ordnance & Explosives (OE) safety standards.

The Contractor will provide a standard UXO/Demining safety work plan to the US Army Corps of Engineers UXO / Demining COR for review prior to commencement of all UXO clearance/demining activities on the project sites. Once the UXO/ Demining clearance has concluded, the Contractor shall provide the US Army Corps of Engineers UXO / Demining COR a clearance certificate for review and approval before any construction activities are to commence.

NOTE 3: The Contractor should be aware that many areas demined by NGOs and other groups may have only been cleared to a depth of 130 mm (5") for humanitarian purposes. If construction will take place, a minimum of 1.0 m (40") in depth is mandatory.

It is the responsibility of the Contractor to be aware of the risk of encountering UXO/mines and to take all actions necessary to assure a safe work area to perform the requirements of this contract. The Contractor assumes the risk of any and all personal injury, property damage or other liability arising out of or resulting from any Contractor

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

If a UXO/mine is encountered during project construction, the Contractor shall immediately stop work in the affected area, mark the area of the UXO/Mine and immediately notify the Contracting Officer, COR or the Government Construction Representative. UXO/Mine disposal will not be the responsibility of the Contractor unless the area exceeds the 1.0 m (40") clearance depth of the original clearance certificate.

2. SUMMARY OF WORK

All work including data collection, design, construction, equipment purchase, equipment installation, studies, and surveys as described in this Section 01010 of the IFB shall be accomplished by the Contractor unless otherwise stated.

2.1 GENERAL

2.2 MOBILIZATION / DEMOBILIZATION

Mobilization and Demobilization shall consist of all labor, equipment, supplies and facilities required to stage all equipment and facilities needed for construction of this project. See Contract Clauses for more information.

The Contractor shall install temporary access points and roads, temporary parking, construction lay-down areas, and foot paths with compacted base, appropriately graded for drainage, and cover with a well graded crushed stone aggregate surface capable of withstanding the anticipated construction traffic. At a minimum, the Contractor shall place 50 mm of crushed, well-graded, and compacted aggregate over areas to be used for drainage, pedestrian circulation (not including foot paths), and/or dust control.

Portable latrines: During construction, the Contractor shall furnish and install portable latrine units in locations as required. Portable latrines shall be a mix of western and eastern style units. Mix shall be determined by Contracting Officer.

Portable lavatories: During construction, the Contractor shall furnish and install handwash units in locations as required. Handwash units shall each include four (4) wash units. Each wash unit shall consist of a basin, foot controlled wash water dispenser, hand soap dispenser, and towel dispenser.

Mobilization/Demobilization shall have a unit measurement of lump sum and paid for under bid items 0001AA, Mobilization/Demobilization, of the Proposal Schedule (Section 00010).

2.3 SECURITY

Security is critical to construction in Afghanistan, especially on roads and remote areas away from Coalition Force bases. The Contractor must have an appropriate amount of security/protection to match the threat in the project area and along the supply routes. A detailed security plan in accordance with Section 01040 SECURITY shall be approved by the Government before construction notice to proceed.

The Contractor shall be responsible for physical security of all materials, supplies, and equipment of every description, including property which may be Government-furnished or owned, for all areas occupied jointly by the Contractor and the Government, as well as for all work performed.

Security shall have a unit of measure lump sum and paid for under bid items 0001AB, Security, of the Proposal Schedule (Section 00010).

2.4 SITE SURVEY / EXISTING CONDITIONS MAP

The site survey and existing conditions map shall consist of all labor, equipment and supplies necessary to produce the topographical data in accordance with the requirements specified in Sections 01015 and 01335.

Site Survey and Existing Conditions Map shall have a unit of measure lump sum and be paid for under bid items 0001AD, Site Survey/Existing Conditions Map, of the Proposal Schedule (Section 00010).

2.5 GEOTECHNICAL INVESTIGATION

Existing geotechnical information is not available at the project site. Any site-specific geotechnical data required to develop foundations, fill at elevated slabs, materials, earthwork, roads, and other geotechnical related design and construction activities for this project shall be the Contractor's responsibility.

The geotechnical report shall contain the results of a geotechnical investigation conducted in accordance with the requirements specified in Section 01015. All labor, equipment and supplies necessary to conduct a geotechnical investigation shall be considered a part of the geotechnical report.

Foundations, including sub-grade, are based on an assumed soil bearing value for standard building designs. The Contractor shall design and construct foundations for standard designs and design build facilities per the standard drawings, unless the actual soil bearing capacity is less than the assumed soil bearing capacity the foundations were based upon. In this case the foundations shall be design by the Contractor based on recommendations from the geotechnical investigation.

The Geotechnical Investigation shall have a unit of measure lump sum and be paid for under bid items 0001AE, Geotechnical Investigation, of the proposed schedule.

2.6 AS-BUILT DRAWINGS

The Contractor shall provide the Government with complete as-built drawings at the conclusion of the project. The bid item "As-Built Drawings" shall consist of all labor, equipment, and all supplies needed to produce design records, documents and drawings in accordance with the requirements specified in Section 01335 and 01780A.

The As-built Drawings shall have a unit of measure lump sum and paid for under bid items 0001AF, As-Built Drawings, of the Proposal Schedule (Section 00010).

3. SITE DEVELOPMENT/IMPROVEMENTS

3.1 DEMOLITION

The Contractor shall remove and dispose of all debris, trash, CONEXs, concrete, buildings, existing utilities above or below ground, fuel tanks, HESCO baskets, and foundations. The Contractor shall be responsible for locating and paying all fees associated with removal and relocation of all debris and shall verify the location of debris disposal with the Contracting Officer. Scrap metal on site shall be moved to an area away from the site perimeter as directed by the COR and left for the host government to salvage. Demolished fencing and concertina wire shall be neatly rolled up and used fence posts and outriggers shall be neatly stockpiled for reuse by the host government. There will be no separate measurement or payment for demolition and the costs associated with any demolition work shall be accounted for by the Contractor in the bid item for which the demolition is associated.

3.2 SITE GRADING AND STORMWATER MANAGEMENT

Site grading and stormwater management features shall conform to the requirements and references specified herein for development of the facility. The Contractor shall design and submit a Site Grading and Drainage Plan showing the location of all required drainage structures.

All barracks, headquarters buildings, well houses and small arms storage buildings shall be raised 450 mm above the existing grade to protect against potential flooding. All other building floor elevations shall be a minimum 150mm above grade and slope away from the building on all sides at a minimum of 5% for 3 m. All other grading on site shall be a minimum of 1% to ensure proper drainage.

The Grading and Drainage Plan shall indicate the existing and proposed contour lines, the location of drainage structures and the direction of flow. Spot elevations shall be indicated at the beginning and the end of all drainage structures and inflexion points and they shall be spaced every 25 m along the alignment. Proposed contour lines shall meet with existing contour lines on the Grading and Drainage Plan. The Grading and Drainage Plan shall be at a scale that all lines and structures can be easily seen and ascertained.

Culverts at perimeter wall penetrations shall have personnel access denial system(s).

The side slopes of all new earthen storm drainage (including canals, trenches, ditches, swales, etc) shall not have a slope greater than 1 Vertical to 3 Horizontal. The side slopes of storm drainage features with a greater slope are allowed, but the drainage features must be lined with a stone and mortar finish or concrete lining to prevent erosion.

At locations of the existing fence and perimeter wall where drainage ditches cross, new concrete culverts shall be installed to manage the wastewater and stormwater flows. The culverts shall include personnel access denial system(s).

The installation of culverts, sized for maximum stormwater flows, shall be required at all road and walkway locations which cross drainage ditches. All culverts outside of the perimeter fence or wall shall include personnel access denial system(s).

Native crushed stone 100 mm thick shall be placed around all buildings, from the building wall out 2.0 m and all areas of anticipated foot or vehicle traffic to reduce erosion and to provide dust control.

The Site grading and Stormwater Management shall have a unit of measure lump sum and paid for under bid items 0002AA, Site Grading and Stormwater Management, of the Proposal Schedule (Section 00010).

3.3 WATER WELL

The Contractor shall provide one (1) 350 m minimum to 400 m maximum depth water well to adequately supply the water flow to meet the needs of 4600 personnel. The Contractor shall locate the well per topographic and site design requirements.

The Contractor shall drill one (1) well to a depth of 350 m to 400 m in an attempt to find potable water meeting all World Health Organization (WHO) water quality requirements. If water cannot be found after drilling to 400 m, the Contractor shall immediately notify the Contracting Officer's Representative (COR). The Contractor will be considered to have fulfilled the terms of the contract and will be entitled to the full price of the contract CLIN for "Water Well".

The Water Well shall have a unit of measure lump sum and paid for under bid items 0002AB, Water Well, of the proposed schedule (Section 00010).

3.4 WELL HOUSE AND WATER WELL SYSTEM

The Contractor shall construct one (1) well house and design and construct the water well system. The well house shall be constructed per the standard drawings in the Appendix titled "Well House". The Contractor shall design and install a submersible pump to provide a minimum of 19 liters per second pumping capacity.

The Contractor shall design and construct a complete, functioning water well to include, but not inclusive of, all piping, flow meters, controls and hypochlorite disinfection system to meet the requirements of Section 01015 and in accordance with the AED Design Requirements-Water Wells, latest version.

The Contractor shall enclose the well facility (10 m x 10 m area) with 3 m high perimeter fence. All gates shall be swinging gates for these facilities. The technical requirements for fences and swinging gates are described in Section 01015.

The Well House and Water Well System shall have a unit of measure lump sum and paid for under bid items 0002AC, Well House and Water Well System, of the proposed schedule (Section 00010).

3.5 WATER DISTRIBUTION SYSTEM

The Contractor shall design and construct a potable water system and an enclosed booster pump station to provide sufficient water pressure with hydro-pneumatic surge tank(s), water storage tank(s) and underground pipe distribution system to all buildings and features requiring water supply. The Contractor shall install water meters between the storage tanks and the distribution system. The booster pump building shall be constructed per the standard drawings titled "Booster Pump Building" in the Appendix. The water system shall be designed and constructed in accordance with the AED Design Requirements, latest version. See Section 01015 for design and construction criteria. Water demand required for fire fighting and for irrigation and landscaping needs shall not be included in design demand calculations.

The Contractor shall connect the water distribution system with the adjacent Special Forces compound water distribution system and the water distribution system on the existing Camp Hero.

The Contractor shall design and construct a backup power generator system that is independent of the garrison power plant for the Booster Pumps and Well Pumps. The contractor shall ensure that the power generator system will accommodate the facilities power needs. The backup power generator system shall provide fuel storage for the generators with a capacity of 48 hours of continuous generator runtime along with an electrical distribution system to the facility. The generators, fuel storage, and distribution system shall be furnished by the Contractor.

The Water Distribution System shall have a unit of measure lump sum and paid for under bid items 0002AD, Water Distribution System, of the proposed schedule (Section 00010).

3.5.1 WATER STORAGE

Contractor shall provide circular steel ground storage tanks (GST). The storage tanks shall have a storage capacity of 3,000,000 liters. 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, insects, rodents and debris cannot enter the reservoir. 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.

There will be no separate measurement or payment for water storage and the costs associated with water storage work shall be accounted for by the Contractor in bid 0002AD, Water Distribution System.

3.6 WASTEWATER TREATMENT PLANT

The Contractor shall design and construct a Wastewater Treatment Plant (WWTP) per the requirements of Section 01015. The Wastewater Treatment Plant shall be a partial mix aerated lagoon type system and shall be located to minimize the use of lift stations and shall utilize gravity sewers as much as possible. The Waste Water Treatment Plant shall be designed and constructed such that the system shall not be flooded by a 25-year storm event and shall include considerations for potential flooding events originating upstream. The wastewater treatment plant shall be designed to treat 860,000 liters per day of waste water. The Contractor shall design and construct the Wastewater Treatment Plant to include sludge drying beds and shall include an adequate outfall to the nearest wadi per the Concept Plan in the Appendix. The design and construction of the outfall shall include concrete lining or rip rap measures to prevent erosion due to the flow from the Wastewater Treatment Plant.

The Contractor shall design and construct a 35 m^2 CMU type building for laboratory/office space and a 35 m^2 CMU type building for the hypochlorite disinfection system/chemical storage room. Both buildings shall have emergency eye wash stations and stainless steel sinks. See Section 01015 for technical requirements.

Approximate location of the proposed WWTP is indicated on the Concept Plan attached in the Appendix.

The WWTP shall have a unit of measure lump sum and paid for under bid items 0002AE, Waste Water Treatment Plant, of the Proposal Schedule (Section 00010).

3.6.1 WASTEWATER COLLECTION SYSTEM

The Contractor shall design and construct a sanitary sewer collection system for all facilities, to flow to the Waste Water Treatment Plant. The Contractor shall also connect the sewage holding tank at the adjacent Special Forces compound (located directly east of the 3/1/205 and 2/1/205 Infantry Kandaks) to the sewage collection system that flows to the wastewater treatment plant. The Contractor shall install lift stations as necessary to convey the waste water from the Special Forces compound to the wastewater treatment plant.

Sewer collection system shall consist of gravity sewer pipe and appurtenances such as manholes, cleanouts, building service connections and lift station(s). See Section 01015 for technical requirements.

The Wastewater Collection System shall have a unit of measure lump sum and be paid for under bid item 0002AF, Wastewater Collection System, of the Proposal Schedule (Section 00010).

3.7 ELECTRICAL DISTRIBUTION SYSTEM

The contractor shall design and construct an underground Electrical Distribution System to provide power to all facilities requiring electricity. The Contractor shall connect the electrical distribution system to the existing electrical distribution system on the existing Camp Hero and the existing electrical system at the adjacent Special Forces compound.

The Contractor shall design and construct an underground electrical distribution system to provide electricity to all facilities within this scope of work. The Contractor shall provide and install all appropriate transformers, cable and any other equipment necessary for a fully functioning electrical distribution system. All electrical design and installation shall meet British Standard BS 7671 requirements. All wiring shall be run and pulled through conduits. Electrical receptacles shall be provided as indicated.

Primary voltage shall be 15kV, 50Hz. Secondary voltage shall be 220/380V, 50Hz. Conductors and circuits shall be sized for the specific design loads utilization voltage shall be shall be 220/380V, 50Hz.

The Electrical Distribution System shall have a unit of measure lump sum and be paid for under bid items 0002AG, Electrical Distribution System, of the proposed schedule.

3.8 ROAD NETWORK

The Contractor shall design and construct the entire asphalt road network based on the analysis of the Contractor's geotechnical investigation.

The road layout shall provide ease of access to entrance points, buildings, loading ramps and docks, vehicle maintenance facilities, fuel points, trash collection points, grease traps, oil/water separators, convoy assembly area, etc. Roads shall be able to withstand 18,000 kg, 5-axle vehicles. The Contractor shall design and construct drainage ditches on both sides of all roads.

The main access and all main traffic shall be 8m wide (4m per lane) asphalt paving. This includes most of the inside roads except for the perimeter road. Perimeter access roads shall be 3.5 m wide per traffic lane with a stand-off distance of 3.0 m from the perimeter wall.

The Contractor shall design and construct one (1) 100 m long by 8 m wide asphalt paved Convoy Assembly Area as part of the Road Network bid item.

The Contractor shall provide design drawings showing detailed cross sections and road structure to comply with the Technical Requirements, Section 01015.

The Road Network shall have a unit of measure lump sum and paid for under bid items 0002AH, Road Network, of the Proposal Schedule (Section 00010).

3.9 CONCRETE SIDEWALKS/FIRE LANES

Concrete sidewalks shall be required as shown on the Concept Plan and shall be designed and constructed based upon recommendations from geotechnical analysis as required herein.

The Contractor shall design and provide a network of concrete sidewalks to connect the buildings. Sidewalks shall be 1.5 m wide.

The Contractor shall design and construct fire lanes that are a minimum of 3.0 m wide and shall be designed to accommodate the existing fire trucks on base. A sidewalk may be used as a fire lane if the sidewalk is a minimum of 3.0 m wide.

The Concrete Sidewalks/Fire Lanes shall have a unit of measure lump sum and be paid for under bid items 0002AJ, Concrete Sidewalks, of the Proposal Schedule (Section 00010).

3.10 MOTOR POOL AREAS

The Contractor shall design and construct Motor Pool Areas in coordination with the facilities required in this RFP. There shall be six (6) Motor Pool areas, varying in sizes and number of facilities contained within each area, as indicated in the Concept Plan attached in the Appendix.

Each Motor Pool Area shall be enclosed by a 3.0 m high chain link fence with Y-channel and triple strand concertina wire and two (2) lockable double swing arm vehicle gates and two (2) lockable personnel gates. The grade shall slope away from the fence for at least 5 meters and shall be kept a minimum of 3.0 m below the top of the fence for a distance of 10 m. The Contractor shall construct the fence and gates per the standard design drawings attached in the Appendix.

All motor pools shall be designed and constructed with 150 mm of aggregate surface compacted to 100% maximum density above 150 mm scarified fill compacted to 95% maximum density. Allow adequate vehicle maneuver space to access all parking and facilities.

Exterior pole-mounted lighting along the fence line shall be provided to provide illumination for night-time operations and safe movement of vehicles within the motor pool compound.

The Motor Pool Areas shall have a unit of measure of lump sum and be paid for under bid item 0002AK, Motor Pool Areas, of the Proposal Schedule (Section 00010).

3.11 SITE COMMUNICTATION SYSTEM

The Contractor shall design, provide, and install the exterior and interior communications infrastructure. The exterior communications infrastructure shall provide a looped communication system for perimeter security functions. The communications duct bank shall run to all guard towers, guard shacks, ECPs, and back to the central Communications Room located in the Battalion Headquarters Building.

The interior communications infrastructure shall provide a pathway to all communications outlets and head-end equipment located in the building. Communications head-end equipment, cabling, RJ45 jacks, and faceplates shall be provided by others. The design and construction of the systems shall be in accordance with the references and the requirements contained herein and in Section 01015.

The Site Communication System shall have a unit of measure lump sum and be paid for under bid items 0002AL, Site Communication System, of the Proposal Schedule (Section 00010).

3.11.1 LOUDSPEAKER AND ALARM SYSTEM

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

The Loudspeaker and Alarm System shall be paid for under the lump sum bid items 0003AL, Site Communication System, of the Proposal Schedule (Section 00010).

3.12 VEHICLE WASH RACK

The Contractor shall construct three (3) vehicle wash racks located adjacent to the vehicle fueling points. The vehicle wash racks shall include elevated concrete pads to accommodate 2 vehicles side by side, as indicated on the Concept Plan. The Vehicle Wash Racks shall be built according to the Standard Design attached in the Appendix and per the requirements of Section 01015.

The Contractor shall design and construct water service for the vehicle wash racks by a pressure pump connected to the nearest water source. Provide broom finish texture concrete pad and elevate with appropriate slope for drainage run-off to a trench drain. Extend drainpipes from trench drain away from the wash stations, with grit chambers, an oil/water separator, and clean outs, and tie into the storm drainage system.

All surface inside the compound up to the elevated concrete racks, shall be designed and constructed with 150 mm of aggregate surface. The Contractor shall allow for adequate vehicle maneuver space.

The Vehicle Wash Rack shall have a unit of measure per each and paid for under bid items 0002AM, Vehicle Wash Rack, of the Proposal Schedule (Section 00010).

3.13 VEHICLE REFUELING POINT

The Contractor shall design and construct two (2) Vehicle Refueling Points. Each vehicle refueling points shall include one (1) diesel dispenser, one (1) MOGAS dispenser, associated islands, fuel tanks and all other associated equipment for a fully functioning vehicle refuel point. Each vehicle refuel point shall have a fuel tank capacity as follows: 38,000 liters of Diesel and 10,000 liters of MOGAS. **The Contractor shall provide a full supply of fuel to the tanks at the time of turnover to the Government.** The Contractor shall use the drawings attached in the Appendix titled 'Fuel Storage and Vehicle Refueling Point' for reference and to the requirements of Section 01015 when designing the facility.

The Contractor shall provide asphalt paved maneuver areas for the dispensers and area for fuel truck deliveries. The Contractor shall grade and level the refueling area to match the adjacent existing with appropriate slope and drainage to tie into the storm drainage system.

For each vehicle refueling point, the Contractor shall provide 200 mm diameter by 1,000 mm high concrete-filled steel bollards around the new dispensers to prevent damage from vehicles. Around the fuel dispensers there shall be a concrete pad. The concrete hard surface pad shall extend for the full length of the dispensing area as shown in the standard drawings. The Contractor is required to provide explosion proof lighting, and fire extinguishers. The Contractor shall provide electrical service to the fuel pumps in accordance with the manufacturer's recommendations and provide area lighting for general illumination of vehicle fuel dispensing areas. Each refueling point shall have a metal roof canopy per the drawings attached in the Appendix.

All new fuel tanks shall be installed above ground to the requirements of Section 01015. The storage tanks shall have adequately protected distribution lines to the vehicle refueling points. The tanks shall be surrounded by concrete Alaska barriers and have a canopy structure to keep precipitation out of the tank pit.

All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Vehicle Refueling Point shall have a unit of measure per each and paid for under bid items 0002AN, Vehicle Refueling Point, of the Proposal Schedule (Section 00010).

3.14 TRASH COLLECTION POINTS

Construct twenty-two (22) Trash Collection Points per the Standard Design drawings in the Appendix. The Contractor shall locate each Trash Collection Point in locations convenient for easy removal. The Contractor shall locate trash points evenly spaced around the property and at each common facilities location.

The Trash Collection Points shall have a unit of measure per each and paid under bid items 0002AP, Trash Collection Points, of the Proposal Schedule (Section 00010).

3.15 VOLLEYBALL COURTS

The Contractor shall design and construct four (4) volleyball courts. All volleyball courts shall be outside. The Volleyball Courts shall be sand courts and include poles, nets and permanent delineated boundaries. The Volleyball Courts shall be regulation size.

Volleyball Courts shall have a unit of measure per each and shall be paid for under bid item 0002AQ, "Volleyball Courts".

4. FORCE PROTECTION

The Contractor shall design and construct force protection measures to include walls, Entry Control Points (ECP) and guard towers. The designer shall incorporate force protection setbacks for new facilities to maximum extent possible as permitted by size of the site.

4.1 PERIMETER STONE WALL

The Contractor shall construct the perimeter wall approximately 4,650 linear meters of reinforced concrete with masonry or native stone veneer per the Concept Plan for the general location. The Contractor shall follow the standard construction drawings attached in the Appendix.

The height of the walls shall measure the standard of 3.0 m from the inside and outside grades to the top of the concrete wall cap. The wall shall be topped with Y shaped outriggers and single-coil concertina style razor wire. The ground grade shall slope away from the wall for at least 5.0 m and shall be kept a minimum of 3.0 m below the top of wall for a minimum distance of 10 m.

The wall shall be designed to keep all pedestrian and truck traffic outside the compound from having a visual line of site into the compound. The perimeter road shall be at a standoff distance of no less than 3.0 m from the inside face of the perimeter wall.

The Perimeter Wall shall have a unit of measure lump sum and be paid under bid items 0003AA, Perimeter Wall, of the Proposal Schedule (Section 00010).

4.2 GUARD TOWERS

The Contractor shall design and construct nineteen (19) Guard Towers per the standard design drawings titled "Guard Tower" in the Appendix.

The Guard Towers shall be located at intervals of approximately 275 m apart from each other, as well as at all access penetration points in the perimeter wall. The floor height shall be elevated as to allow the window sill to be 500 mm above the top of the wall.

The Guard Towers 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. Lighting shall not consist of white lights inside guard towers. The Contractor shall use red, blue, or black lenses in interior guard tower lighting.

The Guard Towers shall have a unit of measure per each and paid under bid items 0003AB, Guard Towers, of the Proposal Schedule (Section 00010).

4.3 ENTRY CONTROL POINTS

The Contractor shall construct three (3) Primary Entry Control Points (ECP) and three (3) secondary ECPs per the conceptual ECP drawings in the Appendix. Each Primary ECP shall include a paved entrance, one (1) manually operated sliding steel vehicular gate, one (1) steel swing personnel gate, one (1) Guard Shack, one (1) steel canopy, three (3) vehicle drop arm barriers, one (1) bypass road and passive anti-vehicle barriers. Each secondary ECP shall include one (1) manually operated sliding steel vehicular gate, one (1) steel swing personnel gate, one (1) drop arm barrier and one (1) guard shack. See Section 01015 for technical requirements.

The ECPs shall all be included on one lump sum unit of measure and be paid under bid item 0003AC, Entry Control Points, of the Proposal Schedule (Section 00010).

4.3.1 GUARD SHACKS

The Guard Shack buildings shall be of a CMU type construction following the standard construction drawings titled "Guard Shack" attached in the Appendix.

There shall be a total of six (6) Guard Shack buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

Areas in the immediate outside vicinity of the guard shacks shall be lighted and provided with an all-weather, non-slip surface and shall be graded to sufficiently drain away from building and pedestrian areas. 2-way communications with all Guard Towers and Main ECP shall be provided. Category 5e dual RJ-45 outlets for voice and data and duplex receptacles shall be provided.

The Guard Shacks shall be paid under bid item 0003AC, Entry Control Points, of the Proposal Schedule (Section 00010).

4.4 PERSONNEL BUNKERS

The Contractor shall construct an approximate number of one hundred and fifty (150) Personnel Bunkers per the standard drawings in the Appendix titled "Personnel Bunker".

The contractor shall place bunkers at optimal locations on the Master Plan in relationship to personnel requirements.

The Personnel Bunkers shall have a unit of measure per each and paid under bid items 0003AD, Personnel Bunkers, of the Proposal Schedule (Section 00010).

5. FACILITIES

5.1 ARMS STORAGE BUILDING

The Arms Storage building shall follow the standard construction drawings titled “Arms Storage” attached in the Appendix.

There shall be a total of five (5) Arms Storage buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

Each Arms Storage building shall include the following:

a. Provide wooden racks for storing long-arm weapons vertically. Racks shall not be furnished with locking bars.
b. The Contractor shall provide power outlets in walls no more than 4.0 m apart.
c. Concrete stoops shall be provided at all exterior doors.
d. The facility will be enclosed with a 3.0 m high fence and a secure entranceway.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

Arms Storage Buildings shall have a unit of measure per each and be paid under bid item 0004AA, Arms Storage Bldg., of the Proposal Schedule (Section 00010).

5.2 POL STORAGE BUILDING

The POL Storage Building shall follow the standard construction drawings titled “POL Building” attached in the Appendix.

There shall be seven (7) POL Storage Buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The POL Storage Building shall have a unit of measure per each and paid under bid items 0004AB, POL Storage Building, of the Proposal Schedule (Section 00010).

5.3 FUEL OPERATORS BUILDING

The Fuel Operators Building shall follow the standard construction drawings attached in the Appendix.

There shall be two (2) Fuel Operators Buildings. The Contractor shall locate the fuel operators buildings adjacent to the Vehicle Fueling Points.

The Fuel Operators Building shall have a unit measure of each and be paid for under bid items 0004AC, Fuel Operators Building, of the Proposal Schedule (Section 00010).

5.4 AMMUNITION SUPPLY POINT

The Contractor shall construct one (1) Ammunition Supply Point. The Ammunition Supply Point shall consist of one (1) Weapons Storage Building and an associated Ammunition Supply Point Area. The Weapons Storage building shall be constructed per the standard drawings titled “Weapons Storage (ASP)” in the Appendix.

The Contractor shall construct a perimeter fence a distance of 30 m around the Weapons Storage Building. All areas within the perimeter fence shall be paved with 100 mm thick aggregate.

Provide exterior lighting at each corner of the ASP building sufficient to light an area of a 30 m radius.

The Ammunition Supply Point shall have a unit of measure per each and shall be paid for under bid item 0004AD, “Ammunition Supply Point”.

5.5 NCO BARRACKS

The NCO Barracks building shall be constructed following the standard construction drawings attached in the Appendix – titled “NCO Barracks – Large”.

There shall be a total of twelve (12) NCO Barracks buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The NCO Barracks shall have a unit of measure per each and shall be paid for under items 0004AE, NCO Barracks, of the Proposal Schedule (Section 00010).

5.6 ENLISTED BARRACKS

The Enlisted Barracks building shall be constructed following the standard construction drawings attached in the Appendix – titled “Enlisted Barracks”.

There shall be a total of twenty-two (22) Enlisted Barracks buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Enlisted Barracks shall have a unit of measure per each and shall be paid for under items 0004AF, Enlisted Barracks, of the Proposal Schedule (Section 00010).

5.7 LARGE LATRINE/LAUNDRY BUILDING

The large Latrine/Laundry Building shall be constructed following the standard construction drawings attached in the Appendix – titled “Latrine - Large”.

There shall be a total of ten (10) Large Latrine/Laundry Buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

All toilets shall be Eastern Style and shall face North–South.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Contractor shall provide three (3) 5.0 m long Clothesline units at each large Latrine/Laundry Building, following the standard construction drawings attached in the Appendix.

The Large Latrine/Laundry shall have a unit of measure per each and shall be paid for under bid item 0004AG, Large Latrine/Laundry Building, of the Proposal Schedule (Section 00010).

5.8 OFFICERS BARRACKS

The Officers Barracks building shall be constructed following the standard construction drawings attached in the Appendix -titled “Officers Barracks - Large”.

There shall be a total of six (6) Officers Barracks buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Officers Barracks shall have a unit of measure per each and shall be paid for under bid item 0004AH, Officers Barracks, of the Proposal Schedule (Section 00010).

5.9 BATTALION STORAGE BUILDING

The Battalion Storage building shall be constructed following the standard construction drawings attached in the Appendix - titled ”Storage Building”.

There shall be a total of seven (7) Battalion Storage buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Battalion Storage Building shall have a unit of measure per each and shall be paid for under bid items 0004AJ, Battalion Storage Building, of the Proposal Schedule (Section 00010).

5.10 SMALL LATRINE BUILDING

The Small latrine Buildings shall be constructed following the standard construction drawings attached in the Appendix - titled “Latrine-Small”.

There shall be a total of three (3) Small Latrine buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

All toilets shall be Eastern Style and shall face North–South.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Contractor shall provide two (2) 5.0 m long Clothesline units at each large Small Latrine Building, following the standard construction drawings attached in the Appendix.

The Small Latrine Buildings shall have a unit of measure per each and shall be paid for under bid item 0004AK, Small Latrine Building, of the Proposal Schedule (Section 00010).

5.11 BATTALION HEADQUARTERS BUILDINGS

The Battalion Headquarter buildings shall be constructed following the standard construction drawings attached in the Appendix – titled “Headquarters Building”.

There shall be a total of five (5) Battalion Headquarters buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The contractor shall design and construct a backup power generator system that is independent of the garrison power plant for the battalion headquarters in emergencies. The contractor shall ensure that the power generator system will accommodate the facilities power needs. The backup power generator system shall provide fuel storage for the generators with a capacity of 48 hours of continuous generator runtime along with an electrical distribution system to the facility. The generators, fuel storage, and distribution system shall be furnished by the Contractor.

The contractor shall provide 3 flagpole structures for each Battalion Headquarters Building, per the standard construction drawings attached in the Appendix.

The Battalion Headquarter Buildings shall have a unit of measure per each and shall be paid for under bid item 0004AL, Battalion headquarters, of the Proposal Schedule (Section 00010).

5.12 ADMINISTRATION BUILDING

The Administration building shall be constructed following the standard construction drawings attached in the Appendix – titled “Admin Building”.

There shall be a total of one (1) Administration building. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Administration Buildings shall have a unit of measure per each and shall be paid for under bid items 0004AM, Administration Building, of the Proposal Schedule (Section 00010).

5.13 LARGE DINING FACILITY

The Large Dining Facility (DFAC) building shall be constructed following the standard construction drawings attached in the Appendix – titled "DFAC- Large".

There shall be one (1) Large Dining Facility building. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

All quantities of stoves, wood stoves, sinks, and other equipment are as illustrated in the standard construction drawings.

The DFAC shall include, as a minimum, the following:

a. A service area in support of the DFAC building. The service area shall be surrounded with a 3 m high chain link fence with Y-channel and triple strand concertina wire and one (1) lockable double swing arm vehicle gate and two (2) lockable personnel gates. Construct the fence and gates per the standard design drawings in the Appendix. The service area shall be able to accommodate propane storage, wood stoves, wood storage area, and storage areas, area for the future location of trailers, and maneuver area. In the event a K-Span is chosen to be designed and constructed, the service area configuration in the standard construction drawings in the Appendix shall be revised to meet the functional requirements of the DFAC.
b. The service areas shall be aggregate surfaced.
c. Grease separator shall be a hydro-mechanical model as defined in Standard PDI G101, revised 2007. Grease separator shall be outside and exterior to the building.
d. Storage area with covered and security fence shall be constructed for propane gas cylinders in close proximity to the kitchen.
e. Kitchen area shall be provided with propane stoves. For a 30-day supply of fuel, provide four (4) bottles per cook stove. **The Contractor shall provide a full supply of fuel to the tanks at the time of turnover to the Government.**
f. The contractor shall design and construct a backup power generator system that is independent of the garrison power plant for the DFAC in emergencies. The contractor shall ensure that the power generator system will accommodate the facilities power needs. The backup power generator system shall provide fuel storage for the generators with a capacity of 48 hours of continuous generator runtime along with an electrical distribution system to the facility. The generators, fuel storage, and distribution system shall be furnished by the Contractor.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Dining Facility shall have a unit of measure per each and shall be paid for under item 0004AN, Large Dining Facility, of the Proposal Schedule (Section 00010).

5.14 SMALL DINING FACILITY

The Small Dining Facility (DFAC) building shall be constructed following the standard construction drawings attached in the Appendix – titled "DFAC Small".

There shall be one (1) Small Dining Facility building. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

All quantities of stoves, wood stoves, sinks, and other equipment are as illustrated in the standard construction drawings.

The DFAC shall include, as a minimum, the following:

g. A service area in support of the DFAC building. The service area shall be surrounded with a 3 m high chain link fence with Y-channel and triple strand concertina wire and one (1) lockable double swing arm vehicle gate and two (2) lockable personnel gates. Construct the fence and gates per the standard design

drawings in the Appendix. The service area shall be able to accommodate propane storage, wood stoves, wood storage area, and storage areas, area for the future location of trailers, and maneuver area. The service areas shall be aggregate surfaced.

h. Grease separator shall be a hydro-mechanical model as defined in Standard PDI G101, revised 2007. Grease separator shall be outside and exterior to the building.
i. A covered wood storage area shall be constructed in close proximity to the wood stoves and be fenced.
j. Storage area with covered and security fence shall be constructed for propane gas cylinders in close proximity to the kitchen.
k. Kitchen area shall be provided with propane stoves. For a 30-day supply of fuel, provide four (4) bottles per cook stove. **The Contractor shall provide a full supply of fuel to the tanks at the time of turnover to the Government.**
l. The contractor shall design and construct a backup power generator system that is independent of the garrison power plant for the DFAC in emergencies. The contractor shall ensure that the power generator system will accommodate the facilities power needs. The backup power generator system shall provide fuel storage for the generators with a capacity of 48 hours of continuous generator runtime along with an electrical distribution system to the facility. The generators, fuel storage, and distribution system shall be furnished by the Contractor.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Dining Facility shall have a unit of measure of each and shall be paid for under item 0004AP, Small Dining Facility, of the Proposal Schedule (Section 00010).

5.15 VEHICLE MAINTENANCE FACILITY

The Vehicle Maintenance building shall be constructed following the standard construction drawings attached in the Appendix – titled “Vehicle Maintenance Building”.

There shall be a total of seven (7) Vehicle Maintenance buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site. To facilitate operations, where there is more than one (1) facility indicated at one motor pool in the Concept Plan, the individual Vehicle Maintenance buildings may be located closer to each other.

Additionally the design shall comply with the requirements of Section 01015 and follow the following programming standards:

a. There shall be four, 200 mm diameter by 1,000 mm high concrete filled steel bollards adjacent to each roll up door on the interior and exterior of the building.
b. There shall be a concrete hardstand apron outside all garage doors at a minimum 10 m width. Concrete hardstand apron shall support a minimum loading of a 3-axle, 30,000 kg vehicle without failing. There shall be at least 18 m clear distance around the vehicle maintenance building before any parking or between any other facilities.
c. The air compressor shall be located outside and to the rear of the building under a canopy and enclosed in a security with gate.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Vehicle Maintenance Facility shall have a unit of measure per each and shall be paid for under bid item 0004AQ, Vehicle Maintenance Facility, of the Proposal Schedule (Section 00010).

5.16 TRAINING CLASSROOM BUILDING

The Training Classroom buildings shall be constructed following the standard construction drawings attached in the Appendix – titled “Training Building”.

There shall be a total of six (6) Training Classroom buildings. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Training Classroom Building shall have a unit of measure per each and shall be paid for under bid item 0004AR, “Training Classroom Building”, of the Proposal Schedule (Section 00010).

5.17 POST EXCHANGE BUILDING

The Post Exchange (PX) building shall be constructed following the standard construction drawings attached in the Appendix – titled “Post Exchange Building”.

There shall be a total of one (1) Post Exchange building. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Post Exchange Building shall have a unit of measure per each and shall be paid for under bid item 0004AS, “Post Exchange Building”, of the Proposal Schedule (Section 00010).

5.18 MWR BUILDING

The MWR building shall be constructed following the standard construction drawings attached in the Appendix – titled “MWR Building”.

There shall be a total of one (1) MWR building. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The MWR Building shall have a unit of measure per each and shall be paid for under bid item 0004AT, “MWR Building”, of the Proposal Schedule (Section 00010).

5.19 MEDICAL CLINIC

The Medical Clinic building shall be constructed following the standard construction drawings attached in the Appendix – titled “Medical Clinic-Small”.

There shall be a total of one (1) Medical Clinic building. The Contractor shall refer to the Concept Plan for the location of this facility type in relationship to other buildings and facilities on site.

The Contractor shall coordinate the construction of this facility based on the Construction Priority List, Table 7-1 in this Section. All materials, finishes, and equipment shall comply with the requirements of Section 01015.

The Medical Clinic Building shall have a unit of measure per each and shall be paid for under bid item 0004AU, “Medical Clinic”, of the Proposal Schedule (Section 00010).

6. COMPLETION OF WORK

The order of construction for all buildings and facilities shall be prioritized. The contractor shall construct in accordance with the Construction Priority Schedule and the requirements specified in Section 00150.

All work required under this contract shall be completed within 550 calendar days including Government review time from Notice-to-Proceed (NTP) for site work.

All work under this contract shall be completed and buildings ready for beneficial occupancy in accordance with the Construction Priority Schedule. The Required Period of Performance is stated in Days following the NTP/Award Date, as described in the Table 7-1 below:

Table 7-1 Construction Priorities Schedule

PRIORITY 1: 228 Days Completion from NTP
SITE WORK AND FACILITIES
Water Well
Well House and Water Well System
Water Distribution System
Wastewater Treatment Plant
Wastewater Collection System
Electrical Distribution System
Perimeter Stone Wall
Guard Towers
Entry Control Points
PRIORITY 2: 360 Days Completion from NTP
FACILITIES TO BE CONSTRUCTED
NCO Barracks
Enlisted Barracks
Large Laundry/Latrine Building
Officers Barracks
Small Latrine Building
Large Dining Facility
Small Dining Facility
PRIORITY 3: 450 Days Completion from NTP
FACILITIES TO BE CONSTRUCTED
Battalion Headquarters Building
Motor Pool Areas
Vehicle Maintenance Buildings
Vehicle Refueling Points
Arms Storage Buildings
PRIORITY 4: 550 Days Completion from NTP
FACILITIES TO BE CONSTRUCTED
All Remaining Work Items

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 senior designers of all engineering disciplines shall have a minimum of 10 years experience with the design and construction of the same magnitude and complexity as required in this project. The Contractor shall provide design and construction using the best blend of cost, construction efficiency, system durability, ease of maintenance and environmental compatibility. This section 01015 represents technical requirements to support the scope of work section 01010. These requirements are generic in nature and to be used in conjunction with the referenced codes of this specification. In case of conflict between the sections 01010 and 01015, the 01010 will supersede.

1.2 MINIMUM & ALTERNATE REQUIREMENTS

The design and product requirements stated in these documents are minimum requirements. Exceeding the minimum requirements as improvements to the design stated herein is highly encouraged at no additional cost and as approved by the government. Any deviation from the technical requirements shall be approved by the Contracting Officer. Request for deviations shall be submitted for approval. The Contractor is encouraged to propose alternate design or products (equipment and material) that are more commonly used in the region; but these variations shall be equal in performance from a technical standpoint as well as more cost effective or allow for more timely completion. Variations shall furnish the same system safety, durability, ease of maintenance and environmental compatibility. The Contractor will be required to submit information as specified in Section 01335, paragraph Variations, for all proposed variations with which to make a comprehensive comparison of the proposed alternate. All variations of approved designs 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 highly recommended that all construction ground guide/ground observation personnel maintain a minimum 16 m buffer zone from all heavy equipment during excavation activities. A daily check of the area for signs of recently emplaced UXO/IED’s is also highly recommended, to include unusual disturbed soil areas or mounds of soil from the previous day. If during construction, the contractor becomes aware of or encounters UXO/Mine or potential UXO/Mine, the contractor shall immediately stop work at the site of encounter, clearly mark the area of UXO/Mine, move to a safe location, notify the COR, and mitigate any delays to scheduled or unscheduled contract work. Once the contractor has informed the COR, the contractor will await further direction. UXO/Mine disposal will not be the responsibility of the Contractor.

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.

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, as much as possible. Standards that cannot be met or require interpretation of their usage, the contracting officer shall make the determination. If there is conflict in the criteria the contracting officer shall make the determination. This list is not exhaustive and is not necessarily complete.

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

Balance)

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

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

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

Air Force Manual 32-1071, Security Engineering, volumes 1-4, 1 May 1994

American Institute of Steel Construction (AISC), Specifications for Structural Steel Buildings (latest edition)

American Petroleum Institute (API) Codes

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

ARI - Air Conditioning and Refrigeration Institute

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

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

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

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

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

ASHRAE Standard 62.2-latest edition, Ventilation and Acceptable Indoor Air Quality for Low-Rise Residential

ASHRAE Standard 90.1-latest edition, Energy Standard for Buildings Except Low-Rise Residential Buildings

ASHRAE Standard 90.2-latest edition with Supplement, Energy-Efficient Design of Low-Rise Residential Buildings

ASME - American Society for Mechanical Engineering

ASTM - American Society for Testing and Materials

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

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

AWS D1.1, Structural Welding Code – Steel (latest edition), American Welding Society

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

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

Design Standard per Memorandum for Record, Design Standards, DTD 16 August 2009 BT, Appendix B-1 and B-2

DoD Ammunition and Explosives Safety Standards

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

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

HESCO® Bastion Concertainer® Construct Guide for Engineers

IBC - International Building Codes, 2006 edition (and its referenced codes including those inset below)

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

IFGC – International Fuel Gas Code, latest edition

IMC – International Mechanical Code, latest edition

IPC – International Plumbing Code, latest edition

Lighting Handbook, IESNA, latest edition

MIL-HDBK-1190, Facility Planning and Design Guide

National Association of Corrosions Engineers (NACE) Codes

Codes and Standards of the National Fire Protection Association (NFPA), as applicable and enacted in 2002 or later.

NFPA 1, General Fire Protection, latest edition

NFPA 10, Portable Fire Extinguishers, latest edition

NFPA 13, Fire Sprinkler Code, latest edition

NFPA 30, Flammable and Combustible Liquids Code, latest edition

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages, latest edition

NFPA 54, National Fuel Gas Code, latest edition

NFPA 55, Standard for the Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks, latest edition

NFPA 58, Liquefied Petroleum Gas Code, latest edition

NFPA 70, National Electrical Code, latest edition

NFPA 72, National Fire Alarm Code, 2002 edition

NFPA 75, Standard for the Protection of Information Technology Equipment

NFPA 80, Fire Rated Doors and Windows, latest edition

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

NFPA 96, Fire Protection for Commercial Kitchens, latest edition

NFPA 99, Health Care Facilities, latest edition

NFPA 101, Life Safety Code, latest edition

NFPA 110, Standard for Emergency and Standby Power Systems, 2005 edition

NFPA 1141, Site Fire Protection, latest edition

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

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

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

TM 5-785 Weather Data

TM 5-805-4 Noise and Vibration

TM 5-811-1 Electrical Power Supply and Distribution

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

UFC 1-300-07A Design Build Technical Requirements

UFC 3-220-03fa Soils and Geology

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

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

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

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

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

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

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

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

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

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

UFC 1-300-09N, Design Procedures

UFC 3-310-01, Structural Load Data

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

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

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

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

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

UFC 3-420-02FA, Compressed Air, latest edition

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

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

UFC 3-501-03N, Electrical Engineering Preliminary Considerations, 16 Jan 2004

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

UFC 3-520-05, Stationary Battery Areas, latest edition

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

UFC 3-550-03FA Design: Electrical Power Supply and Distribution Systems, 1 Mar 2005

UFC 3-600-01, Design: Fire Protection Engineering for Facilities, 14 Jul 2009

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

UFC 4-020-03, Security Engineering: Fences, Gates, and Guard Facilities, 14 June 2007

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

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

UFC 4-229-01N, Design: General Maintenance Facilities, latest edition

UFC 4-722-01, Design: Dining Facilities, 27 January 2003

UL Standards (as applicable)

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

UL 752, Bullet Resisting Equipment, 2000 or later

USCINCCENT OPORD 97-1

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

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

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

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

AED Design Requirements - Site Layout Guidance, latest version

AED Design Requirements – Water Tank and Water Distribution Systems, latest version

AED Design Requirements – Hydrology, latest version

AED Design Requirements - Culvert and Causeway Design, latest version

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

AED Design Requirements - Vertical Curves, latest version

AED Design Requirements – Horizontal Curves & Super elevation , latest version

AED Design Requirements – Geotechnical Investigations for USACE Projects, latest version

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

1.9 AED DESIGN REQUIREMENTS DOCUMENTS

AED Design Requirements documents (latest version) listed above shall be adhered to in this contract. These documents are available from the COR. These documents shall be used as the basis for design and construction, and for selecting options within the United Facilities Guide Specifications (UFGS). It is the contractor's option to use specifications contained in the AED Design Requirements Documents, when provided, or to adapt the UFGS specifications to match the requirements provided in the AED Design Documents and specifications. Site or project

specific data and requirements in the AED Design Requirements documents shall supersede UFGS language where there are differing criteria which must be evaluated and selected.

2.0 SITE DEVELOPMENT

2.1 ENVIRONMENTAL PROTECTION

2.1.1 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.

2.1.2 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.

2.1.3 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.

2.1.4 DISPOSAL

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

2.2 CIVIL SITE DEVELOPMENT

2.2.1 EXISTING CONDITIONS MAP AND SITE PLAN

The Contractor shall prepare an Existing Conditions Map of the property including a Boundary and Site Survey. The survey shall show the closure of the property boundary consisting of identifying all property corners, establishing horizontal and vertical control, listing all bearing and distances of property lines from all property corners, and tie-ins (showing bearing and distance) from at least two (2) major offsite man-made or natural features. This survey shall meet the requirements of World Geodetic System 1984 (WGS 84 UTM Zone 41North in decimal degrees). The Existing Conditions Map shall include topographic information with existing contour lines and spot elevations of relevant topographic features, and show the locations of all on-site and nearby offsite existing features including but not limited to buildings, structures, major trees, road pavements and right of ways, names of roads, widths of roads, easements, right of way, setbacks, parking, paved areas, storage containers, stoops, sidewalks, walkways, walls, fences and gates, barriers, and existing underground and aboveground utilities, dry creek beds, drainage channels, etc. and hydrological, geological, and vegetative or other physical conditions that could impact design. If there are areas where offsite surface water runoff has the potential to affect this project, topographic information of these areas will be required to be provided.

Based on the Boundary Survey a separate Site Plan shall be prepared showing the property boundary, and all proposed surface features including but not limited to buildings, roads, setbacks, parking and paving areas, storage containers, stoops, sidewalks and walkways, above ground utilities, bunker locations. The contractor shall identify and show perimeter walls, fences and gates. Also shown on the Site Plan shall be pertinent existing features (on-site and off-site) that will have an influence or impact on the development of the site. The Contractor shall locate the

facilities in agreement with the associated drawings included and any requirements in Section 01010. All site features shall be clearly defined and dimensioned on the Site Plan. Buildings shall be located to provide access for emergency vehicles and fire fighting. Roads and parking areas shall be designed for turning radius of the largest vehicle entering the compound. The site plan shall show geometric design of the site, including applicable dimensions of all exterior facilities, mechanical equipment, utilities, etc. Required facilities are described in the following sections of this specification. All site plans and master plans shall be drawn in the following projection and datum for incorporation into the USACE GIS system:

WGS 1984 UTM Zone 41 North

The Contractor shall conduct a utility survey to determine the locations of any nearby security fences and buildings, water lines, wells, sanitary sewers, storm sewers and communication/electrical lines. The Contractor shall provide survey for all stormwater outfall piping locations where the contractor is tying into the existing stormwater drainage system.

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

Wastewater Lagoon Site Survey. The Contractor shall conduct a topographic survey to determine existing site characteristics. The Contractor shall conduct a utility survey to determine the locations of any nearby security fences and buildings, water lines, wells, sanitary sewers, storm sewers and communication/electrical lines. The Contractor shall provide survey for all outfall piping locations and the outfall area in the existing wadi to include topographic survey of a minimum of 20 m on both sides of the proposed outfall location.

Waste water Treatment Lagoon Layout. The Contractor shall design a layout for the system to include all lagoon geometry, waste water inlet and off loading station configurations, number of process compartments, yard piping, bypass valves, surface aerators and disinfection equipment and piping, effluent contact chambers and discharge facilities including the outfall system, and sludge drying, sludge drying water recirculation piping, grey water irrigation pond and pumps and related site preparation and earthwork.

2.2.2 DEMOLITION

Demolition shall include removal of all structures, foundations, pavements, and utilities, and clearing and grubbing. Holes and depressions shall be backfilled.

2.2.3 SITE GRADING & DRAINAGE

The Contractor shall provide all necessary site grading to insure adequate drainage so that no areas will be flooded due to a rainfall of a 20-year frequency.

Proper drainage calculations shall be conducted in order to size drainage structures and channels properly.

Rainfall data shall be based on data obtained from meteorological records collected in Afghanistan. National agencies may be consulted for data. In the absence of site specific data, intensity-duration-frequency curves contained in the AED Design Requirements – Hydrology-most recent version shall be used by extrapolating the rainfall intensity information from the stations in closest proximity to the project.

Under no circumstances will relationships developed by extrapolation of hydrological data from foreign countries be used for hydrologic studies.

2.2.4 ROADS

Location, type, and width of roads required are stated in Section 01010. Roads shall be geometrically designed, graded for proper drainage and provided with necessary drainage structures. 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 preexisting conditions are determined to be substantially or materially different than the above-described conditions/estimates.

The centerline of all roads shall be sloped a minimum of 1% and a maximum of 8%.

The roads shall be capable of withstanding traffic of 18,000-kg vehicles. All roads shall be designed geometrically with applicable sections of UFC 3-250-18FA and UFC 3-250-01FA to accommodate WB-50 five axle vehicles with a maximum speed of 20 kilometers per hour. Pavement surfaces shall be designed for a design life of 25 years, Road Class F, Category IV.

All intersecting roads, foot paths, driveways, and culvert crossings are required to end with a smooth transition to the new road alignment. The Contractor shall show spot elevations of the existing terrain at all road tie in locations on the site plans.

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

At a minimum the asphalt pavement shall consist of the following:

1. 100 mm Hot Mix Asphalt compacted to optimum compaction placed in 50 mm lift thickness
2. 150 mm Aggregate Base Course at 100% compaction
3. 300 mm Aggregate Subbase at 100% compaction
4. 150 mm natural or select fill, scarified and compacted to 95%

2.2.5 SIDEWALKS/FIRE LANES AND AGGREGATE PAVED AREAS

The Contractor shall provide 1.5 m wide concrete sidewalks between buildings, parking areas, and other logically anticipated areas to serve as pedestrian foot paths. The Contractor shall assume these above stated standards throughout this document unless otherwise noted.

For emergency access, each building or facility shall have 3.0 m wide fire lanes on three (3) sides. Fire lanes shall consist of 100 mm thick aggregate. This is in compliance with NFPA 2008, Section 6.2.1. Sidewalks may be used as fire lanes if the footpaths are at a minimum of 3.0 m wide concrete and designed to accommodate vehicular traffic.

The Contractor shall pave all areas listed in Section 01010 as requiring aggregate paving with 100 mm thick crushed stone aggregate.

The pavement structures dictated above are minimum requirements. Design of sidewalks and aggregate paved areas shall be conducted based on geotechnical data. The geotechnical data shall be used to calculate the pavement structure using the minimum pavement structure as dictated above as a reference. Reference Section “Geotechnical” below.

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

Parking areas, motor pools and areas requiring aggregate paving per Section 01010 shall consist of 100 mm thick compacted aggregate base course compacted to 100% maximum density placed above 150 mm thick of scarified sub-grade compacted to 95% maximum density, unless otherwise noted.

Provide 1.0 m wide shoulder around all parking areas and motor pools consisting of 100 mm thick aggregate base course material at 2.0% slope.

2.2.6 FORCE PROTECTION DESIGN

The Contractor shall design and construct force protection measures. The Force Protection design shall incorporate minimum setbacks for new facilities to maximum extent possible as permitted by size of the site and the requirements of the user. Force Protection design shall also meet the requirements of UFC 4-010-01, Design: Minimum DoD Antiterrorism Standards for Buildings, 8 Oct 2003 and UFC 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings, 8 Oct 2003. For all fire lane design see International Fire Code (IFC) latest edition.

2.2.6.1 CHAIN-LINK FENCE AND GATES

Provide chain-link fences and gates where required. Chain link fence and gate fabric shall be No. 9 gage wires woven into a 50 mm diamond mesh. Fabric shall be coated with 366 grams per square meter zinc galvanizing. Posts shall be ASTM F 1083 Pipe, Steel, Hot Dipped Zinc Coated (Galvanized) Welded or equal. Top of fence and gates shall be provided with outriggers and reinforced barbed tape as indicated above. Post sizes shall be as shown on drawings.

The gates shall be swing type. Hinged gates shall be a pair of 3.65 m wide x 2.4 m high leafs, constructed of a steel tube frame and steel tube intermediate posts and rails. The design of the gates shall insure that it is dimensionally stable, square, true and planar. Gate leafs shall not rack or deflect when installed on its hinges. Gates shall have a sufficient number of hinges, anchor mounted to the exterior masonry walls, to support each gate leaf. Provide a locking mechanism that holds the gates together when in the closed position as well as a drop bolt that engages a steel sleeve embedded in the pavement.

2.2.6.2 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.

2.2.6.3 REINFORCED BARBED TAPE

Reinforced barbed tape shall be 600 mm diameter concertina style coil consisting of 31 loops. Each loop shall consist of 19 barb clusters per loop. Adjacent coils loops shall be alternately clipped together at three points about the circumference to produce the concertina effect upon deployment. Spacing between attachments points when deployed shall be 400 mm. The reinforced barbed tape shall be fabricated from 430 series stainless steel with hardness range of Rockwell (30N) 37-45 conforming to the requirements of ASTM A 176. Each barb shall be a minimum of 30.5 mm in length, in groups of 4, spaced on 102 mm 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.

2.2.6.4 PERIMETER STONE WALL

Native stone masonry walls, 600 mm thick, shall be constructed around the perimeter of the site. The height of the walls shall measure at least 3 m from the inside grade. Inside grade shall in all cases be higher than outside grade. The wall shall be capped with a cast-in-place concrete capping. Outriggers shall be installed to support barbed wires and 2 strands of concertina style razor wire. The ground grade shall slope away from the wall for at least 5 m and shall be kept a minimum of 2.5 m below the top of wall for a minimum distance of 10 m. The wall shall be designed to prevent visual access to the inside of compound by all pedestrian and vehicular traffic outside the compound which may require the wall to be built at a higher level in some locations. Any penetrations through the Perimeter Security Wall shall only be for site drainage purposes and shall have force protection such as a welded bar grill, welded grating, or other pre-engineered barrier. Details of any penetrations shall be produced by the contractor and provided in the design drawings.

2.2.6.5 PERIMETER WALL ACCESS GATES

2.2.6.5.1 SLIDING STEEL GATES

Gates shall be K4 sliding type. Gate shall be 3 m high 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 diameter solid steel. The sliding gate will also have a built- in personnel gate with its own locking mechanism.

2.2.6.6 ENTRY CONTROL POINT (ECP)

The new Secondary ECP shall be laid out and constructed by the Contractor to facilitate secure entrance of authorized vehicles into the compound. A Guard House shall be provided inside the compound as part of the ECP. Entrance to the ECPs shall be paved, and shall have a single-leaf manually operated sliding steel gate. The gate shall be considered the Active Vehicular Barrier (AVB). A drop arm and guard shack shall be provided and located at a distance of one and a half vehicles away from the entrance to serve as a checkpoint. Jersey Barriers or other approved alternatives shall be used to design and construct a Passive Vehicular Barrier (PVB) beyond and away from the checkpoint to significantly slow down approaching vehicles. The PVB shall be laid out to force approaching vehicles into a snake-like manoeuvre while approaching the checkpoint and to significantly slow them down.

Provide a rejection lane after vehicle inspection and before entrance to the compound to allow rejected vehicles to circle back to the entrance road without interruption of the queue.

2.2.6.6.1 VEHICLE BARRIERS

2.2.6.6.1.1 ACTIVE BARRIERS - DROP ARM GATES

The height of the beam shall be a minimum of 762 mm above finished grade. The crash beam must be capable of blocking a minimum road width of 4.0 m. The crash beam shall be manually raised and lowered with less than 133 Newtons 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 (4500 kg) trucks, in addition to heavy duty steel gates into the compound.

The gate shall be designed to accommodate a vehicle that is 6 m high (including gunners nest). Show a sketch in the design drawings of how the arm will clear the vehicle and gunners nest.

2.2.6.6.1.2 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 CIVIL UTILITIES

2.3.1 WATER

2.3.1.1 GENERAL

The Contractor shall provide water distribution mains, branches, service connections to include all pipe, valves, bends, thrust blocking, fittings and appurtenances. Exterior water line construction shall include service to all buildings as described in the Scope of Work Section 01010. The required average daily flow (ADF) shall be the average daily demand (ADD) per person - derived from 155 liters per capita per day (lpcd) – times a capacity factor, times the effective population. A capacity factor of 1.5 shall be used. The capacity factor shall be utilized as described in the following paragraph.

In the event potable or non-potable use water is required prior to completion of the water facilities infrastructure the Contractor may be issued a Request for Proposal to provide non-potable (tank truck) and potable (bottled or other reliable source) consumption.

Provide a minimum of one (1) outside water hydrant (hose spigot) for all buildings with water service. Every hose spigot shall have a lockable valve on its water line located inside an adjacent building or in a valve box. All buildings with water supply shall have a water meter installed in a locked cabinet area inside the building.

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

- Water Well Pump Capacity - Capacity and total dynamic head (TDH) shall be based on an adjusted ADF (ADD, times the population, times the capacity factor) over a 16 hour period).

- Water Tanks - Capacity shall be based on ADF (ADD x c x CF x 3).

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

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

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

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

2.3.1.2 WATER WELLS

The Contractor shall construct water well(s) inside the compound, to provide sufficient supply for the facility. The water well pump capacity and Total Dynamic Head (TDH) shall be based on an adjusted ADF (ADD, times the population, times the capacity factor) over a 16 hour period. The new well capacity shall have an allowable safe yield determined by a well pump test as described in the USACE-AED Design Requirements - Well Pumps & Well Design/Specifications, latest version. The new well site shall be at a location approved by the Government. The new well site shall be no closer than 60 meters from any existing wells. Well construction shall be in accordance with the USACE-AED Well Design Guide and Water Well Guide Specification. If installation of one or more wells with sufficient yield is not possible within the compound, the Contractor shall immediately notify the COR for resolution. Off-site water wells may then be considered upon approval by the COR.

After de-mining, if applicable, but prior to the construction of any structures, the Contractor shall submit a well test plan, drill and test the water well, conduct well design activities, conduct a chemical analysis of the water, and submit all required information to AES for review prior to installing any permanent well features. A plan for decommissioning dry wells shall be included with the well drilling plan. It is acknowledged that water may not be available at the site despite Contractor good faith efforts to find it.

Well construction shall be in accordance with AED Design Requirements - Well Pumps & Well Design/Specifications, latest version - which includes, but is not limited to, requirements for well screen, casing, gravel pack, well pump, disinfection, water meters and testing requirements. All design requirements, material specifications, and testing contained in this document shall be used and submittals shall be made promptly in accordance with Section 01335. Failure to follow the construction and submittal procedures outlined may, at AED's discretion, result in rejection of the well and, the Contractor having to remove the well casing and screen, re-drill the well and reinstall the proper features per the approved design.

<u>Well Depth.</u> The Contractor shall drill a minimum of two wells to a minimum depth of between 350 meters and 400 meters in an attempt to find potable water meeting WHO water quality requirements. The depth of the permanent well shall take into consideration the drawdown depth, screen depth and pump submergence. If water cannot be found the Contractor shall immediately notify the Contracting Officer's Representative (COR). The Contractor will be considered to have fulfilled the terms of the contract and will be entitled to the full price of the contract CLIN for Water Well.

Casing. Selection of the casing diameter, material and depth shall be per the AED Design Requirements document. In unconsolidated material, casing shall extend to the top of the well screen. In rock formations (drilled wells) the hole may be left open (i.e., well screen not required) with casing extended 3 m into the rock formation. All wells will be cased 610 mm above grade (i.e., base of pit, ground surface, etc.) and be fitted with a lockable cap with air gap (vacuum relief during pumping). Each section of casing will be joined with standard couplings and full-threaded joints, or by proper welding, so that all joints are sound and watertight. Well casing alignment shall not interfere with the proper installation and operation of the pump. The bottom of the casing shall be fitted with a metal or PVC well screen that will permit maximum transmission of water without clogging. The minimum length of screen shall be at least 3 m.

Sealing: The drilling process shall create a hole (borehole) larger than the casing (minimum of 2 inches). The annular space between the casing and the borehole will be filled with gravel, overburden, or concrete as follows:

a. The annular space between the well screen and borehole shall be filled with material that will form a filter to minimize production of fines and not clog the slots in the screen (e.g., washed, well-graded silica sand).

b. The annular space above the filter pack up to the base of the grout seal may be backfilled with overburden or other clean earth material.

c. The upper 3 m of the well bore shall be sealed with neat cement grout. The grout shall be placed in one continuous mass and shall be impermeable.

d. Crushed stone for well sealing shall consist of crushed stone containing angular shapes and surfaces with no rounded surfaces with the following gradation:

Sieve Size	% Total Wt. Passing
12.5 mm	100
4.75 mm	75 ± 13
1.18 mm	25 ± 15
75 µm	8 ± 4

e. All aggregate shall contain less than 5 percent of shale, clay lumps, coal, lignite, soft or unfragmented stone, or other deleterious materials.

Well screen, casing, gravel pack, well pump, disinfection, and testing requirements for well construction shall meet the specifications and design requirements in *AED Design Requirements - Well Pumps & Well Design/Specifications*, June 2009, or most recent version.

Screen. The casing will be fitted with a well screen that will permit maximum transmission of water without clogging. The material of construction, opening requirements, minimum lengths and placement shall be per the AED Design Requirements document. **Screens shall not be installed throughout the depth of the well. Screening shall only be installed in the deepest targeted aquifer.**

Source Protection: Surface drainage within 30 m of the wellhead shall ensure no ponding, flooding, or collection of runoff adjacent to the well. This can be accomplished through surface grading or use of gravel drains to modify site drainage in the vicinity of the well. The Contractor shall identify all sources of contamination and ensure the proposed well site meets minimum standoff distances as indicated below:

Sewage storage areas (outhouses, tanks, individual sewage pits, lagoons, and WWTP) – 30 m

Septic fields (infiltration galleries) – 30 m

Fuel storage, engine maintenance/repair – 30 m

Expansion Tank – Provide bladder style expansion tank for the well pump to minimize pressure surges and water hammer effects.

2.3.1.3 WATER QUALITY CONTROL AND TESTING

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 requirements for laboratory testing shall be addressed in accordance with USACE-AED Well Pumps & Well Design Guide with Attachment A – Guide Specifications for Drinking Water Wells, latest version for requirements for laboratory testing.

2.3.1.4 WELL WATER PUMPS

An electric submersible well pump will fill the above ground water tank. The well pump shall be installed inside the casing set no less than 3 m above the screen or in casing between screened intervals a minimum of 3 m above and below the screens. Pumps shall not be located in a screened interval. Control of the pump shall be by means of a Hand-Off-Auto (HOA) switch. In the "Auto" position, the pump shall be started and stopped automatically by water levels in the water storage tank. Pump shall start at low level and shall stop at high level. Level controls shall be adjustable. Manual start shall be the Hand position.

2.3.1.5 RAW WATER DISINFECTION

Contractor shall perform disinfection of the well water in accordance with AED Design Requirements - Well Pumps & Well Design/Specifications, latest version.

Bacteriological samples shall be collected and examined in accordance with Standard Methods for the Examination of Water and Wastewater by a qualified lab as approved by the Contracting Officer.

2.3.1.6 SERVICE BOOSTER PUMPS

Contractor shall provide a booster pump station to provide water to the water distribution system. The system shall be equipped with hydropneumatic surge tank(s). Service booster pumps shall be end suction or split case double suction horizontal split case (frame mounted) centrifugal pumps arranged in parallel for pumping water storage into the water distribution system. The pumps and controls shall be designed to supply and maintain acceptable system pressure to the water distribution system. 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.

Three identical pumps shall be provided. Two pumps shall alternate to distribute wear (with one as a back-up) and shall automatically turn on and off based on demand. The booster pump system shall be enclosed in a CMU booster pump building per the drawings titled "Booster Pump Building" in Appendix B.

2.3.1.6.1 HYDRO-PNEUMATIC SURGE TANK(S)

The Contractor shall provide horizontally mounted and insulated above ground surge hydro-pneumatic tank(s) containing water and compressed air located adjacent to the water pumps to maintain pressure during surges. A compressor is required to charge the tank with air, or a pre-charged bladder type tank may be used. At low level the water remaining in the tank(s) shall be at least ten percent of the capacity of the tank. The tank(s) size shall be determined such that the pump cycles not less than 4 times per hour or more than 10 times per hour.

2.3.1.7 WATER STORAGE TANK

Contractor shall provide a steel ground storage tank(s) (GST) to be located on the ground surface and sized per Section 01010. 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. The tank shall meet all applicable codes for potable water storage. The interior coatings for the tank shall meet NSF/ANSI 61 requirements.

2.3.1.8 DISINFECTION & CHLORINATION SYSTEM

The Contractor shall test water for World Health Organization (WHO) potable drinking water standards and if treatment is required, the Contractor shall immediately notify the Contracting Officer. Regardless of water quality the Contractor shall provide and install a water disinfection system. The chlorination system shall be enclosed in the booster pump building.

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) 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 day 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.

2.3.1.9 WATER DISTRIBUTION CHLORINE BUILDING

The Contractor shall design and construct a 35 m^2 CMU Chemical Building for housing the chlorination system and storage of chemicals. The Chemical Building shall have an emergency eye wash station, one (1) stainless steel sink and water source for mixing chemicals. The chemical building shall be adequately vented to maintain a safe working environment and per the chlorine manufacturer's requirements. The Contractor shall provide manufacturers catalog information and shop drawing to the Contracting Officer for approval.

2.3.2 WATER DISTRIBUTION SYSTEM

2.3.2.1 GENERAL

The Contractor shall provide a water distribution system. The distribution network shall be laid out in a combination grid and looped pattern with dead ends not exceeding 30 m. Use similar piping materials for all buildings and pipe runs in the distribution system for efficiency of future maintenance activities. Dead end sections shall not be less than 150 mm 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 150 mm in diameter. Water supply distribution shall connect to a building service at a point approximately 1.5 m outside the building or structure to which the service is required. All piping and joints shall be capable of at least 1.03 MPa leakage testing and 1.38 MPa hydrostatic pressure test, unless otherwise specified. Pipe diameters shall be adequate to carry the maximum flow of water at velocities less than 1.5m/sec. Piping segments where velocities less than 0.15 m/sec are anticipated shall be noted and brought to the attention of AES. The operating pressure range shall be between 345 kPa to 414 kPa at all points of the distribution system. If pressures greater than 690 kPa cannot be avoided, pressure-reducing valves shall be used. A system pressure of 30 psi is acceptable at extreme peak flow conditions. A system pressure below 30 psi shall be considered a deviation in the technical requirements requiring Contracting Officer approval.

Contractor shall not use HDPE pipe and fittings, regardless if existing project water distribution system had this pipe material.

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

2.3.2.2 PIPE

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

2.3.2.2.1 WATER MAINS AND BRANCHES

Water main diameter shall be based on the installation fixture unit flow or two times the ADF (ADD x c x CF) and velocity requirements per this guide unless a minimum diameter is specified which is adequate to provide flow and meet the specified maximum velocity. Pipe material for water mains and branches shall be PVC or Ductile Iron (DI). The exterior surface of the pipe must be corrosion resistant. Distribution lines shall not be less than 100mm in diameter. Pipe diameters shall be 100mm and larger. Pipe diameters shall be selected to meet the previously specified flow, velocity, and pressure conditions. If Ductile Iron (DI) pipe is installed underground the pipe shall be encased with polyethylene in accordance with AWWA C105. Ductile iron pipe shall conform to AWWA C104. DI fittings shall be suitable for 1.03 MPa pressure unless otherwise specified. Fittings for mechanical joint pipe shall conform to AWWA C110. Fittings for use with push-on joint pipe shall conform to AWWA C110 and C111. DI fittings shall be cement mortar lined (standard thickness) in accordance with C104. All pipes and joints shall be capable of at least 1.03 MPa leakage test and and 1.38 MPa hydrostatic pressure test unless otherwise specified herein. Polyvinyl Chloride (PVC) pipe shall conform to ASTM D 1785. Plastic pipe coupling and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. PVC screw joint shall be in accordance with ASTM D 1785, Schedules 40, 80 and 120. PVCu 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, PVCu (or uPVC) pipe and fittings shall have SDR that provide equal or superior strength properties to ASTM 1785 SCH 40 or SCH 80 pipe and fittings.

2.3.2.2.2 WATER SERVICE

Water service line diameter based on fixture units of the building serviced or per contract. Building service lines will be sized according to the following guidance. Water service connections from the mains to the buildings shall vary from 19mm, 25mm, 38mm, 75mm, to 100mm as calculated, depending on the maximum flow velocity and minimum pressure requirements as determined by hydraulic analysis of fixture flows. Pipe service connections from the distribution main to the building shall be either Polyvinyl Chloride (PVC) plastic Schedule 80 ASTM D 1785 or copper tubing conforming to ASTM B 88M, Type K, annealed. PVC pipe couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. Contractor shall not use HDPE for any of the water pipes.

2.3.2.3 HYDROSTATIC, LEAKAGE AND DISINFECTION TESTS

The Contracting Officer will be notified not less than 48 hours in advance of any water piping test and will be given full access for monitoring testing procedures and results. Where any section of water line is provided with concrete thrust blocking for fittings or hydrants, tests shall not be made until at least 5 days after installation of concrete thrust blocking, unless otherwise approved. Pressure and leakage testing shall be as specified in AED Design Requirements – Water Tank and Water Distribution Systems, latest version.

2.3.2.4 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 1.38 MPa. Each valve shall be opened and closed several times during the test. Exposed pipe, joints, fittings, hydrants and valves shall be carefully examined during the partially opened

trench test. Joints showing visible leakage shall be replaced or remade as necessary. Cracked or defective pipe, joints, fittings, hydrants and valves discovered following this pressure test shall be removed and replaced and retested until the test results are satisfactory.

2.3.2.5 LEAKAGE TEST

Leakage tests shall be conducted after all pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least 2 hours, and, during the test, water lines shall be subjected to not less than 1.01 MPa. 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 34.5 kPa of the specified leakage test pressure after the pipe has been filled with water and all air expelled. Pipe installation will not be accepted if leakage exceeds the allowable leakage, as determined by the following formula:

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

L = Allowable leakage in gallons per hour

N = Number of joints in the length of pipeline tested

D = Nominal diameter of the pipe in inches

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

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

2.3.2.6 BACTERIOLOGICAL DISINFECTION

2.3.2.6.1 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.

2.3.2.6.2 SAMPLING

For each building connected to the water system, personnel from the Contractor's commercial laboratory shall take at least 3 water samples from different points, approved by the Contracting Officer, in proper sterilized containers and perform a bacterial examination in accordance with approved methods. The commercial laboratory shall be verified to be qualified by the appropriate authority for examination of potable water. Contractor shall submit a water sampling protocol for approval. This shall include at a minimum the name of the laboratory, parameters to be tested, the Company conducting the sampling, and the sample locations.

2.3.2.6.3 ACCEPTANCE REQUIREMENTS

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

2.3.2.6.4 TIME FOR MAKING TESTS

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

2.3.2.6.5 CONCURRENT TESTS

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

2.3.2.6.6 VALVES

Valves (Gate valves w/box) shall be placed at all pipe network tees and cross intersections, and the number of valves shall be one less than the number of lines leading into and away from the intersection. For isolation purposes valves shall be spaced not to exceed 3600 mm (12 feet). Gate valves shall be in accordance with AWWA C 500 and/or C509. Butterfly valves (rubber seated) shall be in accordance with C504 etal. The valves and valve boxes shall be constructed to allow a normal valve key to be readily used to open or close the valve. Provide traffic-rated valve boxes. Provide concrete pad, 1 m square, for all valve boxes.

2.3.2.6.7 VACUUM AND AIR RELEASE VALVES

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

2.3.2.6.7.1 BLOW-OFF VALVES

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

2.3.2.7 THRUST BLOCKING

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

For piping that has **restrained joints** and **less than** 100 mm diameter, thrust blocking is not necessary.

2.3.3 SANITARY SEWER

2.3.3.1 GENERAL

Sanitary sewers less than 1.25 meters under road crossings shall have reinforced concrete cover at least 150 mm thick around the pipe. Concrete cover will extend out to at least 1 m from each road edge.

Exterior sanitary sewer line construction shall include service to all buildings as described in the Scope of Work Section 01010. Contractor shall design sanitary sewer collection system using approved field survey data and finished floor elevations. Depending upon the topography and building location, the most practical location of sanitary sewer lines is along one side of the street. In other cases they may be located behind buildings midway between streets. Main collection sewers will follow the most feasible route to the point of discharge. The sewer collection system shall be designed to accommodate the initial occupancy and a reasonable expansion capability. Sewer collection capacity shall be based on the two times the average daily wastewater flow unless minimum diameter specified is adequate to provide flow and required maximum velocity; wastewater flow through the system shall be distributed on the basis of fixture unit flow in each the buildings serviced by multiplying the proportion of the total fixture flow from each building or facility times the total wastewater flow for the project or installation as determined above.

All sewers shall be located outside of the roadways as much as practical, and minimize the number of roadway crossings. To the extent practical, a sewer from one building shall not be constructed under another building, or remain in service where a building is subsequently constructed over it.

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

1) Follow slopes of natural topography for gravity sewers.

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

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

4) Depending upon the topography and building locates, the most practical location of sanitary sewer lines is along one side of the street. In other cases they may be located behind buildings midway between streets. The intent is to provide future access to the lines for maintenance without impacting vehicular traffic.

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

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

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

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

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

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

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

2.3.3.2 PROTECTION OF WATER SUPPLIES

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

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

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

3) Sanitary sewers crossing above potable water lines shall be constructed of suitable pressure pipe or fully encased in concrete for a distance of 3 m 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 m horizontally to the crossing, unless the joint is fully encased in concrete.

4) When sanitary sewers cross water lines the designer shall cross the water line above the sewer line whenever possible. In such cases the water line shall be located a minimum distance of 450 mm above the sewer line or shall be fully encased in concrete for a distance of 3 m on each side of the crossing.

2.3.3.3 GRAVITY SEWER

Sanitary sewers shall be designed in accordance with the AED Design Requirements for Sanitary Sewer and Septic Systems, latest version to flow at a maximum in the following way:

1) Sanitary sewer laterals, mains and trunk lines flow velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps).

2) A minimum velocity of 0.8 mps at the peak diurnal flow rate.

3) Flows shall be based on allocating the proportion of the average daily or peak daily flow to each building or facility on the basis of fixture unit flow developed for the plumbing design.

4) Minimum pipe slopes shall be provided regardless of the calculated flow velocities to prevent settlement of solids suspended in the wastewater. Minimum pipe slopes are provided in the AED Design Requirements for Sanitary Sewer and Septic Systems.

Unless otherwise indicated (see Building Connections and Service Lines), gravity sewer pipe shall be installed in straight and true runs in between manholes with constant slope and direction. Adequate cover must be provided for frost protection. A minimum cover of 800 mm will be required to protect the sewer against freezing.

2.3.3.4 SITE SELECTION FOR SUBMERSIBLE INFLUENT SEWAGE LIFT STATION

The Contractor shall locate sewage lift stations as needed based primarily on topographic considerations. The lift stations will be located, so that all points within the intended service areas of the facility can be served adequately by gravity sewers en route to the lift station.

2.3.3.4.1 SUBMERSIBLE INFLUENT LIFT STATION PUMP CAPACITY

The number and capacity of pumps provided will be sufficient to discharge minimum, average, peak daily and extreme peak flow rates as calculated in TM 5-814-1/AFM 88-11, Vol 1 or UFC 3-240-08FA. Pumping capacity will be adequate to discharge the peak flow rates with the largest pump out of service.

Each pumping unit will be a constant speed type, and will be capable of discharging the extreme peak flow rate. Influent lift stations will be used to pump major wastewater flows to the treatment facility and operate on a continuous basis. The rate of pumpage must change in increments as the flow to the station varies. The Contractor will provide two or more wastewater pumps of the constant speed type, as required to match the incoming flow rate.

2.3.3.5 MANHOLES

The Contractor shall provide standard depth manholes (MH), (depth may vary) an inside dimension of 1.2 m. Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover. Alternate pre-cast manhole option shall taper to a 750 mm cast iron frame that provides a minimum clear opening of 600 mm. In every case, the manholes, frames and covers shall be traffic rated, H-20 load rating. All manholes shall be provided with a concrete bench with a flow line trough, smoothly formed to guide waste flow to the outlet pipe from the inlet pipe(s). The top surface of the bench shall be above the crown of all pipes within the manhole. All surfaces of the bench shall be sloped smoothly toward the trough to guide flow, even under peak flow conditions. Sanitary sewer

lines shall enter at the manhole flow line. Where the invert of the inlet pipe would be more than 0.5 meter above the manhole floor, a drop inlet shall be provided. No internal drop structures shall be permitted at lift stations. Inlet to lift station wet wells shall enter below the lowest water level of the pump operating range, and if necessary a drop inlet approach pipe external to the lift station may be used to avoid cascading influent flow. The angle between inflow and outflow pipes converging at a manhole shall not be less than 90°.

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

2.3.3.5.2 SPACING

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

2.3.3.5.3 PIPE CONNECTIONS

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

2.3.3.5.4 FRAMES AND COVERS

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

2.3.3.5.5 STEPS FOR MANHOLES

Steps shall be cast iron, polyethylene coated, at least 15 mm thick, not less than 400 mm in width and spaced 300 mm on center.

2.3.3.6 PIPE

Pipe shall conform to the respective specifications and other requirements as follows: Provide Polyvinyl Vinyl Chloride (PVC) conforming to ASTM D 3034, Type PSM with a maximum SDR of 35, size 380 mm or less in diameter. PVC shall be certified as meeting the requirements of ASTM D 1784, cell Class 12454 B. Minimum pipe sizes for the main lines and laterals shall be 200 mm diameter and service lines shall be a minimum of 150 mm diameter. Contractor may use uPVC pipe provided the SDR and strength properties of the pipe equal or exceed the properties of ASTM D 1784 for PVC.

2.3.3.6.1 FITTINGS

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

2.3.3.6.2 JOINTS

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

2.3.3.6.3 BRANCH CONNECTIONS

Branch connections shall be made by use of regular fittings or solvent-cemented saddles as approved. Saddles for PVC pipe shall conform to Table 4 of ASTM D 3034. The minimum depth of the cover over the pipe crown shall be 0.8 m.

2.3.3.6.4 BUILDING CONNECTIONS AND SERVICE LINES

Building connections and service lines will be planned to eliminate as many bends as practical and provide convenience in rodding. Bends greater than 45 degrees made with one fitting should be avoided; combinations of elbows such as 45-45 or 30-60 degrees should be used with a cleanout provided. Connections to other sewers will be made directly to the pipe with standard fittings rather than through manholes. However, a manhole must be used if the connection is more than 30 m from the building cleanout. Tee connections to the main or branch are not allowed. Service connection lines will be a minimum of 150 mm diameter and laid at a minimum 1% grade. Laterals shall be 200 mm and sloped to maintain the minimum velocity as described in paragraph “Gravity Sewer.”

2.3.3.6.5 CLEANOUTS

Cleanouts must be installed on all bends of sewer-building connections to provide a means for inserting cleaning rods into the underground pipe. Install manufactured wye fittings. In lieu of a wye fitting, an inspection chamber may be installed. The inspection chamber shall be of the same construction as a manhole. The cleanout will be of the same diameter as the building sewer, and never be smaller than 150 mm. If there are no bends in the sewer building connection, a cleanouts shall be installed within 1 m from the building.

2.3.3.7 GREASE TRAP

Grease traps are used to remove grease from wastewater to prevent it from entering the sanitary sewer and septic systems. All Dining Facilities (DFACs) shall incorporate preliminary treatment with use of a grease trap prior to the sanitary sewer system. The only waste lines upstream of the grease trap shall be grease laden waste from the kitchen or other areas. Grease trap design shall be based on AED Design Requirements - Grease Trap, latest version. The grease trap shall be of reinforced cast-in-place concrete, reinforced precast concrete or equivalent capacity commercially available steel, with removable three-section, 9.5 mm checker-plate cover, and shall be installed outside the building. Steel grease trap shall in be installed in a concrete pit and shall be epoxy-coated to resist corrosion as recommended by the manufacturer. Concrete shall have a minimum compressive strength of 21 MPa at 28 days. The grease trap shall connect to the sanitary sewer system.

Contractor shall provide bollards around the tank and construct a minimum 4 m wide access road from the closest roadway to the grease trap for a pump truck. The access road shall be of the same material as the main roads in the compound. Under no circumstance shall the grease interceptor be installed inside the building. Provide outside water spigot for cleaning.

2.3.3.8 FIELD QUALITY CONTROL

2.3.3.8.1 FIELD TESTS AND INSPECTIONS

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

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

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

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

Perform Low Pressure Air tests as follows:

1) Concrete pipe: Test in accordance with ASTM C 924M, ASTM C 924. Allowable pressure drop shall be given in ASTM C 924M ASTM C 924. Make calculations in accordance with the Appendix to ASTM C 924M, ASTM C 924.

2) Ductile-iron pipe: Test in accordance with the applicable requirements of ASTM C 924M, ASTM C 924. Allowable pressure drop shall be as given in ASTM C 924M, ASTM C 924. Make calculations in accordance with the Appendix to ASTM C 924M, ASTM C 924.

3) PVC Plastic pipe: Test in accordance with applicable requirements of UBPPA UNI-B-6. Allowable pressure drop shall be as given in UBPPA UNI-B-6. Make calculations in accordance with the Appendix to UBPPA UNI-B-6.

2.3.3.8.2 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.

2.3.4 WASTEWATER TREATMENT LAGOON SYSTEMS

The Contractor shall design and construct a partial mix aerated wastewater treatment lagoon system in accordance with AED Design Requirements - Package Wastewater Treatment Plants and Lagoons, latest version. The Waste water treatment plant shall include a laboratory/office and a chlorine storage building per Section 01010.

2.3.4.1 WASTE WATER TREATMENT LAGOON SYSTEM CAPABILITIES

The partial mix aerated wastewater treatment lagoon system shall be designed to accommodate the wastewater hydraulic load as specified in Section 01010. The wastewater treatment lagoon system shall be designed and constructed such that it operates with the ability to process inflow rates to the waste water lagoon system from the off loading station based on the calculated peak hourly flow. Feed rate to the plant components shall be determined by the Contractor from the analysis of the installation peak flow and average daily flow evaluation. All treatment train components shall be designed and constructed in pairs and with bypass capability in order to continue wastewater treatment while performing maintenance on a particular component in the treatment train.

2.3.4.2 REQUIREMENTS OF DESIGN

Influent Characteristics of Wastewater:

BOD_5 – 400 mg/L

TSS –400 mg/L

TKN – 80 mg/L

Fecal Coliform – 10^8 MPN /100 mL

Effluent Criteria Limitations for Direct Surface Water Discharge:
BOD_5

a. The 30-day average shall not exceed 30 mg/L

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

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

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

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

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

TSS

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

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

pH

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

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

Processes: To be determined by the Contractor as part of the scope of work subject to Government approval as required in AED Design Requirements - Package Wastewater Treatment Plants and Lagoons latest version.

2.3.4.3 LAGOONS

The Contractor shall design the partial mix aerated lagoons in accordance to the AED Design Requirements - Package Wastewater Treatment Plants and Lagoons latest version. The lagoons shall be lined with a geomembrane liner with a hydraulic conductivity no greater than 1×10^{-7}cm/sec, or shall be concrete lined. The Contractor shall construct a minimum of two (2) lagoons of equal volume.

2.3.4.4 FLOW SPLITTING

For multiple treatment trains, provide flow splitting capabilities to evenly distribute flow to each treatment train with broad adjustable rectangular weirs. Plant influent shall be conveyed directly into the flow lagoon basins.

2.3.4.5 INLET BAR SCREEN

A bar screen shall be provided prior to flow equalization to remove large solids from the incoming raw sewage. The bar screen will be fabricated from 13 mm diameter bars spaced 25 mm apart. The bars shall be sloped to permit easy cleaning of accumulating debris. A deck shall be furnished for drying the debris. Minimum area of bar screen shall be 0.9 m x 0.9 m.

2.3.4.6 FLOW EQUALIZATION

Provide flow equalization volume designed to attenuate maximum peak flows equal to 150% of the design flow for two hours. Flow control to the lagoons shall be accomplished by gravity flow of the influent from the off loading station. The off loading station shall contain broad adjustable rectangular discharge weirs. The broad weirs will be adjustable so that a measured amount of influent will flow to the lagoons.

2.3.4.7 CHLORINE CONTACT CHAMBER

A chlorine contact chamber shall be provided for proper disinfection of the treated waste water prior to discharging from the plant. The chlorine contact chamber shall have appropriate detention time based on the design flow to meet effluent standards. Sufficient flow baffles shall be supplied to ensure proper mixing of the chlorine solution with the plant effluent and detention time.

2.3.4.8 HYPOCHLORITE SYSTEM

The Contractor shall design and construct a liquid chlorine (hypochlorite) feed system sized to satisfy all disinfection requirements at the waste water treatment plant. It is anticipated that calcium hypochlorite will be delivered to the plant in the small containers and stored in a dedicated, dry, well ventilated building. No other chemicals, cleaning solvents, lubricants, etc. are to be stored in the dedicated space. The hypochlorite feed system will consist of batch mix/feed storage tanks, positive displacement metering pumps, piping, valves and other appurtenances, and pump controls. For redundancy, provide a dedicated metering pump for each treatment train.

Provide two minimum 400 liter fiberglass reinforced plastic or polyethylene mix/feed tanks. The Contractor shall base the preliminary tank size on commercial strength 12.5% hypochlorite batch solution, and assumption that 45 kilograms of calcium hypochlorite batched in each tank. Tanks shall be elevated on a pad for housekeeping and to provide flooded metering pump suction, and shall come with hinged cover, top mounted mixer, and 25 mm bottom outlet connection. The Contractor shall provide a concrete secondary containment for the mix/feed tank. The concrete secondary containment shall provide a minimum total of 900 liter capacity. The Contractor shall construct a concrete Mixers shall have local, manual on/off control. Hypochlorite metering pumps shall be positive displacement type with stroke and speed control. The pumps shall be capable of adjustable speed operation using DC SCR drive and shall be flow-paced off a flow signal from the lagoon system. Coordinate pump motor type with drive unit provided. Metering pumps shall have capacity to dose minimum 10 mg/L chlorine or as required to meet applicable discharge limits, whichever is greater. Provide a dedicated pump for each treatment train. At a minimum, each metering pump shall be provided with the following appurtenances: Pulsation dampener, adjustable diaphragm backpressure valve, adjustable pressure relief valve, calibration column, pressure indicator with diaphragm seal, Y-strainer. Provide a suitable diffuser or injection assembly for dispersing chemical at the point of application.

Provide non-potable dilution water for batching the dry calcium hypochlorite. Provide appropriate protective clothing and eye protection. Provide an emergency shower and eyewash station in the chlorine feed building.

Chlorine feed piping shall be 13 mm schedule 80 PVC. Provide double walled containment for chlorine lines between the feed building and the point of application. Provide isolation valves to allow equipment to the isolated for maintenance.

Provide power, control wiring and dilution water as required for a complete and operable system.

2.3.4.8.1 WASTEWATER TREATMENT CHLORINE BUILDING

The Contractor shall design and construct a 35 m^2 CMU Chemical Building for housing the chlorination system and storage of chemicals. The Chemical Building shall have an emergency eye wash station, one (1) stainless steel sink and water source for mixing chemicals. The chemical building shall be adequately vented to maintain a safe working environment and per the chlorine manufacturer's requirements. The Contractor shall provide manufacturers catalog information and shop drawing to the Contracting Officer for approval.

2.3.4.9 CENTRAL CONTROL PANEL

The electrical controls will consist of magnetic starters, program timers and switches necessary to automatically control all electrical devices and/or motors on the waste water treatment system.

Manual-off-auto selector switches and magnetic starters in conjunction with the program timer will control the blower/motor. The program timers will have the capability to operate the treatment system when required as determined by the variation in the daily flow rate. Properly sized circuit breakers and fuses will protect all electrical equipment and circuitry. The control system will be designed to operate all duplex or standby equipment.

Electronic flow meters shall be installed at appropriate locations on inflow and outfall locations to monitor influent and effluent flows. The controls and monitors shall be located at the central control panel.

2.3.4.10 ACCESS LADDER, WALKWAYS AND HANDRAILS

Provide an access ladder to each structure above grade. Provide service walkways with handrails to service the plant equipment. Walkways shall be a minimum 0.9 m. Provide service walkways between trains and other plant structures so each structure can be accessed without having to climb back down a ladder.

2.3.4.11 PIPING

All piping that is not buried in accordance with this section shall be Schedule 40 black steel pipe.

2.3.4.12 VALVES

The Contractor shall install bypass valves and piping so that each component in the process train can be bypassed for maintenance.

2.3.4.13 SLUDGE DRYING BEDS

Provide four (4) sludge drying beds sized to adequately provide the capacity to dry sludge produced by the lagoon system. Convey sludge from lagoons to beds by gravity. Provide isolation valves to each bed and splash plate in front of outlet to spread the sludge over the bed and prevent erosion of the sand.

Beds shall be capable of holding 0.3 m of liquid sludge. Profile the following bed layers:

a. 0.3 m top layer of uniform coarse sand (effective size between 0.3 to 0.75 mm)

b. 0.1 m intermediate layer of uniform fine gravel (effective size between 4 to 5 mm)

c. 0.1 m bottom layer of uniform coarse gravel (effective size between 20 to 25 mm)

Slope bed subgrade to drain to drainage laterals. Encase drainage laterals in 0.1 m of uniform coarse gravel. Drainage lateral shall be 0.1 m below bottom gravel layer. Slope drainage laterals and header a minimum of 1% to drain to lift station. Drainage laterals shall be perforated ASTM 3034 100 mm PVC pipe with two rows of holes 13 mm in diameter on 120 mm centers and 120° apart. Space laterals evenly at 3 m apart. Lateral are to run entire length or width of bed. Manifold laterals to common ASTM 3034 150 mm PVC header. Locate feed pipe at opposite end of access point for dried sludge removal equipment (e.g. bulldozer). Slope bed side walls at 2H: 1V slope.

The Contractor shall design and construct effluent recirculation system for the excess effluent that collects in the drying beds. The effluent recirculation system shall consist of, but not inclusive of, pumps and piping that will convey effluent to the lagoon system.

2.3.4.14 START UP TESTING

The Contractor shall include a proposed start-up testing and training program in the operation and maintenance manuals. When the wastewater system construction nears completion and all units are operative, the Contractor shall commence a commissioning and startup procedure for the treatment system. The treatment system includes all treatment plant units and associated equipment, sludge holding and digestion, sewage dump pad, and all buildings. The Contractor shall operate the treatment facility for a trial period of two months performing all daily and weekly operation and maintenance (O&M) tasks recommended by the equipment manufacturer. The Contractor shall utilize services of qualified operators; including the use of at least two Afghan Nationals that the Contractor shall train. During the routine O&M, the Contractor shall perform all sampling and testing necessary to ensure proper daily operations in achieving the required effluent standards. The Contractor shall maintain a log that includes records of daily O&M activities, e.g. repairs, inflow measurement, aeration cycles, effluent cycling, waste and return sludge pumping, and sludge drying. The Contractor shall also maintain and operate the sludge disposal operation during the trial period.

2.3.5 STORM SEWER SYSTEMS

2.3.5.1 DESIGN STORM RETURN PERIOD (BASELINE FREQUENCY)

Developed portions of the site installation such as administration, industrial and barracks areas, shall be based on a rainfall of 20-year frequency. Basic system design shall be in accordance with UFC 3-230-17A, Chapter 2. Potential damage or operational requirements may warrant a more severe criterion or in certain areas a lesser criterion may be appropriate. The design of roadway culverts and other on-site storm drainage features & structures will be based on 20-year rainfall event. Protection of installations against flood flows originating from areas exterior to the base installation shall be based on a minimum 25-year rainfall event.

2.3.5.2 STORM DRAINAGE SYSTEM DESIGN

The Contractor shall be responsible for the complete design of the storm drainage system. Drainage of runoff from unpaved areas onto pavements shall be minimized. If storm drain piping is required it shall comply with the requirements in this section. Where storm drain pipes are of different diameters, the pipe crown elevations should be matched at the drainage structure. Storm drain lines shall be located outside of paved areas to the extent possible. Under no circumstance shall storm drain lines be located beneath buildings. All open storm drainage channels shall be concrete lined. Erosion control shall be provided for all storm drain structures during construction. Water from roof down spouts shall be drained off building site. All storm drain pipe and structures shall comply with the requirements specified in Specification Section 33 40 00 Storm Drainage Utilities. Holding or evaporation of stormwater shall not be accepted as an acceptable design. All stormwater shall be conveyed either from camp shorab or into adequate existing ditches.

2.3.5.3 HYDRAULIC DESIGN

New storm drain pipes shall be designed for gravity flow during the design storm baseline unless otherwise approved by the Government. The hydraulic grade line shall be calculated for the storm drain system and all energy losses accounted for. Design computations shall adhere to procedures contained in UFC 3-230-17A. Storm drain systems shall be designed to provide a maximum velocity of 2m/s.

2.3.5.4 AREA INLETS

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

2.3.5.4.1 CONCRETE PIPE

Reinforced concrete pipe shall be a minimum Class III. Type I cement may be used only when sulfates in the soil are 0.1 percent or less and dissolved sulfates in the effluent are 150 ppm or less. Type II cement may be used only when sulfates in the soil are 0.2 percent or less and dissolved sulfates in the effluent are 1,500 ppm or less. Only Type V cement may be used if sulfates in the soil exceed 0.2 percent or dissolved sulfates in the effluent exceed 1,500 ppm. Concrete pipe shall be assumed to have a minimum design service life of 50 years unless the Contractor determines that conditions at the site will reduce the service life. Concrete culverts and storm drains shall be protected by a minimum of 1 m of cover during construction to prevent damage by heavy construction equipment.

2.3.5.4.2 PLASTIC PIPE

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

2.3.6 OIL WATER SEPERATORS

Oil/water separators shall be utilized for all drains from industrial sites. 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 3-240-07FA, latest edition.

2.4 EARTHWORK AND FOUNDATION PREPARATION

2.4.1 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 37.5 mm and no more than 2 percent by weight passing the 4.75 mm No. 4 size sieve and conforming to the soil quality requirements specified in the paragraph entitled "Satisfactory Materials."

Capillary water barriers shall be placed under floor slabs (not under footings) and be a minimum of 150 mm thick.

2.4.2 SATISFACTORY MATERIALS

Any materials classified by ASTM D 2487 as GW, GM, GC, GP, SP, SW, SM, and 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.

2.4.3 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 75 mm. The Contracting Officer shall be notified of any unsatisfactory materials.

2.4.4 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 m outside of the building and structure line. Remove stumps entirely. Grub out matted roots and roots over 50mm in diameter to at least 460 mm below existing surface.

2.4.5 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% 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 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% 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.

2.5 GEOTECHNICAL

2.5.1 SOIL INVESTIGATION

Existing geotechnical information is not available at the project site. Any site-specific geotechnical data required to develop foundations, fill at elevated slabs, 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 that includes:

a. A clear description of the anticipated construction including planned grading and structural details to provide an estimation of foundation loads (compression, uplift, lateral, and moment) and settlement tolerance.

b. A detailed site and area reconnaissance that includes a description of local geology and origin of sediments, surface features (e.g., ditches or other excavations, existing structures, vegetation, rock outcrops, seeps or springs), surface soil type(s), and subsurface lithology).

c. Justification of number and depth of borings.

d. Site plan illustrating exploratory boring locations.

e. Boring logs that include groundwater levels (if encountered).

f. Field tests and analyses (e.g., Unified Soil Classification System, field density, SPT).

g. Analytical laboratory test results in accordance with ASTM or other recognized standards (e.g., sieve analysis, Atterberg Limits (plastic and liquid), moisture content, hydrometer, consolidation/collapse potential, specific gravity of solids, direct shear, density, chemical [sulfate, chloride, pH, lime], K values) and any other tests as needed to properly conduct necessary calculations to determine the engineering properties of the soil.

h. A summary of the results of the subsurface geotechnical conditions including allowable soil bearing capacity, foundation recommendations, pavement design criteria, and construction materials (e.g. concrete cement, asphalt, and aggregates).

i. Two copies of the geotechnical report shall be submitted to the COR. Foundations, including sub-grade, shall be designed and constructed based on calculations and recommendations from a licensed structural engineer provided by the Contractor.

For standard penetration test (SPT), the Contractor shall use ASTM D1586. All geotechnical laboratory and field work shall be based on standards set forth in the ASTM. Contractor shall not use any DIN standards for penetration tests in lieu of ASTM D 1586. Soil investigations shall be in accordance with AED Design Requirements: Geotechnical Investigations for USACE Projects, latest version, or most recent version.

For foundation design, allowable soil bearing pressures shall be determined by calculations made based on the physical and mechanical properties obtained from laboratory testing. The soil bearing pressures calculated shall be compared with the International Building Code (IBC) 2006 Table 1804.2. The lower of the two bearing pressures, calculated or Table 1804.2, shall be chosen for the allowable soil bearing pressure.

California Bearing Ration (CBR) tests shall be conducted on the existing soils throughout the proposed road alignment and vehicle parking and maneuver areas. Results from the tests shall be used to calculate the pavement structure using the minimum pavement structure as dictated in paragraph 2.3.4 as a reference. In the event that the calculations based on the CBR tests reveal that the pavement structure dictated in paragraph 2.3 is insufficient to carry the design load, the Contractor shall design and construct a subbase layer for the pavement structure.

The Contractor shall conduct soils classification per ASTM D 2487-06.

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

2.5.2 GEOTECHNICAL QUALIFICATIONS

A geotechnical engineer that is a member of a geotechnical firm responsible to the Contractor shall oversee all geotechnical engineering design parameters. The geotechnical engineer shall be qualified by:

a. Education in geotechnical engineering;

b. Professional registration;

c. Minimum of ten (10) years of experience in geotechnical engineering design.

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

3.0 STRUCTURAL

3.1 GENERAL

The structures shall consist of reinforced concrete footings supporting a variety of structure types.

3.2 DESIGN

Design shall be performed by or under the direct supervision of the Contractor's structural engineer. The structural engineer shall be a registered Professional Engineer. All structural design documents shall be stamped and signed by the structural engineer. Calculations shall be in SI (metric) units of measurements.

3.3 STANDARDS

The Contractor should use the following American standards to provide structural design if local standards are not available, relevant, or applicable. All codes are latest edition.

Concrete	ACI 318 and ASTM C 39
Steel Reinforcement	ASTM A 615
Anchor Bolts	ASTM F 1554; Grade 36 steel.
Bolts and Studs	ASTM A 307.
Concrete Masonry Units	ASTM C 90; Type I (normal weight, moisture control).
Mortar	ASTM C 270; Type S (ultimate compressive strength of 13 MPa).
Grout	ASTM C 476; 14 MPa (2,000psi) minimum compressive strength @ 28 days (Slump between 200 mm to 250mm).
Structural Steel	ASTM A 36; 250 MPa (F_y = 36,000psi).
Welding	AWS D1.1 (American Welding Society).
Cold-Formed Steel Members	AISI Specification for the Design of Cold-formed Steel Structural

3.4 LOADS (DEAD & LIVE)

Dead loads shall be in accordance with ASCE 7-05 Minimum Design Loads for Buildings and Other Structures. Dead loads consist of the weight of all materials of construction incorporated in the buildings. Live loads shall be per Chapter 4. All facilities shall be classified as a minimum of Category II in accordance with Table 1-1.

3.5 WIND LOADS

Wind loads shall be calculated in accordance with ASCE 7-2005 using a "3-second gust" wind speed of 135 km/hr. Exposure = C. Importance Factor = 1.0.

3.6 SEISMIC

Seismic design of all structures in southern Afghanistan shall be in accordance with ASCE 7-05. Seismic Acceleration Parameters shall be S_s = 1.28g and S_1 = 0.51g.

3.7 REINFORCED CONCRETE

All concrete members shall be designed and constructed in accordance with the provisions of the American Concrete Institute, Building Code Requirements for Structural Concrete, ACI 318. A minimum 28 day compressive strength of 28 MPa shall be used for design and construction of all concrete. Concrete shall have maximum water-cement ratio of 0.45. Reinforcing steel shall be deformed bars conforming to American Society for Testing and Materials publication ASTM A 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. The minimum yield strength Fy shall be 420 MPa.

No concrete shall be placed when the ambient air temperature exceeds 32 degrees C unless an appropriate chemical retardant is used. In all cases when concrete is placed at 32 degrees C or hotter it shall be covered and kept continuously wet for a minimum of 48 hours.

3.8 REINFORCED 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. A minimum cylinder 28 day compressive strength of 28 MPa shall be used for design and construction of all concrete, except that 24 MPa shall be used for Shotcrete applications. Reinforcing steel shall be deformed bars conforming to American Society for Testing and Materials publication ASTM A 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. Concrete members at or below grade shall have a minimum concrete cover over reinforcement of 75 mm. Concrete shall have maximum water-cement ratio of 0.45. No concrete shall be placed when the ambient air temperature exceeds 32 degrees C unless an appropriate chemical retardant is used. In all cases when concrete is placed at 32 degrees C or hotter it shall be covered and kept continuously wet for a minimum of 48 hours. Except with authorization, do not place concrete when ambient temperature is below 5 degrees C or when concrete is likely to be subjected to freezing temperatures within 24 hours. When authorized, when concrete is likely to be subjected to freezing within 24 hours after placing, heat concrete materials so that temperature of concrete when deposited is between 18 and 27 degrees C. Methods of heating materials are subject to approval of the Contracting Officer. Do not heat mixing water above 74 degrees C. Remove lumps of frozen material and ice from aggregates before placing aggregates in mixer. Follow practices found in ACI 306.1.

3.9 MASONRY

Masonry shall be designed and constructed in accordance with the provisions of Building Code Requirements for Masonry Structures, ACI 530/ASCE 5/TMS 402, latest editions. Mortar shall be Type S and conform to ASTM C 270. All masonry used below grade shall me fully grouted. All cells of exterior reinforced CMU walls shall be fully grouted. For interior CMU walls, only the reinforced cells need to be grouted. All CMU walls shall have reinforced horizontal bond beams at a maximum spacing of 1,200 mm on center.

3.10 STRUCTURAL STEEL

Structural steel shall be designed and constructed in accordance with the provisions of American Institute of Steel Construction (AISC), Specifications for Structural Steel Buildings.

3.11 COLD-FORMED LIGHT GUAGE STEEL

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

3.12 ARCH-SPAN COLD-FORMED LIGHT GUAGE STEEL ARCHES

Cold-formed light gage steel Arch-span structures shall be constructed with arch-span building machines.

Fabrication shall be in accordance with the building machine manufacturer's recommendations. Finite element models and design calculations for cold-formed steel arch-span shapes shall use effective section properties to account for localized buckling. Structural analysis and design calculations for arch-span arch type structures shall use the building machine manufacturer's proprietary finite element software when available.

Thickness of arch-span sheet metal shall be as required by design in accordance with manufacturer's recommendation for span of arch-span, but in no case shall thickness be less than 1 mm.

Arch-span steel specification requirements (international standards):

1. DESIGN LOADS (DE GRADE 40 AND 50)
2. THICKNESS FROM 0.60mm TO 1.524mm
3. SAMPLE PPGI STEEL COIL SPECS :
4. Galvanized steel in coils conforming to ASTM A 653-05
5. Structural quality (SS) suitable for roll forming.
6. Minimum base material complies with AISI 1018.
7. Minimum elongation is 40%.
8. Hardness range is between 70-78 Rb.
9. Coil Maximum outside diameter: 101.60 cm, inside diameter: 48-53cm.
10. Maximum coil weight: 2,270 kilograms.
11. Galvanized coating class G-90 (Z-275), Regular spangle, chemically treated, lightly oiled with evaporative lubricant
12. Coil width: 91.44 cm
13. Steel Grade: Grade 40: Yield strength - 28 kg/mm2 (280MPa)

3.13 CORRUGATED METAL ROOFING

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

3.14 FOUNDATIONS

All structures shall be provided with a reinforced concrete foundation properly placed on suitable native or compacted earth and shall be prepared in accordance with the recommendations from the geotechnical investigation. The foundation shall be designed so that the bottom is 800mm below the local frost line depth.

4.0 ARCHITECTURAL REQUIREMENTS

4.1 GENERAL

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

4.2 DESIGN CRITERIA

Schematic designs for the facility types requested in this proposal are provided in the Appendix. These designs shall be used to create a complete and usable facility meeting the minimum requirements stated in these documents. The Codes, Standards, and Regulations listed in these documents shall be used in the construction of this project. The publications shall be the most recent editions. Standards other than those mentioned may be accepted provided they meet the minimum requirements and the Contractor shall submit proof of equivalency to the Contracting Officer for approval.

IBC - International Building Code, latest edition

NFPA 101 - Life Safety Code, latest edition

4.2.1 PREMANUFACTURED ARCH-SPAN COMPONENTS

It is recommended that all Arch-Span exterior penetrations shall be designed and pre-manufactured off-site using modular design techniques that shall be applied for both structural and finish construction components.

Provide complete architectural and engineering services from project inception through completion of construction.

Prior experience in design and support of major industrial complexes, military bases, ministry projects, as well as public and private projects and provides a wide range of engineering services in Afghanistan or other similar building environments is highly desirable.

Recommend minimal field assembly to the highest extent possible. Pre-manufactured elements are recommended `to include Doors, Windows, Vent Louvers, stove through wall/roof sleeve and other exterior envelope penetrations.

Fabricate all pre-manufactured components to engineered design specifications under controlled conditions, to ensure consistent quality and maximum load bearing capabilities.

Specifications shall address the following criteria:

1. High strength-to-weight ratio.
2. Use of non-combustible material.
3. Wind and seismic resistance.
4. Compatibility with most decking and roofing systems.
5. Modular design.

The Arch-Span system shall meet or exceeds local and international building codes and seismic standards.

Structural and architectural components shall be designed as integral components, so that the site erection is quicker.

The building system shall be fully insulated using non-flammable and non-toxic spray on systems and allow for fully heated, cooled, or refrigerated facilities.

4.2.2 LIFE SAFETY/ FIRE PROTECTION/ HANDICAPPED ACCESSIBILITY

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

4.2.3 ANTITERRORISM / FORCE PROTECTION

Construct force protection measures to include gates and personnel bunkers. Force protection requirements shall be in accordance with UFC 4-010-01, *Minimum DoD Anti-terrorism Standards for Buildings*; and UFC 4-010-02, *DoD Minimum Anti-terrorism Standoff Distances for Buildings**, as much as possible.*** Stand-off distances between buildings and other structures shown on the concept site plan are to be kept as indicated; the UFC requirements are not required in these instances. When there is doubt of the application of the UFC reference, the contracting officer shall make the determination.

4.3 CONCRETE

4.3.1 FINISH

Horizontally placed concrete shall be vibrated and floated prior to screening, followed by progressive troweling and edging with a radius profile edging tool as the concrete sets. Broom finished texture shall be applied to fully trowel finished surfaces and shall be re-edged after the broom finish is added.

Vertical work shall have a form finish. Exposed concrete shall be sealed with an approved sealer.

4.3.2 PRECAST

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

4.4 MASONRY

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

4.4.1 CONCRETE MASONRY UNITS

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

4.5 STONE

Stone type shall be identified for approval in design. Provide and use Type “S” mortar for all stone work. Provide weep holes at veneer installations and all cavity wall systems.

4.6 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 2.280 (R 13)
Ceilings/roof	RSI 3.540 (R 20)
Floor (over unheated space)	RSI 3.346 (R 19)
Exterior doors	RSI 0.252 (R 1.43)

Exterior windows/(glazing within doors)	RSI 0.308(R 1.75)
Skylights	RSI 0.180 (R 1.02)

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

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

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

4.7 ROOFING AND WEATHERPROOFING

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

4.7.1 SLOPED ROOFS

A sloping roof shall be as defined in the IBC. On sloping roofs provide and install 0.60 mm galvanized steel in either corrugated or standing seam design. Metal roofing shall be anchored to the steel “Z” purlins 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. All metal roof panel systems and associated trim/accessories shall be in the manufacturer’s standard white color. Provide 600mm x 600mm white metal louvered vents with insect screen in all gable end walls. Panels shall be overlapped two corrugations side to side and be continuous sheets from ridge to eave. Provide continuous ridge vents on all gable roofs.

4.7.1.1 INSULATION

Provide sprayed on polyurethane insulation on underside of all K-span structures. For standard design drawings, provide a 50 mm 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 compressive strength, hydrophobic, Type VI. Provide thickness by multiple boards to meet the designed R-value. 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 or greater, install required thickness in two layers with joints of second layer offset from joints of first layer a minimum of 300 mm each direction.

4.8 CONNECTIONS AND JOINTING

4.8.1 SOLDERING

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

4.8.1.1 SEAMING

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

4.8.1.2 CLEATS

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

4.9 METAL

4.9.1 MATERIALS

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

4.9.1.1 STEEL SHEET, ZINC-COATED (GALVANIZED)

Zinc coated steel conforming to ASTM A 525, DIN BS or EN Standards. Cold-formed light gage steel K-span arch structures shall be constructed per industry standards.

Fabrication shall be in accordance with the building machine manufacturer's recommendations. Finite element models and design calculations for cold-formed steel K-span shapes shall use effective section properties to account for localized buckling. Structural analysis and design calculations for K-span arch type structures is required and shall be submitted as part of a design analysis for design submittals.

Thickness of S-span sheet metal shall be as required by design in accordance with manufacturer's recommendation for span of K-span, but in no case shall thickness be less than 1 mm.

4.9.1.2 ALUMINUM WALL CAPPING

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

4.9.2 FLASHING

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

4.9.2.1 THROUGH-WALL FLASHING

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

4.9.2.2 LINTEL FLASHING

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

4.9.2.3 VALLEY FLASHING

Valley flashing shall be provided at intersections of roofs where a valley is formed. Flashing shall be a minimum of 500 mm centered on the valley (extending each direction a minimum of 250 mm). Valley flashing shall have a small ridge in the center to allow for expansion and contraction. Material shall be stainless steel, galvanized or match finished roofing metal.

4.9.2.4 SILL FLASHING

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

4.9.3 METAL FASCIA & SOFFIT

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

4.9.4 CONTINUOUS SOFFIT VENT

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

4.9.5 RIDGE VENT

For sloping roofs, provide continues metal ridge vent at the top of roof along the ridge. Ridge vent shall be sized to provide adequate ventilation of the roofing system. Provide all ridge vents in white to match the roof panel system.

4.9.6 SCREEN

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

4.9.7 EXPANSION JOINT PROFILES

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

4.9.8 ROOF GUTTERS

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

4.9.9 DOWNSPOUTS

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

governmental approval. Provide all downspouts in white to match the roof panel system. All downspouts shall be a minimum of 100mm in diameter or greater based on the projected rain amounts to be handled by the system.

4.9.10 WALL CAPPING

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

4.10 SEALANTS

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

4.10.1 INTERIOR SEALANT

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

4.10.2 EXTERIOR SEALANT

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

4.10.3 FLOOR JOINT SEALANT

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

4.10.4 PRIMERS

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

4.10.5 BOND BREAKERS

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

4.10.6 BACKING

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

4.10.7 SURFACE PREPARATION

Surfaces shall be clean, dry to the touch, and free from dirt frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. Oil and grease shall be removed with solvent and surfaces shall be wiped dry with clean cloths. When resealing an existing joint, remove existing calk or sealant prior

to applying new sealant. For surface types not listed below, the sealant manufacturer shall be contacted for specific recommendations.

4.10.8 MASKING TAPE

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

4.10.9 BACKSTOPS

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

4.10.10 PROTECTION

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

4.10.10.1 FINAL CLEANING

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

4.10.10.1.1 MASONRY AND OTHER POROUS SURFACES

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

4.10.10.1.2 METAL AND OTHER NON-POROUS SURFACES

Remove excess sealant with a solvent-moistened cloth.

4.11 LOUVERS

4.11.1 INTERIOR LOUVERS

SDI 111-C, Louvers shall be stationary sight-proof or lightproof type as required. Louvers for lightproof doors shall not transmit light. Detachable moldings on room or non security side of door; on security side of door, moldings to be integral part of louver. Form louver frames of 0.90 mm thick steel and louver blades of a minimum 0.60 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.

4.11.2 EXTERIOR LOUVERS

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

4.12 WINDOWS, DOORS & GLAZING

4.12.1 WINDOWS

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

4.12.1.1 WINDOW SECURITY BARS

Provide 20 mm diameter steel bars, 100 mm on center spacing. Provide frame and secure with fasteners a minimum of 100 mm deep.

4.12.1.2 MATERIALS

4.12.1.2.1 ALUMINUM EXTRUSIONS

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

4.12.1.2.2 FASTENERS

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

4.12.1.2.3 REINFORCEMENT

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

4.12.1.2.4 EXPOSED FASTENERS

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

4.12.1.2.5 ANCHORS, CLIPS, AND WINDOW ACCESSORIES

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

4.12.1.2.6 COMPRESSION-TYPE GLAZING STRIPS AND WEATHERSTRIPPING

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

4.12.1.2.7 SEALANT

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

4.12.1.2.8 WIRE FABRIC INSECT SCREEN

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

4.12.1.3 HARDWARE

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

4.12.1.4 FABRICATION

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

4.12.1.5 METAL WINDOW SILLS

Galvanized metal window sills, 0.90 mm, shall be installed on the exterior of all windows. The metal window sills shall have a turn down of 50 mm over the exterior masonry and stucco. Metal sills shall extend from side to side of the masonry opening in a single piece. Extend the metal window sill a minimum of 20 mm under the bottom of the aluminum windows. Install masonry mortar as required for a smooth surface under the window sills. Sills shall slope a minimum of 6 mm to the exterior and not allow water to puddle.

4.12.1.6 FINISHES

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

4.12.1.7 INSPECTION

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

4.12.1.8 INSTALLATION

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

4.12.1.9 ADJUSTING

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

4.12.1.10 CLEANING

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

4.12.2 DOORS

Fire rated door assemblies including hollow metal frame and hardware shall be provided as indicated in the design drawings. Rated doors and frames shall be tested and approved as an assembly and shall be provided by a single manufacturer/distributor. Hardware for fire rated door assemblies shall be labeled as appropriate for fire rated applications and shall be coordinated with door manufacturer. All exterior doors shall be heavy duty metal doors with metal frames. Interior door shall be hollow metal doors with hollow metal frames. Commercial duty lock sets and hardware shall be used on all doors. Hinges shall be the 5 knuckle type or equivalent. Provide door handles and locksets that can be locked with a key on all doors. All door locks shall have a thumb latch on inside of door such that no key is necessary to exit the room or building. Coordinate the final keying schedule with Contracting Officer prior to ordering lock sets. 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. Provide weather stripping system for all exterior doors.

4.12.2.1 OVERHEAD DOORS

Overhead doors shall be sized as required. Doors shall be fabricated from interlocking cold-rolled slats, designed to withstand building wind loading and be installed with wind locks. Curtain door slats shall be continuous for the width of the door and steel interlocking flat-profile design. Standard steel slats shall be made of roll-formed steel 18 gauge steel, either primed & painted galvanized, stainless steel or anodized aluminum as provided by manufacture. Channel or curtain door guides shall be provided on each side of door. Overhead doors shall have a weather stripping bottom bar, head and jambs. Weather stripping and astragals shall be natural rubber or neoprene rubber. A manual pull chain shall be connected to the operation of the rolling door to provide open and close operation. A locking pin shall be provided on each jamb of the interior side of the door. Door shall have manufacturer's standard five pin tumbler locks, keyed. Coiling housing shall be mounted above all opening, on the interior side. For rated openings, a fusible link shall be provided on the most hazardous side. The coiling shutter shall also be rated and designed accordingly by the manufacture for the required fire rating. Hoods shall be fabricated from steel sheets with minimum yield strength of 227.5 MPa. 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.

Counterbalance-barrel components shall be as follows:

1) 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.

2) 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.

3) 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.

4) 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.

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

6) 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 shall 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.

4.12.2.2 STEEL DOORS

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

4.12.2.3 FIRE AND SMOKE DOORS AND FRAMES

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

4.12.2.4 THRESHOLDS

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

4.12.2.5 STANDARD STEEL FRAMES

SDI A250.8, except as otherwise specified. Form frames to sizes and shapes indicated, with welded corners or knock-down field-assembled corners. Provide steel frames for doors, transoms, sidelights, mullions, cased openings, and interior glazed panels, unless otherwise indicated.

4.12.2.6 WELDED FRAMES

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

4.12.2.7 STOPS AND BEADS

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

4.12.2.8 WEATHER-STRIPPING, INTEGRAL GASKET

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

4.12.2.9 ANCHORS

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

4.12.2.9.1 WALL ANCHORS

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

4.12.2.9.2 FLOOR ANCHORS

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

4.12.2.10 HARDWARE PREPARATION

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

4.12.2.11 HINGES

Exterior hinges shall have non-removable pins and be satin-chrome steel or stainless steel; Grade 1 anti-friction or ball bearing; and 3 each of 115 mm x 115 mm per leaf up to 900 mm wide door 125 mm x 125 mm for doors 900 mm to 1,200 mm wide. Interior hinges shall be Grade 1; antifriction or ball bearing; and 3 each of 115 mm x 115 mm per leaf up to 900 mm wide door 125 mm x 125 mm for doors 900 mm to 1,200mm wide. Hinges for labeled fire doors must be either steel or stainless steel. Hinges shall conform to ANSI/BHMA A156.1 and A156.7.

4.12.2.12 LOCKSETS, LATCHETS, EXIT DEVICES, AND PUSH AND PULL PLATES

Exterior doors shall have mortise locks conforming to ANSI/BHMA A156.13 for metal doors. Emergency exit devices shall be Grade 1, flush mounted type. Interior doors shall have mortise locksets conforming to ANSI/BHMA A156.13, Series1000, Grade 1. All locks and latchsets shall be the product of the same manufacturer. Locksets, padlocks and latchsets shall be provided, as required, with lever handles on each side. Provide heavy duty hasp and locks at all fuel storage tanks.

4.12.2.13 CLOSERS

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

4.12.2.14 DOOR STOPS

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

4.12.2.15 KEYING SYSTEM & LOCK CYLINDERS

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

Cylinders: Lock cylinders shall comply with BHMA A156.5. Lock cylinder shall have six pins. Cylinders shall have key removable type cores. All locksets, exit devices, and padlocks shall accept same interchangeable cores.

4.12.2.16 FINISHES

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

4.12.2.17 WATER-RESISTANT SEALER

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

4.12.2.18 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 caulking compound.

4.12.2.19 INSTALLATION

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

4.12.2.19.1 FRAMES

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

4.12.2.19.2 GROUTED FRAMES

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

4.12.2.20 PROTECTION AND CLEANING

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

4.12.2.21 WEATHER STRIPPING

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

4.12.2.22 PRE-FITTING

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

4.12.3 GLAZING

All glazing shall be tempered double laminated and insulating. Laminated glazing shall be constructed of two panes of minimum 3 mm tempered glass laminated to a minimum 0.75 mm polyvinyl-butyral (PVB) interlayer, in accordance with UFC 4-010-01. Two panes of laminated glazing shall be installed in each window with hermetically sealed 13 mm airspace between them. After installation of windows, the contractor shall install a minimum 3 mil tinted film (Scotch Shield Ultra Safety and Security Window Film or approved equal) to the inside face of the glazing in accordance with manufacturer’s instructions.

4.12.3.1 TEMPERED GLAZING

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.

4.12.3.2 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.

4.12.3.3 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.

4.12.3.4 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.

4.12.3.5 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.

4.12.3.6 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.

4.12.3.7 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.

4.12.3.8 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.

4.12.3.9 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.

4.12.3.10 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.

4.12.3.11 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.

4.13 FINISHES

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

4.13.1 PAINTS & COATINGS

Paints and coatings shall be provided as a Specification 09 90 00 Paints and Coatings.

4.13.2 CONCRETE HARDENER

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

4.13.3 PAINT

Paint shall be oil based or latex. A primer shall be placed prior to any coats of paint. A minimum of two (2) coats of paint shall be used for each surface. Existing painted material shall be cleaned, cracks patched, and prepared for new paint. Existing sealant shall be inspected, cleaned or removed and new sealant placed.

4.13.3.1 EXPOSED EXTERIOR STEEL

Exposed exterior steel shall include items such as trim, frames, door, pipe rails and other exposed steel surfaces. Provide manufacturers standard baked on finish where possible. For unfinished steel items, paint with one coat oil-based primer, with 2 coats of oil-based alkyd gloss enamel, color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.13.3.2 EXPOSED WOOD

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

4.13.4 EXPANSION JOINTS IN PLASTER & STUCCO

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

4.13.5 EXTERIOR WALLS

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

4.13.6 INTERIOR WALLS

4.13.6.1 INTERIOR WALLS FOR K-SPAN BUILDINGS (SANDWICH PANELS)

Interior walls shall be a standard manufacturer's noncombustible, Class "A" rated, panelized insulated wall system that has been in production a minimum of 5 years. The interior wall system may either be an interlocking composite panel system of foam core units, with color coated prefinished metal skins on both sides, and an integral metal frame system with prefinished face sheathing both sides. The interior wall panel system shall be a complete system including trims and shall be able to receive multiple options on door and frame assemblies. Assembly including doors should provide a composite Sound Transmission Class (STC) of at least 42. Panelized system shall provide

fire separation rating where required by design. Rating shall be by Underwriters Laboratory (UL) or an approved international testing agency.

4.13.6.2 PLASTER WALLS

Interior walls (except Arch-Span) shall be plaster applied in a similar manner as exterior stucco. Paint with 2 coats of semi-gloss off-white with less than 0.06% lead by weight color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.13.6.3 SOUND CONTROL

Walls between sleeping rooms shall have a Sound Transmission Class (STC) minimum 45-55 or better, An STC value is a single number rating used to characterize the sound insulating value of a partition (wall, floor, or ceiling). All walls shall be caulked at floor and ceiling prior to installing wall base. All openings between rooms shall be caulked or sealed. Doors shall have rubber seal around frames and threshold.

4.13.6.4 HARDENED (CMU) INTERIOR WALLS

Interior walls intended to be CMU (except Arch-Span) shall be a minimum thickness of 100 mm. Interior CMU walls shall be plaster applied in a similar manner as exterior stucco. Paint with 2 coats of flat off-white paint with less than 0.06% lead by weight color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.13.7 INTERIOR CEILINGS

4.13.7.1 CONCRETE CEILINGS

Concrete ceilings shall be exposed concrete painted with 2 coats of flat white, with less than 0.06% lead by weight.

4.14 TILE WORK

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

Floors in wet areas shall be 300 mm x 300 mm terrazzo tile with thin set mortar. Joints shall be 2-3 mm. Waterproof gray grout shall be applied the full depth of the tile. 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.

Floors in administration areas, living quarters, corridors, and all rooms unless otherwise stated in the standard drawings shall be sealed concrete. 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.

Walls in wet areas shall be tiled with 150 mm x 150 mm glazed ceramic tile up to 2000 mm above the floor to include interior of toilet stalls, 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.

The ablution drain areas shall be recessed below the floor level 200 mm and lined with ceramic tile. Ceramic tile shall extend up the wall past the water spigots to a height of 2000 mm above finished floor. Seats shall be formed

concrete with terrazzo tile finish to match the floor, 300 mm x 300 mm x 300 mm high finished dimensions. Color of ceramic tile shall be selected by the Contracting Officer from samples provided by the Contractor. Spacing between tiles shall be similar to terrazzo tile.

4.15 SPECIALTIES

4.15.1 MIRRORS

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

4.15.2 TOILET PAPER HOLDERS

Toilet paper holders with removable pin shall be stainless steel, installed approximately 200 mm above floor by eastern toilets and 600 mm above floor by western toilets.

4.15.3 SHOWER CURTAIN RODS & SHOWER CURTAIN

Shower curtain rods, stainless steel, heavy duty, 1.20 mm shall be mounted between the walls of each shower stall. Mount rod 2000 mm above finished floor. Provide a shower curtain with support rings for each shower stall.

4.15.4 GRAB-BARS

Stainless steel grab-bars, heavy duty, 1.20 mm, 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. Mount grab-bars between 610mm - 900 mm height on the walls. Each bar shall support no less than 91 Kg in any direction.

4.15.5 PAPER TOWEL DISPENSERS

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

4.15.6 LIGHT DUTY METAL SHELF

Provide a 600 mm long x 150 mm wide, light duty stainless steel shelf with integral brackets over each lavatory and laundry sink.

4.15.7 ROBE HOOKS

Provide a minimum of two robe hooks on all toilet and shower stalls.

4.15.8 CLOTHESLINES

Fabricate clothes line assembly in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling imitations. Clearly mark units for reassembly and coordinated installation. Wire-rope assemblies (clothes line cable) shall minimize the amount of turnbuckle take-up used for dimensional adjustment so the maximum amount is available for tensioning wire ropes. Wire rope shall be nylon covered. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of ~1 mm, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces. Form work true to line and level with accurate angles and surfaces. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate. Cut, reinforce drill, and tap as indicated to receive finish hardware, screws, and similar items. Welded connections: cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

4.16 FACILITY TYPES

All facility types shall be constructed according to the standard designs unless otherwise noted.

5.0 MECHANICAL

5.1 GENERAL

The work covered by this section consists of design, supply, fabrication, and installation of building heating, ventilation and air-conditioning (HVAC), electrical generation, incineration, and all systems stated in this Section. 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.

5.2 SPECIALIST SUB-CONTRACTORS QUALIFICATIONS

All works shall be executed by specialist sub-contractors experienced in the design and construction of the equipment stated in this Section.

5.3 STANDARD PRODUCTS & SUBMITTALS

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.

The Contractor shall submit the following for 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 the codes, standards and regulations; Drawings, as necessary, indicating location and installation details.

5.4 CODES, STANDARDS, & REGULATIONS

The design and installation of equipment, materials, and work covered under the Mechanical services shall conform to the standards, codes, and regulations provide in the paragraph, List Of Codes And Technical Criteria, where applicable except where otherwise indicated under particular clause(s). The publications to be taken into consideration shall be those of the most recent editions and, for HVAC, primarily in accordance with the American Society of Heating, Refrigeration, and Air-Conditioning (ASHRAE).. Standards other than those mentioned 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.

5.5 EQUIPMENT PROTECTION

All exterior pad-mounted mechanical equipment shall be provided with either protective fences and concrete-filled steel bollards or protective screen walls to prevent accumulation of debris and minimize vandalism.

5.6 DESIGN CONDITIONS

Outside Design Conditions are provided for reference only and the Contractor is not to provide any design analysis. If the design conditions vary greatly and increases the HVAC capacity, bring this to the attention of the COR. (Contractor shall verify the ambient conditions with available and reliable local weather data).

Kandahar Area:

Latitude – (approx.) 31.5 deg. North

Longitude – (approx.) 65.85 deg. East

Elevation – (approx.) 1,010 m (3,314 ft)

Summer – 41 C (106 F) Dry Bulb (DB) & 21.7 C (71 F)] Wet Bulb (WB)

Winter – -1.7 C (29 F)

Daily Range – 12 C (21 F)

5.6.1 INDOOR DESIGN CONDITIONS

Facility Type	Summer Temperature	Winter Temperature
Chemical Buildings	No Cooling	Heating 20 C (68 F)
Wastewater Laboratory/Office	No Cooling	Heating 20 C (68 F)

5.6.2 NOISE LEVEL

Noise levels inside occupied spaces generated by HVAC systems indoors shall not exceed NC 35. Noise levels for outdoor generators are provided in paragraph: Mechanical Requirements For Generators.

5.6.3 INTERNAL LOADS

Occupancy: ASHRAE standards shall be used to calculate sensible and latent heat from people. In general, light/moderate office work is 73 W (250 Btuh) sensible and 45 W (155 Btuh) latent.

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

Outdoor Air: Outdoor ventilation air shall be provided per ASHRAE Standard 62.1. Minimum outside ventilation requirements for offices and bedroom sleeping quarters shall be 2.5 lps/person (5 cfm/person) plus 0.3 lps/sq.m of floor space (0.06 cfm/sq.ft). Outdoor air requirements can be satisfied by windows that open to the outside. **Enclosed occupied areas without windows shall have outside air ventilation rates based on occupancy using the formula above in combination with a means for allowing outside make-up air exterior air louvers and adjoining parts of the building.**

Communication (Comm) Rooms: Comm rooms containing computer servers and other heat-producing electronic equipment shall be provided with independently controlled cooling. See Electrical for comm room equipment requirements.

Toilet/Shower Exhaust: 85 cmh (50 cfm) per toilet, urinal, and shower head.

Ablution Exhaust: 35 cmh/sq.m (2 cfm/sq.ft).

Building Pressurization: Maintain negative pressure in latrine areas. Pressurization is only applicable for buildings provided with central ducted forced air systems.

5.6.4 AIR COOLING & HEATING EQUIPMENT

Contractor shall size and select equipment based on equipment manufacturer's performance data at the project site elevation and temperature conditions and ensure the equipment's performance meets the design heating and cooling sizing requirements. The following table represents, as a minimum, facility-specific system requirements and does not limit the applicability of general system requirements stated elsewhere in this specification. All buildings with government provided standard drawings shall be constructed per the drawings.

Facility Type	Type of HVAC System	Remarks
Chemical Buildings	Electric unit heaters	Provide exhaust fans & electric unit heaters
Wastewater Laboratory/Office	Electric unit heaters	Provide exhaust fans & electric unit heaters

* Indirect-tempering of outside make-up air shall be accomplished by locating heating and/or cooling equipment in close proximity to outside air louvers (fitted with filters, screens, and dampers as a minimum) for minor conditioning of raw outside air.

5.6.5 UNITARY DUCTLESS (SPLIT-PACK) HEAT PUMP UNITS

Unitary ductless split-pack heat pump units shall be provided as indicated. Ductless split units shall be unitary in design and factory manufactured ready for installation. Heat pump units shall provide cooling during summer and heating during winter. **Heat pump units shall be suitable for low ambient operation.** Interior evaporator fan coil units shall consist of a DX coil, blower, and washable filter all mounted in a housing finished for exposed installation. Cooling coil condensate piping shall route to the sanitary sewer system or the building exterior to within 20 cm (8") of grade and not cross nor discharge on sidewalks. The exterior condensing units shall contain compressor, condenser coil, and all controls/fittings enclosed in a weatherized housing. Outdoor condensing unit shall be wall-mounted on steel supports or on a concrete pad. Copper refrigerant suction and liquid piping shall be sized, insulated and installed in accordance to unit manufacture recommendations. Unit temperature control shall include wall-mounted adjustable thermostat, blower on-off-auto switch and heating-cooling change over control.

5.7 ELECTRIC HEATERS

Electric trace heating cables for freeze protection shall not be provided as a substitute for space heating systems.

5.7.1 UNIT HEATERS

Electric resistance unit heaters shall be installed in spaces where only heating is required. Generally, unit heaters shall be mounted as high as possible. Unit heaters shall be of the industrial grade, durable, and securely fastened to the ceiling, wall or structure. Electric heating unit shall be self-contained with heating elements and fan. Unit shall be provide control-circuit terminals and single source of power supply with disconnect. Limit controls shall be provided for overheat protection. Hard-wired integral thermostats shall be provided and generally located under the unit in the return air stream.

5.7.2 CABINET OR CONVECTOR HEATERS

Cabinet or convector type heaters shall be generally provided in areas where unit healers are not feasible. Heaters shall be self-contained and surface-mounted on wall or structure with heating elements and, where required for coverage, fan with at least two (2) speeds. Unit shall be provided with control-circuit terminals and single source of power supply with disconnect. Limit controls shall be provided for overheat protection of heaters.

5.8 DUCT SYSTEMS

Air shall be distributed by the equipment supply fans to achieve proper airflow throughout the facility, introduced from the exterior for outside make-up air fans and louvers, and/or removed by exhaust fans all by means of duct systems.

5.9 DUCTWORK

Ductwork shall be comprised of supply, return, transfer, exhaust, and outside make-up air ducting, fittings, turning vanes, volume control dampers, grilles, registers, diffusers and/or louvers. Ductwork shall be constructed of

galvanized steel, stainless steel (i.e. Kitchen hoods, laboratory exhaust systems, etc.), or aluminum sheets (i.e. Shower exhaust systems, etc.) and installed as per SMACNA "HVAC Duct Construction Standards (Metal and Flexible)" (and NFPA 96 for kitchen grease hoods). 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 m (10') in length.

5.9.1 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. Duct installed above suspended ceilings are NOT considered to be located within the conditioned space. All ductwork exterior to the building shall be insulated with a minimum RSI=0.88 (R-5).

Outside make-up air duct systems shall be provided with insulation and vapor barrier to prevent condensation. Insulation exposed to weather or physical damage shall be protected with aluminum jacketing.

5.9.2 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.

5.9.3 BRANCH TAKE-OFFS & BALANCING DAMPERS

Air extractors or 45-degree entry corners ("boots") 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.

5.9.4 WALL PENETRATIONS

Building wall penetrations for fans, exhaust duct, vents, louvers, etc. shall be carefully made so as not to deteriorate the structural integrity of the wall system. **The Contractor is encouraged to locate exterior wall louvers above doors, whenever possible, to take advantage of the structural framing void located above doors.** The Contracting Officer shall be consulted and recommendations strictly adhered to.

5.9.5 WALL TRANSFER GRILLES

Wall penetrations for air transfer between two spaces shall be installed as high as possible within architectural constraints or a minimum of 1.5 m (5') above the floor and provided with a factory fabricated grille on both the inlet and outlet sides of the opening. For fire-rated walls in accordance with NFPA-90A, fire dampers shall be installed between the inlet and outlet grilles.

5.9.6 OUTSIDE AIR INTAKE, MAKE-UP, AND EXHAUST LOUVERS

Outside air louvers shall be factory fabricated of steel, stainless steel, or aluminum and allow the specified air quantity into the intended space. Louvers shall be square or rectangular with rain-proof exterior face blades and internal grille. **To reduce sand and dirt migration, outside air intakes shall be installed as high as possible within architectural constraints or a minimum of 1.5 m (5') above the ground.** Consideration shall be given to locating the louvers near the heating and cooling units (for indirect tempering of air) and encourage air flow across the room in conjunction with the exhaust fan. Outside air intake louvers shall be provided with air filter (See Air Filtration), insect screen, and, if indicated, motorized dampers interlocked to open when the exhaust fans operate. Minimum louver dimensions shall be submitted in the design analysis (DA) calculations.

All supply air shall be filtered using manufacturer's standard washable filters mounted inside the unit. In addition, all outside make-up air intakes shall be equipped with 50 mm (2") thick washable filters. Control wiring and

protection of the air conditioning units shall be the manufacturer's standard, pre-wired factory installed or as recommended.

5.10 VENTILATION & EXHAUST FAN SYSTEMS

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

Intake or outside make-up air openings for exhaust fans shall be provided with motorized dampers which are interlocked with the exhaust fans and provided with air filters and insect screens. The motorized dampers shall open or close when the ventilation or exhaust fan is on or off, respectively. Louvered openings for ventilation or exhaust fan systems shall be sized for a maximum static pressure (SP) drop (that includes filter resistance) of 25 Pa (0.10" wg) to prevent excessive negative pressurization of the building. **Exterior outside door louvers and undercuts are not permitted except when approved or directed by the U.S. Army Corps of Engineers.**

Maintenance shops and similar spaces that use solvents and oils shall be provided with mechanical exhaust air systems. Intake or outside make-up air openings for an exhaust fan system shall be provided as indicated above. The exhaust systems shall consist of a fan, ductwork, exhaust grills, and interlock controls. Design shall be in compliance with the latest addition of the Industrial Ventilation UFC 3-410-04N or ACGIH Industrial Ventilation manual.

All occupied windowless rooms, without connections to a ducted central HVAC system (or without an avenue for obtaining outside ventilation air) shall be provided with forced-air outside air ventilation systems or forced-air exhaust systems.

5.10.1 KITCHEN HOOD EXHAUST AND OUTSIDE MAKE-UP AIR

Kitchen hood exhaust and outside make-up air system shall be provided for dining facilities (DFAC) and comply with ASHRAE Handbook- HVAC Applications, NFPA 96, SMACNA, as per Kitchen design specialist and equipment supplier requirements, and as stated in this Section. Outside make-up air and exhaust systems for each hood shall be independent of the other duct systems in the DFAC. Residential kitchen ventilation hoods shall NOT be used. Kitchen exhaust hoods and exhaust ductwork shall be design for Type I (grease smoke and provided with baffle or mesh grease filters. Hood and exhaust ductwork shall be constructed from minimum 1.0 mm (20-gauge) stainless steel material. Exhaust flow rate shall be a minimum of 2,230 cmh per linear meter (400 cfm per linear foot) of open-sided hood.

The air velocity in the exhaust duct shall be not be less than 4 m/s (500 fpm) but limited to 7.6 m/s (1,500 fpm). All exhaust duct joints and seams shall be continuously welded or brazed. Bracing and supports shall be constructed of non-combustible material securely fastened to the structure. Bolts, screws, rivets, and other fasteners shall not penetrate the duct walls. Ducts shall be placed a minimum of 450 mm (18") from combustible material or 75 mm (3") from gypsum wallboard attached to non-combustible structures. Ductwork terminating through the roof shall extend a minimum of 1,000 mm (40") above the roof. Where roof terminations are not possible, ducts may be terminated through an exterior wall. All ductwork terminating through an exterior wall shall be located a minimum of 900 mm (3') from exterior openings and at least 2 m (80") above the interior floor. All exhaust ductwork shall be pitched to drain back to the hood.

Roof-mounted centrifugal exhaust fans shall be the upblast type. Exhaust fans shall be centrifugal and fan motors shall be located outside the airstream. Fan discharge shall not impinge on the roof, other equipment or appliances, or parts of the building. Discharge outlet of exhaust fans shall be a minimum of 1,000 mm (40") above the roof. Up-blast fans shall be hinged and supplied with a flexible weatherproof electrical cable to permit inspection and cleaning. Where roof installations are not possible, upblast type fans but in the horizontal configuration may be

mounted on an exterior wall. Fans terminating through an exterior wall shall be located a minimum of 900 mm (3') from exterior openings and at least 2 m (80") above the interior floor. All fan exhaust ductwork shall be pitched to drain back to the hood. Connection between ductwork and exhaust fans shall be flanged, gasketed, and bolted. Each exhaust fan shall be electrically interlocked with its corresponding outside make-up air fan to prevent system operation without both fans in service.

Outside make-up air shall be either an integral part of the hood system or be located within 1.0 m (40") distance from the hood to prevent cold drafts. Non-integral outside make-up air greater than this distance shall be tempered to within 6 C (10 F) of room design temperature. The outside air capacity shall be 85% to 90% of the hood exhaust capacity to ensure the kitchen area is under negative pressure. Remaining air balance, 10-15%, shall be pulled from the dining area through the kitchen. In general, outside make-up air shall be enough to prevent kitchen negative pressures from exceeding 5.0 Pa (0.02" of water).

Outside make-up air inlet locations shall take into consideration the prevailing wind direction and shall be placed upstream of exhaust outlets. Wherever possible, outside make-up air inlets shall be located a minimum distance of 3 m (10') from exhaust outlets. Where outside make-up air inlets are located within this distance from the exhaust outlets, the outside make-up air inlet shall be located a minimum of 920 mm (3') below the exhaust outlet. Each outside make-up air fan shall be electrically interlocked with its corresponding exhaust air fan to prevent system operation without both fans in service.

A separate general kitchen exhaust system, independent of the hood system, for the food preparation and serving areas in accordance with ASHRAE Standard 62.1. The general kitchen exhaust system shall be electrically interlock and cease operation when the main kitchen hood exhaust system is in operation.

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 area velocities of the louvers are below 2.5 mps (500 fpm). For inhabited buildings, locate all air intakes (from center-line of intake) at least 1.5 m (5') above the ground. Each air intake shall be provided with a motorized damper which is interlocked with the exhaust fan(s).

5.10.2 BATTERY ROOM EXHAUST

Battery room exhaust shall comply with UFC 3-520-05 and NFPA 70E. The exhaust fan for the lead acid shop shall be sized to maintain concentrations of hydrogen gas in the battery room to below the 1.0 percent concentration and shall be a minimum of 20 cmh/sq.m (1.0 cfm/sq.ft). The exhaust fan shall be sized larger when required for mechanical ventilation cooling. Fan(s) shall have a continuous operation rating and installed as high as possible within architectural constraints or a minimum of 1.5 m (5') above the floor with rodent-insect screen but be provided WITHOUT backdraft dampers (to facilitate natural ventilation). Any components such as fan and ductwork in contact with the exhaust air shall be constructed out of fiberglass reinforced plastic (FRP) or polyvinyl chloride (PVC). The ventilation system for the shop shall be designed to provide a negative static pressure by exhausting a minimum of 10% more air than is supplied. Supply air for the shop shall be 100% outside air. Outside air louver(s) shall be sized with calculations provided in the design analysis (DA) for review and installed as low as possible within architectural constraints or a maximum of 30 cm (1') above the floor with rodent screen but WITHOUT filters or backdraft dampers (to facilitate natural ventilation should the fan be nonoperational).

5.10.3 OVERHEAD VEHICLE TAILPIPE EXHAUST SYSTEMS

Exhaust system shall provided in shops for each vehicle maintenance bay to provide adequate air exhaust capacities and fume capture velocities.

Duct shall be constructed of stainless steel sheets of the minimum gauge thickness for ducts as required in SMACNA. Ducts shall be constructed and sealed in accordance with SMACNA and shall be round with longitudinal lock seam (Steel spiral wound duct is not acceptable) for a negative pressure.

Tailpipe adapters shall be of the tapered-cone type with spring clips or other suitable devices for exhaust pipe attachment. The adapter shall fit the nominal diameter exhaust pipe.

Flexible exhaust hose shall be 0.30 mm (0.012") minimum stainless steel. The exhaust hose suspension system shall suspend the flexible tubing overhead when not in use allowing it to be lowered to the operating level when required.

The suspension system shall be furnished complete with cable and operating mechanism. The suspension system shall be the counter-weighted or manually operated balancer type.

Fan system shall consist of a direct drive heavy duty radial blade blower capable of high static pressure vented to the outdoors. For vehicle exhaust systems, fan size and capacity shall be as per manufacturer's recommendation. Fan shall be mounted high in space for roof discharge or high gable sidewall termination. Control fan with wall switch.

5.10.4 LABORATORY EXHAUST SYSTEMS

In general, laboratory exhaust systms shall be provided in medical facilities, drinking and waste water treatment plants, waste collection facilities, and areas with similar uses. Exhaust hoods shall be sized with a minimum face opening approximately equal in size to the below counter top. Hoods shall be installed above the counter top a maximum of 600 mm (24"). The system shall consist of a stainless steel capture hood and duct with a negative-pressure blower capable of high static pressure and vented to the outdoors. Fan shall be sized for a hood face (or opening) capture velocity of 0.63 mps (125 fpm) and the static pressure (SP) required to draw the laboratory air through the hood and ductwork. Fan may be integral with the hood, roof-mounted, or wall-mounted and be controlled with a separate wall switch. Hood shall be provided with a fluorescent light fixture with a switch located on the exterior of the hood frame.

5.10.5 CEILING FANS

Ceiling fans shall be 5-bladed, 1320 mm (52”), minimum, in diameter, and provided at one per 40 sq.m (430 sq.ft) of floor space unless indicated otherwise. Fans shall be centered or distributed evenly throughout the room. Fan placement shall be coordinated with the lighting plan to prevent conflict or the casting of moving shadows. Fan mount shall be flush, standard, or angle mount depending on ceiling height and configeration. Fan shall be mounted such that the fan blades are a minimum 2.5 m of (98") above the finished floor. The fan shall be provided without light kit. The finish shall be factory painted white. The controls shall be wall-mounted from either a single pole switch or from two (2) 3-way switches to provide on/off operation. The electrical supply shall be as indicated. Install per manufacturers’ instructions.

5.10.6 OSCILLATING WALL FANS

Oscillating fans shall be 460 mm (18”), minimum, in diameter and installed in occupied administrative areas where ceiling fans are not feasible. Fans shall be centered or distributed evenly throughout the room. Fan mount shall be a painted steel wall bracket and mounted such that the fan blade is approximately 2.1 m (7’) above the finished floor. The finish shall be factory painted white. The controls shall be from either a single pole switch or from two (2) 3-way switches to provide on/off operation. The electrical supply shall be s indicated. Install per manufacturers’ instructions.

5.11 CONTROL 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.

5.11.1 THERMOSTATS

Thermostats shall be wall-mounted and located near the unit air returns or next to the main entrance door. For units serving more than one (1) area, the thermostat shall be located in the space with the highest heat generation. Wall-mounted thermostats shall be mounted 1.5 m (5') above the finished floor and be easily accessible.

5.11.2 OVERHEAD DOOR CONTROL DEVICES

Control switch and wiring shall generally be provided in large shop areas to activate when the overhead doors are in the open position. The switch shall override the space thermostat and deactivate the space heating equipment. The minimum setpoint temperature to override the heating deactivation switch during door-open periods shall be 5 C (40 F) for freeze protection. After the doors are closed, the room thermostat should assume normal control.

5.12 TESTS FOR HVAC EQUIPMENT

Upon completion of all HVAC 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 system(s) of concern as necessary until the required conditions are obtained. Operational tests shall be conducted once during the winter and once during the summer. Contractor shall coordinate with the Contracting Officer on when the test shall be scheduled. Tests shall include all interlocks, safety cutouts, and other protective devices to ensure correct functioning. All tests shall be carried out with full written records to be submitted in tabulated form with the design requirements and final settings to the Contracting Officer upon completion. The following tests and readings shall be made by the Contractor at the beginning of the testing and in the presence of the Contracting Officer:

Conditions:

1. The make, model, and capacity of each piece of equipment tested.
2. Outside ambient dry bulb (db) temperature and wet bulb (wb) temperature.
3. Room ambient dry bulb (db) temperature and wet bulb (wb) temperature before test.
4. Room ambient dry bulb (db) temperature and wet bulb (wb) temperature during test.

Packaged Heat Pumps, Air Handling Equipment:

Air quantities shall be obtained by anemometer readings and all necessary adjustments shall be made to obtain the specified quantities of air indicated at each inlet and outlet.

Following readings shall be made:

1. Supply, return, and outside air quantities by each system.
2. Supply, return and outside air temperature for each system.
3. Voltmeter and ammeter readings for each system component.
4. Motor speeds, fan speeds, and input ampere readings for each fan.
5. Split-Pack Heat Pumps, Unit Heaters: The following readings shall be made:
6. Voltmeter & ammeter readings for each system component.
7. Supply and return air temperatures for each system.

Exhaust, Outside Make-up, Air Fans (Including, but not limited to, battery room, laboratory, kitchen, vehicle, & welding exhaust systems):

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 or outlet.

The follow readings shall be made:

1. Supply and exhaust air quantities by each system.
2. Motor speeds, fan speeds, and voltmeter and ammeter readings for each fan.

5.13 ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT

All electrical work shall comply with the National Electric Code.

Operation of the control system shall be at the manufacturer’s standard voltage for the unit.

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

1. Refrigerant compressors: Provide hermeticly sealed type with inherent (internal) overload protection.
2. Refrigerant condensers: Provide internal thermal overload protection.
3. Refrigerant evaporator fans: Provide Open Class "A" fan motor type with internal thermal overload protection.

5.14 WOOD COOKING STOVES FOR DINING FACILITIES

A separate wood burning cooking stove kitchen annex building shall be provided within the DFAC yard with commercial grade built-in-place wood-fired cooking stoves. The annex shall be located adjacent to the kitchen at

minimum distance of 4.0 m (12') and maximum 10.0 m (30') away and be provided with a covered walkway. The annex shall be provided with a concrete slab, a sloped metal or concrete roof slab, and a minimum of three (3) reinforced CMU walls. Walls shall have a minimum height of 3.0 m (10') from floor to finished ceiling). The wood stove kitchen shall be well vented with louvers elevated a minimum of 1.5 m (5') on the end or side walls. Exhaust fans shall NOT be provided because of the effects on the chimney draft. A covered wood storage area, equal to a minimum of 0.3 cu.m (10 cu.ft) of volume per stove, shall be provided for rain shielding. Security fencing with gates and locks shall be provided around the entire annex kitchen complex.

The annex kitchen concrete floors shall be provided with trench drains that extends the length of the cooking area for cleaning purposes. Water service shall be provided for the cooking annex. Water piping shall be buried to prevent pipe freezing. Freeze-proof yard hydrants (where the actual valve is located below the frost line) shall be provided.

The kitchen annex shall be provided with power for light fixtures, receptacles, and other electrical devices required for a complete functional facility, see Electrical.

5.14.1 STOVES

Stoves shall be constructed from masonry fire bricks and cooking stove tops shall be wide enough for a person to walk and accessible by small movable stairs. The stove firebox shall be shaped to maximize the heat absorbed by the cooking pots above and lined with an 15 mm (1/4") cast-iron insert to protect the fire brick. A 40 mm (1.5") toe space shall be provided for the entire interior length of floor in front of the stove lineup.

The minimum height of the stove shall be 950 mm (37") with a minimum stove-to-finished-ceiling clearance of 2.0 m (80"). Stoves shall be topped with a minimum 50 mm (2") thick cast-iron plate. The cast-iron stove top shall be a minimum of 1,000 mm x 1,000 mm (40" x 40") square with a 750 mm (30") diameter hole in the center to accommodate a similar diameter stove plate insert. The 750 mm (30") metal insert shall also have a 450 mm (18") diameter hole in the center that accommodates a second smaller stove plate insert. The second insert shall have a 250 mm (10") diameter hole in the center that accommodates a final stove plate insert.

A minimum 25 mm (1") thick thick cast-iron fire grate (grid plate or fire basket) shall be provided in the wood firebox not less than 100 mm (4") nor more than 150 mm (6") above the firebox floor . The fire grate grill spacing shall not be less than 50 mm (2"). The wood feeding and ash removal doors shall be located on the exterior. The doors shall be constructed of not less than 7.0 mm (1/4") thick steel and provided with 40 mm (1.5") thick metal frames. One (1) exterior wood loading door shall have at least one (1) smaller peek door on the door itself that is approximately 100 mm x 100 mm (4" x 4").

5.14.2 STOVE CHIMNEYS

Each stove shall be provided with a dedicated chimney routed inside the building envelope (or kitchen space) for the maximum allowable distance; hotter exhaust gases produce better chimney drafts. The main chimney shall be constructed using a stainless steel vent (or flue) enclosed with face brick. The face brick shall protected the user from accidental human contact and the metal flue from potential damage from large cooking pots; metal rails may be provide with approval. The minimum flue diameter shall not be less than 200 mm (8") diameter and thickness shall not be less than 3.0 mm (12-gauge). Chimneys penetrating and exiting through walls shall be provided with a 16 mm (5/8") thick steel lentil and exterior eschuteon type pipe sleeve for wall anchoring. All exterior protions of a chimney that exits through a wall shall be double-wall stainless steel with a minimum 25 mm (1") gap filled with fire-proof insulation.

All chimneys shall rise a minimum of 60 cm (24") above the roof ridge so a stable draft can be produced. In addition, the chimney shall be provided with rain cap to reduce the chances of adverse wind pressures. The chimney system shall be reasonably well-sealed to prevent leaks that introduce cool air and make the system more vulnerable to adverse pressures. **Contractor must submit shop drawings for approval.**

5.15 COLD STORAGE SYSTEMS

All cold storage units shall be designed to operate as both refrigerators or freezers should a freezer become non-operational (requiring the frozen stores to be transported to the other unit). The Contractor shall submit to the

Contracting Officer for approval, prior to start of work, copies of both the assembly and installation instructions along with shop drawings for appropriately sized walk-in refrigerators and freezers. The submittal shall also include the proposed manufacturer, cooling load calculations, evacuation and charging procedures, operation and maintenance data, and start-up and initial operational tests.

5.15.1 MODULAR CONSTRUCTION

Dimensions shall be as indicated. All walk-in cold storage units shall be the prefabricated insulated panel (or modular) type. Doors shall be the swing type. Remote refrigeration equipment shall be located on the exterior of the building. Floors of cold storage units shall be the prefabricated insulated type provided by the manufacturer of the cold storage units. The concrete floors under the cold storage units shall NOT be depressed.

Walls, ceilings, doors, and flooring of the cold storage units shall not contain any wood or wooden material. Walls, ceilings, doors, and flooring shall be made of sandwiched panels filled with polystyrene or urethane insulation material. Interior panel surfaces shall be aluminum or stainless steel lined. Ramps shall be provided at the door of each cold storage unit.

5.15.2 REFRIGERATION EQUIPMENT

All refrigeration systems shall be designed for 16-18 hours of continuous operation and be able to maintain the interior product temperature between -23 to -18 C (-10 to 0 F) with an outside ambient temperature down to of –18 C (0 F). Remote condensing units shall be factory fabricated and rated in accordance with UL303 and ARI 365 and consist of, as a minimum, motors, air cooled condensers, receivers, and compressors all 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. Evaporator shall be the forced convection unit cooler type made to suspend from the ceiling panels with forced air discharged parallel to the ceiling. Evaporators shall be provided with air circulating motors, multi-fin tube type coils assembled within a protective housing, and grilles. Air circulation motors shall be lifetime sealed and the entire unit-cooler assembly shall be accessible for cleaning. Refrigeration piping shall be annealed or hard drawn seamless copper tubing in conformance with ASTM B280.

Condensate drip pan and drain connections shall be provided for the evaporators. Condensate drains and drain lines in the space between the modular floors and concrete slab shall be provided with electric heating cable thermostatically controlled to maintain 10 C (50 F) at zero flow rate. The cable shall be sized in accordance with manufacturer’s recommendations.

Outdoor condensing units shall be provided with a protective canopy and security fence or wall to protect from direct sun, weather, and vandalism.

5.15.3 CONTROLS

A recording thermometer, temperature alarm system, and interior lighting with exterior switch shall be provided as a minimum. The temperature alarm shall be connected to a remote temperature alarm located in a frequented area. Automatic electric heat defrosting system shall be provided for ALL cooler units to allow for freezing operations, Timer type defrost controllers shall be provided. For power characteristics; See Electrical.

5.15.4 COLD STORAGE TESTING

Start up and initial operation shall be undertaken upon completion of the equipment and refrigerant piping installation. Safety and automatic controls shall be adjusted to place them in operating sequence. The manufacturer’s recommended readings shall be record hourly for a period not less than 24 hours. Upon completion of operational tests, the systems shall be performance tested for a duration not less than eight (8) hours. The test shall include the following information to be in the report with conclusions regarding the adequacy of the systems:

5.15.5 TIME, DATES, AND DURATION OF TESTS

The Contractor shall provide the following information when testing refrigeration equipment:

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

5.15.6 COLD STORAGE OPERATIONS & MAINTENANCE

A chart showing the complete layout of the refrigeration systems, including piping, valves, wiring, and control mechanisms shall be provided. Printed instructions covering the maintenance and operation of refrigeration equipment shall be submitted. Shutoff valves shall be tagged in accordance with the instructions. Special tools necessary for repair and maintenance of the systems shall be provided. Upon completion of the work and at a time designated by the Contracting Officer, instruction shall be given 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.

5.16 MECHANICAL REQUIREMENTS FOR GENERATORS

Generator quantities and sizes shall be as stated in Section 01010. The following shall be provided in the Mechanical design and installation for **Prime** stationary generator sets and related mechanical systems. This includes, but not limited to: Foundations, mountings, exhaust systems, cooling systems, ventilation, noise attenuation, and equipment configuration. See Electrical for power and electrical equipment requirements, and Plumbing for fuel system requirements,

The generator set(s) shall be the manufacturer's design for outdoor weather-proof installation with skid-mounted high-ambient temperature radiator rated for 50 C (120 F).

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

5.16.1 EXTERIOR INSTALLED GENERATORS

All exterior installed generator sets (i.e. With three or fewer walls) shall be provided with, as a minimum, the manufacturer's factory installed weather-proof enclosure cabinet, the manufacturer's integral muffler system, vibration isolators, and vibration isolating foundation to reduce noise and prevent damage to the overhead structure. Generator set(s) shall be oriented with the prevailing winds when possible (with the alternator upwind) to promote heat removing air flow across the alternator and engine by the radiator fan.

All exterior weather-proof generator sets shall be provided with a covered structure and enclosed with a chain link security fence. A structural cover shall also be provided over the generator accessories (i.e. Switch gear, etc.). The overhead structure shall have a minimum clearance of 2.0 m (6.5’) above the equipment and extend out with a minimum overhang of 1.0 m (40”) beyond the equipment and any spill containment dikes.

Exhaust systems shall have minimal backpressure, directed to disperse the noise away from people and occupied buildings, and be located near the radiator air discharge.

5.17 MEDICAL WASTE INCINERATORS

Medical waste incinerators shall be provided in quantities and capacities as required in Section 01010 and specifically designed by the manufacturer to dispose of all medical wastes. All units shall be designed for 8 hours per day of continuous operation and be rated in quantity per hour (i.e. kg/hr or lbs/hr).

Incinerator loading or charging of medical waste shall be batched-fed manually.

Primary combustion chamber shall be the stationary fixed-hearth (or kiln), multiple-chamber, retort type or larger capacity rotary-hearth (or kiln) type. Burner and combustion air controls shall be fully automatic comprising of, as a minimum, electronic ignition and all necessary interlocks and safety devices to provide safe operation. The chamber and burner shall be designed to maintain a minimum combustion temperature of at least 760 to 870 C (1400 to 1600 F). The ash-removal system shall consist of the automatic continuous removal of the ash into an ash-quench pit where cooled by water and removed by conveyor.

Secondary combustion chamber shall be a solid-walled and -floored, horizontal, refractory-lined cylinder type incinerator designed to oxidize (or burn) the organic vapors and gases. Burner and combustion air controls shall be fully automatic comprising of, as a minimum, electronic ignition and all necessary interlocks and safety devices to provide safe operation. The chamber and burner shall be designed to maintain a minimum combustion temperature of at least 930 to 1200 C (1700 to 2200 F) with a minimum gas residence (or dwell) time of 2.0 seconds. The ash-removal system shall consist of, as a minimum, the direct manual removal into a dry collection hopper.

Cyclone air filters shall be provided to remove the larger particulates. Cyclone air separators may be provided with powered fans to increase the velocity of the gases inside the cyclone to improve the collection efficiency for smaller particles.

5.17.1 INCINERATOR STACKS (OR CHIMNEYS)

Stack size shall be in accordance with the manufacturer's recommendations. Stacks shall be the forced-air type and completely self-supporting and unattached to nearby structures. As a minimum, stack heights shall minimize downwash of stack emissions due to aerodynamic influences from nearby structures and be calculated in accordance with DoD 4715.05-G, Overseas Environmental Baseline Guidance Document. Stacks shall be provided with corrosion-resistant steel weather caps.

5.18 OPERATIONS & MAINTENANCE (O&M) FOR MECHANICAL

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

The O&M manuals must be provided prior to any training activities. Manuals shall be “tri-lingual” in Dari, Pashto, and English.

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

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

6.0 PLUMBING

6.1 GENERAL

The Contractor shall design and build domestic cold and hot water systems, waste, drain and vent systems, compressed air, medical gas storage and distribution systems, fuel-oil storage and distribution systems, and as required in the facilities identified in Section 01010 Scope of Work and as described herein. The Contractor shall also be responsible for complete design and construction of all domestic and special plumbing systems required for full and safe operations for all facilities or structures required in this contract.

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

6.2 SUB-CONTRACTORS QUALIFICATIONS

The plumbing systems shall be executed by specialist subcontractors experienced in the design and construction of implied systems and the types of systems described in this Section.

6.3 STANDARD PRODUCTS & SUBMITTALS

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.

The Contractor shall submit the following for 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 the codes, standards and regulations; Drawings, as necessary, indicating location and installation details.

6.4 CODES, STANDARDS, & REGULATIONS

The design and installation of equipment, materials and work covered under the plumbing services shall conform to the standards, codes, and regulations provide in the paragraph, List of Codes and Technical Criteria, where applicable except where otherwise indicated under particular clause(s). The publications to be taken into consideration shall be those of the most recent editions and primarily in accordance with the ICC International Plumbing Code (IPC) and ASHRAE Handbook-HVAC Applications for Service Water Heating. Standards other than those mentioned 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.

6.5 EQUIPMENT PROTECTION

Exterior plumbing equipment shall be pad-mounted. In addition, security fences, traffic bollards, designed overhead structures for exterior installed generators, incinerators, and adjacent fuel tanks. LP gas-propane canister storage areas shall be provided. Overhead canopy height shall be a minimum of 2 m (80") above the highest point of the engine cabinets and fuel tanks.

6.6 PLUMBING SYSTEM REQUIREMENTS

6.6.1 WATER

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

6.6.2 PIPING MATERIALS

Domestic cold water shall be distributed by means of standard weight schedule 40 galvanized steel pipe, Polyvinyl Vinyl Chloride (PVC) or Polyethylene (PE) (ASTM D 2737) plastic piping. Domestic hot water shall be distributed by means of standard weight schedule 40 galvanized steel pipe, or Chlorinated Polyvinyl Vinyl Chloride (CPVC) piping. Domestic water joints shall be connected using either solvent cement or mechanical threads.

Waste and vent piping can be made of either galvanized steel pipe (schedule 40) or Polyvinyl Vinyl Chloride (PVC) conforming to ASTM D 2665. Flexible waste and vent lines from fixtures (i.e. Lavatories, Water Closets, etc.) and inserted into an adjacent pipe are not allowed accept for clothes washer installations.

Corrosion protection shall be provided if galvanized piping comes in contact with earth or masonry floors, walls or ceilings. The Contractor shall attempt to route all piping beyond the grasp of the occupants. **All exposed domestic water, waste, and vent piping shall be schedule 40 galvanized steel; wall mounting brackets for exposed domestic water, waste, and vent piping shall be spaced a maximum of 40 cm (16") apart to minimize vandalism.**

Polypropylene (PP) pipe is NOT allowed as a substitute (where plastic piping is allowed) because connections, many times, are made using the fusio-therm technique which requires special training and maintenance equipment for installation and repair.

6.6.3 PLUMBING WATER FIXTURES

The following typical plumbing fixtures shall be provided:

WC-1: Eastern Water Closets: Eastern water closets shall be provided 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/hose bib 300 mm (12") above finished floor on the right (from a perspective of standing inside of the cubicle and looking out) sidewall of the cubicle. Toilets shall be oriented north and south; toilets shall not face east or west.

WC-2: Western Water Closets: Western style water closets shall be provided with flush tanks and shall be provided as requested by the User. Western style toilets shall be white vitreous china, siphon jet, round bowl, pressure assisted, floor mounted with floor outlet. Top of toilet seat height shall be 356 to 381 mm. Water closet shall be flush tank type. Provide a cold water spigot 300mm above finished floor. Spigot shall have a flexible hose and spray nozzle.

FU-1: Flush Valve Urinals: Urinals shall be white, vitreous china, wall-mounted, wall outlet, siphon jet, integral trap and extended side shields and shall be provided as requested by the User. Provide urinal with the rim 600 mm (24") above the floor. Water flushing volume of the urinal and flush valve combination shall not exceed 0.5 liters (0.125 gallons) per flush. Mount flush valves not less than 280 mm (11") above the fixture.

L-1: Lavatories (For Afghan Facilities): Lavatories shall be trough-type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse. Provide maintenance access to waste piping and P-traps from under the sink. Trough-type sink faucets shall be similar to heavy duty service sink faucets with one-piece brass body construction, fixed short integral spout, hot and cold water manual mixing valves, and ability to withstand abuse. Lavatories inside prisoner cells shall be tamper-proof with integral spout, soap depression, and outlet connection to slip 40 mm (1.5") OD tubing.

JS-1: Service (Mop or Janitor’s) Sink: All janitor's sinks shall be floor mounted, enameled cast iron, and be provided with copper alloy rim guard. Service sinks provided in maintenance areas shall be concrete. Service sinks in battery rooms shall be acid resistant. Include a stainless steel shelf and three (3) mop holders with janitor sinks. Provide hot and cold water heavy duty service sink valves with manual mixing. Faucet handles shall chrome plated brass or bronze alloy.

SH-1: Shower Base shall be sized to fit from wall to wall. Refer to Architectural drawings and specifications. Showerhead and faucet handles shall be chrome plated brass or bronze alloy. Provide hot and cold water valves for manual mixing. In addition to a shower head, provide each shower stall with a threaded faucet approximately 1.2 m (4') AFF with hot and cold-water controls, mixing valve, and diverter valve so water can be directed to either the shower or to the lower faucet. Shower shall be provided with low flow shower head not to exceed 7.0 lpm (2.0 gpm) (Note: Provide flow restrictor to achieve designated flow at available water pressure). The shower head shall be heavy duty type and securely fastened to the wall. Hand-held shower head with flexible hose shall be allowed.

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.

ESE-1: Emergency Shower and Eye Wash. Provide emergency shower and eye wash assembly as indicated on architectural drawings. In non freezing locations, a floor drain shall be provided. Provide a floor drain in the area if appropriate (i.e. Non-freezing locations, etc.).

EEW-1: Emergency Eye Wash Assembly. Provide emergency eye wash assembly in facilities where shown on the architectural drawings. Provide a floor drain in the area if appropriate (i.e. Non-freezing locations, etc.).

EEF-1: Emergency Eye and Face Wash: Provide emergency eye and face wash assembly in facilities where shown on the architectural drawings. Provide a floor drain in the area if appropriate (i.e. Non-freezing locations, etc).

KS-1: Kitchen Sink. Single bowl sink shall be heavy gauge formed type 304 stainless steel.

KS-2: Kitchen Sink. Two (2) compartment sink shall be heavy gauge formed type 304 stainless steel.

KS-1 and KS-2 Faucet: Faucet bodies and spout shall be chrome plated brass or bronze alloy. Handles, drain assembly, and stopper shall be corrosion resisting steel or brass/bronze alloy.

Ablution Trench: See building floor plans for size and construction of trench and number of stations. Provide trench drain with brass grating and strainer.

Ablution Trench Faucet type: See L-1 Option 1 and Option 2 above. Provide faucets above with hose end, 1 meter of hose a spray nozzle and a hook to hang the nozzle. Install faucet 300 mm above the floor.

Grease Trap: Refer to Civil Drawings.

FS-1: Floor Sink. Provide square floor sink with 300mm overall width or diameter and 250mm nominal overall depth. They shall have acid resistant enamel interior with cast iron body, aluminum sediment bucket and perforated grate of cast iron. Outlet size as indicated on plans. Provide full, half or three quarter grates as needed

TD-1: Trench Drains: Floor trench shall be of concrete construction with a flush mounted cast iron grate. The cast iron grate shall be sectionalized for cleaning access. The grate shall fit into a frame so the grate is flush with the finished floor. Iron grates shall be fabricated in sections in length not greater than 1,500 mm (5'). The cast iron grate shall have 12 mm wide slots, maximum. 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. Trench drains shall not be piped into the grease waste system.

HB-1: Freeze proof hose bib for exterior use.

HB-2: 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 m (40') of hose. Provide clean-up spray nozzle with hose assembly.

Traps: Provide P-Traps per IPC for all fixture drains, floor and trench drains, and shower drains. P-traps shall have minimum of 50 mm (2") water seal.

PS-1: Large Pot sink, provide clean-up spray nozzle with hose assembly.

PS-1 Faucet: Provide hot and cold water heavy duty service sink valves with manual mixing. Faucet shall have hose end on fixture spout. Provide 2 m of hose and spray nozzle. Mount faucet 300 mm above top of largest pot.

TS-1: Laundry Tub Sink: Sinks shall be the standard height polypropylene single-bowled floor-mounted on four (4) legs. Approximate tub dimensions shall be approximately 660 mm depth x 635 mm front (22" x 25") with a minimum 80 l (20 gal) capacity. Sinks shall be provided with hot and cold water valves for manual mixing. Faucet handles shall be copper alloy.

6.7 HOT WATER

Hot water shall be provided for the facility to supply 50 C (120 F) hot water to fixtures and outlets requiring heated water. Water of a higher temperature, 60 C (140 F) and above, shall be provided for special uses or processes as in kitchens (except hand wash lavatories) and for sterilization. All hot water piping shall be insulated. A hot water re-circulating pump shall be provided if hot water piping run exceeds 30 m (100) in accordance with the IPC.

6.7.1 WATER HEATERS

The hot water shall be generated by electric water heaters (WH). All WHs shall be factory insulated. Each water heater shall be equipped with a vacuum relief valve and temperature and pressure (T&P) relief valve that discharge into a nearby floor drain; discharge piping shall terminate 50 mm (2") above the floor drain. The larger floor-mounted units shall be located inside mechanical rooms, storage rooms, janitor rooms, or similar type spaces. Smaller wall-mounted units may be located in toilet-lavatory areas for single remote water closets. Multiply water

heaters (two or more) shall be of equal size and connected by common inlet and outlet manifolds in a **"reverse return"** configuration to ensure equal flow and drawdown rates. All floor-mounted WHs shall be elevated on a 100 mm (4") raised concrete pads. In cases where the pressure of the water system violates the manufacturer's recommendations, a pressure reducer shall be installed in the line before the water heater.

Water heater storage capacity (liters) and recovery capacity elements (kW or liters per hour) shall be sized in accordance with ASHRAE Fundamentals Handbook-HVAC Applications, "Service Water Heating," Provide water heater sizing according to the following chart:

Building Type	ASHRAE Category
Barracks, Latrine	Hotel
HQ, Admin, TOC, DPW, PX,	Office
DFAC	Hotel
Medical Clinic, Hospital	Hospital

The unit(s) capacities shall be for commercially available tank and electric heating element sizes.

6.8 WASTE, DRAIN, & VENT SYSTEMS

Every trap and trapped fixture shall be vented in accordance with the IPC. In order to minimize vent piping, incorporate either "Circuit Venting," "Combination Drain & Vent," or "Wet Venting" options systems in accordance with the IPC.

6.8.1 DESIGN & INSTALLATION CONSIDERATIONS

The Designer and installer shall have in mind a vent option (i.e. Fixture Venting, Circuit Venting, Wet Venting, etc.) before designing the route of the waste line(s) in a building in order to comply and avoid inconsistencies with the IPC. **Under no circumstances shall VENT PIPING be routed horizontally under the floor due to blockages over time.** Every dry vent connection shall rise up vertically from the waste pipe no less than 45-degrees with the horizontal (Note: In most cases, the connection will be 90 degrees for the horizontal or straight up. See IPC). Every dry vent shall rise up vertically at least 15 cm (6") above the flood level rim, of the fixture being vented, before going horizontally.

6.8.2 FLOOR DRAINS

Floor drains shall be provided in each room that contains a water source. Floor drains shall be provided in the mechanical equipment and toilet/shower/ablution rooms. Floor drains shall be provided next to water heaters. In mechanical rooms, floor drains shall be provided to avoid running drain piping long distances above or over the floor. Drain outlet shall use a P-trap system to trap sewer gases and shall be a one-piece system without removable parts. Trench drains shall be provided for the DFAC kitchen areas. This style of floor trench shall be installed due to the kitchen washdown cleaning practices of the local national staff.

6.8.3 CLEANOUTS

Cleanouts shall be provided no more than 8 m (25') apart when measured from the upstream entrance of the cleanout.

6.9 SPECIAL PLUMBING SYSTEMS

Contractor shall design and construct compressor air storage and distribution, waste-oil collection and storage, fuel-oil storage and distribution and 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.

6.9.1 KITCHEN GREASE INTERCEPTORS

A grease interceptor or automatic grease removal devices shall be required to receive the drainage from fixtures and equipment with fats, oils or grease-laden waste located in food preparation areas, Facilities include, but not limited to, kitchens of dining facilities (DFACs), hospitals, school, etc. Fixtures and equipment shall include prep sinks, pot sinks, pre-rinse sinks, automatic dishwashers, and similar devices. All such devices shall be connected to the grease waste. **Floor drains shall not be connected to grease waste unless the floor sink is used to empty pots.**

6.9.2 PLUMBING FOR BATTERY ROOMS

Plumbing features for battery room shall comply with requirements in Part 6 of UFC 4-229-01N. Plumbing shall be provided as follows:

Acid-resistant and alkali-resistant floor drains shall be provided in the lead acid and NICAD shops, respectively.

Emergency shower and eyewash facilities shall be provided and be located within 16 m (25') of the battery handling areas.

Acid-resistant and alkali-resistant dump sinks shall be provided in the lead acid shops. The sinks shall be elevated to allow emptying into portable containers for disposal.

Facilities shall be provided with hose bib, garden hose, and rack for flushing and neutralizing spilled electrolytes for shop.

6.9.3 COMPRESSED AIR SYSTEMS

Compressed air system shall be in accordance with UFC 3-420-02FA. 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 10 kPa (200 psig) maximum for 6 kPa (125 psig) normal units. High-pressure system (above 10 kPa (200 psig)) shall be provided to supply compressed air to equipment where required. Provide an engine driven air compressor where generator electrical power is unreliable. Noise level of air compressor should not exceed acceptable db limits.

The air distribution system shall be provided with necessary regulator valves to maintain desired pressure. Compressed air drops shall be provided in each maintenance bay, tire shop, tool room, paint shop and other areas requiring compressed air service. 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.

6.9.4 MEDICAL GAS SYSTEMS

Medical gas system design and installation shall include all labor, equipment and services necessary for and incidental to the installation of piped medical gas and support, and vacuum systems. Oxygen systems shall be complete to the source valve, ready for connection to the bulk gas supply system. All systems shall be complete, started, tested and ready for use.

The following gas, support, and vacuum systems conforming to NFPA 99 Level 1 criteria shall be provided: oxygen (O), medical compressed air (MA), and medical-surgical vacuum (MV).

None of the above systems intended for patient care shall be supplied to or used for any purpose other than patient care applications.

The Contractor shall provide the initial supply of gases in cylinders or containers as appropriate for cylinder sources a minimum of four (4) containers of each gas completely filled at turnover to the Government. In addition, the Contractor shall submit, for approval, detailed drawings for the complete systems including piping layouts and

locations of connections; dimensions for roughing-in, compressor foundations, and support points; schematic diagrams; and wiring diagrams or connection and interconnection diagrams.

Upon completion of the installed systems, the Contractor shall test and provided test reports in booklet form showing all field tests performed to adjust each component and field tests performed. Each test report shall indicate the final position of controls.

6.9.5 WASTE-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.

6.9.6 DRAINAGE FROM MAINTENANCE AREAS

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.

6.10 GENERATOR & INCINERATOR FUEL STORAGE & DISTRIBUTION

The work shall include the fabrication and installation of the entire fuel storage and distribution system.

6.10.1 FUEL OIL STORAGE AND CONTAINMENT

Fuel Oil Storage and Distribution system shall be provided to support the operation of diesel engine generator set(s) and incinerator(s). Tanks shall be designed to store those fuels specified in Mechanical.

Fuel (non-waste oil) storage tank capacity shall be as specified in Section 01010. For initial operation and testing, only non-waste oil fuels shall be provided. **The Contractor shall provide a full supply of fuel for ALL tanks at the time of turnover to the Government**.

Bulk storage of fuels shall be designed around above-ground horizontal steel tanks with single-walls and containment dike. **Under NO circumstances shall GALVANIZED tanks be provided for storage of fuel oil or diesel.** Tanks shall be installed in accordance with NFPA 37.

The containment dike(s) shall be sized to contain the entire contents of the tank plus 10 percent. The dike structure shall be constructed of reinforced concrete. If more than one (1) tank is sharing a containment dike, then the dike need only be sized for the capacity of the largest tank, plus 10 percent.

Bulk storage tanks shall be designed and manufactured for horizontal aboveground installation. 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. Molded neoprene isolation pads shall be provided at locations where steel contacts concrete to isolate the tank. Steel tank supports specifically are prone to encounter premature rusting due to constant exposure to moisture and their incompatibility with concrete.

Tanks of 3,880 to 45,400 liters (1,000 to 12,000 gallons) capacity shall be provided with 760 mm (30") diameter manways. Tanks larger than 45,400 liters (12,000 gallons) shall be provided with 900 mm (36") diameter manways. Tanks 3,800 liters (1,000 gallons) and larger shall be provided with a minimum of one (1) tank manway to allow for internal tank access. Piping shall not penetrate through access manways. Tank shall be provided with a combination cleanout and gauge connection.

Vent pipe sizing shall be not less than 32 mm (1-1/4") nominal inside diameter. Vent shall be the rupture disc type calibrated to burst at 14 kPa (2 psi) pressure, and operate at 80 percent of burst setting. Tank shall be provided with an overfill alarm system. Tank shall be provided with two (2) stick gauges graduated in m and mm. Stick gauge shall be of wood and treated after graduating to prevent swelling or damage from the fuel being stored. Cathodic protection shall be provided for metal components in accordance with the manufacturer's recommendations. Storage

tanks shall be handled with extreme care to prevent damage during placement and shall be installed in accordance with the manufacturer's installation instructions.

At least one (1) external platform/ladder access to tank top (i.e. manway) shall be provided and installed on a concrete pad.

6.10.2 FUEL DISTRIBUTION SYSTEM

Fuel system shall be designed to supply clean fuel to the generator(s) and incinerator(s). Fuel shall be transferred from the bulk storage tank(s) by either the generator engine fuel pump(s), bulk tank submersible pump(s), or duplex-fuel pumps as determined by the designer and/or manufacturer, and be fitted with in-line fuel filters within 2 m (7') of the tank shell.

Fuel piping shall be black steel for ALL piping above grade and either steel or fiberglass for underground. Rubber hoses shall not be allowed. Under NO circumstances shall GALVANIZED piping, fittings, valves, or other equipment be used for fuel oil or diesel conveyance. Secondary containment for underground fuel piping shall be provided with either double-wall fiberglass, double-wall black steel inner and steel outer with cathodic protection, double-wall black steel inner and fiberglass outer, or either black steel or fiberglass piping located in a concrete secondary containment trench with applied POL-resistant coating and removable covers (traffic-rated as applicable). Piping shall be installed straight and true to bear evenly on supports. Piping shall be free of traps, not embedded in concrete or pavement, and drain toward the corresponding storage tank when elevation permits. Belowground nonmetallic pipe shall be installed in accordance with pipe manufacturer's instructions. Belowground piping shall be laid with a minimum pitch of 0.4 m per 100 m (0.4 percent slope).

Day tank(s) for generators shall be provided if so determined by the designer and/or manufacturer and **shall be provided one (1) for each generator set** and with secondary containment (i.e. Double-wall tank (Not commonly available at this time), containment dike, etc.) and store enough fuel to operate each generator set at full load for an 8-hour period. However, total capacity of all tanks located in an enclosed engine room shall not exceed 2,500 l (660 gal). Complete fuel piping hydraulic calculations shall be clearly shown in the 65% design analysis (DA) with the generator engine fuel pump manufacturers specifications (in the form of a catalog cut). and, if provided, the submersible or in-line fuel pump manufacturer's specifications.]

6.10.3 FUEL OFF-LOAD SYSTEM

A fuel filling system shall be provided for unloading fuel from fuel tanker trucks into individual bulk storage tanks and comprises of truck pad(s) and valves all in weather-proof cabinet. The system shall provide remote fuel level monitoring panels at the pad(s). Lockable containment box shall be provided to contain any spillage encountered during tank filling. Before construction begins, the Contractor shall coordinate with the Contracting Officer Representative and locate the fuel off-loading point outside of the perimeter wall to facilitate transfer of fuel from the commercial tanker trucks to the bulk storage tanks.

6.10.4 TANK/PIPE TESTING AND TURNOVER

A tightness test shall be performed on each storage tank and associated piping. The tank tests shall be performed prior to making piping connections. Tests shall be capable of detecting a 0.1 ml/s (0.0126 cu.ft/h) leak rate from any portion of the tank while accounting for effects of thermal expansion or contraction. Each storage tank shall be pressurized with air to 35 kPa (5 psi) and monitored for a drop in pressure over a two (2) hour period during which there shall be no drop in pressure in the tank greater than that allowed for pressure variations due to thermal effects. Following the tank tightness test(s), 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. Also following the tank tightness test(s) all associated piping shall be tested using the same procedures stated for testing the tank(s), **The Contractor shall provide a full supply of fuel for EACH tank at the time of turnover to the Government**.

6.11 VEHICLE WASH FACILITIES-RACKS

The following shall be provided in the design and installation for wash facilities to clean vehicle exteriors only. This includes, but not limited to: Foundations, mountings, pumps (booster pumps if required), wash stations, equipment configurations. See Electrical Section for power, lighting, and electrical equipment requirements,

As a minimum, each wash station island shall consist of water supply piping with valve boxes, concrete pads with vehicle barriers and trench drains, tower(s), and cleanup hydrants (i.e. Hose bibs). **NO solvents or detergents are used to wash vehicles at the facility.**

Minimum pressure at the nozzles shall be 50 kPa (5.2 bars or 75 psi) with a minimum design flow rate of 95 lpm (25 gpm) for each tower arm hose and 95 lpm (25 gpm) for each hydrant, all operating simultaneously. Pressure and flow rate requirements shall be used to facilitate the (booster) pump selection. All pumps shall be installed on a concrete pad, protect in a weather-proof enclosed structure with bollards, and sized with hydraulic calculations that are included for review in the design analysis (DA), For facility site water supply, see Civil.

Each wash station shall be provided with heavy-duty traffic-rated trench drains, below-grade concrete valve box (with traffic-rated cover) to isolate from the water supply. For facility wash station site plan, see Civil.

In addition, each wash station shall be provided with at least one (1) 5 m (16') high tower of sufficient strength to support a minimum of one (1) hose pivot (i.e. Swing arm) without visible deflection. Hose pivot shall rotate a minimum of 180 degree and be a minimum or 3 m (10') in length (to pass over the vehicle), Hose pivots shall be provided with a flexible hose 10 m (32') minimum in length that is fitted with a durable triggered wand (i.e. Long nozzle type),and controlled by a tower-mounted manual valve. In addition, each wash station shall be provided with at least one (1) tower-mounted waist-high hydrant (i.e. Hose bibs) with a minimum length hose of 0 m (32') and hose reel to facilitate cleanup. All flexible hoses shall be the reinforced industrial type rated for a minimum working pressure or 2,000 kPa (20 bars or 300 psi). For freeze protection, all above-ground piping shall be sloped back to the base of the tower and provided with a 3 mm (1/8") weep holes (i.e. Drain openings) where the piping penetrates the concrete. For facility site water supply, see Civil.

The Contractor shall coordinate vehicle wash facilities projects with the environmental regulations, technical requirements, and concerns of multiple agencies within federal, state, and local governments. See Civil requirements for primary wastewater treatment.

6.12 LPG COOKING STOVE

Cooking areas shall be provided with canopy type exhaust and associated exhaust and outside make-up air fans. See paragraph Mechanical in this Section. New stoves shall be set into formed concrete openings such that they can easily be removed for replacement, maintenance, and cleaning.

6.12.1 COOKING STOVES/BURNERS

Each LPG-propane stove shall be provided with three (3) burners and metal frame with four (4) legs. The stoves shall be of commercial quality and be capable of producing the highest heat output with all three (3) burners on. The center burner is low heat, center and middle burner is medium heat and all three burners is high heat. A gas flow regulating-adjusting valves shall be provided for each burner at the face of the appliance.

Stove dimensions are approximately 720 mm (28”) long by 720 mm (28”) wide by 500 mm (20”) high.

6.12.2 GAS PIPING

Gas piping from the LPG/propane tanks to the respective gas stoves shall be wrought iron, ASTM B36.10M or steel (black or galvanized), ASTM A53. The steel piping shall terminate in front of the stoves with a shut off valve and quick disconnect nipple. A stainless steel flexible hose shall connect from the LPG/propane stove to the steel piping. Each end of the flexible hose shall be provided with quick disconnect fittings.

The LPG/propane piping shall not be embedded in the concrete floor. Installation of the LPG/propane piping in concrete trenches is highly recommended. The piping may be surface mounted provided that it is not susceptible to damage or causes any safety hazards.

Piping passing through the exterior wall shall be provided with pipe sleeves.

New stoves shall be set into formed concrete openings such that they can easily be removed for replacement, maintenance, and cleaning. Stove dimensions are 720 mm long by 720 mm wide by 500 mm high. The height includes the grill.

6.12.3 PROPANE FUEL STORAGE (45 KG BOTTLES)

LPG-propane storage tanks shall be located outside and exterior to the building in a storage yard.

The storage of fuels shall consist of individual 45 kg (100-pound) portable bottle tanks. For a 30-day supply of fuel, provide two (4) bottles per cook stove. **The Contractor shall provide all tanks filled with LPG/propane fuel at time of completion.**

Remote Storage Area: Stored filled and empty LPG/propane storage tanks shall be installed on a concrete pad and placed within a covered, secure, enclosure located a minimum of 8.0 m (26') from any occupied building. Portable bottle tanks shall be secured with chains to prevent tipping, and have caps on all bottles. Chain link enclosure with two (2) walkways and four (4) rows of tanks is recommended for ready access and easy securing of the bottles. Enclosed buildings are discouraged due to the potential for the buildup of propane in the event of a leak. Chain link fences with a visibility barrier are acceptable if the visibility barrier allows minimally impeded airflow.

Connected Storage: Connected Portable Tanks shall be located outdoors near or adjacent to the building behind a fire rated exterior wall. Tank area shall have a cover and be located in a chain link secured enclosure. One (1) tank per stove will be allowed in this location, with all tanks manifolded together (For facilities with three (3) or fewer stoves, the stoves may be individually piped.). The tanks shall be complete with fill fittings, tank gauge, vent, 2-stage and line regulators, and other fittings and appurtenances required for full and safe operation. Portable bottle tanks shall be secured with chains to prevent tipping.

6.13 MOTOR POOL REFUELING POINT (STORAGE-DISPENSING)

Fuel storage and distribution shall be provided to support the vehicles used at various locations. The fuels shall be stored in one or more above-ground or underground horizontal steel tank as per the capacity schedule given below.

Under NO circumstances shall GALVANIZED tanks be provided for storage of fuel oil or diesel.

The refueling point shall provide for both diesel and MOGAS of quantities as stated in Section 01010. The Contractor shall provide a full supply of fuel for ALL tanks at the time of turnover to the Government.

Tanks shall be complete with fill tube and cap, suction tube, tank gauge, vent, and other fittings and appurtenances required for full and safe operation. Tanks shall have overfill protection devices and remote overfill alarms. Aboveground tanks shall be provided with support saddles, platform/stair, concrete pad, and spill containment provisions. Underground tanks shall be with either, double-wall fiberglass, double-wall steel (Not commonly available at this time) with cathodic protection, or single-wall steel or fiberglass with a reinforced concrete secondary containment vault and applied POL-resistant coating.

Secondary containment dikes shall be provided for aboveground tank(s) and sized to contain the entire contents of the tank plus 10 percent. If more than one (1) tank is sharing a containment dike, then the dike need only be sized and have the capacity for the largest tank plus 10 percent.

Fuel piping shall be black steel only for piping located above grade and either steel or fiberglass for underground; rubber hoses shall not be allowed, except for fuel dispensers. Under NO circumstances shall GALVANIZED piping, fittings, valves, or other equipment be used for fuel oil or diesel conveyance. Secondary containment for underground piping shall be provided with either double-wall fiberglass pipe, double-wall steel with catholic protection, or steel or fiberglass pipe located in a concrete secondary containment trench with removal covers (traffic-rated as applicable) and applied POL-resistant coating.

Separate dispensing units shall be provided for diesel and MOGAS. Each dispensing unit shall be equipped with dual nozzles, two (2) mechanical dispensing meters, and key control. Fuel dispensing unit shall be installed on an island such that two (2) vehicles can simultaneously fuel on either sides of the dispensing unit.

6.13.1 TESTING & COMMISSIONING

The Contractor shall test all piping systems in accordance with IPC International Plumbing Code. The final test shall include a pressure test for all piping. After completing the work, the Contractor shall demonstrate that all piping 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 Government 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.

7.0 FIRE PROTECTION

7.1 PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers shall be provided inside all facilities and at exterior locations as required in accordance with NFPA 10. Generally, extinguishers will be of the multi-purpose dry chemical type except for occupancies requiring a special type extinguisher (e.g., carbon dioxide portable fire extinguishers for electrical rooms). Fire extinguishers shall be located in an accessible location, free from blocking by storage and equipment, near room exits that provide an escape route. The top of the extinguisher shall not be more than 1.5m above the floor and not less than 101mm above the floor. The extinguisher shall be easy to each and placed where it will not be damaged.

8.0 ELECTRICAL

8.1 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.

8.2 ELECTRICAL WORKERS QUALIFICATIONS

Electrical work shall be performed by qualified persons with verifiable credentials who are thoroughly knowledgeable with applicable code requirements. Verifiable credentials consist of a certificate of graduations from an approved trade school and required amount of experience, depending on work being performed, and should be identified in the proposal that is submitted. A qualified person is one who has received training in and has demonstrated skills and knowledge in the construction and operation of electrical equipment and installations and the hazards involved. This includes the skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment, to determine the nominal voltage of exposed live parts, the clearance distances and corresponding voltages to which the qualified person will be exposed.

8.2.1 SUPERVISORY ELECTRICIAN

Supervisory electricians must be graduates of an approved trade school, and must have two years of relevant electrician experience. Approved programs include but are not limited to the Afghanistan Technical and Vocational Institute (in Kabul), the Kunar Trades Training Center, and the Commercial Technical Training Center (in Jalalabad). Work experience resumes and graduation certificates shall be submitted and approved prior to commencement of any design or construction involving electrical work. Approval is granted by the Contracting Officer’s Representative with guidance by the Quality Assurance Branch and/or the Safety Office of the U.S. Army Corps of Engineers, Afghanistan Engineer District-South.

8.2.2 ELECTRICIANS

Electricians must be graduates of an approved trade school and must be able to provide upon request a certification of successful course work completion and graduation in addition to a resume of work experience.

8.3 DESIGN CRITERIA

8.3.1 APPLICABLE STANDARDS

Design shall be in the required units as stipulated herein. Conflicts between criteria and/or local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, all available information shall be furnished to the Contracting Officer for approval. All electrical systems and equipment shall be installed in accordance with the requirements set forth in the documents referenced herein.

8.3.2 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).

8.4 MATERIAL

8.4.1 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.

8.4.2 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.

8.4.3 DESIGN CONDITIONS

All equipment shall be rated and designed for the maximum ambient temperature and altitude of the construction site. Equipment that is altitude and temperature sensitive, such as generators, shall be derated according to the manufacturer’s recommendations. Generic derating criteria for altitude and for ambient temperature may be used to approximate the required size of such equipment during the design phase, but a stipulation shall be placed on the construction plans to adjust the size according to the derating criteria specific to the manufacturer’s equipment chosen before the equipment is ordered.

8.4.4 RESTRICTIONS

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

8.5 DESIGN REQUIREMENTS

8.5.1 ELECTRICAL DISTRIBUTION SYSTEM

The Contractor shall design and build a prime power distribution system to distribute power to the site's facilities and other loads as required. The distribution system shall be underground.

The underground portion of the distribution system shall be in direct buried schedule 80 ductbanks, except for under roadways and heavy traffic areas, with the ducts not less than 1220mm below grade. Manholes and handholes shall be provided at changes of direction of more than 40 degrees and elsewhere as required to limit the pulling tension and sidewall pressure on the cables during installation to acceptable levels as defined by the cable manufacturer. Manholes shall be provided for ductbanks with more than 2 ducts. Handholes shall be provided wherever a manhole is not required by quantity of ducts or by cable manufacturer's installation recommendations. Underground ducts shall be not less than 100mm diameter Schedule 80 PVC for non roadway and light traffic areas and concrete encased schedule 40 for roadways and heavy traffic areas. The Contractor shall provide one additional duct per duct bank beyond the design for future growth.

The Contractor shall design and build a medium voltage primary distribution system with distribution feeders to supply power to distribution transformers. The transformers shall be loop feed, dead front type with load break elbows. Each transformer shall be sized to provide power for the total load of the facility served without being loaded to more than 110% of its rated capacity.

The Contractor shall provide all required conduit stub ups to connect all equipment (both present and planned) to the switchgear lineup. Contractor shall provide stepup transformers and the required conduits to connect the generators to their respective transformer and the transformers to the switchgear lineup.

Transformers shall be strategically located close to the loads. Primary side load-break disconnecting means shall be provided with all transformers. Transformers shall come complete from manufacturer. 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.

Size of transformers and power feeds shall be governed by UFC 4-510-01, NFPA 99, and the NEC. In case of conflict between transformer design criteria between the above named standards, UFC 4-510-01 shall govern; in cases where UFC 4-510-01 cannot resolve the conflict, it shall be brought to the attention of the Contracting Officer for resolution.

Design of the electrical system within facilities shall include, but is not limited to (a) interior secondary power distribution system, (b) lighting and power branch circuit and devices, and (c) fire detection and alarm system. All systems shall be designed for the demand loads, plus 25% spare capacity.

The Contractor shall provide feeders from the distribution system to each facility. Equipment shall include a distribution panel board shall be sized for the total load of each facility plus 25% spare capacity for future growth. Feeder lengths shall be kept as short as possible to minimize voltage drop.

All panelboards shall be circuit breaker 'bolt-on' type panels. Circuit breakers shall be connected to bus bar(s) within the panelboards. Daisy chain (breaker-to-breaker) connection(s) are not acceptable. Indoor distribution panels shall be surface mounted. 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 bridge to make a 3-pole breaker. All branch circuit wiring shall be copper. All building service entrance (service intake) panels shall be provided with kilowatt-hour (KWh) meters. A voltmeter and ammeter shall be provided also. All metering shall read true RMS values. Series rated equipment is not permitted. A digital power meter in lieu of a KWh meter, ammeter and voltmeter may be provided. Digital power meters shall meet or exceed ANSI/IEEE C37.90.1. Power receptacles (outlets) shall be 220 V, 50 hertz, 16 amp type CEE 7-7 three-wire grounded and shall be compatible with the required secondary power. All splicing and terminations of wires shall be performed in 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 NFPA 70 (National Electric Code), British Standard (BS) Wiring Regulations, International Electrotechnical Commission (IEC) standards, or Deutsches Institut fur Normung (DIN) standards. Receptacle locations are dictated by NEC, British, and other electrical standards.

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

Phase imbalance at each panel shall not exceed 5%.

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

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

8.5.2 LIGHTING

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

Living room/Quarters	35 FC (350 Lux)
Toilets, Showers, Latrines, washrooms	20 FC (200 Lux)
Mechanical/Electrical rooms	30 FC (300 Lux)
Corridors and Stairways	20 FC (200 Lux)
Offices (private)	50 h/5 v FC (500 h/50 v Lux)
Office areas (open)	30 h/5 v FC (300 h/50 v Lux)
Kitchens (commercial)	70 h/3 v FC (700 h/30 v Lux)
Dining Areas	20 h/3 v FC (200 h/30 h Lux)
Auditoriums (social)	5 h/3 v FC (50 h/30 v Lux)
Conference	30 h/5 v FC (300 h/50 v Lux)
Armories	30 h/3 v FC (100 h/30 v Lux)
Reading (at desk-serious)	50 h/10 v FC (500 h/100v Lux)
Patient Rooms (general)	Per UFC 4-510-01
Patient Rooms (critical)	Per UFC 4-510-01
Egress path (incl. exterior)	10 Lux
Areas adjacent to egress path	0.5 Lux
Areas Requiring Lighting Per Section 01010	0.5 Lux

FC = FootCandle

h = horizontal component

v = vertical component

Area lighting for the Motor Pool shall have photocell controlled switches.

8.5.3 INTERIOR AND EXTERIOR LIGHTING

Indoor lighting for all areas shall consist of fluorescent surface mounted light fixtures.

Exterior lighting such as light steel pole shall be HID (metal halide or high pressure sodium).

Moisture resistant/waterproof fluorescent light fixtures shall be provided in high humidity and wet areas such as latrines, showers and outside. Battery powered 'emergency' and 'exit' lights shall be provided within each building, as applicable, for safe egress during a power outage. All light fixtures shall be factory finished, complete and operational, to include but not be limited to, lens, globe, lamp, ballast etc. Every room shall be provided with a minimum of one light switch. Light fixtures shall be mounted approximately 2.5-meters above finished floor (AFF) minimum. Fixtures may be pendant or ceiling mounted, depending on the ceiling type and height.

8.5.4 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) are required. Ballasts shall be rapid start type. 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.

8.5.5 EMERGENCY "EXIT" LIGHT FIXTURES

Emergency "EXIT" light fixture shall be provided in accordance with NFPA requirements. Fixtures shall be single or double sided as required by the location and for wall/ceiling mounting. Unit shall illuminate continuously and be provided with self-contained nickel cadmium battery pack, to operate on floated-battery or trickle charge circuit. Fixture shall operate satisfactorily for 90 minutes during a power outage. Unit shall have test/re-set button and failure indication lamp. Primary operating voltage shall be 220 volts. Lettering "EXIT" shall be color red and not less than 150 mm in height and on matte white background. Illuminations shall be with LEDs.

8.5.6 EMERGENCY LIGHTING

Battery powered emergency lights shall be provided within each building per NFPA for safe egress during power outage. Fixtures shall be provided with self-contained nickel cadmium battery pack to operate on stand-by circuit for 90-minute minimum. Unit shall have test/re-set button and failure indication lamp. Normal operating voltage shall be 220 volts. Emergency lighting fixtures shall be connected to the normal lighting system.

8.5.7 LIGHT SWITCHES

Light switch shall be single pole. Minimum of one light switch shall be provided in every room. Lighting in rooms with multiple means of egress may be controlled from multiple switches.

8.5.8 RECEPTACLES

General-purpose receptacles shall be as required herein.

Areas with computer work-stations or similar equipment will have additional receptacles. Sinks may have a receptacle above. All receptacles shall be duplex, unless otherwise specified in this section, the NEC, or other referenced standard. Receptacles in wet/damp areas or within 1 meter of sinks, lavatories, or wash-down areas shall be ground fault circuit interrupter (GFCI) type or residual current disconnect (RCD) type. Total number of receptacles shall be limited to six (6) per 20-ampere circuit breaker.

8.5.9 CONDUCTORS

All cable and wire conductors shall be copper. Conductor jacket or insulation shall be color coded to satisfy requirements of the NEC. The use of 75 or 90 degree C (minimum) terminals and insulated conductors is required.

Use of higher degree C rated conductors on circuits with protective device terminals rated at a lower degree C is allowed but must be derated to the rating of the device terminals.

8.5.10 GROUNDING AND BONDING

Grounding and bonding shall comply with the requirements of NFPA 70. All exposed non-current carrying metallic parts of electrical equipment in the electrical system shall be bonded. Insulated equipment grounding conductor (separate from the electrical system neutral conductor) shall be installed in all feeder and branch circuit raceways. Equipment grounding conductor shall be green-colored, unless the local authority requires a different color-coded conductor. If required, ground rods shall be 20 millimeters in diameter and 3 meters long made of copper-clad steel.

8.5.11 ENCLOSURES

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

8.5.12 FIRE DETECTION & ALARM SYSTEM

A complete Fire Detection and Alarm System shall be provided throughout the buildings and installed in accordance with NFPA 72 requirements. System shall include, but not limited to, Fire Alarm Control Panel (FACP), manual pull stations, horns, strobes, and smoke and/or heat detectors (with alarm verification feature). Fire alarm system shall be complete and a standard product of one manufacturer.

8.5.13 CONDUIT RACEWAY SYSTEM

Metal conduit (EMT) system shall be complete, to include but not limited to, necessary junction and pull boxes for all surface mounted conduit systems. PVC conduit, junction and pull boxes are allowed for raceways not subject to severe damage. All empty conduits shall be furnished with pull wire or cord or rope (depending on the size of conduit and length of run). System design and installation shall be per NFPA 70 requirements.

8.5.14 CABLE TRAY RACEWAY SYSTEM

Cable trays shall be ladder type and provided with, but not limited to, splices, end plates, dropouts and miscellaneous hardware. System shall be complete with manufacturer’s minimum standard radius and shall be free of burrs and sharp edges. Nominal width of cable tray shall be per NFPA 70 requirements. The cable tray shall be made of galvanized steel.

8.5.15 IDENTIFICATION NAMEPLATES

Major electrical equipment, such as transformers, panelboards, and load centers, etc. shall be provided with permanently installed engraved identification nameplates. The nameplates shall mention the source that feeds each major piece of electrical equipment.

8.5.16 TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)

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

8.5.17 SCHEDULES

All panel boards and load centers shall be provided with a directory. Directory shall be typed written in English, Dari, and Pashto. The directory shall also indicate the source where the panelboard/loadcenter is fed from.

8.5.18 SINGLE LINE DIAGRAM

Complete single line diagrams shall be provided for all systems installed. All major items in each system shall be identified and labeled for respective ratings. Single line diagrams for each system, installed in a clear plastic enclosure, shall be provided. Most current version of design, based on current design review, shall be kept on project site at all times for reference, and updated with redline edits to show any and all variations from the drawings.

8.6 OPERATIONS AND MAINTENANCE (O&M) FOR ELECTRICAL

The O&M manuals must be provided prior to any training activities. Manuals shall be “tri-lingual” in Dari, Pashto and English.

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

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

9.0 COMMUNICATIONS SYSTEM

9.1 DESIGN CRITERIA

9.1.1 APPLICABLE STANDARDS

Design shall be in the required units as stipulated herein. Conflicts between criteria and/or local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, all available information shall be furnished to the Contracting Officer for approval. All communications systems and equipment shall be installed in accordance with the requirements set forth in the documents referenced herein.

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

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

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

ANSI TIA/EIA 568-C.1 (2009) Commercial Building Telecommunications Cabling Standard

ANSI TIA/EIA 568-C.2 (2009) Balanced Twisted-Pair Telecommunications Cabling and Components Standards

ANSI TIA/EIA 568-C.3 (2008) Optical Fiber Components Standard

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

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

UFC 3-580-01 Telecommunications Bldg Cabling Systems Planning/Design

9.2 COMMUNICATION SYSTEM

The Contractor shall design, provide, and install the exterior and interior communications infrastructure. The exterior communications infrastructure shall provide a looped communication system for perimeter security functions. The communications duct bank shall run to all guard towers, guard houses, ECPs, and back to the central

Communications Room located in Battalion HQ Building. The interior communications infrastructure shall provide a pathway to all communications outlets and head-end equipment located in the building. Communications head-end equipment, cabling, RJ45 jacks, and faceplates shall be provided by others. The design and construction of the systems shall be in accordance with the references and the requirements contained herein.

9.2.1 EXTERIOR COMMUNICATION SYSTEM

The Contractor shall design, provide and install the exterior communications infrastructure system. The system shall include but is not limited to communications manholes, hand-holes, inner duct, and underground ductbank. The Contractor shall coordinate the communication system with the power distribution system to distribute communications to the site's facilities as required. The distribution system shall be an underground system. Communications manholes and hand-holes-shall not be shared with other utilities. Manholes and hand-holes shall be cast in place or precast type. Manholes minimal interior dimensions shall be 3.66m L x 1.83m W x 2.13m H. Hand-holes minimal interior dimensions shall be 1.22m L x 1.22m W x 1.22m H. The minimum concrete thickness shall be 127mm for walls, 152mm for roof, and 127mm for the floor. The quality of the concrete pour and the construction of the manhole and hand-hole shall be such that the rebar or visible rock shall not be seen in the surface of a wall. In other words, the pour shall not have any voids. The maximum distance between manholes and/or hand-holes shall be 170 m. Place a manhole or hand-hole at all 90 degree turns. The ducts shall be direct buried with a minimum of 900 mm of properly tamped dirt/backfill on the top. Hand-holes shall be installed in laterals between manholes and buildings only where the distance between manhole and the building is 100 meters or more. The maximum number of ducts in a hand-hole wall shall be two, with one having four (4) inner ducts installed unless there are two buildings close by and can be fed from one hand-hole. In this case, four (two with inner ducts) conduits can be installed in the walls. Manholes and hand-holes shall be installed on a leveled, crushed, washed gravel base of sufficient depth, i.e.,a minimum thickness of 150 mm under the entire manhole or handhole, to allow for drainage and stability. Where manholes and hand-holes are installed in roadways or areas subject to vehicular traffic, the structure and lid (cover) shall support heavy vehicular traffic. Manholes and hand-holes shall be equipped with corrosion-resistant pulling irons and cable racks that are grounded and with a sump for drainage. Cable racking diagrams (manhole/hand-hole butterflies) shall be provided for the manholes and hand-holes. See accessories chart below for additional requirements.

Manhole and Hand-hole Accessories	**HANDHOLE** 1.22m X 1.22m X 1.22m	**MANHOLE** 3.66m X 1.83m X 2.13m
Bonding Ribbon 16mm	20	65
Bonding Ribbon Clamps	12	20
Cable Rack 762mm	4	
Cable Rack 47 Hole		14
Corner Cable Rack Support		8
Cable Rack Hook 191mm	8	14 minimum
Cable Rack Standoff Bracket	9	12
Concrete Collar 152mm	1	1
Cover (Lid) 762 Diameter	1	1
Frame Support Structure for Lid	1	1
Ground Rod 19mm X 3m	1	1
Ground Rod Clamp 19mm	1	1
Metal Hit Anchor	10	20
Pull-In Irons	4	4
Sump	1	1

9.2.1.1 EXTERIOR CONDUIT

The underground conduit for the manhole and duct system shall be direct buried (900 mm below surface), 100 mm DB type PVC or schedule 80, PVC. Inner ducts shall be four (4) 25 mm PVC or PE inner ducts field installed in the outer-duct. The inner ducts shall be installed in the duct face and secured with properly sized duct plugs which expand to seal the duct. The ducts shall be stubbed up, sealed, capped and tagged in the communications equipment room, and shall be sealed, capped, tagged and marked at the other end. Empty ducts shall be sealed with a mechanical, screw-type, reusable duct plug. The ducts shall be concrete encased when install under roadways or areas subject to vehicular traffic. The ducts (inner and outer) shall be listed on the RUS list of materials acceptable for use on RUS projects. The minimum duct configuration in the main duct system shall be a six way duct, being three conduits wide by two conduits deep (3 X 2) with two of the conduits having inner-ducts installed. Laterals off of the main duct system manhole to manhole shall be a minimum of a 4 way (1x4) with one duct having inner ducts. The duct system from the manhole/hand hole to a building with cable installed shall be a 1x2, 100 mm PVC duct bank with one duct having inner ducts. The duct system from a manhole/hand-hole to a building with allocations only shall be two (2), 100 mm DB type PVC conduits stubbed out 3 meters from the manhole/hand hole. All conduits shall be terminated in ABS plastic terminators cast into the walls of the concrete structures. In manholes, all conduit windows shall be recessed. Pull wire/rope must be provided in all conduits. Conduits shall enter the manholes and hand-holes in the lower portion of the knockout window to simplify future conduit additions..

9.2.2 MAIN DISTRIBUTION FRAME

The Contractor shall route all communications to the Main Distribution Frame located in central Communications Room.

9.2.3 BUILDING INTERIOR COMMUNICATIONS SYSTEM

The Contractor shall design, provide and install the building communications infrastructure system. The system shall include but is not limited to communications equipment racks, conduit, pull boxes, communications outlet boxes, and communications grounding/bonding infrastructure. Provide communications outlet boxes in locations shown on the standard drawings. Outlet boxes shall be a single gang box (51 mm x 102 mm x 57 mm) or double gang box (119 mm x 119 mm x 57 mm boxes). The contractor may use an equivalent sized outlet box. Conduit shall be installed from each outlet box location to the communications equipment rack location. Label the conduit on both ends with room number and outlet box number. Contractor shall coordinate the location of the communications rack to be installed in central Communications Room. Equipment racks shall be standard wall mounted 19” steel telecommunications racks. Provide all empty conduits with a pull rope. Properly sized metallic conduit and cable tray shall be used as appropriate to distribute the telephone/data cabling throughout the building. Minimum conduit size shall be 20 mm inside diameter. Pull boxes shall be placed in conduit runs where a continuous conduit length exceeds 30 meters or where there are more than two 90-degree bends. Pull boxes shall be placed in straight runs of conduit and shall not be used in lieu of a bend. Equipment racks shall be wall mounted and 475 mm wide. Equipment racks shall have a minimum 900 mm of space both in front of and behind the rack and behind any installed equipment. A minimum side clearance of 600 mm shall be provided on end racks. The contractor shall provide a grounding and bonding system in accordance with ANSI TIA/EIA 607-A. The grounding system shall include but is not limited to a Telecommunications Main Grounding Busbar (TMGB), Telecommunications Grounding Busbars (TGB) where applicable, Telecommunications Bonding Backbone (TBB), Grounding Equalizer (GE), and Bonding Conductors.

9.3 TESTING

Perform telecommunications cabling inspection, verification, and performance tests in accordance with TIA-568-C.1 and TIA-568-C.2, Perform optical fiber field inspection tests via attenuation measurements on factory reels and provide results along with manufacturer certification for factory reel tests. Remove failed cable reels from project site upon attenuation test failure.

9.3.1 INSPECTION

Visually inspect UTP and optical fiber jacket materials for UL or third party certification markings. Inspect cabling terminations in telecommunications rooms and at workstations to confirm color code for T568A or T568B pin assignments, and inspect cabling connections to confirm compliance with TIA-568-C.1, TIA-568-C.2, Visually confirm Category 6 marking of outlets, cover plates, outlet/connectors, and patch panels.

9.3.2 VERIFICATION TESTS

UTP backbone copper cabling shall be tested for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors, and between conductors and shield, if cable has overall shield. Test operation of shorting bars in connection blocks. Test cables after termination but not cross-connected. For single-mode optical fiber, perform optical fiber end-to-end attenuation tests in accordance with TIA-568-C.3 and TIA-526-7 using Method A, Optical Power Meter and Light Source for single-mode optical fiber. Perform verification acceptance tests.

9.3.3 PERFORMANCE TESTS

Perform Category 6 link tests in accordance with TIA-568-C.1 and TIA-568-2. Tests shall include wire map, length, insertion loss, NEXT, PSNEXT, ELFEXT, PSELFEXT, return loss, propagation delay, and delay skew. Perform verification tests for UTP and optical fiber systems after the complete telecommunications cabling and workstation outlet/connectors are installed.

9.4 LOUDSPEAKER AND ALARM SYSTEM

Install Loud Speaker & Alarm System that can alert the entire compound via panic button from any tower or guard post station. Loud Speaker & Alarm System shall include, but is not limited to central control stations, high power speaker arrays (HPSA), communication links, and ancillary equipment. Central control stations shall operate and control the system. Loud Speaker & Alarm System shall be capable of providing intelligible live and pre-recorded voice signals. The system shall include tones for conventional attack warning, non-conventional attack warning, all clear, and a system test tone. Speaker & Alarm System shall be exterior grade components to withstand severe weather conditions of cold, heat, rain, sleet, and dust storms and to be completely understandable during these conditions from any point within the compound. All wires shall be installed in conduits.

9.4.1 CENTRAL CONTROL STATIONS

Loud Speaker & Alarm System shall be provided with at least one primary and one redundant central control station. The locations of the central control stations shall be coordinated with the Contracting Officer's Representative. The primary central control station should be located at the command post or similar location. The redundant central control center should be located at a physically separate location such as a security forces building, military police station, fire station, or emergency services office. The central control stations shall control the operation of outdoor speakers. Each central control station shall be equipped with batteries to supply power for a minimum of 4 hours of full-load operation. Control stations shall be capable to provide automatic status reporting for each HPSA and for all activations and the status of the activations. The controls shall provide an alarm summary report that provides a historical report for all changes of status, including all troubles, equipment failure, power system trouble (including normal and emergency power), unsolicited messages, tamper/supervision of the enclosure for the HPSA electronics, amplifier status, last activation and synchronization error, operator log on and log off, and configurable reports for time-based events such as "report all troubles from 1/01/04 to 6/30/04." Control stations shall feature multiple levels of password protection, including levels for system operators, maintainers, supervisors, and military commanders. The control stations shall be capable to deliver at least two essentially concurrent voice messages: one for threatened areas or buildings and one for adjacent areas or buildings. This includes the capability for two pre-recorded voice messages, or one live and one pre-recorded voice message. The control station shall have the capability to target specific messages to any individual HPSA, zone of HPSAs, or to all areas on the installation

9.4.2 HIGH POWER SPEAKER ARRAYS (HPSA)

HPSAs shall be arranged into zones so that each zone can be individually controlled by the control station. HPSAs shall be designed with directional characteristics that will minimize the distortion of voice signals by interface from other zones. HPSAs shall be designed to maintain the intelligibility of voice signals within the zone at a level no less than 0.8 on the Common Intelligibility Scale (CIS) or 0.7 on the Speech Transmission Index (STI) during normal weather conditions in special outdoor areas such as those with a high concentration of multi-story buildings in close proximity. Parade grounds, training fields, and similar outdoor areas should also be provided with this higher intelligibility. Intelligibility may be less than 0.8 CIS in areas of the zone if personnel can determine that a voice signal is being broadcast and could walk less than 25 m to find a location in the zone with a CIS score of at least 0.8. It is necessary to control the occupational noise exposure to personnel from the HPSA. Sound levels at any location where personnel may be located, including directly underneath the HPSA, shall not exceed 120 decibels (adjusted) (dBA) when measured on the A-scale of a standard sound level meter at slow response. Do not exceed 85 dBA at the location of the individual HPSA equipment cabinet for those HPSAs designated to be furnished with a local microphone. Each HPSA site for each zone shall include a field-mounted local control unit, microprocessor, amplifier, standby batteries, charger, power supply, radio, mounting brackets and loudspeaker assembly for pole or building mounting. Designated HPSA sites shall be capable of microphone input and shall be provided with a microphone designed to prevent feedback at that particular microphone location. All external conductors (conductors passing outside of the HPSA equipment cabinet) shall be provided with surge suppression tested to Underwriters Laboratories, Inc. (UL) standards. The HPSA control units shall feature a digitally addressable controller. The HPSA control units shall receive and store messages via the primary (and redundant, if required) communication link with a confirmation signal sent back to the primary and redundant central control stations. Provide a charger/ power supply that will accept alternating current (AC) input, backup electrical power generator input, battery input, or solar power cell input. The HPSA control units shall have the capability of storing pre-recorded messages. The HPSA control units shall provide a minimum of 7 standard tones. In addition, the systems shall have the capability to provide custom tones. Provide a tamper switch that will signal the central control station that the HPSA enclosure door is open. All equipment for each HPSA speaker site shall be housed in modular, mountable cabinets suitable for the local environmental conditions, including space heaters and ventilation fans, as appropriate. Speakers shall be able to operate between temperatures of -40 degrees Celsius (C) (-40 degrees Fahrenheit (F)) to +60 degrees C (+140 degrees F). Enclosures shall protect the HPSA control unit from external temperatures ranging from -40 degrees C (-40 degrees F) to +60 degrees C (+140 degrees F). The height shall not be less than 9 m (30 ft) or greater than 18 m (60 ft) above ground level. HPSA equipment cabinets shall be mounted on the elevated supporting structure with the top of the enclosure no more than 3 m (10 ft) above ground level. The equipment cabinet and power boxes must be capable of being locked shut.

9.4.3 COMMUNICATIONS LINKS

Primary communications shall use radio frequency-type systems that comply with National Telecommunications and Information Administration (NTIA) requirements. The systems shall be designed to minimize the potential for interference, jamming, eavesdropping, and spoofing. Confirm that the devices conform to regulations and obtain the approval from the authority having jurisdiction prior to using radio frequency-type devices. Redundant communication means (when required) should be established using several alternate wireless radio frequency paths to the radios. The redundant communication means might be accomplished by using the communications backbone network (e.g., optical fiber cable). In this case, the central control units should accomplish this by being directly connected to the backbone network. Communications equipment furnished as part of the wide area MNS shall be commercial off-the-shelf (COTS). All programming codes or passwords required to access, update, modify, and maintain the communications equipment shall be provided no later than the date of final system acceptance. Full system supervision shall be provided. Notification of system alarm, supervisory, and trouble signals shall be provided to the central control stations within a time period not to exceed 200 seconds. The communications systems shall provide self-test and diagnostics capabilities. Local diagnostics information shall be transmitted to the central control stations.

END OF SECTION

SECTION 01040
SECURITY

1.0 SPECIFIC CONTRACT SECURITY ASSESSMENT

The Contractor will construct the Project in an active war zone where International Security Assistance Forces (ISAF) may conduct offensive and defensive operations against a variety of hostile forces, to include members of the Taliban. The Contractor understands that it may not receive any support whatsoever in securing the Project site and in securing the transportation of materials to the Project site. Neither U.S. Government nor other ISAF forces are available to provide exclusive security for the Project. The Contractor is responsible for securing the Project site and in securing the transportation of materials to the Project site. The Contracting Officer possesses no ability to control the operations of either ISAF or hostile forces. The Government, acting in its sovereign capacity in its prosecution of its operations, may take actions which directly or indirectly affect the Contractor. These kinds of acts are general in application, not specifically directed at the Contractor. The Contractor recognizes that such actions may be taken, and that they will not entitle the Contractor to make claims for excusable or compensable delays. The Contractor possesses sufficient information about the specific security situation at the site to enable it to formulate an appropriate security plan. The Contractor understands that the security situation at the Project is subject to significant transformation in a short time span based on the changing operational picture in the region. The Contractor's security plan will take this factor into account.

2.0 GOVERNMENT PREREQUISITES TO CONTRACTOR DEPLOYMENT OF SITE SECURITY PERSONNEL

The following regulations and policies apply to Contractor-Provided Site Security Personnel:

a. DODI 3020.41; **Contractor Personnel Authorized to Accompany the U.S. Armed Forces**; 3 OCT 2005 (available at www.dtic.mil/whs/directives/corres/pdf/302041p.pdf).

b. DODI 3020.50; **Private Security Contractors (PSCs) Operating in Contingency Operations**; 22 JUL 2009 (available at www.dtic.mil/whs/directives/corres/pdf/302050p.pdf).

c. USCENTCOM Contracting Command, **Acquisition Instruction**; 5 NOV 2010 (available at http://c3-training.net/policy.html).

d. DFARS Subpart 225.74, Defense Contractors Outside the United States.

The Contractor understands its responsibilities under these regulations, policies, and standard contract clauses, as well as its responsibilities under Afghan law, with regard to its contracts for and employment of security personnel. The Contractor is not authorized to deploy any site security personnel until it complies with all prerequisites identified in these references. The Contractor acknowledges that its repeated failure to comply with these regulations, policies, and standard contract clauses constitute grounds for the Government to terminate the Contractor for default.

3.0 GOVERNMENT REPRESENTATIVES

During the Project, USACE may disseminate essential security information to the Contractor and will attempt to assist with any Contractor's questions and concerns. The USACE Area Office OIC/NCOIC will serve as the Area Office Security Officer and the Resident Office OIC/NCOIC will serve as the Resident Office Security Officer (collectively "the Security Officers").

4.0 SECURITY COORDINATION

Contractor will be required to coordinate construction site security with any Afghan or Coalition Forces and Local Governments that are available, if any, to assist the Contractor on a case-by-case basis. Coordination does **not** include nor imply making any unauthorized or illegal payments to the local ANA/ANP or Local/Provincial Government Officials for permission or protection to construct the project. The Contractor will immediately inform the Government if asked to make any such payments, and the Government will provide further direction to the

Contractor. Corruption will not be tolerated at any level, under any circumstances. Conducting business in this manner will be grounds for termination of the contract.

5.0 SECURITY PLAN

The Security Officers will review and approve all current and future Contractor security plans prior to submittal approval by the authorized representative of the Contracting Officer. The Security Officers shall ensure that all Contractor security plans are in accordance with the Contract requirements. The security plans shall address movement of Contractor labor, material, and equipment. The Security Officers will lead the quality assurance program to ensure Contractors are executing their approved security plans. The Government will not allow the Contractor to start work on the Project site without an approved security plan.

5.1 SECURITY RATING

Each contract or task order will be assigned a rating by the Area Office Security Officer. This rating will determine the level of approval for the security plan. Assistance from the District's J2/J3 may be required to assess the rating. Ratings and approval levels are below:

a. Extremely High Risk: District Commander
b. High Risk: Deputy CDR, Chief of E&C, Area OIC, J2 OIC, or J3 OIC
c. Moderate Risk: Chief of Construction, Area OIC/NCOIC, or Area Engineer
d. Low Risk: Resident OIC/NCIOC, Resident Engineer

The rating assigned is in no way an indication that the security situation at the site will remain at a constant level throughout the Project.

5.2 SITE SECURITY FOR PROJECTS OUTSIDE OF ACTIVE COALITION FORCE BASES

The Contractor shall develop a site security plan and program to provide 24 hr/7 days a week security for the Project throughout its performance. The security plan must consider all construction-related sites; batch plants, material sources, stockpiles, worker camps and any other location where there is a major construction effort. The plan must also address security as it relates to the transportation of materials, equipment, personnel, and other items and individuals to the site. The Contractor is expected to perform all required actions to protect the construction site compound from theft and vandalism and personnel from physical harm. These measures are strictly for the protection and defense of the on-site people and property; Contractors are not authorized to conduct any type of offensive operations. For security of road construction, transportation of supplies, and equipment convoys, see the appropriate section below.

5.3 ESTIMATED THREAT ASSESSMENT

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

5.4 ADDITIONAL CIVILIAN ARMING REQUIREMENTS

The Contractor must include in its security plan, and must continue to maintain throughout the Project, current information on the following items for all its armed civilian personnel: MOI license number, AISA license, armed Contractor & subcontractor company names, contract number/title, contracting agency (USACE-AES), type of work, number/type of weapons authorized, POC for company with contact details, Government Contracting Officer and COR with contact details, number of security personnel by type (U.S., Afghan, Other), company's country of registration/origin, names, photos, and tazkira numbers of security personnel as well as those personnel with access to weapons/ammo and those persons who will be handling or transporting explosives. In addition the Contractor will immediately update any change to the coordinates of the Contractor's base camps, quarries, and current work locations. The Contractor shall submit, prior to the commencement of construction, a plan for security protection, with a list of the chain of command. Perimeter security shall prevent unauthorized site access and provide safety protection to the Contractor workforce and government personnel for the duration of the project.

6.0 SECURITY PLAN SUBMITTAL REQUIREMENTS

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

7.0 COMMUNICATION

The Contractor will operate a 24/7 security operations center with communication capability to each guard on duty and the ability to notify all on-site personnel of increased threats and protective actions to take. The operations center will also have 24/7 communication with the local Coalition, ANA, or ANP security forces. The Contractor shall have communication with the Resident Office Security Officer at all times for rapid emergency response; the Resident Office Security Officer will give the Contractor the District J2/J3 contact information. Communication can be via cell phone, email, satellite phones, VHF, HF, CODAN, text, or other communication technologies compatible with the Government's capabilities. The Contractor will provide the Government with their contact information (names, numbers, frequencies, email addresses, transponder IDs, etc.) for the site encompassing all available communication means.

8.0 CONTRACTOR PROVIDED EQUIPMENT

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

9.0 KEY CONTROL

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

10.0 CRITICAL INFORMATION TO REPORT

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

a. AC/PSC Escalation of Force to include the use of weapons resulting in the death or injury of an Afghan citizen, coalition, or U.S. service member, other government official, or Contractor
b. AC/PSC accidents, traffic, or otherwise, resulting in the death or injury of an Afghan citizen, coalition, or U.S. service member, governmental official, or Contractor.
c. Attacks against AC/PSC activities by Anti-Afghan Forces resulting in the death or injury of an Afghan citizen, coalition or US service member, governmental official, or Contractor.
d. Reports of "lost convoys." These are AC/PSC escort or independent activities which have lost contact with their companies.
e. AC/PSC Escalation of Force, accidents, or other activities that result in significant damage to Afghan or USG vehicles, materials or facilities.
f. Anti-Afghan Force actions including small arms fires (SAF), RPG fire, indirect fire (IDF), improvised explosive devices (IEDs), and/or complex attacks against AC/PSC activities.
Contractor accidental or negligent discharge of a weapon.

--END OF SECTION--

SECTION 01060
SPECIAL CLAUSES

1 GENERAL

1.1 PRECONSTRUCTION CONFERENCE

1.1.1 SCHEDULE OF MEETING

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

1.1.2 MEETING MINUTES

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

1.2 AREA USE PLAN

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

1.3 CONTRACTOR'S MOBILIZATION AREA

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

1.3.1 CONTRACTOR'S TEMPORARY FACILITIES

1.3.1.1 GENERAL

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

1.3.1.2 ADMINISTRATIVE FIELD OFFICES

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

1.3.1.3 STORAGE AREA

The Contractor shall construct a temporary 1.8 meter (6 foot) high chain link fence around trailers and materials. The fence shall include plastic strip inserts, colored green or brown, so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless approved in writing by the Contracting Officer.

1.3.1.4 PLANT COMMUNICATION

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. If radio communication is approved by Contracting Officer / installation security office, frequency selection shall be approved by Contracting Officer to prevent interference with installation operations. Such devices shall be provided by the Contractor and made available for use by Government personnel as requested.

1.3.1.5 APPEARANCE OF MOBILIZATION SITE FACILITIES AND/OR TRAILERS

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

1.3.1.6 MAINTENANCE OF STORAGE AREA

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

1.3.1.7 SECURITY PROVISIONS

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own facilities and equipment in accordance with Contract Section 01040.

1.3.1.8 SANITATION

a. Sanitary Facilities: The Contractor shall be responsible for maintaining such facilities at no expense to the Government.
b. Trash Disposal: The Contractor shall be responsible for collection and disposal of trash from the work areas and from the mobilization area. General construction debris and demolition debris shall be collected and transported by the Contractor to a location designated by the Government. Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Loose debris capable of being windblown, shall be immediately placed in sealed or covered containers to prevent it from being blown onto taxiways or runways. Any dirt or soil that is tracked onto paved or surfaced roadways shall be cleaned daily. Materials resulting from demolition activities that are salvageable shall be stored within the fenced area described above. Stored material not indoors, whether new or salvaged, shall be neatly stacked when stored.

1.3.1.9 TELEPHONE

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

1.3.1.10 RESTORATION OF STORAGE AREA

Upon completion of the project and after removal of mobilization facilities, trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse unpaved areas shall be removed and all such areas restored to their original conditions.

1.3.2 PROTECTION AND MAINTENANCE OF TRAFFIC

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

1.3.2.1 USE OF EXISTING ROADS AS HAUL ROUTES

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

1.3.2.2 EMPLOYEE PARKING

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

1.3.3 TEMPORARY PROJECT SAFETY FENCING AND BARRICADES

The Contractor shall impose all measures necessary to limit public access to hazardous areas and to ensure the restriction of workers to the immediate area of the construction and mobilization site. The Contracting Officer may require in writing that the Contractor remove from the work any employee found to be in violation of this requirement**.** Contractor shall be responsible for fencing off individual project sites within the total contract limits to control safe access to individual project areas and to control movement of personnel and materials.

1.3.3.1 BARRICADES

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

1.3.4 HOST NATION AUTHORIZATIONS, PERMITS AND LICENSES

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

1.4 RESPONSIBILITY FOR PHYSICAL SECURITY

Prior to mobilization, the Contractor shall submit his proposed means of providing project security to meet the

requirements of Contract Section 01040 and prevent unauthorized access to equipment, facilities, materials and documents, and to safeguard them against sabotage, damage, and theft. The Contractor shall be responsible for physical security of all materials, supplies, and equipment of every description, including property which may be Government-furnished or owned, for all areas occupied jointly by the Contractor and the Government, as well as for all work performed.

1.5 DUST CONTROL

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

1.6 DIGGING PERMITS

1.6.1 REQUIREMENTS FOR DIGGING PERMITS

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

1.6.2 REQUESTS FOR DIGGING PERMITS

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

1.6.3 PREPARATION OF REQUESTS FOR DIGGING PERMITS

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

1.6.4 EXISTING UNDERGROUND UTILITIES

The Contractor shall exercise utmost care in researching locations of existing utilities and reducing damage to existing utilities. Any utilities damaged by the Contractor shall be promptly repaired by the Contractor. The Contracting Officer will review and approve any proposed repairs. Any damage to existing utilities will be immediately reported to the Contracting Officer and the Base Commander.

1.7 CONNECTIONS TO EXISTING UTILITIES

1.7.1 GENERAL

Any outage involving disruption of electrical service beyond the site area shall be requested in writing at least ten (10) days in advance of the date requested for the commencement of the outage. The Contractor shall provide a request, detailing the type of outage needed (water, sewer, electrical, steam, etc.), the time needed to perform the work, the reason for the outage, and the known affected facilities. The Contracting Officer shall be contacted prior to the outage to confirm the time and date. If the Contractor fails to initiate work at the approved time, the Contracting Officer may cancel the approved outage and may direct the Contractor to resubmit a new request. No part of the time lost due to the Contractors failure to properly schedule an outage shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

1.7.2 EXISTING UNDERGROUND UTILITIES

The Contractor is provided notice that existing utilities may be present in the construction area. The Contractor shall exercise the utmost care in researching locations of existing utility lines by implementing control measures to eliminate, or reduce to a level acceptable to the Contracting Officer, the chance of damaging or destroying existing utilities.

1.7.3 USE OF UNDERGROUND UTILITY DETECTING DEVICE

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

1.7.4 HAND EXCAVATION

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

1.7.5 REPAIR OF DAMAGED UTILITIES

The Contractor shall be responsible to repair any utilities damaged by him. The method of repair and schedule for performance of the repair shall be coordinated with, and subject to the approval of, the Contracting Officer. The repair work and any temporary work required to keep the system operational while repairs are being completed, shall be performed at no cost to the Government.

1.8 TEMPORARY OUTAGES OF EXISTING SERVICES

To minimize outage impact to the mission of the installation, all outages shall be scheduled on weekends or from 2100 – 0530 hours on duty days and/or as directed by Contracting Officer Representative (COR). The period proposed for performance of the outage shall include sufficient contingencies to preclude impact to the peak working hours 0530 – 1800 hours during the workweek.

1.9 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.

1.10 ELECTRICITY

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

1.11 WORK OUTSIDE REGULAR HOURS

If the Contractor desires to carry on work outside regular base duty hours, or on holidays, including the following U.S. holidays: New Year's Day, Martin Luther King Jr Birthday, President’s Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving and Christmas. the Contractor shall submit an

application to the Contracting Officer. Due to reliance upon local national laborers and time off due to local observances, there may be disruptions. Potentials dates are the following local observances: National Islamic Holiday of Ashura, Ramadan (actual date varies – check with local authorities). The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. At night, exterior lighting shall be provided in conformance with EM-385-1-1 entitled "Safety and Health Requirements Manual".

1.11.1 EXTERIOR NIGHT LIGHTING

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

1.12 SCHEDULING OF WORK IN EXISTING FACILITIES

As soon as practicable, but in any event not later than thirty (30) calendar days after award of this contract, the Contractor shall meet in conference with the Contracting Officer, or his duly authorized representatives, to discuss and develop mutual understanding relative to the scheduling of work in and access to the existing facilities where work has to be performed under this contract, so that the Contractor's proposed construction schedule is coordinated with the operating and security requirements of the installation.

1.13 SPECIAL FACILITIES AND SERVICES TO BE FURNISHED BY THE CONTRACTOR

The Contractor shall furnish the facilities and services listed in this clause for Corps of Engineers personnel and other persons as designated by the Contracting Officer. All facilities, furnishings, materials, and equipment shall be new when furnished at the site. The Contractor shall fully maintain and repair all facilities, furnishings and equipment listed below. All facilities, furnishings, materials, and equipment furnished and/or installed by the Contractor under this clause shall remain the property of the Contractor at the completion of the contract. Facility structures shall be modular or containerized, suitable for easy movement at a later date.

1.14 CERTIFICATES OF COMPLIANCE

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

1.15 ACCIDENT PREVENTION

The Contractor shall comply with all applicable Host Country laws and with such additional measures as the Contracting Officer may find necessary in accordance with CONTRACT CLAUSE 52.236-13 entitled ACCIDENT PREVENTION (NOV1991)-ALTERNATE 1 (APR 1984). Applicable provisions of the Corps of Engineers manual entitled Safety and Health Requirements Manual EM 385-1-1 will be applied to all work under this contract. The referenced manual may be obtained from the Contracting Officer at the jobsite or from the Afghanistan Engineer District at Kabul, Afghanistan.

1.15.1 ACCIDENT PREVENTION PROGRAM

Within 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. The Contractor shall provide a copy of company policy statement of Accident Prevention and any other guidance as required by EM 385-1-1, Appendix A.

1.15.2 GROUND FAULT CIRCUIT INTERRUPTER (GFCI) REQUIREMENT – OVERSEAS CONSTRUCTION

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

1.15.3 TEMPORARY POWER - ELECTRICAL DISTRIBUTION BOXES

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

Contractors shall:

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

1.16 HAZARDOUS MATERIALS

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

1.17 SPARE PARTS

1.17.1 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.

1.17.2 SELECTION OF SPARE PARTS TO BE FURNISHED

The Contractor shall provide a one (1) year’s supply of spare parts based upon the Manufacturer’s

recommendations. The Contractor shall provide master 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.

1.17.3 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. 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.

1.17.3.1 SHIPMENT AND DELIVERY

The Contractor shall be responsible for the shipment and delivery of spare parts to the location on the project site in Afghanistan. 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.

1.17.3.2 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.

1.17.3.3 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.

1.17.3.4 PRESERVATION AND PACKAGING INSTRUCTION

e. 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.

f. Machined spare parts shall be lubricated or coated in order to withstand extensive periods of storage in a highly corrosive atmosphere.

g. 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.

h. 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.

i. 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.

1.17.4 WARRANTY

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

1.17.5 PAYMENTS FOR SPARE PARTS

Payments for spare parts specifically required in this contract shall be considered as part of those equipment costs and shall be included in bid items as appropriate. 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 bid items of this contract. Payment for the spare parts portion of the appropriate bid items will be made after the spare parts have been accepted at the site by the Contracting Officer. Payments for equipment costs 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 bid items of this contract and no additional cost except as provided herein will be allowed.

1.18 OPERATION AND MAINTENANCE (O&M) DATA

1.18.1 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.

1.18.2 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.

1.18.3 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.

1.18.4 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.

1.18.5 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.

1.18.6 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.

1.18.7 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.

1.19 INSTRUCTIONS AND TRAINING FOR OPERATION AND MAINTENANCE

1.19.1 GENERAL

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

Title	Duration of Training
Mechanical Systems	10 Days
Electrical Systems	10 Days

1.19.2 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.

1.19.3 ARRANGEMENTS

The training shall be for not less than the periods of time specified, five (5) days per week, and eight (8) hours per day, subject to review and approval by the Contracting Officer. Each individual training session shall be presented one time only, shall be videotaped in a television system compatible with the local area, and be scheduled in a

manner acceptable to the Contracting Officer. At the completion of training, the videotapes shall become the property of the Government. In addition to the Contractor's requirements to video tape each training section, the Government reserves the right to record, in any manner, the subject training material, or training sessions given by the Contractor, without additional cost to the Government.

Recordings obtained will be used in future training by the Government. The operating and maintenance manual data, as specified to be furnished in these Special Clauses, shall be used as the base material for training.

1.19.4 **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.

1.19.5 **PRELIMINARY PLAN**

The Contractor shall submit seven (7) copies of an outline of his proposed training plan to the Contracting Officer for review and approval not later than 60 calendar days after award of this contract. The plan will be reviewed and coordinated with the content of the O&M manuals.

1.19.6 **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.

1.19.7 **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.

1.20 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.

1.21 TIME EXTENSIONS

1.21.1 GENERAL

This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the Contract Clause 52.249-10 entitled DEFAULT (FIXED-PRICE CONSTRUCTION) APR 1984. The listing below defines the anticipated monthly unusually severe weather for the contract period and is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the geographic location of the project. The schedule of anticipated unusually severe weather will constitute the baseline for determining monthly weather time evaluations. Upon award of this 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.

Kandahar Province - Kandahar

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
14	7	4	6	1	0	1	1	0	1	6	12	53

1.21.2 WEATHER DELAYS

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.

1.21.3 OTHER DELAYS

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

1.22 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.

1.23 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.

1.23.1 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.

1.24 EMPLOYEE ACCESS TO PROJECT SITE

1.24.1 EMPLOYEE IDENTIFICATION

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

1.24.1.1 PREPARATION OF IDENTIFICATION BADGES

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

1.24.1.2 EMPLOYEE BACKGROUND AND HISTORICAL INFORMATION

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

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

1.24.2 IDENTIFICATION OF CONTRACTOR VEHICLES

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

1.24.3 SECURITY PLAN

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

1.25 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.

1.26 PUBLIC RELEASE OF INFORMATION

1.26.1 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.

1.26.2 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.

1.27 ATTACHMENTS

TAC FORM 61 - Accident Prevention Program Hazard Analysis

TAC FORM 356 - Operation and Maintenance Training Validation Certificate

2 LOCAL CLAUSES

2.1 APPLICATION OF US CRIMINAL JURISDICTION

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

2.2 ATTACKS FROM HOSTILE ENTITIES

This contract is firm fixed-price. Costs incurred in the performance of project execution that arise from the attacks of hostile entities, such as costs arising from damage to or destruction of contractor equipment and facilities, and damage to or destruction of the project prior to Government acceptance, are the sole responsibility of the contractor. The Government makes no guarantee to provide the contractor with security, and bears no obligation to reimburse the contractor for costs arising from the attacks of hostile entities. When appropriate, the Contracting Officer may provide the contractor with an equitable adjustment with respect to time – but not cost – in accordance with clause 52.249-10; see 52.249-10(b)(1)(i) and (2).

2.3 INSTALLATION ACCESS AND BADGING

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

2.4 CUSTOMS CLEARANCE

Reference clauses are 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

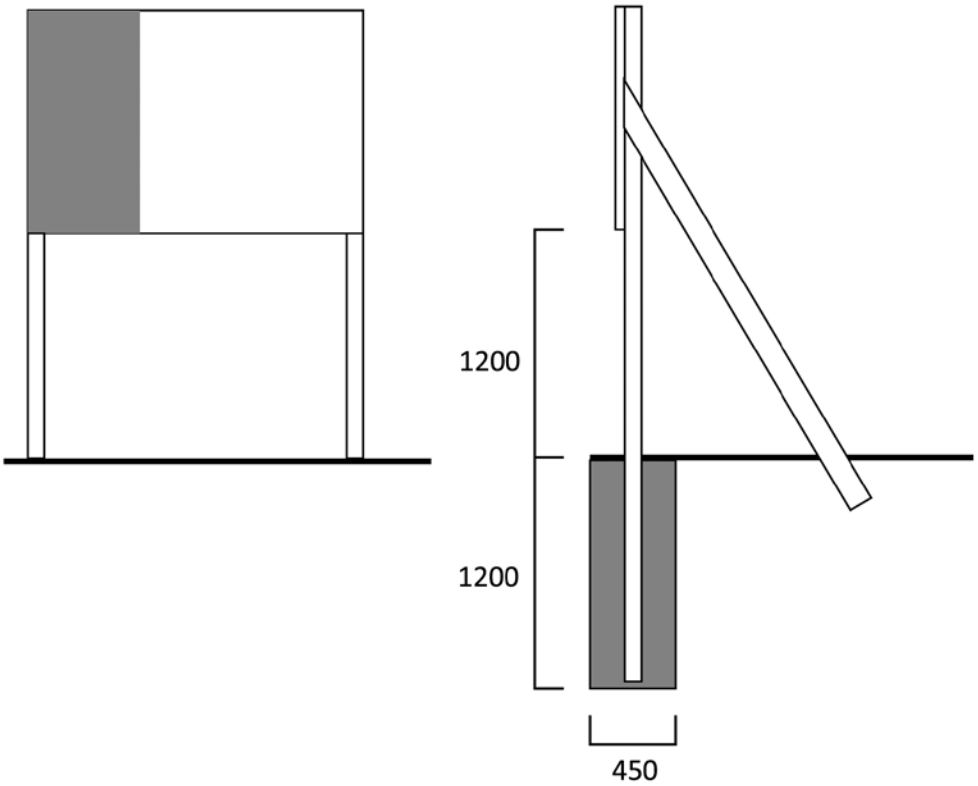
contractor to plan accordingly in order to meet its existing obligations under this contract. The US Army Corps of Engineers, Afghanistan Engineer District, neither controls nor is responsible for any such customs clearance procedures, requirements or changes thereto.

-- END OF SECTION --

Construction Project Sign Dimensions (mm)

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

Mounting Diagram



Ministry of Defense

Government of the Islamic Republic of Afghanistan

SECTION 01312
QUALITY CONTROL SYSTEM (QCS)

1. GENERAL

1.1 GENERAL

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

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

1.1.1 CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

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

1.1.2 OTHER FACTORS

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

1.2 QCS SOFTWARE

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

1.3 SYSTEM REQUIREMENTS

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

Hardware

IBM-compatible PC with 1000 MHz Pentium or higher processor

256+ MB RAM for workstation / 512+ MB RAM for server

1 GB hard drive disk space for sole use by the QCS system

Digital Video Disk (DVD)-Compact Disk (CD) Reader-Writer (RW/ROM)

Monitor with a resolution of AT LEAST 1024x768, 16bit colors

Mouse or other pointing device

Windows compatible printer (Laser printer must have 4 MB+ of RAM)

Connection to the Internet, minimum 56k BPS

Software

MS Windows 2000 or higher

QAS-Word Processing software: MS Word 2000 or newer

Internet browser supporting HTML 4.0 or higher

Electronic mail (E-mail) MAPI compatible

Virus protection software regularly upgraded with all issued manufacturer's updates

1.4 RELATED INFORMATION

1.4.1 QCS USER GUIDE

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

1.4.2 CONTRACTOR QUALITY CONTROL (CQC) TRAINING

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

1.5 CONTRACT DATABASE

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

1.6 DATABASE MAINTENANCE

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

PART 1 GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE) ER 1-1-11 (1995) Progress, Schedules, and Network Analysis Systems

1.2 QUALIFICATIONS

The Contractor shall designate an authorized representative who shall be responsible for the preparation of all required project schedule reports.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS, a Project Schedule as described below shall be prepared. The scheduling of Construction design and construction shall be the responsibility of the Contractor. Contractor management personnel shall actively participate in its development. Designers, Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule. The Contractor is responsible for scheduling the construction contract work to include procurement of critical materials and equipment, Contractor quality control and construction, acceptance testing and training. 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 will result in an inability of the Contracting Officer to evaluate Contractor's 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, the Contracting Officer may hold, retain up to the maximum allowed by contract, each payment period, until revisions to the Project Schedule have been made. Resource loading of cost is required and will be used as the cost breakdown for progress payments.

3.3 PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer. Project schedules must be prepared and maintained in a software compatible with current versions of government’s systems RMS and Primavera Project Manager. Contracts with price value over $500,000 will use Primavera SureTrak, Primavera Project Manager P6, or current version of government’s systems. The Licensed copy of scheduling software shall be submitted for acceptance to the Contracting Officer within two weeks after Contract Award.

3.3.1 Use of the Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in the Precedence Diagram Method (PDM).

3.3.2 Level of Detail Required

The Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule.

The Network Analysis System (NAS) shall identify all Government, Construction Quality Management (CQM) Construction activities planned for the project and all other activities that could impact project completion if delayed. Refer to 3.5.5.4 Banding for further detail in grouping activities.

With the exception of the Contract Award and Contract Completion Date (CCD) milestone activities, no activity shall be open-ended; each activity shall have predecessor and successor ties. Once an activity exists on the schedule it may not be deleted or renamed to change the scope of the activity and shall not be removed from the schedule logic without approval from the Contracting Officer. The ID number for a deleted activity shall not be re-used for another activity. No more than 20 percent of the activities shall be critical or near critical. Critical is defined as having zero days of Total Float. "Near Critical" is defined as having Total Float of 1 to 14 days. Contractor activities shall be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days.

The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule:

3.3.2.1 Activity Durations

Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations are greater than 20 days).

3.3.2.2 Design and Permit Activities

Design and permitting activities, including necessary conferences and follow up actions and design package submission dates, shall be integrated into the schedule.

3.3.2.3 Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long lead materials and equipment are those materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, and delivery. The Contractor shall show each delivery with relationship tie to the Construction Activity specifically for the delivery. For rejected material/equipment not in compliance with approved submittals a new procurement activity shall be inserted in the schedule.

3.3.2.4 Critical Activities

The following activities, as applicable, shall be listed as separate line activities on the Contractor's project schedule:

a. Submission and approval of mechanical/electrical layout drawings.
b. Submission and approval of O & M manuals.
c. Submission and approval of as-built drawings.

d. Submission and approval of 1354 data and installed equipment lists.
e. Submission and approval of testing and air balance (TAB).
f. Submission of TAB specialist design review report.
g. Submission and approval of fire protection specialist.
h. Submission and approval of testing and balancing of HVAC plus commissioning plans and data.
i. Air and water balance dates.
j. HVAC commissioning dates.
k. Controls testing plan.
l. Controls testing.
m. Performance Verification testing.
n. Other systems testing, if required.
o. Pre-final inspection.
p. Correction of punch list from pre-final inspection.
q. Final inspection.

3.3.2.5 Government Activities

Government and other agency activities germane to the contract shall be shown. These activities include, but are not limited to: design reviews, environmental permit approvals by State regulators, inspections, proposals and pay estimates reviews, and utility tie in.

3.3.2.6 Responsibility

All activities shall be identified in the project schedule by the party responsible to perform the work. Responsibility includes, but is not limited to, the subcontracting firm, contractor work force, or government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by the Responsibility Code.

3.3.2.7 Work Areas

All activities shall be identified in the project schedule by the work area in which the activity occurs. Activities shall not be allowed to cover more than one work area. The work area of each activity shall be identified by the Work Area Code.

3.3.2.8 Modification or Claim Number

Any activity that is added or changed by contract modification or used to justify claimed time shall be identified by a mod or claim code that changed the activity. Activities shall not belong to more than one modification or claim item. The modification or claim number of each activity shall be identified by the Mod or Claim Number. Whenever possible, changes shall be added to the schedule by adding new activities. Existing activities shall not normally be changed to reflect modifications. A new current approved baseline shall be created to reflect the changes to the previous approved baseline (see item 3.5.5.6 Baseline Network Analysis Schedule.)

3.3.2.9 Work Item

All activities shall be identified in the project schedule by the Work Item to which the activity belongs. An activity shall not contain work in more than one work item. The work item for each appropriate activity shall be identified by the Work Item Code.

3.3.2.10 Phase of Work

All activities shall be identified in the project schedule by the phases of work in which the activity occurs. Activities shall not contain work in more than one phase of work. The project phase of each activity shall be by the unique Phase of Work Code.

3.3.2.11 Category of Work

All Activities shall be identified in the project schedule according to the category of work which best describes the activity. Category of work refers, but is not limited, to the procurement chain of activities including such items as designs, design package submissions design reviews, review conferences, permits, submittals, approvals, procurement, fabrication, delivery, installation, start-up, and testing. The category of work for each activity shall be identified by the Category of Work Code.

3.3.2.12 Feature of Work

All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to, a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code.

3.3.3 Scheduled Project Completion

The schedule interval shall extend from award of contract to the contract completion date.

3.3.3.1 Project Start Date

The schedule shall start no earlier than the date on which award of contract was acknowledged. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have an "ES" constraint date equal to the date that the award of task order was acknowledged, and a zero day duration.

3.3.3.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

3.3.3.3 Early Project Completion

In the event the project schedule shows completion of the project prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Contractor shall specifically address each of the activities noted in the narrative report at every project schedule update period to assist the Contracting Officer in evaluating the Contractor's ability to actually complete prior to the contract period.

3.3.4 Interim Completion Dates

Contractually specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

3.3.4.1 Start Phase

The Contractor shall include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the award of task order was acknowledged, and a zero day duration.

3.3.4.2 End Phase

The Contractor shall include as the last activity in a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the completion date for the project, and a zero day duration.

3.3.4.3 Phase X

The Contractor shall include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5 Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Program features which calculate one of these parameters from the other shall be disabled.

3.3.6 Out-of-Sequence Progress

Activities that have posted progress without all preceding logic being satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case approval of the Contracting Officer. The Contractor shall propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule.

3.3.7 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.4 PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1 Initial Project Schedule Submission

The Initial Project Schedule shall be submitted for approval within 30 calendar days after award of contract. The schedule shall provide a reasonable sequence of activities which represent work through the entire project and shall be at a reasonable level of detail. The baseline schedule shall be reviewed and deemed acceptable prior to the contractor entering (manually or electronically via SDEF file) in QCS.

3.4.2 Periodic Schedule Updates

Based on the result of progress meetings, specified in "Periodic Progress Meetings," the Contractor shall submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

3.4.3 Standard Activity Coding Dictionary

The Contractor shall use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. The contractor shall assure the schedule contains the holidays, fiscal year starting month, work day start and finish shift and preferences for units of time, observed by the government.

3.5 SUBMISSION REQUIREMENTS

The following items shall be submitted by the Contractor for the preliminary submission, initial submission, and every periodic project schedule update throughout the life of the project:

3.5.1 Data Disks

Two (2) Data Compact Disks containing the project schedule shall be provided. Data on the disks shall adhere to the SDEF format specified in ER 1-1-11, Appendix A.

3.5.1.1 File Medium

Required data shall be submitted on Compact Disk, formatted to hold 700 MB of data, under the MS-DOS Version 5 or 6.x, unless otherwise approved by the Contracting Officer.

3.5.1.2 Disk Label

A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Preliminary, Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number of person responsible for the schedule, and the MSDOS version used to format the disk.

1. Two (2) Data Compact Disks containing the project schedule shall be provided. Data on the disks shall adhere to the SDEF format specified in ER 1-1-11, Appendix A.

2. File Medium - Required data shall be submitted on Compact Disk, formatted to hold 700 MB of data, under the MS-DOS Version 5. or 6.x, unless otherwise approved by the Contracting Officer.

3. Disk Label - A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Preliminary, Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number of person responsible for the schedule, and the MSDOS version used to format the disk.

4. File Name - Each file submitted shall have a name related to either the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will ensure that the names of the files submitted are unique. The Contractor shall submit the file naming convention to the Contracting Officer for approval.

3.5.1.3 File Name

Each file submitted shall have a name related to the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will ensure that the names of the files submitted are unique. The Contractor shall submit the file naming convention to the Contracting Officer for approval.

3.5.2 Narrative Report

A Narrative Report shall be provided with the preliminary, initial, and each update of the project schedule. This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include: a description of activities along the 2 most critical paths, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to relay to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through that analysis.

3.5.3 Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the schedule submission. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, and Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number.

3.5.4.2 Logic Report

A Logic Report is a list of Preceding and Succeeding activities for every activity in ascending order by activity number. Preceding and succeeding activities shall include all information listed above in paragraph Schedule Reports. A blank line shall be left between each activity grouping.

3.5.4.3 Total Float Report

A list of all incomplete activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates. Completed activities shall not be shown on this report.

3.5.4.4 Earnings Report

An Earnings Report is a compilation of the Contractor's Total Earnings on the project from award of contract until the most recent Monthly Progress Meeting. This report shall reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and 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. Activities shall be grouped by work item and sorted by activity numbers. This report shall: sum all activities in a work item and provide a work item percent; and complete and sum all work items to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5 Network Diagram

The network diagram shall be required on the initial schedule submission and on monthly schedule update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left. The activity number, description, duration, and estimated earned value shall be shown on the diagram.

3.5.5.2 Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3 Critical Path

The critical path shall be clearly shown.

3.5.5.4 Banding

Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility. Separate activities shall be created for each Phase, Area, Floor Level and Location in which the activity is occurring. Each set of activities identified as a separate group shall be included in a Work Breakdown Structure to avoid confusion with similar activities repeated in other phases, floors, or locations.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.5.5.6 Baseline Network Analysis Schedule

The original approved baseline shall not change through the duration of the contract. The original baseline naming convention is B/L – Contract Name – (Date created). A second revised baseline shall be maintained to reflect approved time extensions, and/or changes to the contract; this could be named as Current Approved Baseline and follow the naming convention: C/A - Contract Name – (Date changed). A third monthly baseline shall be maintained to reflect the monthly updates submitted by the contractor for payment. Naming convention is Mmm- Contract Name-(Date created). Submittal of the Baseline Network Analysis Schedule, and subsequent schedule updates, shall be understood to be the Contractor's certification that the submitted schedule meets all of the requirements of the Contract Documents, represents the Contractor's plan on how the work shall be accomplished, and accurately reflects the work that has been accomplished and how it was sequenced (as-built logic).

Samples of baselines naming conventions:

Field Description in Primavera	Baseline Type	Naming Convention
Project Baseline	Current Approved Baseline	CA – Cerrillos Dam – (12-Jan-1992)
Primary	Monthly Baseline	M02 – Cerillos Dam – (1-Feb-1992)

Secondary	Original Baseline	BL – Cerrillos Dam – (12-Jan-1992)

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly onsite meeting or 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.

3.6.1 Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

3.6.2 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 4 working days after the monthly progress meeting.

3.6.3 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. As a minimum, the Contractor shall address the following items on an activity by activity basis during each progress meeting.

3.6.3.1 Start and Finish Dates

The Actual Start and Actual Finish date for each activity currently in progress or completed.

3.6.3.2 Time Completion

The estimated Remaining Duration for each activity in-progress. Time-based progress calculations shall be based on Remaining Duration for each activity.

3.6.3.3 Cost Completion

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

3.6.3.4 Logic Changes

All logic changes pertaining to change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include:

a. Delays beyond the Contractor's control, such as strikes and unusual weather.

b. Delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary.
c. Changes required in order to correct a schedule which does not represent the actual or planned prosecution and progress of the work.

3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract completion date, or any interim milestone date, the Contractor shall furnish the following for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals.

3.7.1 Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be a cause for a time extension to the contract completion date.

3.7.2 Submission Requirements

The Contractor shall submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

a. A list of affected activities, with their associated project schedule activity number.
b. A brief explanation of the causes of the change.
c. An analysis of the overall impact of the changes proposed.
d. A sub-network of the affected area.

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

3.7.3 Additional Submission Requirements

For any requested time extension greater than 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request. The Contractor shall provide this disk within 4 days of the Contracting Officer's request.

3.8 DIRECTED CHANGES

If changes are issued prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 2 weeks of this task order being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions

within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

-- End of Section --

ADDENDUM

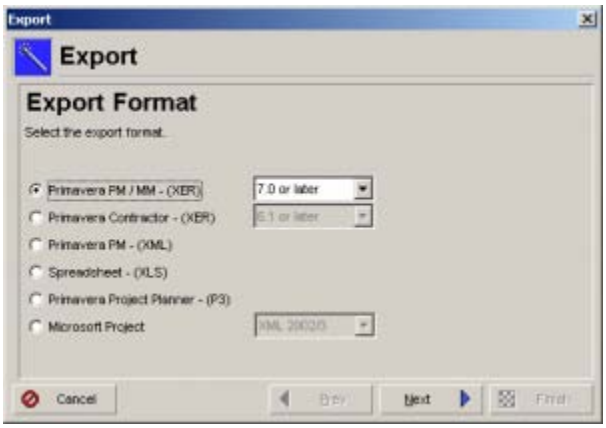
Exporting and Importing Project Information
October 25th, 2009 Activities, EPS primaverarena

As you know Primavera P6 is not a File based system, you need to export Project files if you wish to share your project with someone not in your network via email or other electronic delivery system. Export a Project file is simple and the exported file is a compressed file of all you project

As you know Primavera P6 is not a *File based system*, you need to export Project files if you wish to share your project with someone not in your network via email or other electronic delivery system. Export a Project file is simple and the exported file is a compressed file of all you project information which the other party needs to import in order to see it.

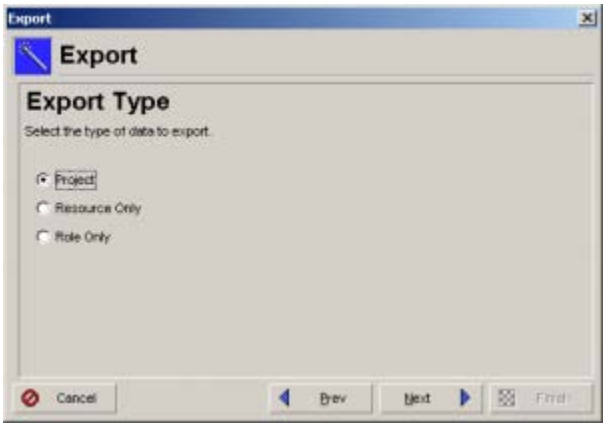
Export

To export a project file, you can go to File menu and click on Export.

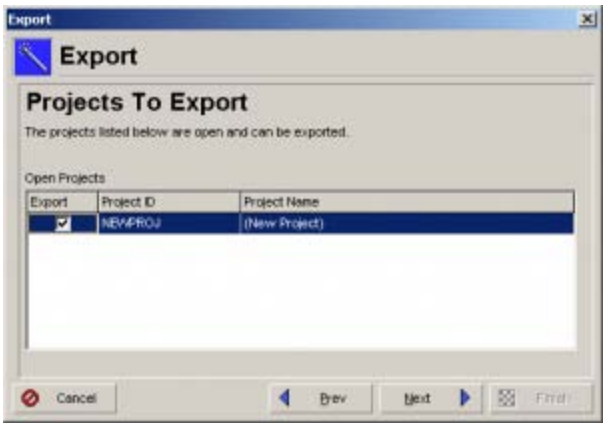


Select Primavera PM/MM format.

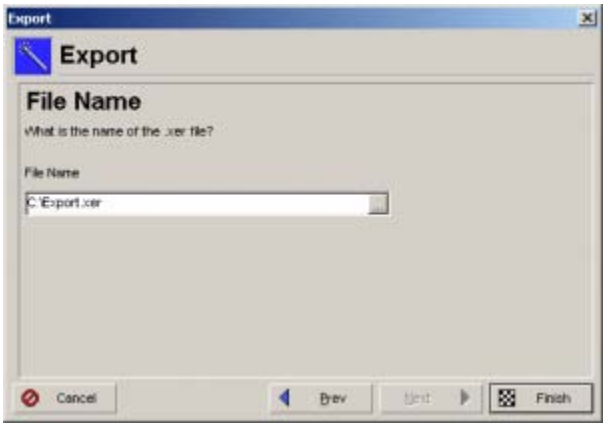
Choose which type of data you wish to export.



Select the Project.



Select the location of the exported file to be placed in.



Click Finish and Ta'daa

And you will find the*.XER file on your desktop (or the location you chose).

Import

To Import the file just double clicking the *.xer file would take you through the same steps and help you successfully update or create a new Project in your EPS.

Key definitions

1. Earned value is a technique for measuring project performance according to both project cost and schedule. This technique compares the budgeted or planned cost of the work to the actual cost. While earned value analyses are typically performed for WBS elements, you can also perform an earned value analysis for activities and groups of activities.

    a. In order to perform an earned value analysis, you must specify two calculation techniques. These techniques apply to activities that are currently in progress. The first technique is used to calculate an activity's percent complete. The second technique is used to calculate an activity's Estimate To Complete (ETC). A set of options is provided for both of these techniques, and you can set these options for each WBS element.

    b. The fundamental earned value parameters used to calculate an activity's Estimate to Complete are: Earned Value Cost; Budget at Completion; Planned Value Cost; and, Actual Cost. You can derive an activity's Estimate to Complete and other earned value indexes from these parameters.

    c. If you are the administrator for your organization, you can specify default earned value techniques for WBS elements.

2. Critical path: The critical path is a series of activities that determines a project's completion time. The duration of the activities on the critical path controls the duration of the entire project; a delay to any of these activities will delay the finish date of the entire project. Critical activities are defined by either the total float or the longest path in the project network.

3. Critical Path Method (CPM) scheduling: The method by which activity durations and the relationships between activities are used to mathematically calculate a schedule for the entire project. CPM focuses your attention on the critical path of activities that affect the completion date for the project or an intermediate deadline.

    Early dates, the earliest possible dates each activity can start and finish, and late dates, the latest possible dates each activity can start and finish without delaying the project finish or an intermediate deadline (constraint) are also calculated.

SECTION 01335
SUBMITTAL PROCEDURES

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.

NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS)

Unified Master Reference List (UMRL)

National Institute of Building Sciences
1090 Vermont Avenue, NW, Suite 700
Washington, DC 20005-4905
Email: nibs@nibs.org
FAX: (202) 289-1092
Tele: (202) 289-7800

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows.

1.2.1 DESIGN SUBMITTALS

Contractor furnished design submittals are the various design documents which primarily consist of field investigations, calculations, design analysis, drawings and specifications.

In addition, for each design submittal, the contractor shall submit all non-administrative modifications issued for the contract as part of the Design Submittal package to enable AES to validate that these modifications have been incorporated into this design submittal.

Design submittals should only address Contract requirements not shown on plans and any specifications already furnished to the Contractor as part of this contract. Plans and specifications furnished to the Contractor shall NOT be included as part of any Design Submittal. The Contractor shall complete all work as shown in these furnished drawings without deviation, unless site conditions mandate changes (i.e., larger building foundations per geotechnical investigations, etc.).

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 Contractor shall not begin construction work until the Government has reviewed and approved the work presented in each Design Submittal, including complete resolution of all DrChecks comments, and the Contracting Officer has cleared work 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 Contractor.

The sole responsibility of ensuring that the design submittals comply with contract documents remains with the Contractor, in accordance with this section of the contract. The Government retains the right to comment on the design at any design stage, and the lack of Government comments at a given review cannot be used as a basis for the Contractor to fail to address the Government's comments on subsequent reviews, regardless of design stage. Furthermore, approval of incomplete designs will not relieve the Contractor of the responsibility for any error which may exist, and which may require rework or other appropriate adjustment to the contract terms, as determined at the sole discretion of the Government. It is the sole responsibility of the Contractor to ensure that submittals do or do not comply with the contract documents. Government review, clearance for construction, or approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract. Government review, clearance for

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

The 99% Design Review Submittal, submittal interval, and levels of completion requested are deliberately set at the highest degree of completion possible. The actual difference between the 99% and the 100% completion levels is not intended to allow for differences in material submittals, but for the Government to have had the opportunity to address and/or otherwise correct or request compliance with codes, standards, methods and use of materials prior to commencing construction.

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

Preliminary design reports – 10%

General Design review - 65%

Final Design review - 99%

Cleared For Construction review - 100%

1.2.1.1 PRELIMINARY DESIGN REPORTS – (10%)

The review of this submittal is primarily to ensure that the Contractor has at a minimum developed the test well and completed the sub-surface investigation. **Failure to do so at the satisfaction of the Government shall constitute grounds for withholding of all progress payments.**

Geotechnical Report, indicating appropriate information for various site characteristics, soil parameters as determined by certified lab tests, allowable soil bearing capacities, correlation with foundation design parameters, and any changes in foundation design of structures furnished in the Contract; estimated settlement for building foundation loads; and all other project feature changes due to the Geotechnical Report conclusions.

Results of the site topographic survey which shall include highlighting of significant features (wadis, adjacent properties and structures, roads, etc.) to provide a detailed, overall understanding of the project site and surrounding area; demolition plan for existing site features;

Master planning elements of the site plan to include all facilities, roads, general utilities and force protection measures.

The Concept Plan attached in the Appendix is for conceptual purposes only and does not constitute a design. The Contractor shall prepare a site Master Plan based on information contained in this Solicitation. The Contractor shall participate in a Master Plan design charrette that shall be conducted at the Corps of Engineers Kandahar Area Office at Kandahar Airfield, if deemed necessary by the Government. If necessary, the Contractor shall modify and implement changes to the Master Plan based on the information gathered during the design charrette process.

Current site conditions are only partially indicated in the Concept Site Plan. The Contractor is responsible to identify all buildings, facilities and site features by construction priority following the Construction Priorities Schedule, Section 01010, Table 7-1.

The Contactor must verify all space requirements and code compliance in accordance of Section and Section 01015 of this contract. The final Master Plan shall be site-specific and it shall include the location of all temporary structures such as the construction office/storage containers and lay-down and construction debris removal areas. The Contractor shall indicate all other site features on the Master Plan regardless of whether they are indicated on the Government supplied Concept Plan or not. The Contractor shall include all information pertinent to this project into the Master Plan to achieve a complete design in accordance with the requirements of this contract.

1.2.1.2 GENERAL DESIGN (65%)

This Design Submittal presents all information necessary to construct all utilities, grading, stormwater management and foundations. It is crucial that the submittal is complete and includes all components noted below and any other pertinent information not listed which the Contractor requires to enable construction to begin as soon as possible. As a minimum, for each Contract project location the submittal shall contain:

Results of the site topographic survey which shall include highlighting of significant features (wadis, adjacent properties and structures, roads, etc.) to provide a detailed, overall understanding of the project site and surrounding area; demolition plan for existing site features; complete grading and drainage plan with existing grades, proposed grades, and building finished floor elevations based on Contract technical requirements; Geotechnical Report;

Any necessary adaptations of the Concept Plan and detailed design drawings furnished with this Contract that might be required due to actual site constraints, to include: water supply/storage location and distribution layout plan; wastewater collection or treatment location and tie-in to all required buildings; electrical generation and distribution plan; connection of existing roads with ECP location(s); and any other changes required due to adjacent property or existing topography. As noted in Paragraph 1.2.1, this would also include proposed changes to the detailed drawings if, and only if, site conditions mandate revisions.

Complete design analysis, plans and specifications for any contract feature(s) not already provided in the Contract that the Contractor would like Partial Clearance for Construction on once the Design Submittal has been approved, including project components with long ordering, fabrication and delivery times.

Outline of Construction Specification Sections to be used for other work yet to be submitted at the 65% Final Design Review submittal, and those Specification items requiring Government Approval, unless 100% Technical Specifications were provided with the Contract.

Drawing and details of any grease interceptors and oil-water separators required. Grease interceptors should either be gravity or hydro-mechanical types. Drawings would show sizing, depth, and all connecting piping. Design analysis shall include calculations for sizing both the interceptor/separator and connecting piping.

Cross sections of roads and sidewalks, showing all essential dimensions, materials, layers, and proposed fore and back slopes of adjacent drainage features.

Drawings and design of site storm drainage structures, including calculations in the design analysis for sizing and sloping of pipe runs and ditches. Provide cross sections of drainage structures such as ditches and culverts.

Design Analysis for the Contractor designs.

1.2.1.3 FINAL DESIGN REVIEW (99%):

The review of this submittal is primarily to insure that the contract documents and design analysis are proceeding in a timely manner and that the Contract requirements and design criteria are being correctly understood and adhered to. Requirements listed below, only apply to the k-span facilities listed in section 01010. The submittal shall consist of the following:

Draft Construction Specifications complete - all anticipated sections, edited to include only applicable requirements, if not provided as part of the Contract.

Construction Drawings complete with all 65% comments incorporated. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall be finalized at this time including the incorporation of any design review comments generated by all past design reviews. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.

The review of this submittal is primarily to insure that the contract documents and design analysis are complete and that the Contract requirements and design criteria are being correctly understood and adhered to. It is crucial that the submittal is complete and includes all components noted below and any other pertinent information not listed which the Contractor requires to enable construction to begin as soon as possible. As a minimum, for each Contract project location the submittal shall contain:

Geotechnical Report, indicating appropriate information for various site characteristics, soil parameters as determined by certified lab tests, allowable soil bearing capacities, correlation with foundation design parameters, and any changes in foundation design of structures furnished in the Contract; estimated settlement for building foundation loads; and all other project feature changes due to the Geotechnical Report conclusions.

Results of the site topographic survey (in accordance with Paragraph 3.9.6.4 through 3.9.6.6 of this Section) which shall include highlighting of significant features (wadis, adjacent properties and structures, roads, etc.) to provide a detailed, overall understanding of the project site and surrounding area; demolition plan for existing site features; complete grading and drainage plan with existing grades, proposed grades, and building finished floor elevations based on Contract technical requirements;

Any necessary adaptations of the Concept Plan and detailed design drawings furnished with this Contract that might be required due to actual site constraints, to include: water supply/storage location and distribution layout plan; wastewater collection or treatment location and tie-in to all required buildings; electrical generation and distribution plan; connection of existing roads with ECP location(s); and any other changes required due to adjacent property or existing topography. This would also include proposed changes to any furnished detailed drawings if site conditions or other requirements mandate revisions.

Complete drawings and details of any grease interceptors and oil-water separators required. Grease interceptors should either be gravity or hydro-mechanical types. Drawings would show sizing, depth, and all connecting piping. Design analysis shall include calculations for sizing both the interceptor/separator and connecting piping.

Complete cross sections of roads and sidewalks, showing all essential dimensions, materials, layers, and proposed fore and back slopes of adjacent drainage features.

Complete drawings of site storm drainage structures, including calculations in the design analysis for sizing and sloping of pipe runs and ditches. Provide cross sections of drainage structures such as ditches and culverts.

Design Analysis complete.

Construction Specifications complete - all anticipated sections, edited to include only applicable requirements.

Construction Drawings complete. 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. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.

1.2.1.4 “CLEARED FOR CONSTRUCTION” SUBMITTAL (100%):

The review of this submittal is to insure that the design is in accordance with 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:

Design Analysis, only if changes have occurred since 99% Design Submittal. The Design Analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the Final Drawings and Specifications.

Geotechnical Report, complete.

Construction Specifications, complete.

Construction Drawings, complete.

Once the design documents have been "Cleared for Construction" by the Contracting Officer, the Contractor shall clearly identify each document by annotating it as "Cleared for Construction."

1.2.2 PARTIAL DESIGN SUBMITTALS

In the interest of expediting construction, the Contracting Officer may approve partial design submittals, procurement of materials and equipment, as well as issue the Notice To Proceed (NTP) for construction of those elements of the design which have been cleared for construction. Such partial notices to proceed shall be solely at the discretion of the Contracting Officer. The Contractor must obtain the approval of the Designer of Record (DOR) and the Government's concurrence for any Contractor proposed revision to the professionally stamped and sealed design reviewed and Cleared for Construction by the Government, before proceeding with the revision. The Government reserves the right to non-concur with any revision to the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and cleared for construction design. Any revision to the design, which deviates from the contract requirements (i.e., the solicitation and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision. Unless the Government initiates a change to the contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the contract requirements, which results in additional cost, shall strictly be at the Contractor's expense. The Contractor shall track all approved revisions to the reviewed and cleared for construction design and shall incorporate them into the As-Built design documentation, in accordance with Section 01780A, CLOSEOUT SUBMITTALS, Paragraphs 1.1 and 1.2, which lists all requirements associated with submission of editable CAD format As-Builts required as part of this contract. The Designer of Record shall document its professional concurrence on the As-Builts for any revisions by affixing its stamp and seal on the drawings and specifications.

1.2.3 ADHERENCE TO THE STANDARD DESIGNS

Contractor shall construct standard building designs as indicated. Any request to deviate or change the standard building designs must be due to changed site conditions ONLY and submitted to the AES Resident Office administering the contract. Contractor shall indicate the changes and provide a narrative justification for the changes proposed, but shall not proceed with deviations without written approval.

1.2.4 USE OF DRCHECKS$_{SM}$ FOR DESIGN SUBMITTAL COMMENT AND RESPONSE

1.2.4.1 DRCHECKS$_{SM}$ WEB LINK

All AES Design Submittal review comments will be documented using the standard design review tool for the U.S. Army Corps of Engineers, a web-based application called "DrChecks$_{SM}$". The web link to DrChecks$_{SM}$ is:

https://www.projnet.org/projnet/binKornHome/index.cfm

1.2.4.2 DRCHECKS$_{SM}$ VENDOR IDENTIFICATION AND TUTORIAL

Upon notification of award, the contractor shall immediately coordinate with the Chief, Engineering Branch, AES to acquire a vendor identification and a brief tutorial on the use of DrChecks$_{SM}$. The contractor is responsible for providing their own DrChecks$_{SM}$ Administrator within their own design staff personnel to access and accomplish actions within DrChecks$_{SM}$.

1.2.4.3 NOTIFICATION OF DRCHECKS$_{SM}$ FILE ACCESS

The Afghanistan Engineer District South will complete a review at every Design Submittal stage for conformance with the technical requirements of the Contract and document all comments in DrChecks$_{SM}$. At completion of the

review, a notification will be issued to the Contractor by the Contracting Officer's representative that the particular DrChecks$_{SM}$ file will be opened to the Contractor. Until this time, the Contractor is not able to view any AES comments for that particular Design Submittal.

1.2.4.4 FURTHER CONTRACTOR INFORMATION AFTER DRCHECKS$_{SM}$ REVIEWS

See Paragraph 3.7.4, Government Review, for further procedures and requirements associated with Design Submittal reviews.

1.2.5 CONSTRUCTION SUBMITTALS

1.2.5.1 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, reports and records/statements.

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

a. CIVIL FEATURES

TESTING RESULTS: Data will include information on the locations and depths of all viable water supply sources at the site(s) involved and a water quantity and water quality analysis for each source from the Ministry of Public Health or other certified testing firm.

b. MECHANICAL FEATURES

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

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

1) The date the tests were performed.

2) A list of equipment used, with calibration certifications.

3) A copy of measurements taken.

4) The parameters to be verified.

5) The condition specified for the parameter.

6) The inspection results, signed, dated, and certified by the installer. The certification shall state that required procedures were accomplished, that the procedures were conducted in compliance the plans and specifications.

7) A description of adjustments performed.

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

c. ELECTRICAL FEATURES

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

DESIGN DATA: lightning protection and grounding.

TEST DATA: Lightning protection and grounding.

d. ARCHITECTURAL FEATURES

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

COLOR BOARD: Architectural finishes

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

SHOP DRAWINGS: Casework/Cabinetry

1.2.5.2 FOR INFORMATION ONLY CONSTRUCTION SUBMITTALS (FIO)

All submittals not requiring Designer of Record or Government approval will be for information only. These construction submittals shall be checked, stamped, signed and dated by the Contractor's Quality Control Engineer, certifying that such submittal complies with the contract requirements. All Contractor submittals shall be subject to review by the Government at any time during the course of the contract. Any Contractor submittal found to contain errors or omissions shall be resubmitted as one requiring "approval". No adjustment for time or money will be allowed for corrections required as a result of noncompliance with plans or specifications. Normally submittals For Information Only will not be returned. Approval of the Contracting Officer is not required on FIO submittals. These submittals will be used for information purposes. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications and will not prevent the Contracting Officer from requiring removal and replacement if nonconforming material is incorporated in the work.

1.2.5.3 VARIATIONS

After design submittals have been reviewed and cleared for construction by the Contracting Officer, no submittal for variation shall be considered by the Government.

1.2.5.4 ADDITIONAL SHOP DRAWINGS AND SUBMITTALS

In accordance with the paragraph entitled DESIGN DISCREPANCIES, the Government may request the Contractor to provide additional shop drawing and submittal type data subsequent to completion of the design.

1.2.5.5 INCOMPLETE DESIGN

The Contractor shall not use construction submittals as a means to supplant and/or supplement an incomplete design effort.

1.3 SUBMITTAL CERTIFICATION

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

1.3.1 EFFECTIVE QUALITY CONTROL SYSTEM

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

1.3.1.1 ORGANIZATIONAL RESPONSIBILITY

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

1.3.1.2 CQC SYSTEM MANAGER REVIEW AND APPROVAL

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

1.3.1.3 DETERMINATION OF COMPLIANCE

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

1.3.2 RESPONSIBILITY FOR ERRORS OR OMISSIONS

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

1.3.2.1 GOVERNMENT REVIEW

Government review, clearance for construction, or approval of 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

No submittals for the purpose of substituting materials or equipment specified in the contract drawings, specifications, and reference documents shall be considered by the Government.

1.3.4 ADDITIONAL SUBMITTALS

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

1.3.5 UNTIMELY AND UNACCEPTABLE SUBMITTALS

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

1.3.6 STAMPS

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

Contractor (Firm Name)
Contract Number
Contract Name

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

Name of CQC System Manager: _____
Signature of CQC System Manager: _____
Date: _____

1.4 ENGLISH LANGUAGE

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

1.5 UNITS OF MEASUREMENT

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

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

1.5.1 DRAWINGS

1.5.1.1 SITE LAYOUT

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

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

1.5.1.2 GEO-REFERENCE

All site plans shall be geo-referenced using the WGS 1984 coordinate system, specifically the following: WGS 1984 UTM one 42 North. 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 AES to incorporate the plans into GIS for storage, map production, and possible geospatial analysis of the different work sites.

1.5.2 DESIGN CALCULATIONS

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

1.5.3 SPECIFICATIONS

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

1.6 WITHHOLDING OF PAYMENT FOR SUBMITTALS

1.6.1 DESIGN SUBMITTALS

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

1.6.2 CONSTRUCTION SUBMITTALS

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

2.0 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 Sections 01010 and 01015 (and any additional sections that are appropriate). The solicitation Section 01010 and 01015 shall be the latest version. Any subsequent changes to the solicitation 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

Only design analyses associated with the features of this contract design by the Contractor shall be submitted for review. It shall be written in the English language with SI units of measure. 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.

2.3.2 FORMAT

Format of design analysis shall closely match the standard format referenced within the solicitation.

2.4 DESIGN CALCULATIONS

Only calculations associated with the features of this contract designed by the Contractor shall be submitted for review, unless site conditions mandate changes to drawings and specifications furnished with this Contract. All design calculations shall be presented such that they are easily understood, correlated with contract requirements (Section 1010 and 1015 criteria; codes; all other applicable or pertinent criteria) and all final conclusions clearly documented and summarized. The Design Submittal must include complete information (Soil Report, percolation test results, concrete design strengths, steel material properties, electrical loads, heat gain/loss assumptions, etc.) necessary to support all design calculations in order to easily and efficiently verify the accuracy of this information and the resulting project components shown in plans and specifications.

2.4.1 SUBMITTAL

When design calculations are voluminous, they shall be bound separately from the narrative part of the design analysis. Design calculations will include a title page, table of contents, and be indexed (tabbed) to separate distinct parts of the various analysis and design actions being accomplished to support plan drawings submitted. They shall be presented in a clear, consistent and legible format in order to quickly understand the analysis and design accomplished. Presentation shall be such that a person unfamiliar with the project features and associated analysis and design can quickly understand the overall design process and procedures, review the information in conjunction with the given set of plans and specifications, and verify the suitability of all information submitted.

All design calculations shall explain the source of loading conditions with assumptions and conclusions explained. The analysis and design methods shall also be explained, including assumptions, theories and formulae. Include applicable diagrams that are clearly explained and correlated with related computations, whether computer or hand generated. The design calculations shall include a complete and comprehensive list of the criteria (and date or version of the criteria) that the design/analysis will be compared to (codes, Corps of Engineers Engineering Regulations, Engineering Manuals, etc.). Within the separable elements of design calculations, the engineer shall cite the specific code or reference paragraph or section as appropriate to indicate conformance to requirements.

At the beginning of each project component design section, present a summary of all load conditions and combinations required per applicable code or Corps of Engineers manual or regulation. Then clearly identify the particular load case governing the design and clearly show how the particular analysis, construction materials to be used, and the specific design meet the governing load combination.

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

2.4.2 COMPUTER ANALYSIS

Provide a clear summary of all computer outputs and highlight in the outputs information used in the analysis and design accomplished elsewhere in the calculations.

If a computerized analysis or design program is used (either commercial software packages or unique, designer-written computer analysis/design tools), the computations shall provide clear reference to the software program and version being used and an explanation of the validity of the particular program to the given application (where has the program been used before, what input and output does the program provide, is the program a recognized Corps of Engineers or industry standard). If the program is proprietary to the Contractor (not recognized by the Corps of Engineers or industry), the Contractor shall provide a sample hand calculation to verify the results of one set of data generated by the computer program.

State exactly the computation performed by the computer. Include applicable diagrams, adequately identified. Provide all necessary explanations of the computer printout format, symbols, and abbreviations. Use adequate and consistent notation. Provide sufficient information to permit manual checks of the results.

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

When the computer output is large, it shall be divided into volumes at logical division points. All final computer results used in design shall be separated from the total pages of computer output that might be included in the design calculations for ease of review.

2.5 SPECIFICATIONS

Specifications for most work associated with this Contract may have been furnished to the Contractor and only specifications produced by the Contractor should be submitted for review. If the Contractor determines that features of this contract design by the Contractor require additional specifications, they shall be submitted for review and approval. Specifications shall be prepared in accordance with the UFGS (Uniform Facilities Guide Specifications) format. The Contractor-prepared specifications shall include as a minimum, all applicable specification sections referenced by the UFGS. Where the UFGS does not reference a specification section for specific work to be performed by this contract, the Site-Adapt Contractor shall be responsible for creating the required specification in the UFGS format.

2.5.1 USE OF UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS)

If additional specifications are deemed necessary by the Contractor, UFGS (Uniform Federal Guide Specifications) are required 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.

2.5.2 QUALITY CONTROL AND TESTING

Any additional specifications deemed necessary by the Contractor shall include required quality control and further indicate all testing to be conducted by the Contractor, its subcontractors, vendors and/or suppliers.

2.5.3 AMBIGUITIES AND INDEFINITE SPECIFICATIONS

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

2.5.4 INDUSTRY STANDARDS

2.5.4.1 U.S. INDUSTRY STANDARDS

The Specifications shall be based on internationally accepted U.S. industry Standards. Customarily accepted publications may be found in the UNIFIED MASTER REFERENCE LIST (UMRL) which may be located at the following URL: http://www.hnd.usace.army.mil/techinfo/UFGS/UFGSref.htm.

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

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

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

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

2.5.5 AED DESIGN REQUIREMENTS DOCUMENTS

AED Design Requirements (latest version) documents listed in section 01015, shall be adhered to in this contract. These documents are available from the COR. These documents shall be used as the basis for design and construction, and for selecting options within the United Facilities Guide Specifications (UFGS). It is the contractor's option to use specifications contained in the AED Design Requirements Documents, when provided, or to adapt the UFGS specifications to match the requirements provided in the AED Design Documents and specifications. Site or project specific data and requirements in the AED Design Requirements documents shall supersede UFGS language where there are differing criteria which must be evaluated and selected.

2.6 DRAWINGS

2.6.1 COMPUTER ASSISTED DESIGN AND DRAFTING (CAD)

Computer Assisted Design and Drafting (CAD) is required for all Afghanistan Engineer District-North contracts. Only personnel proficient in the preparation of CAD drawings shall be employed to modify the contract drawings or prepare new drawings. The CAD deliverables shall meet the requirements of the A/E/C CAD Standards (V 3.0 or newer). The A/E/C CAD Standards may be downloaded at the CAD/BIM Technology Center at the following link: https://cadbim.usace.army.mil/default.aspx?p=s&t=13&i=4 or the AED-N website http://www.aed.usace.army.mil/engineeringtop2010.asp under the "Government Provided CAD Files" link.

The Contractor shall furnish all softcopy design submittals (and As-Builts) using software applications in either DWG format (Auto Desk, AutoCad Release 2009 or newer) or DGN format (Bentley Systems, MicroStation, version 8.0 or newer). Use of unregistered or student copies of software applications to prepare design drawings **IS NOT PERMITTED**. In addition, the Contractor is required to submit the softcopy design submittals in PDF (Adobe Acrobat) format.

CD media submitted containing the softcopy design submittals shall be organized per the instructions below and the diagram in Section 1335a:

CD Title:

Project Name and Location:

Project Number:
Submittal Number:
Date:
Contractor Name, Address, Telephone Number and email

Folders and Folder Contents/Structure:

Main Folder Name	Subfolders, Files and File Format	Description
Administrative	Multiple PDF files	Files shall include the contract, task order, approved modifications, approved BCDs, approved variations and non-administrative modifications (do not provide time extensions, COR appointments, and Requests for Information/responses, etc).
Design Analysis	One pdf file with identical contents as the printed document of the submittal.	All data, discussion, calculations and information presented in the printed Design analysis.
Specifications	One folder specifications in word format. One folder with specifications in pdf format.	All specification sections including table of contents edited as appropriate for the submittal stage of the project[2].
Geotechnical Report	One file in pdf format	All data, graphs, charts and tables generated during the geotechnical investigation.
PDF Drawings	One Binder of pdf files.	PDF Drawings. Files will be saved in a Binder and organized in the same order as indicated on the sheet index
CAD Drawings	DGN or DWG files organized in the following folders. Each folder shall contain only drawings pertaining to that discipline. General (Cover Sheet/ Index of Drawings, Vicinity Maps) Civil Architectural Structural Mechanical Plumbing Electrical Telecommunications	CAD Drawings. All referenced files are to be attached without drive or directories and placed in the same folder it is referencing. Do not save or use paths. Do not use live nesting when attaching reference files.

Notes:
1. The administrative folder shall provide documents submitted by the contractor and received from the COR related to the contract. These documents shall include Requests for Information related to design issues, Variation Requests, Modifications to the Contract. In addition, the folder shall contain a copy of the signed contract, relevant task orders and change orders.
2. DO NOT INCLUDE standard drawings or specifications provided to the contractor as part of the RFP or as part of the contract.

2.6.2 DRAWINGS

Drawings shall be prepared in the English language with metric (SI) units of measure. All drawings and details of the working drawings shall be labeled and cross-referenced, thoroughly checked and coordinated with other engineering disciplines. At the final design submittal (100%) the Contractor shall have incorporated all design review comments generated by previous design review(s), have completed all of the constructability and coordination comments, and have the drawings in a Ready-to-Build condition. The drawings shall be complete at this time and contain all the details necessary to ensure a clear understanding of the work throughout construction. Prior to submitting the 100% Final Design drawings, the Contractor shall follow the procedures as described in Section 3 of the AED Design Requirements for CAD Design Guide.

2.6.3 DRAWING SIZE BORDER SHEETS

All drawings shall be prepared in size "A1" border sheets (594mm by 841mm). Hardcopy design submissions may be printed on half size drawing sheets (“A3”, 297 mm by 420 mm) for purposes of saving paper and for ease of review. If drawings are not readable in the half size reduction, the Contractor shall submit all drawings in A1 border sheets. All final contract drawing sets (As-Builts) shall be submitted on A1 border sheets. Drawing sheets shall be trimmed to specified size if necessary.

2.6.4 SEQUENCE OF DESIGN DRAWINGS

Referencing the A/E/C CAD Standard the sequence of drawings shall follow the sequence as shown below:

Discipline

1. General
2. Hazardous Materials
3. Survey/Mapping
4. Geotechnical
5. Civil
6. Landscape
7. Structural
8. Architectural
9. Interiors
10. Equipment
11. Fire Protection
12. Plumbing
13. Process
14. Mechanical
15. Electrical
16. Telecommunications
17. Resource
18. Other Disciplines
19. Sub-Contractor/Shop Drawings
20. Operations

2.6.5 DRAWING FOLDER STRUCTURE

CAD files shall be organized in folder names as described in Paragraph 2.6.4. For multi-building projects, a folder of each building type shall be created and the applicable folders shown in each building type folder.

2.6.6 DRAWING SHEET ASSEMBLY

CAD files will be organized in what is described as "**Option 1a**" (page 9 in the A/E/C CAD Standards Drawing Sheet Assembly manual), normally referred to as "Model Space and Paper Space" in Autodesk Autocad applications and "Design Model and Sheet Model" in Bentley Microstation applications. All files will be drawn consistently in the same manner using this option throughout the entire project.

2.6.7 MODEL FILES

Model files represent the building's physical layout and components such as floor plans, elevations and details. Model files shall be drawn to full size (1:1) in metric units in the default model view. Floor Plan Model files represent one floor. Example: do not use one model drawing file to draw several floor plan drawings with several border files. One paper space layout shall be provided per plotted sheet. Model files being referenced into another shall have insertion coordinates (x,y,z) of 0,0,0 in model space. The exception for model files with insertion coordinates other than 0,0,0 shall be the civil site plans (using Georeferencing and real-world coordinates.) Dimensioning shall be in millimeters unless noted otherwise, drawn associatively, and not be "forced". Example: if a wall is drawn 1:1, as 150 mm but the dimensioned number is modified to 200, this is unacceptable.

2.6.8 BORDER SHEET FILES

Border sheet files are referenced into drawing files (in Paper Space) for plotting and viewing purposes. Every border sheet file has a drawing area, Title Block information and sheet trim border. The Afghanistan Engineer District – South uses a common Title Block sheet border for each project. The project Title Block sheet border with "sheet independent" data is referenced into each drawing. When a drawing file is created, "sheet dependent" Title Block data, such as the Sheet Identification and Title, is added to the specific drawing file and located in Paper Space where the Title Block is referenced and viewed. AED-S Title Block drawings may be downloaded at:

http://www.aed.usace.army.mil/engineeringtop2010.asp

,under the "Government Provided CAD Files" link.

2.6.9 LAYER/LEVEL NAMES

Layer or level files names shall follow the guidelines of the A/E/C CAD Standards V4.0. For AutoCAD, [discipline].dwt (drawing template files) shall be used to import the proper layers that will be inclusive of the correct line type, color, and line thickness of the respective layer. Templates to be used are found on the CAD/BIM Technology Center at the following link:

https://cadbim.usace.army.mil/default.aspx?p=s&t=13&i=4,

or at AED-N's website:

http://www.aed.usace.army.mil/engineeringtop2010.asp

,under the "Government Provided CAD Files" link.

2.6.10 DRAWING FILE NAMING CONVENTION

The sheet identifier will consist of the discipline designator, the sheet type designator and the sheet sequence number as referenced in the A/E/C CAD Standards V4.0.

2.6.11 SHEET IDENTIFICATION BLOCK

The sheet identifier will follow the format of the border sheet file. This will consist of the discipline designator, the sheet type designator and the sheet sequence number as referenced in the A/E/C CAD Standards Manual.

2.6.12 DRAWING SCALES

The scales indicated on the following list shall be the guide in determining the scale for all drawings. Bar scales on drawings are preferred as printed copies may lose their plotted scale through generational copying. The Contractor may, at its option, make exceptions to the scales indicated, if approved in writing by the Contracting Officer.

TYPICAL DRAWING SCALES	
DRAWING TYPE	**METRIC**
SITE PLAN	1:200
	1:400
	1:500
	1:600
	1:700
	1:1000
	1:2000
	1:5000
	1:6000
	1:10000
	1:20000
FLOOR PLAN	1:50
	1:100
ROOF PLAN	1:200
EXTERIOR ELEVATIONS	1:100
	1:200
INTERIOR ELEVATIONS	1:50
	1:100
CROSS SECTIONS	1:50
	1:100
	1:200
WALL SECTIONS	1:20
STAIR DETAILS	1:10
DETAILS	1:5

2.6.13 SYMBOLS, LINE STYLES, & PATTERNS

Approved symbols, line styles, and patterns shall be in accordance with AEC CAD Standards V 3.0 or newer (see Appendix D of the A/E/C CAD Standards). The approved symbols, line styles, and patterns associated with AutoCAD software maybe downloaded at the following link:

https://tsc.wes.army.mil/products/standards/aec/aecstdsym.asp

2.6.14 PLOTTER PREPARED ORIGINAL DRAWINGS AND PDF FILES

Design files shall be developed in anticipation of plotting on a monochrome, vector plotter. Line density shall be equivalent to that produced by black India ink: half tone plots are only acceptable where the half-tone color setting of RGB (red, green blue) settings equal a value of 153. (Please refer to the A/E/C CAD Standards). **Drawings plotted in color are not acceptable.** Manual changes to plotted originals are not acceptable. A separate Adobe PDF file shall be made of each drawing file oriented in "Landscape". Each PDF drawing file shall then be compiled into one "binder" PDF file for each set of drawings following the order of the Sheet Index.

2.6.15 TITLE AND REVISION BLOCK

Only AED-S Title and Revision Blocks are allowed. These are available at AED-N's website for download at: http://www.aed.usace.army.mil/engineeringtop2010.asp under the "Government Provided CAD Files" link.

2.6.16 LEGENDS

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

2.6.17 LOCATION/COLUMN GRID

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

2.6.18 COMPOSITE AND KEY PLANS

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

2.6.19 SPECIFICATIONS PLACED ON THE DRAWINGS

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

2.6.20 REVISIONS

Drawing revisions shall be prepared only on the original CAD files. A revision history (located in the Title Block) is required on all sheets.

2.6.21 BINDING

All volumes of drawing prints shall be firmly bound and shall have covers of heavier bond than the drawing sheets. If posts are used to fasten sheets together, the drilled holes on the bond edges of the sheets shall be on 8-1/2-inch centers.

2.6.22 GOVERNMENT PROVIDED FILES

All CAD related files provided by the Government to the Contractor (AutoCad and MicroStation Afghanistan Engineering District-North Title Block and Cover/Index sheet files, AutoCAD template files) may be downloaded through the following Afghanistan Engineering District-North website:

http://www.aed.usace.army.mil/engineeringtop2010.asp

,under the "Government Provided CAD Files" link.

If Contractor is unable to access this site, a CD will be provided upon request to the Project Manager.

3.0 EXECUTION

3.1 GENERAL

3.1.1 DESIGN CONCEPT COORDINATION MEETING

Shortly after Notice To Proceed (NTP) the Government or contractor may suggest meeting(s) to review the Design Submittal process or discuss various aspects of the contract to enable prompt and efficient initiation of contract actions. Meeting(s) will be held to assure attention is focused on key project requirements (necessary contractor design and Government review that is required to provide Construction Clearance), to discuss features and items of work that need to be submitted early due to long lead time items, or discuss other concepts/ideas that will help accelerate the contract work. Other Design Coordination meetings may be requested throughout the contract period if Government review of various contractor Design Submittals indicate poor design and plan or specification quality in order to clearly explain the changes and improvements required of the contractor, assure understanding of Government comments, code references and required investigations and calculations, to move forward with acceptable design and satisfactory plans and specifications.

3.1.2 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 REGISTER

3.2.1 DESIGN SUBMITTALS

The Contractor shall submit as part of his Project Schedule Design Submittal milestone dates. The Contractor shall post all actual dates of submittal actions (including clearance for construction) as they occur.

3.2.2 CONSTRUCTION SUBMITTAL REGISTER (ENG FORM 4288)

Attached to this section is ENG Form 4288 which the Contractor is responsible for developing for this contract. All design and construction submittals shall be shown on this register. The submittal register shall be the controlling

document and will be used to control all submittals throughout the life of the contract. The Contractor shall maintain and update the register on a monthly basis for the Contracting Officer's approval.

3.3 TRANSMITTAL FORM (ENG FORM 4025)

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

3.4 PROGRESS SCHEDULE

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

3.5 SCHEDULING

3.5.1 DESIGN SUBMITTALS

Adequate time (a minimum of fourteen (14) full calendar days exclusive of mailing time) shall be allowed for AES review and comment in DrChecks$_{SM}$. This time period starts on the next full day after delivery of the Design Submittal to AES. If the Contractor fails to submit design submittals in a timely fashion, or repetitively submits design submittals that are not in strict conformance with the Contract documents, no part of the time lost due to such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.5.2 CONSTRUCTION SUBMITTALS

Contractor furnished Government Approved Construction Submittals (GA) for items noted in Paragraph 1.2.5 of this Section, or others as required by the COR, shall be submitted to the Area or Resident Office, per directions given at the Pre-Construction meeting. Adequate time (a minimum of fourteen (14) full calendar days exclusive of mailing time) shall be allowed for AES review and comment.

3.5.3 POST DESIGN CONSTRUCTION SUBMITTALS

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of fourteen (14) full calendar days exclusive of mailing time) shall be allowed for review and approval. If the Contractor fails to submit post design construction submittals in a timely fashion, or repetitively submits submittals that are not in strict conformance with the Contract documents, no part of the time lost due to actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.6 SUBMITTAL PROCEDURE

3.6.1 DESIGN SUBMITTALS

3.6.1.1 AFGHANISTAN ENGINEER DISTRICT SOUTH (AES)

One (1) half-size hard copy and two (2) soft copies (electronic version) of all design submittals (calculations, reports of field tests, design analysis, plans, specifications, etc) shall be transmitted to the Government at the following address, by means of ENG Form 4025:

AFGHANISTAN ENGINEER DISTRICT SOUTH (AES)

(1) DHL, FEDEX, UPS or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District-south
Kandahar Air Field
USACE-TAS
APO AE 09355
Attention: Chief, Engineering Branch

The soft copy (electronic version) and CD case shall both be clearly labeled (hand written information is not acceptable – typed labels are required) with contract information (contract #, title, contractor name, specific design submittal stage including if it is a Resubmittal, date of submission, components of the submittal – design analysis, plans, specifications, and if more than one CD then state 1 of "X", 2 of "X", etc., anti-virus information below, etc.)

The Contractor shall scan the soft copy (electronic version) of each Design Submittal using most up-to-date version of recognized Industry-standard anti-virus software (Symantec, Norton, etc.) to insure that no viruses are contained in it prior to acceptance by AES. The label shall indicate it has been scanned for viruses and the anti-virus software and version clearly indicated.

3.6.1.2 RESIDENT/AREA ENGINEER OFFICE

Complete design submittals shall be provided to the Area and/or Resident Engineer Office such that these are received **at the same time** as these submittals are delivered to the AES address in Para. 3.6.1.1. At the Pre-Construction meeting, the Contractor will be furnished the Area and/or Resident Office address to which these submittals shall be provided along with the number and size of hard and soft (electronic version) copies required for these offices. As per Paragraph 3.6.1.1, soft copies are to be properly labeled and checked for viruses by the contractor prior to delivery.

3.6.1.3 EDITABLE CAD FORMAT AS-BUILTS

This is a 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. See Section 01780A CLOSEOUT SUBMITTALS, Paragraphs 1.1 and 1.2, for all requirements associated with submission of editable CAD format As-Builts required as part of this contract.

3.6.2 POST DESIGN CONSTRUCTION SUBMITTALS

One (1) copy of all post design construction submittals shall be transmitted to:

AFGHANISTAN ENGINEER DISTRICT SOUTH (AES)

(1) DHL, FEDEX, UPS or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District-South

Kandahar Air Field
USACE-TAS
APO AE 09355
Attention: Chief, Engineering Branch

3.6.3 SUBMITTAL NUMBERING SYSTEM

Instructions on the numbering system to be used for construction submittals follows.

3.6.3.1 SUBMITTALS

Shop drawings and materials are listed on the Submittal Register (ENG Form 4288) as follows:

List is prepared according to contract specifications and drawings, picking up all items involved in the project.

This list is divided into sections as indicated in the specifications. For example:

Section	01015	"Technical Requirements"
Section	01335	“Design Submittals”
Section	02831	"Chain-Link Fence"
Section	02710	"Sub-drainage System"
Section	03300	"Concrete For Building Construction"
Section	04200	"Masonry"

3.6.3.2 NUMBERING PROCEDURES FOR TRANSMITTAL ON ENG FORM 4025

Each Specification Section will have various requirements for submittals (design information, product data, test reports, procedures, etc.) to the Government for Approval (GA) or For Information Only (FIO). Items from different Sections cannot be submitted on the same ENG Form 4025. When furnishing one or more items from the same Section at a given time, a single ENG Form 4025 can be used to identify and submit these items. Block ‘b” of the 4025 entitled “DESCRIPTION OF ITEM SUBMITTED” should provide an accurate and unique description of each item being proposed by the Contractor. Item numbers (block “a” of the 4025 entitled “ITEM NO.”) will be automatically generated in QCS for each ENG Form 4025. QCS will track and automatically generate the “ITEM NO.” for all following ENG Form 4025s for the same Section number. To illustrate, a transmittal for the 65% 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	65% 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 solicitation or in the Construction Specifications compiled by the Contractor in the prosecution of work under the solicitation.

3.6.3.3 RESUBMITTALS

Should the Contractor be required to resubmit any transmittal due to one or more items on that transmittal being Coded “C” (Cleared for Construction, except as noted in attached comments, Resubmission Required) or “E” (NOT Cleared for Construction, see attached comments, resubmission required) by the Government, QCS will be used to generate the same transmittal number followed by the number "-1" for the first re-submittal, "-2" for the second re-submittal, "-3" for the third re-submittal, etc.

As an example, assume the 65% Design Submittal is provided to the Government as Transmittal 01335-9. Due to omissions or errors in that Submittal which result in a Code “E” being given, then the subsequent 65% Design Re-submittal #1 would be “Transmittal 01335-9.1”. Should a re-submittal again be necessary, it would be Design Re-submittal #2 and would be submitted as “Transmittal 01335-9.2”.

The purpose of this system is to avoid deviations from the Submittal Register and to track submittals in both RMS and DrChecks$_{SM}$. <u>It should be noted that a new transmittal number following the above system CANNOT be generated in QCS unless the prior transmittal has been given a Code.</u> If the Contractor is having difficulty generating the correct transmittal number, contact the COR to resolve the matter.

The Contractor use the above nomenclature and date of submission to the Government for Plan Cover Sheets; title blocks for all drawings; all Specification Cover Sheets; all specification pages; all Design Analysis Cover Sheets and associated pages; and similar labeling for all other documents included in the submittal.

See the attachment titled “SITE ADAPT 1335a-Attachments-AED.pdf” (Figures 1-4) for required Title Block Required Annotations drawing guidance.

3.6.4 VARIATIONS

If design or construction submittals show variations from the contract parameters and/or requirements due to site conditions, 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 shall be considered.

3.6.5 NON-COMPLIANCE

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

3.7 REVIEW OF CONTRACTOR PREPARED DESIGN DOCUMENTS

3.7.1 GENERAL

The work under contract will be subject to continuous review by representatives of the Contracting Officer. Additionally, joint design review conferences with representation by all organizations having a direct interest in the items under review may be held. The Contractor shall furnish copies of all drawings and related documents to be reviewed at the review conference on or before the date indicated by the Government. Additional conferences

pertaining to specific problems may be requested by the Contractor or may be directed by the Contracting Officer as necessary to progress the work. The Contractor shall prepare minutes of all conferences and shall furnish two copies to the Contracting Officer within seven (7) days after the conference.

3.7.2 INDEPENDENT DESIGN REVIEW

The Contractor shall have someone other than the Designer or Design Team perform an independent technical review of all specifications, drawings, design analysis, calculations, and other required data prior to submission to the Government. This review shall insure the professional quality, technical accuracy, and the coordination of all design analysis, drawings and specifications, and other services furnished under this contract have been accomplished. Work must be organized in a manner that will assure thorough coordination between various details on drawings, between the various sections of the specifications, and between the drawings and specifications. The Contractor shall thoroughly cross-check and coordinate all work until he is professionally satisfied that no conflicts exist, vital information has not been omitted, and that indefinite language open to interpretation has been resolved. Upon completion of this review, the Contractor shall certify that each design submittal is complete, accurate, is in strict conformance with all contract requirements, that repetition has been avoided, that all conflicts have been resolved, and that the documents have thoroughly coordinated and cross checked against all the applicable disciplines to prevent the omission of vital information.

3.7.3 CONTRACTOR'S QUALITY CONTROL ORGANIZATION REVIEW

The Contractor shall thoroughly review each submittal prior to submission to the Contracting Officer to assure it is complete, correct and unified. This review shall be for the purposes of eliminating errors, interferences, and inconsistencies, and of incorporating design criteria, review comments, specifications, and any additional information required. The Contractor shall give evidence of such review of all items in each submittal ENG Form 4025, by annotating Column “g” (titled “For Contractor Use Code”) of this Form with the letter “A,” meaning the Contractor has reviewed it and is indicating it is “Approved as Submitted”. Design submittals submitted to the Contracting Officer without evidence of the above requirements or the Contractor's certified approval will be returned for resubmission. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7.4 GOVERNMENT REVIEW

Within 14 days after Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated in calendar dates. The Contractor shall update this schedule monthly. After receipt, the Government will be allowed fourteen (14) full days to review and comment on all Design Submittals, except as noted below. This time period starts on the next full day after delivery of the Design Submittal to AES.

If a design submittal is deficient (errors on ENG Form 4025; incorrect drawing title block information; missing or incomplete features required in the submittal; etc.), it will be returned immediately without further review for correction and resubmission. The review time will begin when the corrected submittal is received. The Contractor may be liable for liquidated damages owed to the Government for returned design submittals due to deficiencies.

The contractor shall not begin construction work until the Government has reviewed the Contractor's Design Submittal and cleared it for construction. Clearance for construction does not mean Government approval. Government review shall not be construed as a complete check but will evaluate the general design approach and adherence to contract parameters. The Government Review is often limited in time and scope. Therefore, the Contractor shall not consider any review performed by the Government as an excuse for incomplete work.

Upon completion of the review the Contractor will be notified by the Contracting Officer Representative that the DrChecks$_{SM}$ file is open for viewing and response to AES comments. The Contracting Officer will indicate whether the Design Submittal, or portions thereof, has or has not been cleared for construction using the following action codes:

A – Cleared for Construction

B – Cleared for Construction, except as noted in attached comments

C – Cleared for Construction, except as noted in attached comments, 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 Contractor.

Design submittals Cleared for Construction by the Contracting Officer shall not relieve the Contractor from responsibility for any design errors or omissions and any liability associated with such errors, nor from responsibility for complying with the requirements of this contract.

3.7.4.1 INCORPORATION OF GOVERNMENT REVIEW COMMENTS

The Contractor shall review each comment, furnish a complete response in DrChecks$_{SM}$ as to how the comment will be addressed in the Design Analysis, Plans and Specifications, or other Design Submittal stipulations required in this Contract. The Contractor will then incorporate each comment into the design submittal along with other work required at the next Design Submittal stage. The Contractor shall furnish disposition of all comments in DrChecks$_{SM}$, with the next scheduled submittal. The disposition shall identify action taken with citation of location within the relevant design document. Generalized statements of intention such as "will comply" or "will revise the specification" are not acceptable. During the design review process, comments will be made on the design submittals that will change the drawings and specifications. The Government will make no additional payments to the Contractor for the incorporation of comments. Review comments are considered part of the contract administration process.

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 is cautioned that if he believes the action required by any comment exceeds the requirements of this contract, he should flag the comment in DrChecks$_{SM}$ as a scope change, and notify the COR in writing immediately.

If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period may be extended 7 days. Submittal date revisions must be made in writing at least five (5) days prior to the submittal.

3.7.4.2 CONFERENCES

As necessary, conferences will be conducted between the Contractor and the Government to resolve review comments.

A review conference may be held at the completion of AES review and subsequent Contractor response for each design submittal. The review conference will be held at the Corps District Office in Kandahar Air Field, Afghanistan. The Contractor shall bring the personnel that developed the design submittal to the review conference.

3.7.4.3 DESIGN DEFICIENCIES

Design deficiencies noted by the Government shall be corrected prior to the start of design for subsequent features of work which may be affected by, or need to be built upon, the deficient design work.

3.7.5 DESIGN DISCREPANCIES

The Contractor shall be responsible for the correction of incomplete design data, omissions, and design discrepancies which become apparent during construction. The Contractor shall provide the Contracting Officer with a proposed recommendation for correcting a design error, within three (3) calendar days after notification by the Contracting Officer. The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor. Should extensions of design, fabrication plans and/or specific manufacturer's details be required as a result of a Government issued Change Order, the Government will make an equitable adjustment in accordance with Contract Clause 52.243-4 entitled CHANGES.

3.8 PHASED OR "FAST-TRACK" DESIGN

3.8.1 GENERAL

If approved by the Government, design and construction sequencing may be effected on an incremental basis as each approved phase or portion (e.g., demolition, geotechnical, site work, exterior utilities, foundations, substructure, superstructure, exterior closure, roofing, interior construction, mechanical, electrical, etc.) of the design is completed.

3.8.2 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 CONDUCT OF WORK

3.9.1 PERFORMANCE

Perform the work diligently and aggressively, and promptly advise the Contracting Officer of all significant developments.

3.9.2 TELEPHONE CONVERSATIONS

Prepare a summary, and promptly furnish a copy thereof to the Contracting Officer, of all telephone conversations relating to the design work under this contract.

3.9.3 COOPERATION WITH OTHERS

Cooperate fully with other firms, consultants and contractors performing work under the program to which this contract pertains, upon being advised by the Contracting Officer that such firms or individuals have a legitimate interest in the program, have need-to-know status, and proper security clearance where required.

3.9.4 TECHNICAL CRITERIA

All designs, drawings, and specifications shall be prepared in accordance with the contract documents and with the applicable publications referenced therein. As soon as possible, the Contractor shall obtain copies of all publications applicable to this contract. Availability of publications (where to purchase) is contained in Specification Section 01420 entitled: SOURCES FOR REFERENCE PUBLICATIONS. Any deviations from the technical criteria contained in the contract documents or in the applicable publications, including the use of criteria obtained from the user or other sources, must receive prior approval of the Contracting Officer. Where the technical criteria contained or referred to herein is not met, the Contractor will be required to conform his design to the same at his own time and expense.

3.9.5 CONFLICTS

Any conflicts, ambiguities, questions or problems encountered by the Contractor in following the criteria shall be immediately submitted in writing to the Contracting Officer with the Contractor's recommendations. Prior to submission to the Government the Contractor shall take appropriate measures to obtain clarification of design criteria requirements, to acquire all pertinent design information, and to incorporate such information in the work being performed.

3.9.6 DESIGN PRIORITIES

The design of this project shall consider the remote location and harsh environment of this project and the impact this will have on sources of technical supply, the cost of construction, the low level of maintenance, and the difficulty of obtaining replacement parts. Unless stated otherwise in this contract, the following design priorities shall be followed.

3.9.6.1 CONSTRUCTION LIFE SPAN

Buildings and facilities shall be designed and constructed to serve a life expectancy of more than 25 years, to be energy efficient, and to have finishes, materials, and systems that are low maintenance and low life cycle cost.

3.9.6.2 OPERABILITY

Systems including but not necessarily limited to mechanical, electrical, communications, etc., must be simple to operate and easy to maintain.

3.9.6.3 STANDARDIZATION

Use of standardized materials, products, equipment, and systems is necessary to minimize the requirements for replacement parts, storage facilities, and service requirements.

3.9.6.4 TOPOGRAPHIC SURVEYS, EASEMENTS, AND UTILITIES

Unless otherwise stated in the contract, the Contractor will be responsible for detailed topographic mapping, available easements, and utility information for the project.

3.9.6.5 HORIZONTAL AND VERTICAL CONTROL

The mapping shall be based on the base coordinate system. If the base system cannot be found, the surveyor shall use any established monuments. If monuments have been destroyed or do not exist, an assumed horizontal and vertical datum shall be established, using arbitrary coordinates of 10,000n and 10,000e and an elevation of 1,000 meters. The horizontal and vertical control established on site shall be a closed loop with third order accuracy and procedures. Provide three (3) concrete survey monuments at the survey site. All of the control points established at the site shall be plotted at the appropriate coordinate point and shall be identified by name or number, and adjusted elevations. The location of the project site, as determined by the surveyor shall be submitted in writing to the Contracting Officer. The site location shall be identified by temporary markers, approved by the Contracting Officer before proceeding with the surveying work.

3.9.6.6 TOPOGRAPHY REQUIREMENTS

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

The contours shall accurately express the relief detail and topographic shapes. In addition, 90 percent of the elevations or profiles interpolated from the contours shall be correct to within one-half of the contour interval and spot elevations shall be correct within plus or minus 20 millimeters.

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

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

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

3.9.7 OCCUPATIONAL SAFETY AND HEALTH ACT

The facilities, systems, and equipment designed under this contract shall comply with the Occupational Safety and Health Act (OSHA), Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926. Any problems in incorporating these standards due to conflicts with other technical criteria shall be submitted to the Contracting Officer for resolution.

3.9.8 ASBESTOS CONTAINING MATERIALS

Asbestos containing material (ACM) will not be used in the design of new structures or systems. In the event no other material is available which will perform the required function or where the use of other material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from AED.

3.9.8.1 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.

3.9.8.2 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.

3.10 ATTACHMENTS

The following attachments form an integral part of this specification:

ENG FORM 4025-R, Mar 95 - Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificate of Compliance (2 pages)

ENG FORM 4288-R, Mar 95 - Submittal Register

Figure 1 – AED Title Block

Figure 2 – AED Management Block

Figure 3 – AED Issue Block & Required Notations

Figure 4 – Border Sheet Size

-- END OF SECTION -

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE	TRANSMITTAL NO.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		CHECK ONE: THIS TRANSMITTAL IS FOR ☐ FIO ☐ GOV'T. APPROVAL

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* *b.*	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction no. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruction No. 6)* *h.*	FOR CE USE CODE *i.*
				SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*			

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated. _____ NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A	--	Approved as submitted.	E	--	Disapproved (See attached).
B	--	Approved, except as noted on drawings.	F	--	Receipt acknowledged.
C	--	Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX	--	Receipt acknowledged, does not comply as noted with contract requirements.
D	--	Will be returned by separate correspondence.	G	--	Other *(Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

SUBMITTAL REGISTER

(ER 415 1-10)

CONTRACT NO.

TITLE AND LOCATION

CONTRACTOR

SPECIFICATION SECTION

ACTIVITY NO a.	TRANS-MITTAL NO. b.	ITEM NO c.	SPECIFICATION PARAGRAPH NUMBER d.	DESCRIPTION OF ITEM SUBMITTED e.	TYPE OF SUBMITTAL: DATA f.	DRAWINGS g.	INSTRUCTIONS h.	SCHEDULES i.	STATEMENTS j.	REPORTS k.	CERTIFICATES l.	SAMPLES m.	RECORDS n.	O&M MANUALS o.	CLASSIFICATION: INFORMATION ONLY p.	GOVERNMENT APPROVED q.	REVIEWER r.	CONTRACTOR SCHEDULE DATES: SUBMIT s.	APPROVAL NEEDED BY t.	MATERIAL NEEDED BY u.	CONTRACTOR ACTION: CODE v.	DATE w.	SUBMIT TO GOVERN-MENT x.	GOVERNMENT ACTION: CODE y.	DATE z.	REMARKS aa.

ENG FORM 4288-R, JAN 97 EDITION OF MAR 95 IS OBSOLETE. PAGE _____ O _____ PAGES (Proponent:

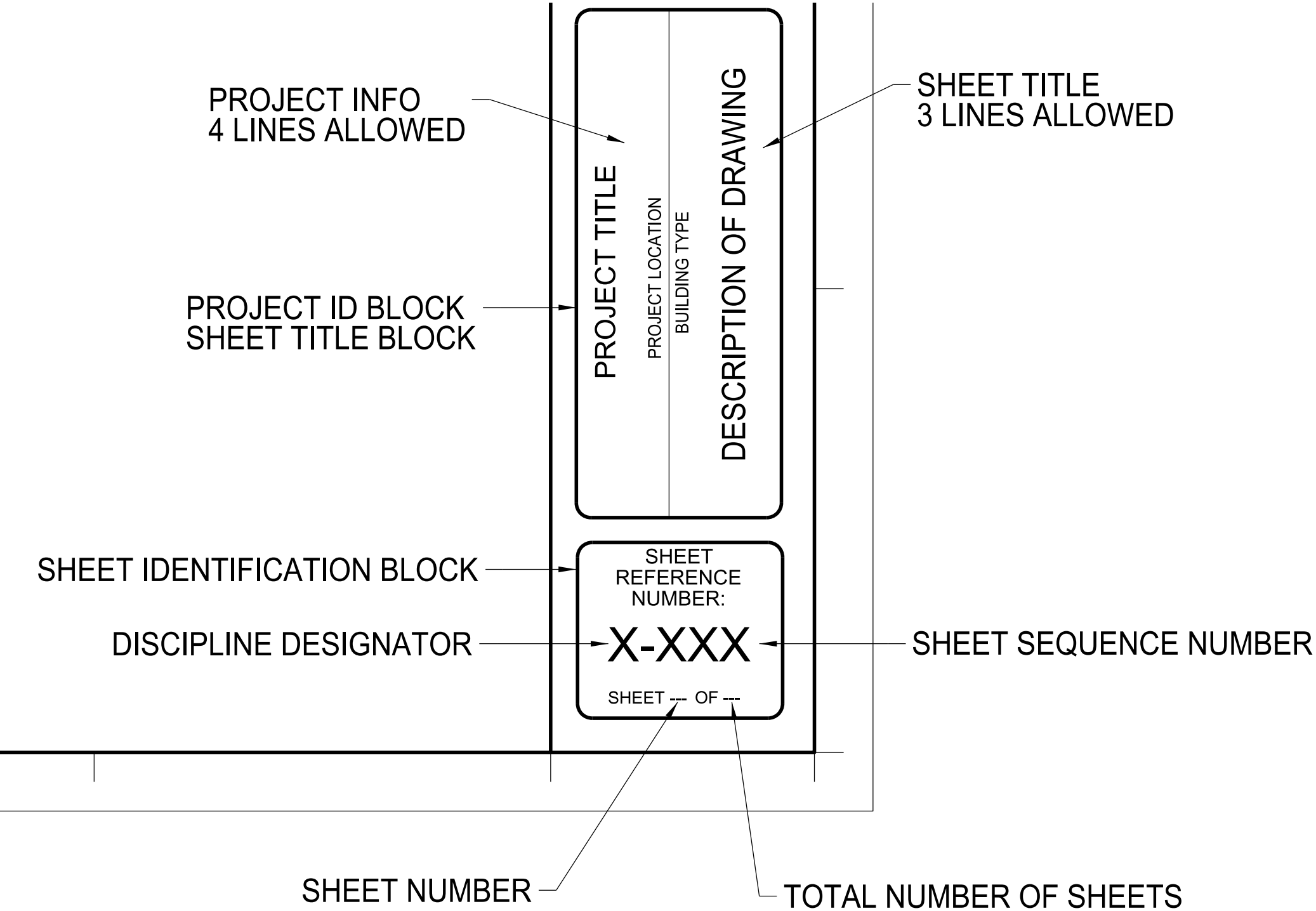


Figure 1: AED-S Title Block

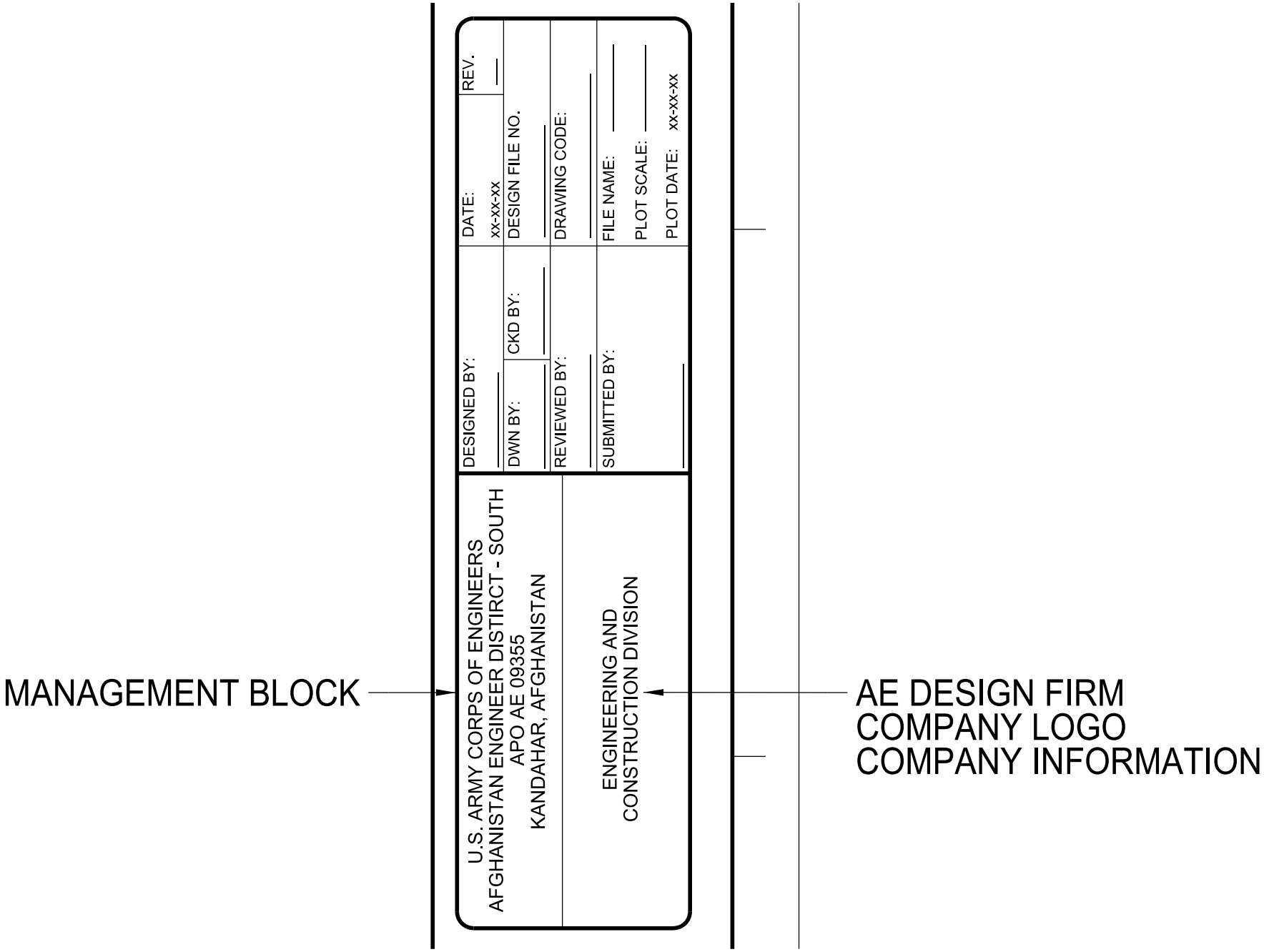


Figure 2: AED-S Management Block

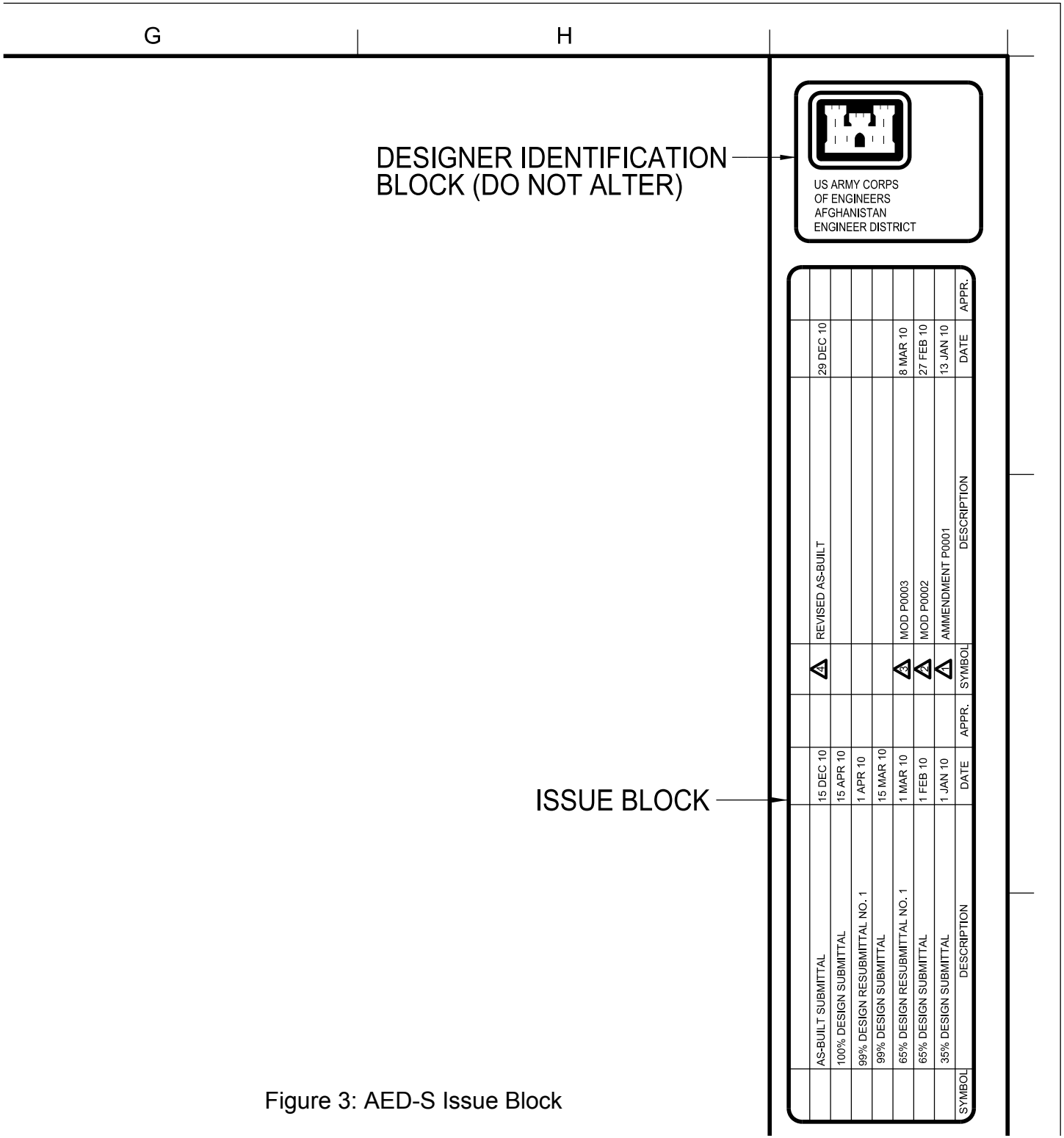


Figure 3: AED-S Issue Block

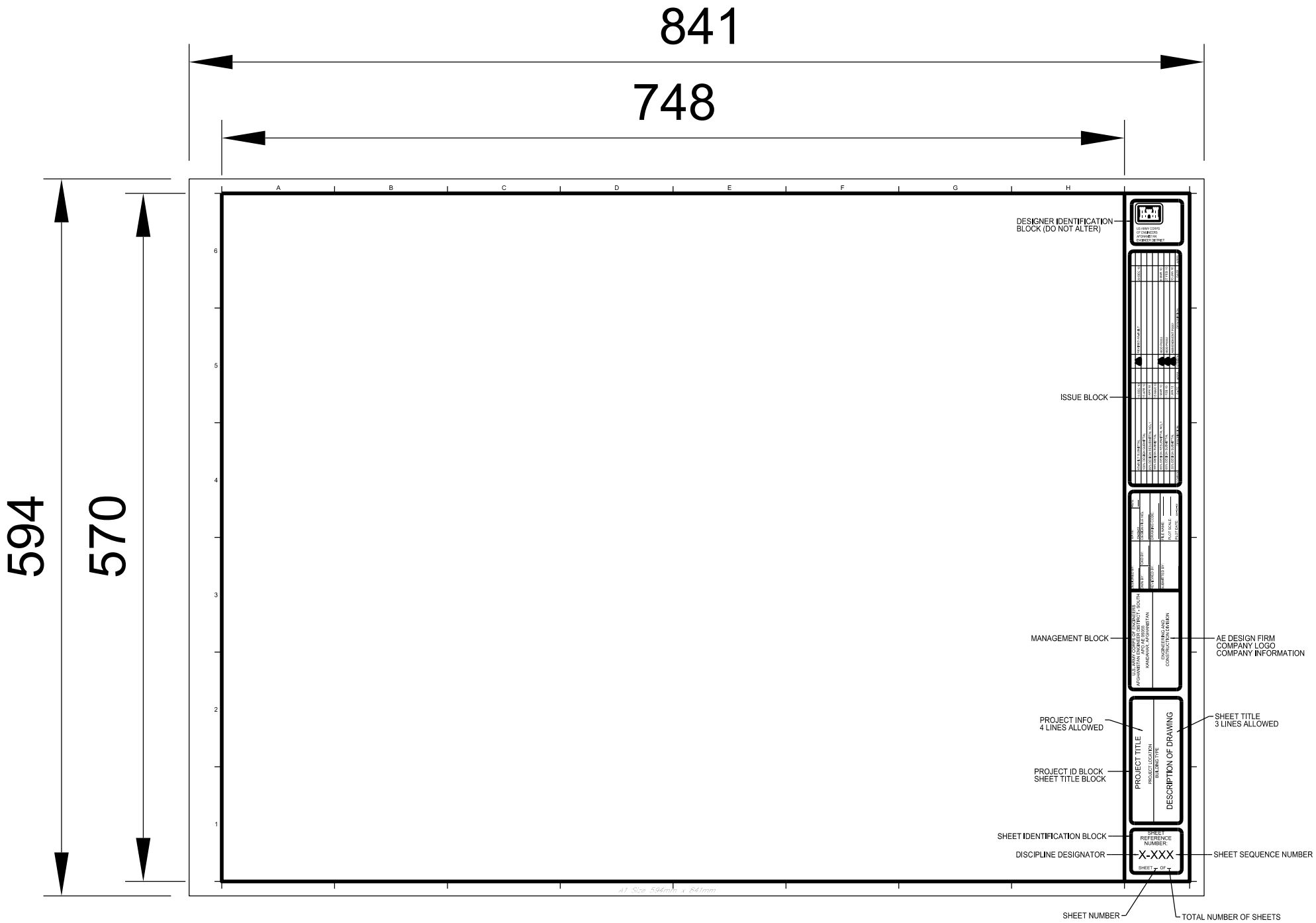


Figure 4: AED-S Sheet Dimensions

ELECTRONIC SUBMITTAL DOCUMENT FORMAT

PART 1 - GENERAL: Throughout the design process, the DB Contractor shall submit electronic packages for review at each Design Phase identified in the Request for Proposals. To facilitate reviews, submittal packages shall conform to the following file structure and format.

1.1. File Structure: Submittal packages that can be contained on a single disc shall use the file structure shown in Figure 1.

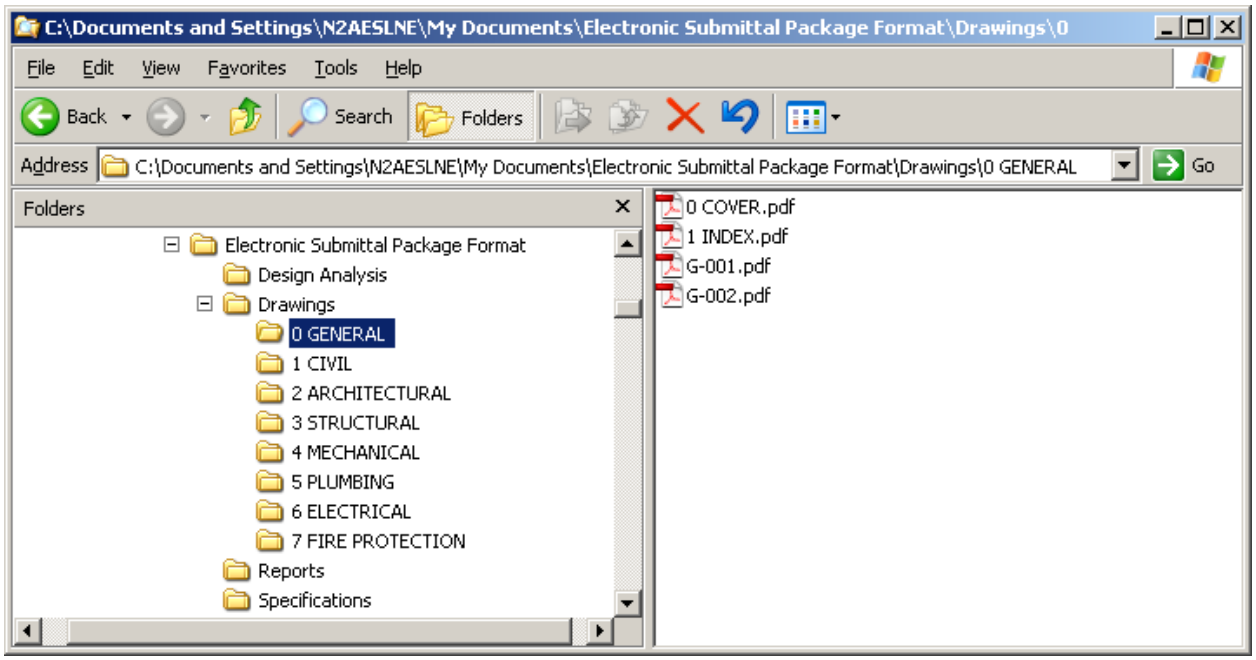


Figure 1: Submittal package file structure

1.2. Design Analysis: The design analysis directory shall contain all design analysis and calculation documents necessary for the current design stage. All design analysis and calculations shall be compiled into a single document containing a table of contents and page numbers. As additional analysis and calculation documents are created in progressive design phases, insert these documents into their appropriate section of the Design Analysis. Avoid lengthy appendices except in the case where numerical output sheets from analysis software are included. All documentation shall be organized by discipline: Civil, Architectural, Structural, Mechanical and Electrical.

1.2.A. Some projects requiring complex plumbing, communications and fire protection systems may require additional sections covering these specific systems. Note that water supply and sanitary sewer systems beyond 1.5 meters of the building envelope are Civil systems, not Plumbing systems.

1.2.B. If the project involves a compound comprised of several structures, clearly identify which building is being analyzed. In these cases, the major divisions of the Design Analysis shall be by discipline with subdivisions by building such that all

calculations for a particular discipline will be found in one section of the document. For example, a compound containing three separate buildings would have three separate seismic loading analysis calculations in the structural section.

1.3. Drawings: Drawings shall be arranged by discipline. Subdirectories shall be made corresponding to discipline only. Folders labeled for specific disciplines as shown in Figure 1 shall contain all drawings in the project applicable to that discipline. Note that these discipline specific folders are to contain only drawings and no other type of document. Drawings must be submitted in pdf form at a minimum. Files shall be named by reference number (i.e. C-101). If multiple file types for submittal drawings are provided, place all file types for each discipline in the same folder; do not subdivide the discipline specific folders for separate file types. Also, include a single pdf file containing all drawings in the project in this folder. The sheets in this file should follow the order indicated in the index sheet. This file should be named to indicate the contract number and submittal stage.

1.3.A. GENERAL: A folder labeled “0 GENERAL” shall contain the cover sheet, index sheet, list of legends and abbreviations sheet, project location and vicinity sheet, and site survey sheets.

1.3.B. CIVIL: A folder labeled “1 CIVIL” shall contain all site survey drawings and all civil drawings for the project. Note that the pipe networks for water supply systems, sanitary sewer systems and storm drainage systems are civil drawings, not plumbing drawings. Also note that gates, fences and small site structures are typically part of the civil discipline.

1.3.C. ARCHITECTURAL: A folder labeled “2 ARCHITECTURAL” shall contain all architectural drawings for the project. Note that life safety drawings denote architectural features and belong in this folder.

1.3.D. STRUCTURAL: A folder labeled “3 STRUCTURAL” shall contain all structural drawings for the project.

1.3.E. MECHANICAL: A folder labeled “4 MECHANICAL” shall contain all HVAC drawings for the project.

1.3.F. PLUMBING: A folder labeled “5 PLUMBING” shall contain all indoor plumbing systems (i.e. domestic water, waste & vent, LPG or propane, compressed air, diesel or fuel oil, etc.) for the project. Note that water supply and sanitary sewer systems beyond 1.5 meters of the building envelope are Civil systems, not Plumbing systems.

1.3.G. ELECTRICAL: A folder labeled “6 ELECTRICAL” shall contain all electrical drawings for the project. Note that communication and fire alarm systems are electrical systems and belong in this folder for most projects.

1.3.H. FIRE PROTECTION: A folder labeled “7 FIRE PROTECTION” shall contain all indoor fire protection systems (i.e. sprinklers, fire pumps, etc.) for the project.

1.4. Reports: The reports folder shall contain all certified reports required in the contract, including the Geotechnical Report, Water Quality Report and any other reports specifically called for in the contract. No subdirectories shall be created in this folder.

1.5. Specifications: All project specifications shall be contained in this folder. Include the project table of contents and name it so that it is easily identifiable (naming it “00000 Project Table of Contents” should ensure that it is at the top of the list). Specification sections should be named by number only so that they sort in ascending order as indicated on the project table of contents, or all project specifications shall be collated into a single file indexed at each section. No subdirectories shall be created in this folder.

PART 2 - PRODUCTS: (NOT APPLICABLE)

PART 3 - EXECUTION: (NOT APPLICABLE)

- - END SECTION - -

SECTION 01355

ENVIRONMENTAL PROTECTION

1 GENERAL

1.1 REFERENCES

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

ISLAMIC REPUBLIC OF AFGHANISTAN

Official Gazette No. 912 Environmental Law (2007)

U.S. DEPARTMENT OF DEFENSE (DoD)

DoD 4715.05-G Overseas Environmental Baseline Guidance Document (OEBGD) (2007)

U.S. ARMY (DA)

AR 200-1 Environmental Protection and Enhancement (2007)

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 Safety and Health Requirements Manual (2009)

1.2 DEFINITIONS

1.2.1 Environmental Pollution

The condition resulting from the presence of chemical, mineral, radioactive, or biological substances that:

a. Alter the natural environment.

b. Adversely affect human health or the quality of life, biosystems, the environment, in structures and equipment, recreational opportunities, aesthetics, and/or natural beauty.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution.

1.2.3 Hazardous Material (HM)

A hazardous material is a useful product that requires special management because it has hazardous characteristics (ignitability, corrosivity, reactivity, or toxicity) that could pose dangers to human health or the environment. A HM becomes a Hazardous Waste when it can no longer be used for its intended purpose.

1.2.4 Hazardous Waste (HW)

A hazardous waste is a discarded material with hazardous characteristics that could pose dangers to human health or the environment.

1.2.5 Contractor Generated Hazardous Waste

Hazardous wastes generated or discarded by the Contractor. This includes materials not fully consumed during the course of construction - for example, paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and fuel/oils/lubricants.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The Contractor shall be responsible for delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by all subcontractors, suppliers, and vendors.

1.5 LAWS AND REGULATIONS

The Contractor shall comply with all applicable Afghanistan environmental, natural and cultural resources, and historic preservation laws and regulations.

1.6 SUBMITTALS

1.6.1 Environmental Protection Plan

The Contractor shall submit an Environmental Protection Plan as part of the 10% design submittal for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present an overview of known or potential environmental (natural and cultural) issues which the Contractor must address during construction. The Environmental Protection Plan shall be current and maintained onsite by the Contractor. The Environmental Protection Plan shall, at a minimum, contain the following:

1.6.1.1 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

1. Name(s) of the on-site Environmental Manager who is responsible for ensuring adherence to the Environmental Protection Plan and monitoring and documenting environmental procedures.
2. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are effective.
3. Work area plan showing the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.
4. Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a hazardous material. This plan shall include as a minimum:
    a. The name of the individual who will immediately notify the Contracting Officer and report any spills or hazardous substance releases. The plan shall contain a list of the required reporting channels and telephone numbers.
    b. A list of materials and equipment contained in the job site spill kit (see Appendix for minimum requirements).
    c. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.
    d. The methods and procedures to be used for expeditious contaminant cleanup.
5. An air pollution control plan detailing how trash is disposed of without debris burning.
6. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
7. A contaminant prevention plan that identifies potentially hazardous substances to be used on the job site and identifies the intended actions to prevent introduction of such materials into the air, water, or ground. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.
8. A hazardous waste plan that identifies potentially hazardous waste that may be generated by the project.
9. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities.
10. A plan that defines procedures for identifying and protecting historical, archaeological, cultural resources known to be on the project site. The plan shall identify lines of communication between Contractor personnel and the Contracting Officer.

1.6.1.2 Unidentified issues

During Construction, the Contractor shall be responsible for identifying, implementing, and submitting, for approval, any additional requirements to be included in the Environmental Protection Plan.

1.7 PROTECTION FEATURES

The Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness.

1.8 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer.

1.9 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with elements of the Contractor's Environmental Protection plan. Upon notification or discovery of noncompliance, the Contractor shall propose corrective action to the COR and take such action when approved by the COR. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions.

2 PRODUCTS (NOT USED)

3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all permits and commitments required by Afghanistan environmental, natural and cultural resources, and historic preservation laws and regulations.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Features indicated to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures. The COR shall approve erosion and sediment controls prior to installation. Any temporary measures shall be removed after the area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.2.5 Tree Protection

All costs associated with tree protection requirements required by specifications and drawings are the full responsibility of the Contractor. The Contractor shall exercise care when excavating trenches in the vicinity of trees.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor.

3.3.1 Cofferdams, Diversions, and Dewatering Operations

Construction operations surface waters shall be controlled at all times to maintain compliance with designated uses of the surface water body.

3.3.2 Stream Crossings

Constructed stream crossings (wet or dry) shall not block the natural flow of water when present.

3.4 AIR RESOURCES

3.4.1 Burning

All areas within facility perimeter fence line are designated as no burn areas.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5.1 Chemicals and Chemical Wastes

Chemicals shall not be spilled on the ground or water. Dispensing areas shall be clean and not subject to repetitive spills. Corrective action shall be quickly performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Wastes shall be classified, managed, stored, and disposed at an appropriate disposal site.

3.5.2 Contractor Hazardous Material / Generated Hazardous Wastes / Excess Hazardous Materials

The Contractor shall be responsible for storage, describing, packaging, labeling, and marking hazardous waste and hazardous material. The Contractor shall manage and store hazardous material and waste in a designated area designed to segregate and prevent mixing of incompatible chemicals. The area will be dry, securable and have warning signs appropriate for the wastes being accumulated. Facilities or areas shall provide adequate ventilation, containment, and protection from the elements. Contractor vehicles are not considered a proper storage facility. No HM or HW shall be stored in vehicles overnight or for any length of time. The Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility.

3.5.3 Fuel and Lubricants

Equipment and motor vehicle fueling, lubrication and storage shall be conducted on containment surfaces to minimize spills evaporation.

3.5.4 Waste Water

Disposal of waste water shall be as specified below.

a. Waste water from construction activities shall not be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off site, unless on-site disposal is approved by the Contracting Officers Representative.
b. Water generated from the flushing of lines after decontamination or decontamination in conjunction with hydrostatic testing or only hydrostatic testing shall be discharged into areas where the liquids will percolate into the ground.

3.6 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

If during construction activities any historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall protect animal and plant species including their habitat in accordance with Afghanistan regulations.

3.8 MAINTENANCE OF POLLUTION CONTROL

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.9 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of

excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area restored to its original condition.

-- End of Section --

01355

SECTION 01415

METRIC MEASUREMENTS

1. REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM E 621	(1994; R 1999e1) Use of Metric (SI) Units in Building Design and Construction (Committee E-6 Supplement to E380)
ASTM SI 10	(2002) American National Standard for Use of the International System of Units (SI): The Modern Metric System

2. GENERAL

This project includes metric units of measurements. The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the11th CGPM in 1960. A number of circumstances require that both metric SI units and English inch-pound (I-P) units be included in a section of the specifications. When both metric and I-P measurements are included, the section may contain measurements for products that are manufactured to I-P dimensions and then expressed in mathematically converted metric value(soft metric) or, it may contain measurements for products that are manufactured to an industry recognized rounded metric (hard metric)dimensions but are allowed to be substituted by I-P products to comply with the law. Dual measurements are also included to indicate industry and/or Government standards, test values or other controlling factors, such as the code requirements where I-P values are needed for clarity or to trace back to the referenced standards, test values or codes.

3. USE OF MEASUREMENTS IN SPECIFICATIONS

Measurements in specifications shall be either in SI or I-P units as indicated, except for soft metric measurements or as otherwise authorized. When only SI or I-P measurements are specified for a product, the product shall be procured in the specified units (SI or I-P) unless otherwise authorized by the Contracting Officer. The Contractor shall be responsible for all associated labor and materials when authorized to substitute one system of units for another and for the final assembly and performance of the specified work and/or products.

3.1 HARD METRIC

A hard metric measurement is indicated by an SI value with no expressed correlation to an I-P value. Hard metric measurements are often used for field data such as distance from one point to another or distance above the floor. Products are considered to be hard metric when they are manufactured to metric dimensions or have an industry recognized metric designation.

3.2 SOFT METRIC

a. A soft metric measurement is indicated by an SI value which is a mathematical conversion of the I-P value shown in parentheses (e.g. 38.1 mm (1-1/2 inches)). Soft metric measurements are used for measurements

pertaining to products, test values, and other situations where the I-P units are the standard for manufacture, verification, or other controlling factor. The I-P value shall govern while the metric measurement is provided for information.

b. A soft metric measurement is also indicated for products that are manufactured in industry designated metric dimensions but are required by law to allow substitute I-P products. These measurements are indicated by a manufacturing hard metric product dimension followed by the substitute I-P equivalent value in parentheses (e.g., 190 x 190 x 390 mm (7-5/8 x 7-5/8 x 15-5/8inches)).

3.3 NEUTRAL

A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

3.4 COORDINATION

Discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the drawings shall be brought to the attention of the Contracting Officer for resolution.

3.5 RELATIONSHIP TO SUBMITTALS

Submittals for Government approval or for information only shall cover the SI or I-P products actually being furnished for the project. The Contractor shall submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise instructed or approved. The Contractor shall use ASTM SI 10 and ASTM E 621 as the basis for establishing metric measurements required to be used in submittals.

-- END OF SECTION --

SECTION 01451

CONTRACTOR QUALITY CONTROL

1. GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-1-12 (1993)	Quality Management
EM 385-1-1	Safety and Health Requirements Manual

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

2. EXECUTION

2.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clauses and this specification section. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

2.2 CQM TRAINING 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 (USACE) Construction Quality Management (CQM) course, or equivalent. The CQM course will be offered periodically by the Afghanistan Engineer District (AED), USACE. Additional approved CQM courses include those offered by the Commercial Technical Training Center (in Jalalabad) and the Champion Technical Training Center (in Kabul). The Quality Assurance Branch of the AED can

provide information related to AED offerings of the CQM course, as well as contact information for training centers. Alternative CQM courses, other than those mentioned above, must be approved by the Quality Assurance Branch.

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

2.3 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than five (5) days after receipt of Notice-to-Proceed (NTP) the proposed Contractor Quality Control (CQC) Plan. The plan shall identify personnel, procedures, control, instructions, records, and forms to be used.

2.3.1 CONTENT OF THE CQC PLAN

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both on site and off-site, including work by subcontractors, fabricators, suppliers and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, consultants, and purchasing agents. These procedures shall be in accordance with Specification 01335 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test.

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

2.3.2 ADDITIONAL REQUIREMENTS FOR DESIGN QUALITY CONTROL (DQC) PLAN

The following additional requirements apply to the Design Quality Control (DQC) plan:

(1) The Contractor shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents shall be technically reviewed by competent, independent reviewers identified in the DQC Plan. The same element that produced the product shall not perform the independent technical review (ITR). The Contractor shall correct errors and deficiencies in the design documents prior to submitting them to the Government.

(2) The Contractor shall include the design schedule in the master project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This should be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. The schedule shall include review and correction periods associated with each item. This should be a forward planning as well as a project monitoring tool. The schedule reflects calendar days and not dates for each activity. If the schedule is changed, the Contractor shall submit a revised schedule reflecting the change within 7 calendar days. The Contractor shall include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. These completed checklists shall be submitted at each design phase as part of the project documentation. Example checklists can be found in ER 1110-1-12.

(3) The DQC Plan shall be implemented by an Design Quality Control Manager who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated. This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. The Contractor shall notify the Contracting Officer, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

The Contracting Officer will notify the Contractor in writing of the acceptance of the DQC Plan. After acceptance, any changes proposed by the Contractor are subject to the acceptance of the Contracting Officer.

2.3.3 ACCEPTANCE OF PLAN

Acceptance of the Contractor’s plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

2.3.4 NOTIFICATION OF CHANGES

After acceptance of the QC plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

2.4 COORDINATION MEETING

After the Pre-construction Conference, before start of construction, and prior to acceptance by the Government of the Quality Control Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 5 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures, which may require corrective action by the Contractor.

2.5 QUALITY CONTROL ORGANIZATION

2.5.1 PERSONNEL REQUIREMENTS

The requirements for the CQC organization are a CQC System Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

2.5.2 CQC SYSTEM MANAGER

The Contractor shall identify an individual within his organization at the site of the work who shall be responsible for overall management of the CQC and have the authority to act in all CQC matters for the Contractor. The CQC system manager shall be a graduate engineer, graduate architect, or a graduate construction manager, with experience on construction projects similar in type to this contract OR a construction person with a minimum of ten (10) years in related work. The CQC System Manager shall be on the site at all times during construction and shall be employed by the Contractor. The CQC System Manager shall be assigned no other duties. An alternate for the CQC System Manager will be identified in the plan to serve in the event of the CQC system manager's absence. The requirements for the alternate will be the same as for the designated CQC manager.

2.5.3 ADDITIONAL REQUIREMENT

In addition to the above experience and/or education requirements, the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered by the government, and inquiries as to the next course offering may be directed to the local construction field office.

2.5.4 ORGANIZATIONAL CHANGES

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

2.6 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in the STR titled SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

2.7 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

2.7.1 PREPARATORY PHASE

This phase shall be performed prior to beginning work on each definable feature of work, after all required documents and materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards, in the English language unless specifically approved otherwise by the Contracting Officer, applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. A check to assure that provisions have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to verify that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. Reviews of the appropriate activity hazard analysis to ensure safety requirements are met.

h. Discussion of procedures for constructing the work including repetitive deficiencies, construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the Contracting Officer has accepted the portion of the plan for the work to be performed.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 24 hours in advance of beginning any of the required action of the preparatory phase. This phase shall include a meeting conducted by the CQC system manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC system manager and attached to the daily QC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

2.7.2 INITIAL PHASE

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of preliminary work to ensure that it is in compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verification of full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC system manager and attached to the daily QC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.

2.7.3 FOLLOW-UP PHASE

Daily checks shall be performed to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted, and all noted deficiencies corrected, prior to the start of additional features of work that may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

2.7.4 ADDITIONAL PREPARATORY AND INITIAL PHASES

Additional preparatory and initial phases may be required by the Contracting Officer on the same definable features of work if the quality of on-going work is unacceptable; if there are changes in the applicable QC staff or in the on-site production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

2.8 TESTS

2.8.1 TESTING PROCEDURE

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product that conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Costs incidental to the transportation of samples or materials shall be borne by the Contractor.

Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the Quality Control report for the date taken. Specification paragraph/item reference, location where tests were taken, and the sequential control number identifying the test will be given. Actual test reports may be submitted later, if approved by the Contracting Officer, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly

to the Contracting Officer. Failure to submit timely test reports, as stated, may result in nonpayment for related work performed and disapproval of the test facility for this contract.

2.9 COMPLETION INSPECTION

2.9.1 PUNCH-OUT INSPECTION

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.9.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

2.9.2 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. 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.

3.1 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.

3.2 NOTIFICATION OF NONCOMPLIANCE

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

satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- END OF SECTION --

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

1. GENERAL

For contractor safety on projects associated with this program, compliance with EM 385-1-1 (latest edition) safety requirements will be the long-term goal reached by growing a safety culture. This compliance will, by necessity, be achieved through a phased-in process. In the Commander's letter at the preface of the EM 385-1-1, he acknowledges that in OCONUS locations, strict compliance with the manual may not be possible – and through the hazard analysis process, safety measures can be developed to attain the same degree of safety.

This specification consists of two parts:

1) Sections 1.1 through 2.10.1, which are the standard safety specifications for work in Afghanistan District and the references listed below:
2) Appendix A, Phasing approach for safety in emerging countries where there is little or no national safety standards.

1.1 REFERENCES

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

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI/ASSE A10.32	Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI/ASSE Z359.1 (2007)	Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

ASME INTERNATIONAL (ASME)

ASME B30.3 (2009)	Construction Tower Cranes
ASME B30.22 (2005)	Articulating Boom Cranes
ASME B30.5	Mobile and Locomotive Cranes

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10 (2010)	Portable Fire Extinguishers
NFPA 241 (2010)	Safeguarding Construction, Alteration, and Demolition Operations
NFPA 51B (2009)	Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70(2008)	National Electrical Code
NFPA 70E (2009)	Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008)	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 FR 1919	Gear Certification
20 FR 1926	Safety and Health Regulations for Construction
29 FR 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

SD-06 Test Reports

Reports: Submit reports as their incidence occurs, in accordance with the requirements of the paragraph titled, "Reports."

Accident Reports

Monthly Exposure 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.

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:

1. A minimum of 1 year safety work on similar projects;

2. 30-hour OSHA construction safety class or equivalent within the last 3 years

3. 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 34 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.

g. Maintain records required.

1.6.1.3 CRANE OPERATORS

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16, Appendix I.

1.6.2 PERSONNEL DUTIES

1.6.2.1 SITE SAFETY AND HEALTH OFFICER (SSHO)

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.

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 US Army Corps of Engineers Compound 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 (as defined by ASSE/ANSI-34), 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 34, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.H, and the following:

    1. For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29CFR 1926.550(g).

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. The Contractor shall format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.10 DISPLAY OF SAFETY INFORMATION

Within 1 calendar day after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project. Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. The Government has no responsibility to provide emergency medical treatment. Military medical clinics may provide emergency treatment for serious injuries; the contractor is responsible for coordination with the local military medical clinic prior to mobilization.

1.13 REPORTS

1.13.1 ACCIDENT REPORTS

For recordable injuries and illnesses and property damage accidents resulting in at least $2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

1.13.2 ACCIDENT NOTIFICATION

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than $2,000. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.13.3 MONTHLY EXPOSURE REPORTS

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.13.4 CRANE REPORTS

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

1.14 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Installation. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) six kilogram ABC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in fire fighting techniques and remain on-site for a minimum of 120 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone numbers. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION/DEPARTMENT IMMEDIATELY.

2. EXECUTION

2.1 CONSTRUCTION AND/OR OTHER WORK

Before initiation of work at the job site, an accident prevention plan, written by the Contractor for the specific work and hazards of the contract and implementing in detail the pertinent requirements of EM 385-1-1, will be reviewed and found acceptable by designated Government personnel. Specific requirements for development of the accident prevention plan are found in Appendix A of EM 385-1-1.

Before beginning each activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform the work, activity hazard analysis (AHA) shall be prepared by the Contractor performing the work activity. See paragraph 01.A.13 of EM 385-1-1.

The Contractor shall require subcontractors to submit their plan of operations showing methods they propose to use in accomplishing major phases of work.

The Contractor shall be prepared to discuss the plans in conferences convened by the Contracting Officer prior to starting work on each major phase of operation. Plans shall include all pertinent information such as layout of haul roads, access roads, storage areas, electrical distribution lines, methods of providing minimum exposure to overhead loads, and methods of access to work areas. The plan for accomplishing the initial work phase shall be submitted within 15 calendar days after award of the contract. Plans for subsequent major phases of work shall be submitted not later than 15 calendar days prior to initiation of work on each major phase.

All areas where construction, demolition, alteration, building, or similarly related activities take place, all workers shall have the following minimum personal protective clothing and equipment:

1. Short sleeve shirt.

2. Long trousers.

3. Steel-toed safety boots.

4. Hard hat.

2.1.1 FALLING OBJECT PROTECTION

All areas must be barricaded to safeguard employees. When working overhead, barricade the area below to prevent entry by unauthorized employees. Construction warning tape and signs shall be posted so they are clearly visible from all possible access points. When employees are working overhead all tools and equipment shall be secured so that they will not fall. When using guardrail as falling object protection, all openings shall be small enough to prevent passage of potential falling objects.

2.1.2 HAZARDOUS MATERIAL USE

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose Government or Contractor employees to any unsafe or unhealthful conditions. Adequate protective measures must be taken to prevent Government or Contractor employees from being exposed to any hazardous condition that could result from the work or storage. The Prime Contractor shall keep a complete inventory of hazardous materials brought onto the work-site. Approval by the Contracting Officer of protective measures and storage area is required prior to the start of the work.

2.1.3 HAZARDOUS MATERIAL EXCLUSIONS

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

2.1.4 UNFORESEEN HAZARDOUS MATERIAL

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

2.2 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

2.2.1 TRAINING

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.A.16.

2.2.2 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 21.N through 21.N.04. 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.

2.2.2.1 PERSONAL FALL ARREST EQUIPMENT

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1 or European Union equivalent. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. 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 carabineers shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

2.2.3 FALL PROTECTION FOR ROOFING WORK

Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

   (1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized.

   (2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

2.2.4 EXISTING ANCHORAGE

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI/ANSI Z359.1 or European Union equivalent. Exiting horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

2.2.5 HORIZONTAL LIFELINES

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2.

2.2.6 GUARDRAILS AND SAFETY NETS

Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 or Host Nation requirements, whichever is more stringent.

2.2.7 RESCUE AND EVACUATION PROCEDURES

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

2.3 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material are 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 1.8 m or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

2.4 EQUIPMENT

2.4.1 MATERIAL HANDLING EQUIPMENT

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks shall be trained/licensed in accordance with Host Nation requirements.

2.4.2 WEIGHT HANDLING EQUIPMENT

a. Cranes and derricks shall be equipped as specified in EM-385-1-1 section 16.

b. The Contractor shall notify the Contracting Officer 24 hours in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.

c. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person. All testing shall be performed in accordance with the manufacturer's recommended procedures.

d. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.

e. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11.

f. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves to the satisfaction of the Contracting Officer that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.

g. Portable fire extinguishers shall be inspected, maintained, and recharged.

h. All employees shall be kept clear of loads about to be lifted and of suspended loads.

i. The Contractor shall use cribbing when performing lifts on outriggers.

j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

k. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

l. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

m. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.

n. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

o. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations the contractor shall set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

2.5 EXCAVATIONS

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect, and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

2.5.1 UTILITY LOCATIONS

Prior to any excavation, all underground utilities in the work area must be positively identified by the contractor utilizing a) a private utility locating service in addition to any station locating service, and/or b) a metal and/or cable-detecting device along the route of the excavation. All underground utilities discovered will be flagged a distance of one-half (1/2) meter on each side of the location, and any markings made during the utility investigation must be maintained throughout the contract.

Damage occurring to existing utilities, when the above procedures are not followed, will be repaired at the Contractor's expense.

2.5.2 UTILITY LOCATION VERIFICATION

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within 1 m of the underground system. Digging within 0.61 m 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 if parallel within 1.5 m of the excavation.

2.5.3 SHORING SYSTEMS

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

2.5.4 TRENCHING MACHINERY

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

2.6 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

2.7 ELECTRICAL

2.7.1 CONDUCT OF ELECTRICAL WORK

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

2.7.2 PORTABLE EXTENSION CORDS

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70 or European Union equivalent.

2.8 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 34 of USACE EM 385-1-1. Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Ensure the use of rescue and retrieval devices in confined spaces greater than 1.5 m in depth. Conform to 29 CFR 1910-14.

d. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

e. Daily Entry Permit. Post the permit in a conspicuous place close to the confined space entrance.

2.9 CRYSTALLINE SILICA

Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica, shall comply with USACE EM 385-1-1, Section 06.M. Work Place Evaluation consistent with EM 385-1-1 Section 06.M.02 must be completed and documented in the AHA for the job/task producing airborne crystalline silica. The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

2.10 DEMOLITION

2.10.1 DEMOLITION PLAN

The Contractor shall submit a written demolition plan for all demolition work to be carried on the site. In addition, the demolition plan shall be signed by a Professional Registered Engineer and meet the requirements of the Corps of Engineers Safety and Health Manual, EM 385-1-1, section 23. The demolition plan shall be submitted to the COR at least 1 week before the beginning of the work, including structural calculations for the demolition, if necessary. The demolition work shall not begin before the Contractor has received a written approval from the COR.

2.9.1 PROTECTION OF PERSONNEL

During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workers remove debris or perform other work in the immediate area.

2.9.2 PROTECTION OF STRUCTURES

Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without

additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the COR. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

Interior concrete or masonry walls shall be demolished from the top down unless a Registered Engineer can demonstrate that an alternate method poses no additional safety hazards

2.10 HOUSEKEEPING

2.10.1 CLEAN-UP

The Contractor shall be responsible for cleaning up. The Contractor shall require his personnel to keep the immediate work site clean of all dirt and debris resulting from work under this contract. Accumulated dirt and debris shall be hauled off and disposed of in accordance with local law and at least once a week by the Contractor. Additionally, all debris in work areas shall be cleaned up daily or more frequently if necessary. Construction debris may be temporarily located in an approved location; however garbage accumulation must be removed each day.

Stairwells used by the Contractor during execution of work shall be cleaned daily. Cloths, mops, and brushes containing combustible materials shall be disposed of or stored outside of the buildings in tight covered metal containers. Paints and thinners shall not be poured into inlets of the interior or exterior sewage system. Paint, stains, and other residues on adjacent surfaces or fixtures caused by the Contractor shall be carefully removed and cleaned to original finish. Upon completion of the work, the Contractor shall remove all construction equipment, materials and debris resulting from the work. The entire work site and the area used by Contractor personnel shall be left clean.

---END OF SECTION---

SPECIFICATION SECTION 01770

CLOSEOUT PROCEDURES

1. GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01335 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data

Equipment/Product Warranty List; G

Submit Data Package 1 in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

As-Built Drawings; G

Record Of Materials; G

Equipment/Product Warranty Tag; G

1.2 PROJECT RECORD DOCUMENTS

1.2.1 AS-BUILT DRAWINGS

As built drawings shall be submitted in accordance with Section 01780A CLOSEOUT SUBMITTALS

1.2.2 AS-BUILT RECORD OF MATERIALS

Furnish a record of materials.

Where several manufacturers' brands, types, or classes of the item listed have been used in the project, designate specific areas where each item was used. Designations shall be keyed to the areas and spaces depicted on the contract drawing. Furnish the record of materials used in the following format:

MATERIALS DESIGNATION	SPECIFICATION	MANUFACTURER	MATERIALS USED (MANUFACTURER'S DESIGNATION)	WHERE USED

1.3 EQUIPMENT/PRODUCT WARRANTIES

1.3.1 EQUIPMENT/PRODUCT WARRANTY LIST

The Contractor shall develop a warranty management plan which shall contain information relevant to the clause Warranty of Construction. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase shall be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Approved information shall be assembled in a binder and shall be turned over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. A joint 4 month and 9 month warranty inspection shall be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

c. A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.
5. 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.

-- END OF SECTION --

SECTION 01780A

CLOSEOUT SUBMITTALS

1. GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01335 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

As-Built Drawings G

Drawings showing final as-built conditions of the project. The local language of Afghanistan, Pashto or Dari shall be added to project As-Built drawings. The final CADD as-built drawings shall consist of three (3) sets of electronic CADD drawing files in the specified format, and one (1) set of full size and one (1) set of half size paper copies of the approved as-built drawings. One electronic copy of the As-Built drawings and the paper copies of the As-Built drawings shall be delivered to the O&M Regional Site manager at the Resident Office or Area Office responsible for contract administration. Two electronic copies of the As-Built drawings shall be mailed or delivered to the KAF O&M Branch.

SD-03 Product Data

As-Built Record of Equipment and Materials G

Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

Warranty Management Plan G

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 G

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

a. The Contractor shall revise 2 sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project. These working as-built marked drawings shall be kept current on a weekly basis and at least one set shall be available on the jobsite at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. Final as-built drawings shall be prepared after the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project). The working as-built marked prints and final as-built drawings will be jointly reviewed for accuracy and completeness by the Contracting Officer and the Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the working and final as-built drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the as-built drawings. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of updated drawings. The working and final as-built drawings shall show, but shall not be limited to, the following information:

b. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Valves, splice boxes and similar appurtenances shall be located by dimensioning along the utility run from a reference point. The average depth below the surface of each run shall also be recorded.

c. The location and dimensions of any changes within the building structure.

d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

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

g. Changes or modifications which result from the final inspection.

h. Where contract drawings or specifications present options, only the option selected for construction shall be shown on the final as-built prints.

i. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, the Contractor shall furnish a contour map of the final borrow pit/spoil area elevations.

j. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.

k. Modifications (change order price shall include the Contractor's cost to change working and final as-built drawings to reflect modifications) and compliance with the following procedures.

1. Directions in the modification for posting descriptive changes shall be followed.
2. A Modification Circle shall be placed at the location of each deletion.
3. For new details or sections which are added to a drawing, a Modification Circle shall be placed by the detail or section title.
4. For minor changes, a Modification Circle shall be placed by the area changed on the drawing (each location).
5. For major changes to a drawing, a Modification Circle shall be placed by the title of the affected plan, section, or detail at each location.
6. For changes to schedules or drawings, a Modification Circle shall be placed either by the schedule heading or by the change in the schedule.
7. The Modification Circle size shall be 12.7 mm 1/2 inch diameter unless the area where the circle is to be placed is crowded. Smaller size circle shall be used for crowded areas.

1.2.1.3 DRAWING PREPARATION

The as-built drawings shall be modified as may be necessary to correctly show the features of the project as it has been constructed by bringing the contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints shall be neat, legible and accurate. These drawings are part of the permanent records of this project and shall be returned to the Contracting Officer after approval by the Government. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

1.2.1.4 COMPUTER AIDED DESIGN AND DRAFTING (CADD) DRAWINGS

a. 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 2007 or Microstation VM format compatible with a Windows XP operating system. The electronic files will be supplied on compact disc, read-only memory (CD-ROM). The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings.

b. Prior to submittal of the first design submittal involving CADD drawings, the Contractor shall prepare one typical CADD drawing for the project and furnish, via ENG Form 4025, the electronic CADD drawing file for review and approval by the Contracting Officer. All Government comments involving changes to this single drawing shall be accomplished and resubmittal(s) made until the Government is satisfied that all CADD Standards are being followed and all subsequent drawings will also be in compliance with these Standards.

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

e. 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:

Furnish the record of materials used in the following format:

MATERIALS DESIGNATION	SPECIFICATION	MANUFACTURER	MATERIALS USED (MANUFACTURER'S DESIGNATION)	WHERE USED

1.2.3 FINAL APPROVED SHOP DRAWINGS

The Contractor shall furnish final approved project shop drawings 30 days after transfer of the completed facility.

1.2.4 CONSTRUCTION CONTRACT SPECIFICATIONS

The Contractor shall furnish final as-built construction contract specifications, including modifications thereto, 30 days after transfer of the completed facility.

1.2.5 REAL PROPERTY EQUIPMENT

The Contractor shall furnish a list of installed equipment furnished under this contract. The list shall include all information usually listed on manufacturer's name plate. The "EQUIPMENT-IN-PLACE LIST" shall include, as

applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, spare parts list, manufacturer's catalog, and warranty. A draft list shall be furnished at time of transfer. The final list shall be furnished 30 days after transfer of the completed facility.

1.3 WARRANTY MANAGEMENT

1.3.1 WARRANTY MANAGEMENT PLAN

The Contractor shall develop a warranty management plan which shall contain information relevant to the clause Warranty of Construction. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase shall be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Approved information shall be assembled in a binder and shall be turned over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. A joint 4 month and 9 month warranty inspection shall be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

c. A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.
5. Names, addresses and telephone numbers of sources of spare parts.
6. Warranties and terms of warranty. This shall include one-year overall warranty of construction. Items which have extended warranties shall be indicated with separate warranty expiration dates.
7. Cross-reference to warranty certificates as applicable.
8. Starting point and duration of warranty period.
9. Summary of maintenance procedures required to continue the warranty in force.
10. Cross-reference to specific pertinent Operation and Maintenance manuals.
11. Organization, names and phone numbers of persons to call for warranty service.
12. Typical response time and repair time expected for various warranted equipment.

d. The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

e. Procedure and status of tagging of all equipment covered by extended warranties.

f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.3.2 PRE-WARRANTY CONFERENCE

Prior to contract completion, and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor shall furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, shall be continuously available, and shall be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.3.3 CONTRACTOR'S RESPONSE TO CONSTRUCTION WARRANTY SERVICE REQUIREMENTS

Following oral or written notification by the Contracting Officer, the Contractor shall respond to construction warranty service requirements in accordance with the "Construction Warranty Service Priority List" and the three categories of priorities listed below. The Contractor shall submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframes specified, the Government will perform the work and backcharge the construction warranty payment item established.

a. First Priority Code 1. Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

b. Second Priority Code 2. Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

c. Third Priority Code 3. All other work to be initiated within 3 work days and work continuously to completion or relief.

d. The "Construction Warranty Service Priority List" is as follows:

Code 1-Air Conditioning Systems
1) Recreational support.
2) Air conditioning leak in part of building, if causing damage.
3) Air conditioning system not cooling properly.

Code 1-Doors
1) Overhead doors not operational, causing a security, fire, or safety problem.
2) Interior, exterior personnel doors or hardware, not functioning properly, causing a security, fire, or safety problem.

Code 3-Doors
1) Overhead doors not operational.
2) Interior/exterior personnel doors or hardware not functioning properly.

Code 1-Electrical
1) Power failure (entire area or any building operational after 1600 hours).
2) Security lights

3) Smoke detectors

Code 2-Electrical
1) Power failure (no power to a room or part of building).
2) Receptacle and lights (in a room or part of building).

Code 3-
Electrical
Street lights.

Code 1-Gas
1) Leaks and breaks.
2) No gas to family housing unit or cantonment area.

Code 1-Heat
1) Area power failure affecting heat.
2) Heater in unit not working.

Code 2-Kitchen Equipment
1) Dishwasher not operating properly.
2) All other equipment hampering preparation of a meal.

Code 1-Plumbing
1) Hot water heater failure.
2) Leaking water supply pipes.

Code 2-Plumbing
1) Flush valves not operating properly.
2) Fixture drain, supply line to commode, or any water pipe leaking.
3) Commode leaking at base.

Code 3 –Plumbing
Leaky faucets.

Code 3-Interior
1) Floors damaged.
2) Paint chipping or peeling.
3) Casework.

Code 1-Roof Leaks
Temporary repairs will be made where major damage to property is occurring.

Code 2-Roof Leaks
Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

Code 2-Water (Exterior)
No water to facility.

Code 2-Water (Hot)
No hot water in portion of building listed.

Code 3-All other work not listed above.

1.3.4 WARRANTY TAGS

At the time of installation, each warranted item shall be tagged with a durable, oil and water resistant tag approved by the Contracting Officer. Each tag shall be attached with a copper wire and shall be sprayed with a silicone waterproof coating. The date of acceptance and the QC signature shall remain blank until project is accepted for beneficial occupancy. The tag shall show the following information.

a. Type of product/material_____.

b. Model number_____.

c. Serial number_____.

d. Contract number_____.

e. Warranty period_____from_____to_____.

f. Inspector's signature_____.

g. Construction Contractor_____.
Address_____.
Telephone number_____.

h. Warranty contact_____
Address_____.
Telephone number_____.

i. Warranty response time priority code_____.

j. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

1.4 MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Prior to final inspection and transfer of the completed facility; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems shall be submitted to and approved by the Contracting Officer as specified inapplicable technical specification sections.

1.5 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.

1.6 OPERATION AND MAINTENANCE MANUALS

Two electronic copies in English of all Operation and Maintenance (O&M) manuals shall be submitted as follows:

U.S. Army Corps of Engineers
Afghanistan Engineering District – South
Att:, O&M
Kandahar Air Field, Afghanistan
APO, AE 09355

One hard paper copy and an electronic copy of the O&M manuals in English, Pashto, and Dari shall be delivered to the O&M Regional Site manager at the Resident Office or Area Office responsible for contract administration.

Operation manuals and maintenance manuals shall be provided in a common volume, complete, clearly differentiated and separately indexed.

-- END OF SECTION --

SECTION 01781
OPERATION AND MAINTENANCE DATA

1. GENERAL

1.1 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01335 SUBMITTAL PROCEDURES.

1.1.1 PACKAGE QUALITY

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.1.2 PACKAGE CONTENT

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission.

1.1.3 CHANGES TO SUBMITTALS

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.2 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

1.2.1 OPERATING INSTRUCTIONS

Include specific instructions, procedures, and illustrations for the following phases of operation:

1.2.1.1 SAFETY PRECAUTIONS

List personnel hazards and equipment or product safety precautions for all operating conditions.

1.2.1.2 OPERATOR PRESTART

Include procedures required to set up and prepare each system for use.

1.2.1.3 STARTUP, SHUTDOWN, AND POST-SHUTDOWN PROCEDURES

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.2.1.4 NORMAL OPERATIONS

Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.

1.2.1.5 EMERGENCY OPERATIONS

Include Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of all utility systems including required valve positions, valve locations and zones or portions of systems controlled.

1.2.1.6 OPERATOR SERVICE REQUIREMENTS

Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gage readings.

1.2.1.7 ENVIRONMENTAL CONDITIONS

Include a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.2.2 PREVENTIVE MAINTENANCE

Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair.

1.2.2.1 LUBRICATION DATA

Include preventative maintenance lubrication data, in addition to instructions for lubrication provided under paragraph titled "Operator Service Requirements":

a. A table showing recommended lubricants for specific temperature ranges and applications.

b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.

c. A Lubrication Schedule showing service interval frequency.

1.2.2.2 PREVENTIVE MAINTENANCE PLAN AND SCHEDULE

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.2.3 CORRECTIVE MAINTENANCE (REPAIR)

Include manufacturer's recommended procedures and instructions for correcting problems and making repairs.

1.2.3.1 TROUBLESHOOTING GUIDES AND DIAGNOSTIC TECHNIQUES

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.2.3.2 WIRING DIAGRAMS AND CONTROL DIAGRAMS

Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

1.2.3.3 MAINTENANCE AND REPAIR PROCEDURES

Include instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

1.2.3.4 REMOVAL AND REPLACEMENT INSTRUCTIONS

Include step-by-step procedures and a list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.

1.2.3.5 SPARE PARTS AND SUPPLY LISTS

The Contractor shall 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. The Contractor shall 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, email, and cell phone 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 email, and cell phone telephone number of the manufacturer's representative and service organization most convenient to the project site. Provide the name, address, address email, and cell phone number of the product, equipment, and system manufacturers.

2. EXECUTION

2.1 TRAINING

Unless provided for elsewhere, the Contractor shall provide operational and maintenance training for all systems furnished under this contract in accordance with this section. The training shall not take place until the operation and maintenance manuals are submitted and approved.

Training will be given to personnel responsible for the operation and maintenance of the system at the installation. Orient training to the specific system being installed under this contract. Use operation and maintenance manual as the primary instructional aid in contractor provided activity personnel training. Manuals shall be delivered for each trainee with two additional sets delivered for archiving at the project site. Submit a training course schedule, syllabus, and training materials 14 days prior to the start of training. Obtain approval of the training course before beginning that phase of training. Furnish a qualified instructor approved by the system manufacturer to conduct training for the specific system. Manuals need to be translated and provided in Pashtu and Dari to the attendees.

Training manuals shall include an agenda, defined objectives and a detailed description of the subject matter for each lesson. Furnish audio-visual equipment and all other training materials and supplies. A training day is defined as 8 hours of classroom or lab instruction, including two 15 minute breaks and excluding lunch time, Monday through Friday, during the daytime shift in effect at the training facility. For guidance, the Contractor should assume the attendees will have a high school education.

The Contractor shall videotape the training session on VHS tapes or DVD and provide the copies to the Government.

-- END OF SECTION --