SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W917PM-09-R-0111-0001	2. TYPE OF SOLICITATION [ ] SEALED BID (IFB) [X] NEGOTIATED *(RFP)*	3. DATE ISSUED 11-Aug-2009	PAGE OF PAGES 1 of 272

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

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO. 105333

7. ISSUED BY CODE W917PM	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
AFGHANISTAN ENGINEER DISTRICT US ARMY CORPS OF ENGINEERS KABUL APO AE 09356 TEL: FAX:	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME CHRISTIAN E WALLACE	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):*

DESIGN-BUILD AFGHANISTAN NATIONAL ARMY REGIONAL MILITARY TRAINING CENTER, SHINDAN, HERAT PROVINCE, AFGHANISTAN.

The project consists of the design and construction of a new campus facility for the Afghanistan National Army, Regional Military Training Center at Shindand Airfield, Afghanistan. Site is located to the northwest of the existing runway as shown in Appendix A. The project is defined as the design, material, labor, and equipment to construct buildings, parking, utilities and other infrastructure for a design population of 3,000 personnel.

The award for this procurement is subject to the availability of funds. See FAR Clause 52.232-18.

The magnitude of this effort is between $25,000,000.00 and $100,000,000.00.

This solicitation was originally synopsized using pre-solicitation number W917PM-09-R-0109.

NAICS Code: 236 -- Construction of Buildings/236220 -- Commercial and Institutional Building Construction.

SECTION 00010 Solicitation Contract Form / Proposal Schedule
SECTION 00100 Instructions to Bidders / General Information
SECTION 00600 Representations & Certifications
SECTION 00700 Contract Clauses
SECTION 00800 Special Contract Requirements
SECTION 01000 Scope of Work / Specifications

11. The Contractor shall begin performance within 7 calendar days and complete it within 420 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.)* [ ] YES [X] NO	12B. CALENDAR DAYS

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 3 copies to perform the work required are due at the place specified in Item 8 by 04:00 PM *(hour)* local time 12 Sep 2009 *(date).* If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [ ] is, [X] 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

PROPOSAL SCHEDULE

SECTION 00010
PROPOSAL SCHEDULE

Provide a price for all items, including those labeled "Optional Items."

No.	*Description*	*Qty*	*Unit*	*Unit Price*	*Total Amount*
1. BASE PROPOSAL:					
0001	**Design Program:**				
0001AA	Site Survey / Master Plan / A/E Design	1	LS	XXX	$_____
0001AB	As-Built Drawings	1	LS	NTE (Not to Exceed)	**$ 40,000**
Sub-Total Design Program: (Including NTE Amount)					**$_____**
0002 Site Development / Improvements:					
0002AA	Mobilization, Demobilization	1	LS	XXX	$_____
0002AB	COE Office and Living Quarters	1	LS	XXX	$_____
0002AC	Test Water Well	1	LS	XXX	$_____
0002AD	Potable Water Supply System	1	LS	XXX	$_____
0002AE	Sanitary Sewer Collection and Treatment System	1	LS	XXX	$_____
0002AF	Site Electrical Power and Distribution System	1	LS	XXX	$_____
0002AG	Road Network and Foot Paths	1	LS	XXX	$_____
0002AH	Access Points	2	EA	$_____	$_____
Sub-Total Site Developments / Improvements:					**$_____**
0003 Buildings & Building Complexes:					
0003AA	RMTC HQ Building	1	EA	$_____	$_____
0003AB	Instructors Offices	3	EA	$_____	$_____

0003AC	Classroom Building, 200 Students	2	EA	$_____	$_____
0003AD	Classroom Building, 2 x 100 Students	2	EA	$_____	$_____
0003AE	Dining Facility (DFAC), with Propane Storage and Dry Storage Yard	1	EA	$_____	$_____
0003AF	NCO/Officer Barracks	5	EA	$_____	$_____
No.	***Description***	***Qty***	***Unit***	***Unit Price***	***Total Amount***
0003AG	Enlisted Barracks	6	EA	$_____	$_____
0003AH	Latrines, Large, with Toilets/Shower/ Ablution/Laundry	6	EA	$_____	$_____
0003AJ	Latrines, Small, with Toilets	3	EA	$_____	$_____
0003AK	BWT Barracks Security Fence	1	EA	$_____	$_____
0003AL	Medical Clinic	1	EA	$_____	$_____
0003AM	PX / Finance Office	1	EA	$_____	$_____
0003AN	Laundry	1	EA	$_____	$_____
0003AP	Small Arms Storage and Security Fence	1	EA	$_____	$_____
0003AQ	ASP and Security Fence	1	EA	$_____	$_____
0003AR	Motor Pool and Security Fence	1	EA	$_____	$_____
0003AS	Vehicle Maintenance Building	1	EA	$_____	$_____
0003AT	POL Storage, Fuel Point and Fuel Pumps	1	EA	$_____	$_____
0003AU	RMTC Storage, Bridmals and BWT Storage and Security Fence	1	EA	$_____	$_____
Sub-Total Buildings & Building Complexes:					**$_____**
0004	**DBA Insurance**	1	JB		$_____
TOTAL BASE BID ITEMS: (Including NTE Amount)					**$_____**

2. OPTIONAL ITEMS PROPOSAL:

0005 Optional Items:

0005AA	Parade Ground with Review Stand	1	LS	XXX	$_____
0005AB	Trash Collection Points	6	EA	$_____	$_____
0005AC	Personnel Bunkers	12	EA	$_____	$_____
0005AD	Classroom Building, 4 x 50 Students	3	EA	$_____	$_____
0005AE	Vehicle Wash Rack	1	EA	$_____	$_____

TOTAL ALL OPTIONAL BID ITEMS:
$_____

TOTAL PROPOSAL: **$_____**
(Total of all above costs – Base and all Options including NTE)

PROPOSAL SCHEDULE NOTES

1. Only one contract for the entire schedule will be awarded under this solicitation.

2. DESIGN COSTS DEFINITION: Design costs shall consist of design analysis, drawings, and specifications of all facilities. The established design cost limitation shall not exceed 6 percent of the total construction cost.

3. The government has the right to reduce the number of units in a bid item or choose to delete a base bid item entirely if necessary after the proposals are received.

4. EVALUATION OF OPTIONS: The award will be made to the offeror whose proposal represents the best overall value to the Government. For pricing purposes, the Government will evaluate both the Base Proposal and Option Proposal Items. However, the Government is not obligated to exercise the options.

5. EXERCISE OF OPTIONAL BID ITEMS: Optional bid items may, at the option of the Government, be added to the contract at any time within 120 calendar days after receipt of the Notice to Proceed.

6. ORDER OF WORK: All base proposal line items have priority over any option items that may have been exercised.

7. Period of performance is 420 calendar days from receipt of the Notice to Proceed. Liquidated damages are assessed at $1,566.00 per day for every day of delay past the period of performance end date for both the base items and any option items that may have been exercised.

-END OF SECTION-

Questions and Answers #1 for W917PM-09-R-0111

1 September 2009

1. Both the part 4.17 MEDICAL CLINIC at page no: 67 and the 5.4.1 INDOOR DESIGN CONDITION table do not include information about the heating & cooling condition of the Medical Clinic Building. Could you please provide this information?

   Answer: Use the admin bldg/offices criteria.

2. For Small Arms Storage; at page 68, it is stated that "Wall mounted electric forced air AC units shall be used to maintain a minimum temperature of 18 degree Celsius during winter and maximum 30 degree Celsius during summer however; at page 127, at the 5.4.1 INDOOR DESIGN CONDITION table; it is stated that no cooling and 12.7 C (55 F) heating is required. Could you please clarify?

   Answer: Only heating is required for the small arms room.

3. Regarding vehicle wash rack, for how many car will it be designed for simultaneous washing and will there be an office in this area?

   Answer: One 7 ton vehicle. No office space.

4. Could you please provide information regarding heating and cooling conditions of classrooms?

   Answer: Unit heaters and ceiling fans.

5. Could you please provide drawings related below structures, if any?

   - Infrastructure Office
   - Classrooms
   - PX
   - Laundry
   - Ammunition Supply Point
   - Fuel Point
   - Fuel Storage

   Answer: Ammunition supply point details are provided in Appendix A. A floor plan for the POL building is also in Appendix A. There are no drawings for the other requested facilities.

6. Clarification: The CD that was provided at the Pre-proposal Conference contains diagrams, which are also located at the end of the solicitation document. I have extra copies of the CD if you would like to pick one up. But, this would be at your option since all diagrams are online with the solicitation.

7. Was the existing main base power plant constructed within the last 2 years?

   Answer: Not relevant to this project.

8. Has above-ground power been tied in from the Herat main utility plant as was initially planned in 06?

   Answer: I don't believe that the above ground power has been tied in from Herat's main utility. This does not affect the current project. A power plant will need to be provided as a power source.

9. Where will the design charrettes take place?

   Answer: Not relevant to this project.

10. Is the builder allowed to build their camp inside the NATO camp?

    Answer: Only within the given construction area.

11. Do you have additional overhead recon photos available for review?

    Answer: No.

12. Has the Soviet MIG graveyard and the debris field been cleared?

    Answer: Not relevant to this project.

13. Does USACE have the water table depth available?

    Answer: No. But based on previous experience, the water table for the western half of Afghanistan is typically deep and in the range of 150 to 200 meters. The depth may be deeper, depending on the location.

14. Does USACE have available for review soils & water sample data?

    Answer: No. RFP requires that the Contractor obtain this information.

15. Please confirm that this solicitation excludes the option of possible renovation of existing buildings to accommodate new build-out. Can this be addressed in the design charrette?

    Answer: not relevant to this project.

16. Where should I put the DUNS number?

Answer: I would put your DUNS number on the cover page of your proposal with your address.

17. Kindly refer RFP item 2.4.2.5 "WELL WATER PUMPS" and kindly confirm if we can supply a well hand pump with a capacity of 25*3000= 75000 gallons per day or 52 GPM. According to our knowledge a maximum 3-5 GPM can be achieved with a well hand pump at a maximum 200 feet water level depth. Please correct the input data or please guide us if we are in mistake. Additionally, if well investigation result with a drilling of more than 200 feet we cannot use hand pumps.

    Answer: Below is corrected section 2.4.2.5 of 01015 section, which is incorporated via Amendment #1:

    "2.4.2.5 WELL WATER PUMPS (FOR HYDRO-PNEUMATIC SYSTEM)
    An electric submersible well pump will pressurize the system by supplying water to a hydro-pneumatic tank and be capable of providing output for twice the average daily demand and provide hydro-pneumatic tank pressure. A mechanical hand pump capable of providing a flow equal to 5 gallons per minute is required as a backup. The hand pump will be connected directly to the electric well pump effluent piping thereby allowing the system to be pressurized by either pump. In the event that the well is in excess of 100 meters a mechanical hand pump will not be required. The pumps and controls shall be designed to supply and maintain acceptable system pressure throughout the distribution network given the full range of flow conditions (low flow to peak). The pump discharge shall have a gate valve, check valve, pressure gage, and air relief valve."

18. Can we use the airfield /airport of Shindand for chartered airplanes or helicopters during the project progress?

    Answer: There are no issues with landing aircraft at Shindand as long as contractors can land on 4940 ft of runway. The US Government has no fuel at this location and limited ramp space. As long as the US Government gets a heads up on what and when a contractor is coming in, we can accommodate. The runway construction should be completed within a month, and after that, there will be 9200 ft of runway available.

-END OF SECTION-

Section 00010 - Solicitation Contract Form

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SECTION 01000 Scope of Work / Specifications

SECTION 00100:

SECTION 00110 Proposal Preparation/Instructions to Bidders
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SECTION 00150 The Design/Build Process
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SECTION 01770 Closeout Procedures
SECTION 01780a Closeout Submittals
SECTION 01781 Operation and Maintenance Data
1335a-Attachments-AED.pdf
APPENDIX RMTC 1Sep09.pdf

SECTION 00110
ANA CONSTRUCTION (DESIGN-BUILD) – BEST VALUE
PROPOSAL PREPARATION

1. INQUIRIES

Perspective offerors should submit inquiries related to this solicitation in writing by 20 August 2009:

All questions will be submitted in writing by letter or e-mail to:

U.S. Army Corps of Engineers (USACE)
Afghanistan Engineer District (AED)
Qalaa House, Attention: Christian E. Wallace
Kabul, Afghanistan

E-MAIL ADDRESS: christian.e.wallace@usace.army.mil

Please include the solicitation number, and project title with your questions.

Oral explanations or instructions are not binding. Any information given to an offeror which impacts the solicitation and/or offer will be given in the form of a written amendment to the solicitation.

As this is a competitive negotiation acquisition, there is no public bid opening and no information will be given out as to the number of offerors or the results of the competition until all awards are made.

2. DIRECTIONS FOR SUBMITTING PROPOSALS

Offers must be in sealed envelopes/packages, marked and addressed as follows:

MARK PACKAGES:
Solicitation No. **W917PM-08-R-0111**
Offer Closing Date: **12 September 2009**
Offer Closing Time: **16:00**
(LOCAL KABUL TIME)

ADDRESS PACKAGES TO:
U.S. Army Corps of Engineers (USACE)
Afghanistan Engineer District (AED)
Qalaa House, Attention: christian.e.wallace@usace.army.mil
Kabul, Afghanistan

Special Instruction Pertaining to Hand Carried Offers: Hand-carried offers must be delivered to the USACE AED offices, Qalaa House, Kabul, Afghanistan. Offers who desire to hand-deliver their offers shall notify the Contract Specialist **in advance** in order to be met at the entrance gate to Qalaa House Compound.

3. PREPROPOSAL CONFERENCE / SITE VISIT

The Pre-proposal Conference shall be held at the Corp of Engineers Afghanistan District Headquarter in Kabul at the Qalaa House Compound on 17 August 2009 at 1000 hours (10am). There will **NOT** be an official Site Visit

scheduled. Contractors are welcome to visit the site on their own, however all site visits must be coordinated with the resident Engineer Office at Farah.

IMPORTANT NOTES. (1) Remarks and explanations addressed during the conference shall not qualify or alter the terms and conditions of the solicitation. (2) The terms and conditions of the solicitation remain unchanged unless the solicitation is formally amended in writing.

4. TELEGRAPHIC OFFERS - - TELEGRAPHIC OFFERS ARE NOT ACCEPTABLE.
However, offers may be withdrawn by written or telegraphic notice. Any telegram to withdraw an offer sent to this office must be received in the office designated in the Request for Proposal (RFP) for receipt of offers not later than the exact date and time set for receipt of proposals. A telegraphic withdrawal of an offer received in such office by telephone from the receiving telegraph office not later than the exact date and time set for receipt of proposals shall be considered. However, the telephone message shall be confirmed by the telegraph company by sending a copy of the written telegram that formed the basis for the telephone call. The written telegram shall be sealed in an envelope by a proper official and sent to the office designated in the RFP for receipt of offers. The official shall write on the envelope (1) the date and time of receipt and by whom, and (2) the number of the RFP, and shall sign the envelope. The offeror is responsible to inform the telegraph company of these requirements. No one from this office will be dispatched to the local telegraph office to pick up any telegram for any reason.

5. FACSIMILE OFFERS

Facsimile offers, modifications thereto, or cancellations of offers will not be accepted.

6. PROPOSAL SUBMISSION REQUIREMENTS AND INSTRUCTIONS

a. REQUIREMENT FOR SEPARATE PRICE AND TECHNICAL PROPOSALS.

(1) Each Offeror must submit both a Price Proposal and a Technical Proposal. The Price Proposal and the Technical Proposal must be submitted as separate volumes. Ensure that the outside of each separate volume is clearly marked to indicate its contents; and the identity of the offeror. Additionally, clearly identify the “original” cost/price proposal and the “original” technical proposal on the outside cover.

(2) Both the Price Proposal and the Technical Proposal must be received by the closing date and time set for receipt of proposals.

(3) No dollar amounts from the Price Proposal are to be included in the Technical Proposal.

(4) All information intended to be evaluated as part of the Technical Proposal must be submitted as part of the Technical Proposal. Do not cross-reference similar material in the Price Proposal, or vice versa. Also, do not include links to websites in lieu of incorporating information into your proposal.

(5) Do not include exceptions to the terms and conditions of the solicitation in either the technical or price proposal. Should the offer include any standard company terms and conditions that conflict with the terms and conditions of the solicitation, the offer may be determined "unacceptable" and thus ineligible for award. Should the offeror have any questions related to specific terms and conditions, these should be resolved prior to submission of the offer. The Offeror must clearly describe in the Proposal Cover Sheet submitted with the Price Proposal any exceptions to the contractual and/or technical terms and conditions of the solicitation contained in the Offer.

b. DISCUSSIONS. The Government intends to evaluate proposals and award a contract without discussions with offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

c. COST OR PRICING DATA. Offerors are not required to submit Cost or Pricing Data with their offers.

d. GENERAL INSTRUCTIONS.

(1) Submit only the hard-copy paper documents and the electronic files specifically authorized and/or required elsewhere in this section. Do not submit excess information, to include audio-visual materials, electronic media, etc.

(2) Use only 8 ½ by 11 inch paper for hard copy submissions, unless another paper size is specifically authorized elsewhere in this section for a particular submission. Do not use fold-outs (e.g.,11" x 14" or 11" x 17" sheets) unless specifically authorized in this section for a particular submission. Do not use a font size smaller than 10, an unusual font style such as script, or condensed print for any submission. All page margins must be at least 1 inch wide, but may include headers and footers.

(3) The preferred method for assembling your proposals is to use three-ring binders; however, the use of pressboard or other report covers with compression or other type fasteners is acceptable. Do not use spring clamps or exceed the recommended capacity of the fastener or binder. Do not use plastic multi-hole/spiral binding systems, heat binding systems, or other systems which do not facilitate the ready insertion of additional pages.

(4) "Confidential" projects cannot be submitted to demonstrate capability unless all of the information required for evaluation as specified herein can be provided to the Government as part of the Offeror's technical proposal. Offerors that include in their proposals information that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, must be clearly marked in accordance with the instructions at FAR 52.215-1, "Instructions to Offerors—Competitive Acquisition", paragraph (e), "Restriction on disclosure and use of data".

(5) In the case of an Offeror that is part of a large, multi-segmented business concern, provide information directly pertaining to the specific segment of the business concern (i.e., the division, group, unit, etc.) that will perform work under the prospective contract.

(6) For submissions with page limitations, the pages will be counted as follows: One side of the paper is one page; information on both the back and front of one sheet of paper will be counted as two pages. Where authorized, fold-out pages (11" x 14" or 11" x 17") will count as one page. Pages furnished for organizational purposes only, such as a "Table of Contents" or divider tabs, are not included in the page limitation.

e. <u>SPECIFIC INSTRUCTIONS FOR THE PRICE PROPOSAL</u>

(1) Number of Sets of the Price Proposal. Submit the ORIGINAL and ONE additional hard copy set of the Price Proposal.

(2) Size Restrictions and Page Limits. Use only 8 ½" x 11" pages. There are no page limits set for the price proposal. However, limit your response to information required by this solicitation. Excess information will not be considered in the Government's evaluation.

(3) Format and Contents of the Price Proposal and List of Tabs. The Price Proposal shall be appropriately labeled as such and shall be organized as indicated in the following chart. Note: If the Offeror is not required to submit any information under a listed Tab in accordance with the instructions below, that tab can be omitted. However, do not renumber the subsequent tabs.

TAB	CONTENTS OF THE PRICE PROPOSAL
#1	The Proposal Cover Sheet
#2	The SF1442 and Acknowledgement of Amendments
#3	Section 00010, Pricing Schedule
#4	Representations, Certifications, and Other Statements of Offerors
#5	JV Agreement, if applicable.

(4) Detailed Submission Instructions for the Price Proposal

TAB 1: The proposal cover sheet is required by FAR 52.215-1(2) (c) (i)-(v) and must be submitted by all offerors. This provision, titled "Instructions to Offerors Competitive Acquisition," and the format for the proposal cover sheet are furnished elsewhere in this section.

TAB 2: The SF 1442, Solicitation, Offer, and Award is to be completed by all Offerors and duly executed with an original signature by an official authorized to bind the company in accordance with FAR 4.102. Any and all amendments must be acknowledged by all Offerors in accordance with the instructions on the Standard Form 30, Amendment of Solicitation.

TAB 3: Section 00010, Pricing Schedule is to be completed in its entirety by all Offerors. See Section 00010 with attached notes, for further instructions.

TAB 4: All Offerors must have electronically completed the annual representations and certifications on the "Online Representations and Certifications Application" (ORCA) website or respond with the completed representations / certifications found in the solicitation.. The offerors are responsible for ensuring that these on-line Representations and Certifications are updated as necessary to reflect changes, but at least annually to ensure that they are kept current, accurate and complete. Additionally, the offeror must also complete and return the "Representations, Certifications, and Other Statements of Offerors" included in the solicitation. If the offeror is a Joint Venture, all participants must separately complete both the ORCA Representations and Certifications.

TAB 5: If the Offeror is a Joint Venture (JV), include a copy of the JV Agreement. If a JV Agreement has not yet been finalized/approved, indicate its status. JV Agreements must clearly indicate the percentages of the JV participants, in particular the percent of the controlling party, and a clear delineation of responsibilities and authorities between the JV parties.

f. SPECIFIC INSTRUCTIONS FOR THE TECHNICAL PROPOSAL

(1) Number of Sets of the Technical Proposal. Submit the (1) ORIGINAL and (3) additional sets of the written Technical Proposal, with each set separately packaged.

(2) Format and Contents of the Technical Proposal and List of Tabs. The original and all copies of the technical proposal will be appropriately labeled as such. Each set shall be organized using the tabs specified in the following chart. Note: The main tabs directly correlate to the evaluation factors identified in Section 00120.

TAB	CONTENTS OF THE TECHNICAL PROPOSAL
Factor #1	EXPERIENCE
Factor #2	PROJECT MANAGEMENT and SECURITY PLAN
Factor #3	RESOURCES (Key Personnel and Capacity)
Factor #4	PAST EVALUATIONS/PERFORMANCE

(3) Page Limitations. See paragraphs 6.d.(2) and 6.d.(6) above for format and page count instructions. The following page limitations are established for each factor described above:

- Factor #1, Experience – Limited to 1 Experience Form and 5 pages of representative design information per project. Maximum 10 projects.
- Factor #2, Project Management and Security Plan – Limited to 6 pages total, not including organizational charts
- Factor #3, Resources (Key Personnel and Capacity) – Limited to 1 page for each resume/Individual provided and three pages for capacity.
- Factor #4, Past Evaluations/Performance – No page limitation

Tables of content, proposal cover letters, and tabs between proposal information do not count toward any page limitations in the proposal.

(4) Detailed Submission Requirements for the Technical Proposal. The following is a detailed description of the information to be submitted under each TAB.

(i) **TAB 1: FACTOR 1, EXPERIENCE:** Demonstrate the experience of the offeror and/or team, including sub-contractors, on projects same/similar to that described in the solicitation. The projects submitted must have been performed by the offeror and/or same team member(s) who will be providing similar services under the prospective contract.

The Government will evaluate the relevant work experience of the offeror and their proposed team, including subcontractors, on projects same/similar to that described in this solicitation. The Contractor shall complete a minimum of three (3), but no more than ten (10), “Experience Information” forms, attached at the end of this section, in response to this factor. All blocks must be filled in and all data should be accurate, current, and complete. All

projects submitted must have been underway or completed with the last five years within US DOD's CENTCOM or AFRICOM area of authority including: Afghanistan, Tajikistan, Iraq, Pakistan etc. At least one (1) of the projects provided must be valued at over $10 million US, and all other projects must be at least $5 million US. For each project that included design, the offer may also submit up to 5 pages of information representative of the design efforts of the project.

(ii) **TAB 2: FACTOR 2, PROJECT MANAGEMENT AND SECURITY PLAN:** Provide a narrative that addresses the offeror's project management and security plan. The plan must address the following elements, as a minimum:

- Procedures used to manage the project, to include project management, quality control, and safety.
- How the contractor plans to meet major design and construction project milestones in the specifications that reflects completion of all work within the period of contract performance.
- Provide a narrative response that addresses timely delivery and receipt of equipment and materials at the job site which coincides with the major construction project milestones and provides for protection of equipment and materials to and from an isolated project site in a hostile environment.
- Management of concurrent work on multiple job sites if it is applicable to this project.
- Security plan including construction materials procurement/transferring to the site, site security including both constructed facilities and construction materials storage.

The offeror shall include an organizational chart depicting lines of authority and responsibility for all personnel/entities on the project, including subcontractors, from the lowest level to the corporate level. The organizational chart shall clearly indicate which entity has overall authority for the contract and identify by name and title the single Point of Contact to the Government for all project-related matters.

(iii) **TAB 3: FACTOR 3, RESOURCES (Key Personnel and Capacity)**:

Sub-factor 3.1 - Key Personnel: The offeror must provide resume data for the following key personnel: Project Manager – Design, Project Manager - Construction, Safety Officer, Quality Control Manager, Senior Architect, Senior Civil Engineer, Senior Electrical Engineer, Senior Mechanical Engineer, Fire Protection Engineer, Construction Superintendent/Foreman, and Project Security Manager. All key personnel shall have a degree (engineers and project managers) in the field of work governed by the position they are assigned to and a minimum of five (5) years of professional experience in their field (all key personnel). For example, a Civil Engineer must have a degree in Civil Engineering and five (5) years of professional civil engineering experience.

Key Personnel	Requirement
Project Manager – Design	A degree & minimum 5 years professional experience.
Project Manager - Construction	A degree & minimum 5 years professional experience.
Quality Control Manager	A degree & minimum 5 years professional experience.
Senior Architect	A degree & minimum 5 years professional experience.
Senior Civil Engineer	A degree & minimum 5 years professional experience.
Senior Electrical Engineer	A degree & minimum 5 years professional experience.
Senior Mechanical Engineer	A degree & minimum 5 years professional experience.
Fire Protection Engineer	A degree & minimum 5 years professional experience.
Construction Superintendent/Foreman	Minimum 5 years professional experience.
Project Security Manager	Minimum 5 years professional experience.
Safety Officer	Minimum 5 years professional experience.

Resume information to be provided for personnel identified above shall be limited to no more than one (1) page per person and shall include the following information as a minimum:

- Name and title
- Project assignment
- Name of firm with which associated
- Years experience with this firm and with other firms
- Education degree(s), year, specialization, if applicable
- Active professional registration, year first registered, if applicable
- Other experience and qualifications relevant to same/similar work required under this Contract

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

Proposals should also address how the offeror will have adequate resources for the project described in this RFP in light of any other ongoing projects and contractual commitments it may have within Afghanistan. Provide Capacity of Contractor's Resources, what other projects are in the works, ongoing and awarded in the past three (3) years and how does the contractor plan to manage multiple projects.

Sub-factor 3.2 - Capacity:

- The contractor shall submit a list of ALL current ongoing contracts or projects. The list shall include the contract number, contract amount, original contract completion date, current official contract completion date and the current progress.
- The contractor shall identify the key personnel assigned to each of those projects.
- The contractor shall provide a narrative that explains how award of this contract will affect current contracts or projects and how the current contracts or projects will affect this contract if it is awarded to the contractor.
- The contractor shall provide a narrative that explains their capability and plan to implement an additional project and resources available to them without adversely affecting current contracts or projects.

(iv) **TAB 4: FACTOR 4, PAST EVALUATIONS/PERFORMANCE:** For the projects listed under Factor 1 – Experience, provide letters of recommendations, past performance evaluations, letters of appreciation, commendations, and awards or certificates of appreciation. Following is the format you should follow for your past performance submittal.

(The following projects are to be the same projects submitted under Factor 1 Experience)

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

Name:
Address:
Phone number:

Email Address:

3. Problems encountered and corrective actions taken:
4. List Change Orders and their circumstances:
5. Project scheduled completion date and actual completion date:

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

6. Initial Project Budget (US Dollars) and Final Actual Project Cost (US Dollars):

7. Safety record and accident reports:

8. References (submit the following): Customer Satisfaction letters, Letters of Appreciation, Performance Evaluations, Certification of Achievements, Letters of Recommendations.

The Contractor Performance Assessment Reporting System (to include ACASS, CCASS, and CPARS) will be utilized to validate past performance ratings on Department of Defense contracts and any other past performance information the Government deems necessary to evaluate a contractor's past performance. Firms without a history of past performance will be given a neutral rating.

The Government may contact any other sources for information regarding the offerors past performance and on any projects. The government may contact references provided as part of Factor 1 – Experience for information regarding the offeror's past performance on the project and for the purposes of assessing and verifying the scope of the work performed. Offerors should provide accurate, current, and complete contact information for references provided in the project descriptions.

7. PROPOSAL COVER SHEET

PROPOSAL COVER SHEET

1. Solicitation Number:

2. The name, address, DUNS number, and telephone/facsimile numbers of the Offeror (and electronic address if available).

3. A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item. Statement to include any exceptions in technical or cost/price proposal or exceptions inherent in Offeror's standard terms and conditions.

4. Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the Offeror's behalf with the Government in connection with this solicitation.

5. Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

8. SOURCE SELECTION USING THE BEST VALUE PROCESS. The Government will select the offer that represents the best value to the Government by using the trade-off process described in FAR Part 15. This process permits tradeoffs between cost/price and technical ("non-cost") factors and allows the Government to accept other

than the lowest priced offer or other than the highest rated offer. The award decision will be based on a comparative assessment of proposals against all source selection criteria in the solicitation. See Section 00120.

For the award decision, all evaluation factors other than cost or price, when combined, are more important than price. All non price factors will be treated equally and all non price sub-factors will be treated equally. The Government is concerned with striking the most advantageous balance between technical merit ("quality") and price to the Government (i.e., the price). The degree of importance of price could become greater depending upon the equality of the technical proposals. If competing technical proposals are determined to be essentially equal, price could become the controlling factor.

Template Experience Information Form:

EXPERIENCE INFORMATION **(To be completed by Contractor)**	
1. Contractor: **Name:** **Address:**	**2. Contract /Task Order(TO) /Purchase Order (PO) Number:**
	3. Contract/TO/PO Dollar Value:
	4. Contract/TO /PO Status: Active Complete **Completion Date (w/ extensions):**
5. Project Title: **Location:**	
6. Project Description:	
7. Project Owner or Project Manager for the Client – provide: **Name:** **Address:** **Telephone Number and E-mail:**	

-END OF SECTION-

SECTION 00120
ANA CONSTRUCTON (DESIGN-BUILD) – BEST VALUE
PROPOSAL EVALUATION AND CONTRACT AWARD

1. ELIGIBILITY FOR CONTRACT AWARD

In accordance with the FAR, no contract shall be entered into unless the contracting officer ensures that all requirements of law, executive orders, regulations, and all other applicable procedures, including clearances and approvals, have been met. This includes the FAR requirement that no award shall be made unless the contracting officer makes an affirmative determination of responsibility. To be determined responsible, a prospective contractor must meet the general standards in FAR Part 9 and any special standards set forth in the solicitation.

2. SOURCE SELECTION USING THE BEST VALUE PROCESS

The Government will select the offer that represents the best value to the Government by using the trade-off process described in FAR Part 15. This process permits tradeoffs between cost/price and technical ("non-cost") factors and allows the Government to accept other than the lowest priced offer. The award decision will be based on a comparative assessment of proposals against all source selection criteria in the solicitation.

3. RELATIVE IMPORTANCE OF PRICE TO THE TECHNICAL EVALUATION FACTORS

All evaluation factors other than cost or price, when combined, are more important than price. All non price factors will be treated equally and all non price sub-factors will be treated equally. The Government is concerned with striking the most advantageous balance between technical merit ("quality") and price to the Government (i.e., the price). The degree of importance of price could become greater depending upon the equality of the technical proposals. If competing technical proposals are determined to be essentially equal, price could become the controlling factor.

4. EVALUATION OF THE PRICE PROPOSALS

a. Price will be evaluated and considered but will not be scored or combined with other aspects of the proposal evaluation. The proposed prices will be analyzed for reasonableness. They may also be analyzed to determine whether they are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the Offeror's Technical Proposal. Additionally, all offers will be analyzed for unbalanced pricing.

b. The price will be used along with the technical evaluation to make a selection for award. Since evaluation of the price proposal will represent a portion of the total evaluation, it is possible that an offeror might not be selected for award because of unreasonable, unrealistic, or incomplete price proposal information. The Government will evaluate the format and clarity of the price proposal.

c. Other Award Factors: The Contracting Officer shall consider several factors in the selection process which are important, but not quantified, such as:

(1) Agreement by the offeror to all general and special contract provisions and clauses.

(2) Determination of responsibility of the contractor by the Contracting Officer in accordance with the provisions of the Federal Acquisition Regulation, Part 9.1. In order 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 taking into consideration all existing commercial and Governmental business commitments.;
(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) Have 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.

5. EVALUATION OF THE TECHNICAL PROPOSAL

The Technical Proposal will be evaluated based on the following evaluation criteria:

a. **FACTOR 1: EXPERIENCE:**

The Government will evaluate the relevant work experience of the offeror and their proposed team, including subcontractors, on projects same/similar to that described in this solicitation. The Contractor shall complete a minimum of three (3), but no more than ten (10), "Experience Information" forms, attached at the end of this section, in response to this factor. All blocks must be filled in and all data should be accurate, current, and complete. Of the projects submitted, at least one (1) must be valued at over $10 Million US and the other projects must be at least $5 Million US within US DOD's CENTCOM or AFRICOM area of authority including: Afghanistan, Tajikistan, Iraq, Pakistan etc.. Of these projects, they must be design build projects underway or completed in the last five (5) years. Offerors with experience on same/similar relevant projects (type of services, similar dollar value, complexity, USACE design / construction requirements, and applicable quality standards) will receive a higher rating than those with dissimilar or non-relevant projects.

b. **FACTOR 2, PROJECT MANAGEMENT AND SECURITY PLAN:**

Responses to this factor will be evaluated for:

- Offeror's ability/procedures used to manage the project, to include project management, quality control, and safety;
- How the offeror plans to meet major design and construction project milestones in the specifications that reflects completion of all work within the period of contract performance.
- Provide a narrative response that addresses timely delivery and receipt of equipment and materials at the job site which coincides with the major construction project milestones and provides for protection of equipment and materials to and from an isolated project site in a hostile environment.
- Management of concurrent work on multiple job sites if it is applicable to this project.
- Security plan including construction materials procurement/transferring to the site, site security including both constructed facilities and construction materials storage.

In addition, the offeror shall include an organizational chart depicting lines of authority and responsibility for all personnel/entities on the project, including subcontractors, from the lowest level to the corporate level. The

organizational chart shall clearly indicate which entity has overall authority for the contract and identify by name and title the single Point of Contact to the Government for all project-related matters.

c. **FACTOR 3: RESOURCES (Key Personnel and Capacity):**

Sub-factor 3.1 - Key Personnel: Key personnel resumes will be evaluated to determine the depth and breadth of personnel experience on same/similar projects and as it relates to the Responsibilities that person will have on this contract. All key personnel shall a minimum of five (5) years of professional experience in their field. Key personnel shall have a degree in the field of work governed by the position they are assigned to as follows: Project Manager – Design, Project Manager – Construction, Quality Control Manager, Senior Architect, Senior Civil Engineer, Senior Electrical Engineer, Senior Mechanical Engineer, and Fire Protection Engineer. For example, a Civil Engineer must have a degree in Civil Engineering and five (5) years of professional civil engineering experience.

Key Personnel	Requirement
Project Manager – Design	A degree & minimum 5 years professional experience.
Project Manager - Construction	A degree & minimum 5 years professional experience.
Quality Control Manager	A degree & minimum 5 years professional experience.
Senior Architect	A degree & minimum 5 years professional experience.
Senior Civil Engineer	A degree & minimum 5 years professional experience.
Senior Electrical Engineer	A degree & minimum 5 years professional experience.
Senior Mechanical Engineer	A degree & minimum 5 years professional experience.
Fire Protection Engineer	A degree & minimum 5 years professional experience.
Construction Superintendent/Foreman	Minimum 5 years professional experience.
Project Security Manager	Minimum 5 years professional experience.
Safety Officer	Minimum 5 years professional experience.

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

Proposals should also address how the offeror will have adequate resources for the project described in this RFP in light of any other ongoing projects and contractual commitments it may have within Afghanistan. Provide Capacity of Contractor's Resources, what other projects are in the works, ongoing and awarded in the past three (3) years and how does the contractor plan to manage multiple projects.

Sub-factor 3.2 - Capacity: Offerors who convincingly demonstrate that they have the reserve capacity for additional contracts or projects without adversely affecting existing projects or contracts will receive a higher rating than those which appear to be at or near capacity or fail to provide convincing evidence of surplus capacity. In order to receive a satisfactory rating, the Offeror must provide the following for evaluation:

- The contractor shall submit a list of ALL current ongoing contracts or projects. The list shall include the contract number, contract amount, original contract completion date, current official contract completion date and the current progress.
- The contractor shall identify the key personnel assigned to each of those projects.
- The contractor shall provide a narrative that explains how award of this contract will affect current contracts or projects and how the current contracts or projects will affect this contract if it is awarded to the contractor.

- The contractor shall provide a narrative that explains their capability and plan to implement an additional project and resources available to them without adversely affecting current contracts or projects.

d. **FACTOR 4: PAST EVALUATIONS/PERFORMANCE:**

The Government will evaluate past performance information to assess the level of performance risk associated with the Offeror's likelihood of success in performing the requirements stated in the solicitation. The currency and relevance of the information (as determined by the Government), the source of the information, context of the data, and general trends in the contractor's performance may be considered. Information submitted by the Offeror pertaining to recent, relevant contracts will be evaluated as well as data obtained from other sources, including automated databases and questionnaires. References other than those identified by the Offeror may be contacted by the Government. The Government may take into consideration the offeror's performance of contracts with the agency; other Federal, State, and local government activities; and commercial concerns. The result will be a performance risk rating based on each Offeror's record of past performance.

For the purpose of the past performance evaluation, offerors shall be defined as business arrangements and relationships, such as Joint Venture participants, teaming partners, and major subcontractors. The past performance record of each firm in the business arrangement may be evaluated by the Government.

In the case of an Offeror without a record of recent, relevant past performance (and for which there is also no recent, relevant past performance information for its predecessor companies or key subcontractors), or for whom information on past performance is not available or cannot be verified, the Offeror will not be evaluated favorably or unfavorably on past performance, and given a neutral. This does not preclude the Government from making award to a higher-priced Offeror with a favorable past performance record over a lower-priced Offeror with a neutral past performance rating.

6. RELATIVE WEIGHTING OF THE TECHNICAL EVALUATION FACTORS

For the award decision, all evaluation factors other than cost or price, when combined, are more important than price. All non price factors will be treated equally and all non price sub-factors will be treated equally. The Government is concerned with striking the most advantageous balance between technical merit ("quality") and price to the Government (i.e., the price). The degree of importance of price could become greater depending upon the equality of the technical proposals. If competing technical proposals are determined to be essentially equal, price could become the controlling factor.

7. GENERAL TECHNICAL CRITERIA

a. Material omission(s) may cause the technical proposal to be rejected as unacceptable.

b. Technical proposals which do not provide the specified information in the specified location in accordance with the submission instructions may be downgraded. The Government is under no obligation to search for information that is not in the specified location.

c. Proposals which are generic, vague, or lacking in detail may be downgraded. The offeror's failure to include information that the Government has indicated should be included may result in the proposal being downgraded and/or being found deficient if inadequate detail is provided.

d. The Government cannot make award based on a deficient offer. Therefore, a rating of "Unsatisfactory" under any sub-factor will make the offer ineligible for award, unless the Government elects to enter into discussions with that Offeror and all deficiencies are remedied in a revised proposal.

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8. 52.217-5 EVALUATION OF OPTIONS (JUL 1990)

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

(End of provision)

-END OF SECTION-

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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)

52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (JAN 2004)

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

“Discussions” are negotiations that occur after establishment of the competitive range that may, at the Contracting Officer's discretion, result in the offeror being allowed to revise its proposal.

“In writing or written” means any worded or numbered expression which can be read, reproduced, and later communicated, and includes electronically transmitted and stored information.

“Proposal modification” is a change made to a proposal before the solicitation's closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

“Proposal revision” is a change to a proposal made after the solicitation closing date, at the request of or as allowed

by a Contracting Officer as the result of negotiations.

“Time”, if stated as a number of days, is calculated using calendar days, unless otherwise specified, and will include Saturdays, Sundays, and legal holidays. However, if the last day falls on a Saturday, Sunday, or legal holiday, then the period shall include the next working day.

(b) Amendments to solicitations. If this solicitation is amended, all terms and conditions that are not amended remain unchanged. Offerors shall acknowledge receipt of any amendment to this solicitation by the date and time specified in the amendment(s).

(c) Submission, modification, revision, and withdrawal of proposals. (1) Unless other methods (e.g., electronic commerce or facsimile) are permitted in the solicitation, proposals and modifications to proposals shall be submitted in paper media in sealed envelopes or packages (i) addressed to the office specified in the solicitation, and (ii) showing the time and date specified for receipt, the solicitation number, and the name and address of the offeror. Offerors using commercial carriers should ensure that the proposal is marked on the outermost wrapper with the information in paragraphs (c)(1)(i) and (c)(1)(ii) of this provision.

(2) The first page of the proposal must show--

(i) The solicitation number;

(ii) The name, address, and telephone and facsimile numbers of the offeror (and electronic address if available);

(iii) A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item;

(iv) Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the offeror's behalf with the Government in connection with this solicitation; and

(v) Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

(3) Submission, modification, or revision, of proposals.

(i) Offerors are responsible for submitting proposals, and any modifications, or revisions, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that proposal or revision is due.

(ii)(A) Any proposal, modification, or revision received at the Government office designated in the solicitation after the exact time specified for receipt of offers is “late” and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and--

(1) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or

(2) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or

(3) It is the only proposal received.

(B) However, a late modification of an otherwise successful proposal that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(iii) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(iv) If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(v) Proposals may be withdrawn by written notice received at any time before award. Oral proposals in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award, subject to the conditions specified in the provision at 52.215-5, Facsimile Proposals. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.

(4) Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.

(5) Offerors shall submit proposals in response to this solicitation in English, unless otherwise permitted by the solicitation, and in U.S. dollars, unless the provision at FAR 52.225-17, Evaluation of Foreign Currency Offers, is included in the solicitation.

(6) Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time before award.

(7) Offerors may submit revised proposals only if requested or allowed by the Contracting Officer.

(8) Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.

(d) Offer expiration date. Proposals in response to this solicitation will be valid for the number of days specified on the solicitation cover sheet (unless a different period is proposed by the offeror).

(e) Restriction on disclosure and use of data. Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall--

(1) Mark the title page with the following legend: This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of--or in connection with-- the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent

provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]; and

(2) Mark each sheet of data it wishes to restrict with the following legend: Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

(f) Contract award. (1) The Government intends to award a contract or contracts resulting from this solicitation to the responsible offeror(s) whose proposal(s) represents the best value after evaluation in accordance with the factors and sub-factors in the solicitation.

(2) The Government may reject any or all proposals if such action is in the Government's interest.

(3) The Government may waive informalities and minor irregularities in proposals received.

(4) The Government intends to evaluate proposals and award a contract without discussions with offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

(5) The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the offeror specifies otherwise in the proposal.

(6) The Government reserves the right to make multiple awards if, after considering the additional administrative costs, it is in the Government's best interest to do so.

(7) Exchanges with offerors after receipt of a proposal do not constitute a rejection or counteroffer by the Government.

(8) The Government may determine that a proposal is unacceptable if the prices proposed are materially unbalanced between line items or sub-line items. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly overstated or understated as indicated by the application of cost or price analysis techniques. A proposal may be rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to the Government.

(9) If a cost realism analysis is performed, cost realism may be considered by the source selection authority in evaluating performance or schedule risk.

(10) A written award or acceptance of proposal mailed or otherwise furnished to the successful offeror within the time specified in the proposal shall result in a binding contract without further action by either party.

(11) If a post-award debriefing is given to requesting offerors, the Government shall disclose the following information, if applicable:

(i) The agency's evaluation of the significant weak or deficient factors in the debriefed offeror's offer.

(ii) The overall evaluated cost or price and technical rating of the successful and the debriefed offeror and past performance information on the debriefed offeror.

(iii) The overall ranking of all offerors, when any ranking was developed by the agency during source selection.

(iv) A summary of the rationale for award.

(v) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.

(vi) Reasonable responses to relevant questions posed by the debriefed offeror as to whether source-selection procedures set forth in the solicitation, applicable regulations, and other applicable authorities were followed by the agency.

(End of provision)

-END OF SECTION-

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52.203-3	Gratuities	APR 1984
52.203-11	Certification And Disclosure Regarding Payments To Influence Certain Federal Transactions	SEP 2007
52.209-5	Certification Regarding Responsibility Matters	DEC 2008
52.222-38	Compliance With Veterans' Employment Reporting Requirements	DEC 2001
252.209-7001	Disclosure of Ownership or Control by the Government of a Terrorist Country	JAN 2009
252.247-7002	Revision of Prices	DEC 1991
252.247-7022	Representation Of Extent Of Transportation Of Supplies By Sea	AUG 1992

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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 provision _____ (insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization);

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

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

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

(End of clause)

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (FEB 2009)

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

(2) The small business size standard is $31.0 million.

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

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

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

(__) Paragraph (d) applies.

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

(c)(1) The following representations or certifications in ORCA are applicable to this solicitation as indicated:

(i) 52.203-2, Certificate of Independent Price Determination. This provision applies to solicitations when a firm-fixed-price contract or fixed-price contract with economic price adjustment is contemplated, unless--

(A) The acquisition is to be made under the simplified acquisition procedures in Part 13;

(B) The solicitation is a request for technical proposals under two-step sealed bidding procedures; or

(C) The solicitation is for utility services for which rates are set by law or regulation.

(ii) 52.203-11, Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions. This provision applies to solicitations expected to exceed $100,000.

(iii) 52.204-3, Taxpayer Identification. This provision applies to solicitations that do not include the clause at 52.204-7, Central Contractor Registration.

(iv) 52.204-5, Women-Owned Business (Other Than Small Business).This provision applies to solicitations that--

(A) Are not set aside for small business concerns;

(B) Exceed the simplified acquisition threshold; and

(C) Are for contracts that will be performed in the United States or its outlying areas.

(v) 52.209-5, Certification Regarding Responsibility Matters. This provision applies to solicitations where the contract value is expected to exceed the simplified acquisition threshold.

(vi) 52.214-14, Place of Performance--Sealed Bidding. This provision applies to invitations for bids except those in which the place of performance is specified by the Government.

(vii) 52.215-6, Place of Performance. This provision applies to solicitations unless the place of performance is specified by the Government.

(viii) 52.219-1, Small Business Program Representations (Basic & Alternate I). This provision applies to solicitations when the contract will be performed in the United States or its outlying areas.

(A) The basic provision applies when the solicitations are issued by other than DoD, NASA, and the Coast Guard.

(B) The provision with its Alternate I applies to solicitations issued by DoD, NASA, or the Coast Guard.

(ix) 52.219-2, Equal Low Bids. This provision applies to solicitations when contracting by sealed bidding and the contract will be performed in the United States or its outlying areas.

(x) 52.222-22, Previous Contracts and Compliance Reports. This provision applies to solicitations that include the clause at 52.222-26, Equal Opportunity.

(xi) 52.222-25, Affirmative Action Compliance. This provision applies to solicitations, other than those for construction, when the solicitation includes the clause at 52.222-26, Equal Opportunity.

(xii) 52.222-38, Compliance with Veterans' Employment Reporting Requirements. This provision applies to solicitations when it is anticipated the contract award will exceed the simplified acquisition threshold and the contract is not for acquisition of commercial items.

(xiii) 52.223-1, Biobased Product Certification. This provision applies to solicitations that require the delivery or specify the use of USDA-designated items; or include the clause at 52.223-2, Affirmative Procurement of Biobased Products Under Service and Construction Contracts.

(xiv) 52.223-4, Recovered Material Certification. This provision applies to solicitations that are for, or specify the use of, EPA-designated items.

(xv) 52.225-2, Buy American Act Certificate. This provision applies to solicitations containing the clause at 52.225-1.

(xvi) 52.225-4, Buy American Act--Free Trade Agreements—Israeli Trade Act Certificate. (Basic, Alternate I, and Alternate II) This provision applies to solicitations containing the clause at 52.225-3.

(A) If the acquisition value is less than $25,000, the basic provision applies.

(B) If the acquisition value is $25,000 or more but is less than $50,000, the provision with its Alternate I applies.

(C) If the acquisition value is $50,000 or more but is less than $67,826, the provision with its Alternate II applies.

(xvii) 52.225-6, Trade Agreements Certificate. This provision applies to solicitations containing the clause at 52.225-5.

(xviii) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan--Certification.

(xix) 52.226-2, Historically Black College or University and Minority Institution Representation. This provision applies to--

(A) Solicitations for research, studies, supplies, or services of the type normally acquired from higher educational institutions; and

(B) For DoD, NASA, and Coast Guard acquisitions, solicitations that contain the clause at 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns.

(2) The following certifications are applicable as indicated by the Contracting Officer:

(Contracting Officer check as appropriate.)

----(i) 52.219-19, Small Business Concern Representation for the Small Business Competitiveness Demonstration Program.

------(ii) 52.219-21, Small Business Size Representation for Targeted Industry Categories Under the Small Business Competitiveness Demonstration Program.

------(iii) 52.219-22, Small Disadvantaged Business Status.

------(A) Basic.

------(B) Alternate I.

------(iv) 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products.

------(v) 52.222-48, Exemption from Application of the Service Contract Act to Contracts for Maintenance, Calibration, or Repair of Certain Equipment Certification.

------(vi) 52.222-52 Exemption from Application of the Service Contract Act to Contracts for Certain Services--Certification.

------(vii) 52.223-9, with its Alternate I, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (Alternate I only).

------(viii) 52.223-13, Certification of Toxic Chemical Release Reporting.

------(ix) 52.227-6, Royalty Information.

------ (A) Basic.

------ (B) Alternate I.

------(x) 52.227-15, Representation of Limited Rights Data and Restricted Computer Software.

(d) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below (offeror to insert changes, identifying change by clause number, title, date). These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

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

(End of Provision)

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

The offeror represents that --

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

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

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

(End of provision)

52.233-2 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 Contracting Officer, US Army Corps of Engineers, House 1, Street 1, West Wazir Akbar Khan (behind Aman High School), Kabul Afghanistan.

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

(End of provision)

52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995)

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

(b) There will NOT BE AN OFFICIAL SITE VISIT SCHEDULED.

252.229-7001 TAX RELIEF (JUN 1997)

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

NAME OF TAX: (Offeror Insert) RATE (PERCENTAGE): (Offeror Insert)

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

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

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

(End of clause)

DBA FILL-IN

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

(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 and JCC-I/A contractors and subcontractors at a contracted fixed rate. The fixed rates for this insurance are as follows:

Service $4.00 per $100 of employee remuneration
Construction $7.50 per $100 of employee remuneration
Aviation $20.00 per $100 of employee remuneration
Security $12.50 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 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 $4.00/$100 or 4%

(3) Total DBA Cost: _____
(Amount of DBA Premium) Ex:: $100 K multiplied by 4% is $4,000.00

(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 Ramoan Jones, (703) 813-6571 ramoan.jones@rutherfoord.com. The alternate POC is Sara Payne, Senior Vice President, (703) 813-6503 sara.payne@rutherfoord.com.

-END OF SECTION-

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2007
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-6	Data Universal Numbering System (DUNS) Number	APR 2008
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.214-34	Submission Of Offers In The English Language	APR 1991
52.214-35	Submission Of Offers In U.S. Currency	APR 1991
52.215-2	Audit and Records--Negotiation	MAR 2009
52.215-13	Subcontractor Cost or Pricing Data--Modifications	OCT 1997
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions	JUL 2005
52.215-19	Notification of Ownership Changes	OCT 1997
52.215-20	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data	OCT 1997
52.217-4	Evaluation Of Options Exercised At The Time Of Contract Award	JUN 1988
52.217-5	Evaluation Of Options	JUL 1990
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	MAR 2007
52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999
52.222-29	Notification Of Visa Denial	JUN 2003
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-50	Combating Trafficking in Persons	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
52.227-4	Patent Indemnity-Construction Contracts	DEC 2007
52.229-6	Taxes--Foreign Fixed-Price Contracts	JUN 2003
52.230-1	Cost Accounting Standards Notices And Certification	OCT 2008
52.232-5	Payments under Fixed-Price Construction Contracts	SEP 2002

52.232-17	Interest	OCT 2008
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
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13 Alt I	Accident Prevention (Nov 1991) - Alternate I	NOV 1991
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-17	Layout of Work	APR 1984
52.236-21 Alt I	Specifications and Drawings for Construction (Feb 1997) - Alternate I	APR 1984
52.236-23	Responsibility of the Architect-Engineer Contractor	APR 1984
52.236-24	Work Oversight in Architect-Engineer Contracts	APR 1984
52.236-26	Preconstruction Conference	FEB 1995
52.236-27	Site Visit (Construction)	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-4	Changes	JUN 2007
52.243-6	Change Order Accounting	APR 1984
52.244-4	Subcontractors and Outside Associates and Consultants (Architect-Engineer Services)	AUG 1998
52.244-5	Competition In Subcontracting	DEC 1996
52.246-21	Warranty of Construction	MAR 1994
52.247-31	F.O.B. Origin, Freight Allowed	FEB 2006
52.247-34	F.O.B. Destination	NOV 1991
52.247-63	Preference For U.S. Flag Air Carriers	JUN 2003
52.248-3	Value Engineering-Construction	SEP 2006
52.249-2 Alt I	Termination for Convenience of the Government (Fixed-Price) (May 2004) - Alternate I	SEP 1996
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2008
252.204-7001	Commercial And Government Entity (CAGE) Code Reporting	AUG 1999
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	SEP 2007
252.204-7006	Billing Instructions	OCT 2005
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.215-7000	Pricing Adjustments	DEC 1991
252.215-7002	Cost Estimating System Requirements	DEC 2006
252.222-7002	Compliance With Local Labor Laws (Overseas)	JUN 1997

252.223-7003	Changes In Place Of Performance--Ammunition And Explosives	DEC 1991
252.223-7004	Drug Free Work Force	SEP 1988
252.227-7013	Rights in Technical Data--Noncommercial Items	NOV 1995
252.227-7022	Government Rights (Unlimited)	MAR 1979
252.231-7000	Supplemental Cost Principles	DEC 1991

CLAUSES INCORPORATED BY FULL TEXT

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

(a) The offeror certifies that --

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

(i) Those prices,

(ii) The intention to submit an offer, or

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

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

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

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

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

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this 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)

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)

52.217-6 OPTION FOR INCREASED QUANTITY (MAR 1989)

The Government may increase the quantity of supplies called for in the Schedule at the unit price specified. The Contracting Officer may exercise the option by written notice to the Contractor within 120 days after the NTP. Delivery of the added items shall continue at the same rate as the like items called for under the contract, unless the parties otherwise agree.

(End of clause)

52.217-7 OPTION FOR INCREASED QUANTITY--SEPARATELY PRICED LINE ITEM (MAR 1989)

The Government may require the delivery of the numbered line item, identified in the Schedule as an option item, in the quantity and at the price stated in the Schedule. The Contracting Officer may exercise the option by written notice to the Contractor within 120 days after NTP. Delivery of added items shall continue at the same rate that like items are called for under the contract, unless the parties otherwise agree.

(End of clause)

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

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

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade

Please contact the Office of Federal Contract Compliance Programs as appropriate	Please contact the Office of Federal Contract Compliance Programs as appropriate

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

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

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

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

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

(3) Estimated dollar amount of the subcontract;

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

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

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

(End of provision)

52.232-18 AVAILABILITY OF FUNDS (APR 1984)

Funds are not presently available for this contract. The Government's obligation under this contract is contingent upon the availability of appropriated funds from which payment for contract purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the Contracting Officer for this contract and until the Contractor receives notice of such availability, to be confirmed in writing by the

Contracting Officer.

(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 20% percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

(End of clause)

52.252-1 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):

www.arnet.gov or www.farsite.hill.af.mil

(End of provision)

252.225-7040 CONTRACTOR PERSONNEL AUTHORIZED TO ACCOMPANY U.S. ARMED FORCES DEPLOYED OUTSIDE THE UNITED STATES (JUL 2009)

(a) Definitions. As used in this clause--Combatant Commander means the commander of a unified or specified combatant command established in accordance with 10 U.S.C. 161.

Designated operational area means a geographic area designated by the combatant commander or subordinate joint force commander for the conduct or support of specified military operations.

Law of war means that part of international law that regulates the conduct of armed hostilities. The law of war encompasses all international law for the conduct of hostilities binding on the United States or its individual citizens, including treaties and international agreements to which the United States is a party, and applicable customary international law.

Subordinate joint force commander means a sub-unified commander or joint task force commander.

(b) General.

(1) This clause applies when Contractor personnel are authorized to accompany U.S. Armed Forces deployed outside the United States in--

(i) Contingency operations;

(ii) Humanitarian or peacekeeping operations; or

(iii) Other military operations or military exercises, when designated by the Combatant Commander.

(2) Contract performance in support of U.S. Armed Forces deployed outside the United States 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 accompanying the U.S. Armed Forces.

(i) Except as provided in paragraph (b)(3)(ii) 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 such force reasonably appears necessary to execute their security mission to protect assets/persons, consistent with the terms and conditions contained in their contract or with their job description and terms of employment.

(iii) Unless immune from host nation jurisdiction by virtue of an international agreement or international law, inappropriate use of force by contractor personnel authorized to accompany the U.S. Armed Forces can subject such personnel to United States or host nation prosecution and civil liability (see paragraphs (d) and (j)(3) of this clause).

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

(c) Support. (1)(i) The Combatant Commander will develop a security plan for protection of Contractor personnel in locations where there is not sufficient or legitimate civil authority, when the Combatant Commander decides it is in the interests of the Government to provide security because--

(A) The Contractor cannot obtain effective security services;

(B) Effective security services are unavailable at a reasonable cost; or

(C) Threat conditions necessitate security through military means.

(ii) The Contracting Officer shall include in the contract the level of protection to be provided to Contractor personnel.

(iii) In appropriate cases, the Combatant Commander may provide security through military means, commensurate with the level of security provided DoD civilians.

(2)(i) Generally, all Contractor personnel authorized to accompany the U.S. Armed Forces in the designated operational area are authorized to receive resuscitative care, stabilization, hospitalization at level III military treatment facilities, and assistance with patient movement in emergencies where loss of life, limb, or eyesight could occur. Hospitalization will be limited to stabilization and short-term medical treatment with an emphasis on return to duty or placement in the patient movement system.

(ii) When the Government provides medical treatment or transportation of Contractor personnel to a selected civilian facility, the Contractor shall ensure that the Government is reimbursed for any costs associated with such treatment or transportation.

(iii) Medical or dental care beyond this standard is not authorized unless specified elsewhere in this contract.

(3) Unless specified elsewhere in this contract, the Contractor is responsible for all other support required for its personnel engaged in the designated operational area under this contract.

(4) Contractor personnel must have a letter of authorization issued by the Contracting Officer in order to process through a deployment center or to travel to, from, or within the designated operational area. The letter of authorization also will identify any additional authorizations, privileges, or Government support that Contractor personnel are entitled to under this contract.

(d) Compliance with laws and regulations. (1) The Contractor shall comply with, and shall ensure that its personnel authorized to accompany U.S. Armed Forces deployed outside the United States as specified in paragraph (b)(1) of this clause are familiar with and comply with, all applicable--

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

(ii) Provisions of the law of war, as well as any other applicable treaties and international agreements;

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

(iv) Orders, directives, and instructions issued by the Combatant Commander, including those relating to force protection, security, health, safety, or relations and interaction with local nationals.

(2) The Contractor shall institute and implement an effective program to prevent violations of the law of war by its employees and subcontractors, including law of war training in accordance with paragraph (e)(1)(vii) of this clause.

(e) Pre-deployment requirements.

(1) The Contractor shall ensure that the following requirements are met prior to deploying personnel authorized to accompany U.S. Armed Forces. Specific requirements for each category may be specified in the statement of work or elsewhere in the contract.

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

(ii) All deploying personnel meet the minimum medical screening requirements and have received all required immunizations as specified in the contract. The Government will provide, at no cost to the Contractor, any theater-specific immunizations and/or medications not available to the general public.

(iii) Deploying personnel have all necessary passports, visas, and other documents required to enter and exit a designated operational area and have a Geneva Conventions identification card, or other appropriate DoD identity credential, from the deployment center. Any Common Access Card issued to deploying personnel shall contain the access permissions allowed by the letter of authorization issued in accordance with paragraph (c)(4) of this clause.

(iv) Special area, country, and theater clearance is obtained for personnel. Clearance requirements are in DoD Directive 4500.54, Official Temporary Duty Abroad, and DoD 4500.54-G, DoD Foreign Clearance Guide. Contractor personnel are considered non-DoD personnel traveling under DoD sponsorship.

(v) All personnel have received personal security training. At a minimum, the training shall--

(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 have received isolated personnel training, if specified in the contract, in accordance with DoD Instruction 1300.23, Isolated Personnel Training for DoD Civilian and Contractors.

(vii) Personnel have received law of war training as follows:

(A) Basic training is required for all Contractor personnel authorized to accompany U.S. Armed Forces deployed outside the United States. The basic training will be provided through--

(1) A military-run training center; or

(2) A Web-based source, if specified in the contract or approved by the Contracting Officer.

(B) Advanced training, commensurate with their duties and responsibilities, may be required for some Contractor personnel as specified in the contract.

(2) The Contractor shall notify all personnel who are not a host country national, or who are not 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 in accordance with the Military Extraterritorial Jurisdiction Act of 2000 (18 U.S.C. 3621, 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 war crime 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 U.S. diplomatic, consular, military or other U.S. Government missions outside the United States (18 U.S.C. 7(9)); and

(iv) In time of declared war or a contingency operation, Contractor personnel authorized to accompany U.S. Armed Forces in the field are subject to the jurisdiction of the Uniform Code of Military Justice under 10 U.S.C. 802(a)(10).

(f) Processing and departure points. Deployed Contractor personnel shall--

(1) Process through the deployment center designated in the contract, or as otherwise directed by the Contracting Officer, prior to deploying. The deployment center will conduct deployment processing to ensure visibility and

accountability of Contractor personnel and to ensure that all deployment requirements are met, including the requirements specified in paragraph (e)(1) of this clause;

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

(3) Process through a Joint Reception Center (JRC) upon arrival at the deployed location. The JRC will validate personnel accountability, ensure that specific designated operational area entrance requirements are met, and brief Contractor personnel on theater-specific policies and procedures.

(g) Personnel data.

(1) The Contractor shall enter before deployment and maintain data for all Contractor personnel that are authorized to accompany U.S. Armed Forces deployed outside the United States as specified in paragraph (b)(1) of this clause. The Contractor shall use the Synchronized Pre-deployment and Operational Tracker (SPOT) web-based system, at http://www.dod.mil/bta/products/spot.html, to enter and maintain the data.

(2) The Contractor shall ensure that all employees 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 this data card.

(h) Contractor personnel.

(1) The Contracting Officer may direct the Contractor, at its own expense, to remove and replace any Contractor personnel who jeopardize or interfere with mission accomplishment or 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 the Termination for Default clause.

(2) The Contractor shall have a plan on file showing how the Contractor would replace employees who are unavailable for deployment or who need to be replaced during deployment. The Contractor shall keep this plan current and shall provide a copy to the Contracting Officer upon request. The plan shall--

(i) Identify all personnel who are subject to military mobilization;

(ii) Detail how the position would be filled if the individual were mobilized; and

(iii) Identify all personnel who occupy a position that the Contracting Officer has designated as mission essential.

(3) Contractor personnel shall report to the Combatant Commander or a designee, or through other channels such as the military police, a judge advocate, or an inspector general, any suspected or alleged conduct for which there is credible information that such conduct--

(i) Constitutes violation of the law of war; or

(ii) Occurred during any other military operations and would constitute a violation of the law of war if it occurred during an armed conflict.

(i) Military clothing and protective equipment.

(1) Contractor personnel are prohibited from wearing military clothing unless specifically authorized in writing by the Combatant Commander. If authorized to wear military clothing, Contractor personnel must--

(i) Wear distinctive patches, arm bands, nametags, or headgear, in order to be distinguishable from military personnel, consistent with force protection measures; and

(ii) Carry the written authorization with them at all times.

(2) Contractor personnel may wear military-unique organizational clothing and individual equipment (OCIE) required for safety and security, such as ballistic, nuclear, biological, or chemical protective equipment.

(3) The deployment center, or the Combatant Commander, shall issue OCIE and shall provide training, if necessary, to ensure the safety and security of Contractor personnel.

(4) The Contractor shall ensure that all issued OCIE is returned to the point of issue, unless otherwise directed by the Contracting Officer.

(j) Weapons.

(1) If the Contractor requests that its personnel performing in the designated operational area be authorized to carry weapons, the request shall be made through the Contracting Officer to the Combatant Commander, in accordance with DoD Instruction 3020.41, paragraph 6.3.4.1 or, if the contract is for security services, paragraph 6.3.5.3. The Combatant Commander will determine whether to authorize in-theater Contractor personnel to carry weapons and what weapons and ammunition will be allowed.

(2) If the Contracting Officer, subject to the approval of the Combatant Commander, authorizes the carrying of weapons--

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

(ii) The Regional Security Officer may issue Government-furnished weapons and ammunition to the Contractor for issuance to specified Contractor employees.

(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 Combatant Commander; and

(C) In compliance with applicable 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 Combatant Commander regarding possession, use, safety, and accountability of weapons and ammunition.

(4) 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.

(5) Upon redeployment or revocation by the Combatant Commander of the Contractor's authorization to issue firearms, the Contractor shall ensure that all Government-issued weapons and unexpended ammunition are returned as directed by the Contracting Officer.

(k) Vehicle or equipment licenses. Contractor personnel shall possess the required licenses to operate all vehicles or equipment necessary to perform the contract in the designated operational area.

(l) Purchase of scarce goods and services. If the Combatant Commander has established an organization for the designated operational area whose function is to determine that certain items are scarce goods or services, the Contractor shall coordinate with that organization local purchases of goods and services designated as scarce, in accordance with instructions provided by the Contracting Officer.

(m) Evacuation.

(1) If the Combatant Commander orders a mandatory evacuation of some or all personnel, the Government will provide assistance, to the extent available, to United States and third country national Contractor personnel.

(2) In the event of a non-mandatory evacuation order, unless authorized in writing by the Contracting Officer, the Contractor shall maintain personnel on location sufficient to meet obligations under this contract.

(n) Next of kin notification and personnel recovery.

(1) The Contractor shall be responsible for notification of the employee-designated next of kin in the event an employee dies, requires evacuation due to an injury, or is isolated, missing, detained, captured, or abducted.

(2) In the case of isolated, missing, detained, captured, or abducted Contractor personnel, the Government will assist in personnel recovery actions in accordance with DoD Directive 3002.01E, Personnel Recovery in the Department of Defense.

(o) Mortuary affairs. Mortuary affairs for Contractor personnel who die while accompanying the U.S. Armed Forces will be handled in accordance with DoD Directive 1300.22, Mortuary Affairs Policy.

(p) 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 the place of performance or Government-furnished facilities, equipment, material, services, or site. Any change order issued in accordance with this paragraph (p) shall be subject to the provisions of the Changes clause of this contract.

(q) Subcontracts. The Contractor shall incorporate the substance of this clause, including this paragraph (q), in all subcontracts when subcontractor personnel are authorized to accompany U.S. Armed Forces deployed outside the United States in--

(1) Contingency operations;

(2) Humanitarian or peacekeeping operations; or

(3) Other military operations or military exercises, when designated by the Combatant Commander.

(End of clause)

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

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

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

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

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

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

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

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

(1) A foreign government;

(2) A representative of a foreign government; or

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

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

(End of clause)

-END OF SECTION-

AI 22.1705-100
PROHIBITION AGAINST HUMAN TRAFFICKING, INHUMANE LIVING CONDITIONS, AND WITHHOLDING OF EMPLOYEE PASSPORTS (MAR 2009)

(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, when the person is or has been a victim of a severe form of trafficking in persons.
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(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 laws regarding transit/exit/entry procedures, and the requirements for work visas. Contractors shall follow all Host Country entry and exit requirements.
(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.

(End of Requirement)

AI 23.1000-100
REPORTING KIDNAPPINGS, SERIOUS INJURIES AND DEATHS (MAR 2009)

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:

(End of Requirement)

AI 25.1103-101
ARMING REQUIREMENTS AND PROCEDURES FOR PERSONAL SECURITY SERVICES CONTRACTORS AND FOR REQUESTS FOR PERSONAL PROTECTION (MAR 2009)

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, Multi-National Force Commander and Multi-National Corps Commander orders, instructions and directives. Contractors will ensure that all employees, including employees at any tier of subcontracting relationships, armed under the provisions of this contract, comply with the contents of this clause and with the requirements set forth in the following:
DODI 3020.41, *Program Management for Acquisition and Operational Contract Support in Contingency Operations*;
DFARS 252.225-7040, *Contractor Personnel Supporting a Force Deployed Outside the United States*;
Class Deviation 2007-O0010, Contractor Personnel in the United States Central Command Area of Responsibility
CPA Order #17, *Registration Requirements for Private Security Companies*, dated 27 Jun 04;
U.S. CENTCOM Policy Letter, Mod 1, *Personal Protection and Contract Security Service Arming*, dated 7 Nov 2006
Required Government Documentation. The unit requesting the contractor security shall provide a description of the following to the arming approval authority and to the contracting officer:
The specific location where the PSC will operate;
The persons and/or property that require protection;
The anticipated threat;
The required weapon types; and
The reason current security/police forces are inadequate.

Required Contractor Documentation. Contractors and their subcontractors at all tiers that require arming approval shall provide the following to the contracting officer representative (COR):

Documentation that each employee who will be armed under the contract received the following training—

Weapons Qualification/Familiarization. All employees must meet the qualification requirements 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.

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.

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

One (1) copy of an operating license (or a temporary operating license) from the Ministry of Interior;

A communications plan that, at a minimum, sets forth the following:

The contractor's method of notifying military forces and requesting assistance where hostilities arise or combat action is needed;

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

How the contractor will coordinate transportation with appropriate military authorities.

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):

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;

Verify with MNC-I or Afghanistan RCE – CG Provost Marshal that no employee has been barred by any commander within Iraq or Afghanistan; and

Certify, after completing all checks, that all persons armed under this contract are not prohibited under U.S. law from possessing a weapon or ammunition.

Required Contractor Acknowledgements. Contractors and their subcontractors at all tiers that require arming approval will provide written acknowledgement of the following to the COR:

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 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.

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 U.S. and Host Nation prosecution and civil liability. "Host Nation" refers to the nation or nations where services under this contract are performed.

Lapses in Training. Failure to successfully retrain an employee who is 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 to the contractor and will remain unarmed until such time as they are retrained and the COR determines that the retraining is sufficient.

Authorized Weapon & Ammunition Types. Unless DCDRUSCENTCOM (or a designee) 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. 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:

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

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

U.S. government Ball ammunition is the standard approved ammunition.

Requirements for Individual Weapons Possession. All employees of the contractor and its subcontractors at all tiers who are armed under this contract must:

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

Carry weapons only when on duty or at a specific post;

Not conceal any weapons, unless specifically authorized;

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

IAW USCENTCOM G.O. #1, consumption of alcohol in Iraq or Afghanistan is prohibited. In the event of a suspension or and exception to G.O. #1, employees shall not consume any alcoholic beverage while armed or within eight (8) hours of the next work period where they will be armed.

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.

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. 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:

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

Failing to cooperate with Coalition and Host Nation forces;

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

Failing to use a graduated force approach;

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

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

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.
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.
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:
The total number of armed civilians and contractors;
The names and contact information of its subcontractors at all tiers; and
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 (c)(5).

(End of Requirement)

AI 25.1103-104
COMPLIANCE WITH LAWS AND REGULATIONS (MAR 2009)

(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 Operations (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.

(End of Requirement)

AI 25.1103-109
MEDICAL SCREENING AND VACCINATION REQUIREMENTS FOR LOCALLY HIRED EMPLOYEES (MAR 2009)

(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, and U.S. employees, working on military have been screened for and do not currently have active tuberculosis (TB).
(1) Contractors may utilize a testing method of either a chest x-ray or TB skin test (TST).
(i) Chest x-rays shall be taken and TBTs administered within 90 days prior to the start of employment.
(ii) Screening may be performed either by a licensed medical provider from the local economy or by contractors' licensed medical staffs. Contractors shall maintain medical screening documentation and make it available to the Contracting Officer upon request.
(2) TB screening documentation will be required by the responsible Base Defense Operations Center (BDOC) prior to issuance of base access badges.
(b) Contractor employees, including subcontractors at any tier, who work in positions where they are working with food or water production and distribution shall have current Typhoid and Hepatitis "A" (full series) vaccinations, in addition to the TB tests required above.
(a) At least the first inoculation in the Hepatitis "A" series must be given prior to the start of employment, with continuation and completion of the inoculation series. The Typhoid inoculation must be completed within two years prior to the date of employment in the food and water service capacity.
(i) Once the complete Hepatitis "A" vaccination series is completed, it does not have to be repeated. The Typhoid vaccination requires a booster immunization every three years.
(ii) Proof of individual employee vaccinations shall be provided to the Contracting Officer and maintained by the Contractor for examination by the Contracting Officer.

(End of Requirement)

AI 25.1103-2
ARMED PERSONNEL INCIDENT REPORTS (MAR 2009)

(a) All contractors and subcontractors in the Multi-National Forces-Iraq (MNF-I) or Combined Joint Task Force (Afghanistan) theater of operations shall comply with and shall ensure that their personnel supporting MNF-I or CJTF forces are familiar with and comply with all applicable orders, directives, and instructions issued by the respective

MNF-I or CJTF Commanders relating to force protection and safety.
(b) **IRAQ**: Contractors shall provide all incidents and use of weapons firing incidents to the MNC-I Contractor Operations Cell (CONOC) as soon as practical, based upon the situation, and submit a written report to CONOC within 4 hours. The initial report shall include the name of the company, location of the incident, time when the incident occurred, a brief description of the events leading up to the incident, and a company point of contact. A follow-up, comprehensive written report shall be provided to the CONOC within 96 hours of the incident. Reports shall be submitted to CONOC at: mncic3conoc@iraq.centcom.mil;, DSN 318-435-2369; Iraqna 0044 203 286 9851 or 0044 203 239 5894; or Skype: MNCICONOC.
(c) **AFGHANISTAN**: Contractors shall report all incidents and use of weapons through their Contracting Officers who will notify the JOC Watch at Bagram AB. (JOC SHIFT DIRECTOR, DSN: 318-431-4116; SVOIP: 431-7108) 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 JOC Watch duty officer 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/JOC Watch.

(End of Requirement)

AI 25.1103-103
FITNESS FOR DUTY AND MEDICAL/DENTAL CARE LIMITATIONS (MAR 2009)

(1) The contractor shall perform the requirements of this contract notwithstanding the fitness for duty of deployed employees, the provisions for care offered under this section, and redeployment of individuals determined to be unfit. The contractor bears the responsibility for ensuring all employees are aware of the conditions and medical treatment available at the performance. The contractor shall include this information and requirement in all subcontracts with performance in the theater of operations.
(2) 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 protectives and antidotes; diabetes mellitus, Type I or II, on pharmacological therapy; symptomatic coronary artery disease, or with myocardial infarction within one year prior to deployment, or within six months of coronary artery bypass graft, coronary artery angioplasty, or stenting; morbid obesity (BMI >/= 40); dysrhythmias or arrhythmias, either symptomatic or requiring medical or electrophysiologic control; uncontrolled hypertension, current heart failure, or automatic implantable defibrillator; therapeutic anticoagulation; malignancy, newly diagnosed or under current treatment, or recently diagnosed/treated and requiring frequent subspecialist surveillance, examination, and/or

laboratory testing; dental or oral conditions requiring or likely to require urgent dental care within six months' time, active orthodontic care, conditions requiring prosthodontic care, conditions with immediate restorative dentistry needs, conditions with a current requirement for oral-maxillofacial surgery; new onset (< 1 year) seizure disorder, or seizure within one year prior to deployment; history of heat stroke; Meniere's Disease or other vertiginous/motion sickness disorder, unless well controlled on medications available in theater; recurrent syncope, ataxias, new diagnosis (< 1year) of mood disorder, thought disorder, anxiety, somotoform, or dissociative disorder, or personality disorder with mood or thought manifestations; unrepaired hernia; tracheostomy or aphonia; renalithiasis, current; active tuberculosis; pregnancy; unclosed surgical defect, such as external fixeter placement; requirement for medical devices using AC power; HIV antibody positivity; psychotic and bipolar disorders. (Reference: Mod 8 to USCENTCOM Individual Protection and Individual/Unit Deployment Policy, PPG-Tab A: Amplification of the Minimal Standards of Fitness for Deployment to the CENTCOM AOR).
(3) In accordance with military directives (DoDI 3020.41, DoDI 6000.11, CFC FRAGO 09-1038, DoD PGI 225.74), resuscitative care, stabilization, hospitalization at Level III (emergency) military treatment facilities and assistance with patient movement in emergencies where loss of life, limb or eyesight could occur will be provided. Hospitalization will be limited to emergency stabilization and short-term medical treatment with an emphasis on return to duty or placement in the patient movement system. Subject to availability at the time of need, a medical treatment facility may provide reimbursable treatment for emergency medical or dental care such as broken bones, lacerations, broken teeth or lost fillings.
(4) 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.
(5) Notwithstanding any other provision of the contract, the contractor shall be liable for any and all medically-related services or transportation rendered. In accordance with OUSD(C) Memorandum dated 4 June 2008, the following reimbursement rates will be charged for services at all DoD deployed medical facilities. These rates are in effect until changed by DoD direction.
(a) Inpatient daily rate: $2,041.00. Date of discharge is not billed unless the patient is admitted to the hospital and discharged the same day.
(b) Outpatient visit rate: $195.00. This includes diagnostic imaging, laboratory, pathology, and pharmacy provided at the medical facility.

(End of Requirement)

AI 25.1103-105
MONTHLY CONTRACTOR CENSUS REPORTING (MAR 2009)

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 Predeployment & Operational Tracker (SPOT) IAW DFARS 252.225-7040 or DFARS DOD class deviation 2007-O0010.

(End of Requirement)

AI 25.1103-110
CONTRACTOR EMPLOYEE LEGAL REQUIREMENTS (MAR 2009)

(a) The contractor shall not employ, nor allow a subcontractor to employ, any person that has ever been convicted, in any U.S. court, including a court-martial, of any crime against an Iraqi and/or an Afghan national, regardless of the place at which the crime occurred.
(b) For the purpose of this clause, "crime" is defined as: "a violation of a law in which there is injury to the public or a member of the public and a term in jail or prison, and/or a fine as possible penalties." Further, the crime must be an offense that could be classified as a Class B misdemeanor, or any higher class up to a Class A felony, as referenced at 18 USC §3559.
(c) Contractors shall exercise effective screening processes to ensure that individuals not conforming to this standard are identified and prohibited from, or removed from (if already employed) working under this contract.
(d) Contractor employees discovered to have one of more prior convictions as described above shall be removed from the contract at the contractor's expense.
(e) Failure to adhere to the requirements of this clause could result in a termination for cause or termination for default, in accordance with the terms and conditions of this contract.

(End of Requirement)

AI 36.521-100
ELECTRICAL AND STRUCTURAL BUILDING STANDARDS FOR CONSTRUCTION PROJECTS (MAR 2009)

(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) National Electrical Code (NEC),
(3) the American National Standards Institute (ANSI) C2, and
(4) the 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

(End of Requirement)

WORKERS COMPENSATION INSURANCE (DEFENSE BASE ACT) - CONSTRUCTION (OCT 2008)
(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 selfinsurance
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 rate under the USACE and JCC-I/A contract is **$7.50 per $100 of compensation for construction.**
(c) 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.
(d) Should the rates for DBA insurance coverage increase or decrease during the performance of this contract, USACE shall modify the contract accordingly. However, the revised rates will not be applicable until the Contractor's or Subcontractor's DBA Insurance policy is due to be renewed.
(e) Premiums will be reimbursed only if coverage is purchased through the USACE mandatory requirements DBA contract administered by CNA Insurance and their Managing Broker, Rutherfoord International.
(f) 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 breech and could cause your contract to be terminated for default/cause.

(End of Requirement)

-END OF SECTION-

CLAUSES INCORPORATED BY REFERENCE

52.211-13	Time Extensions	SEP 2000
52.236-4	Physical Data	APR 1984
52.246-12	Inspection of Construction	AUG 1996
252.227-7023	Drawings and Other Data to become Property of Government	MAR 1979
252.227-7030	Technical Data--Withholding Of Payment	MAR 2000
252.227-7033	Rights in Shop Drawings	APR 1966

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 **7** calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than **420 CALENDAR DAY**S after the NTP. 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 **$1,556.00** 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)

252.225-7044 BALANCE OF PAYMENTS PROGRAM--CONSTRUCTION MATERIAL (JAN 2009)

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

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

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

(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.

“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.

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

(b) Domestic preference. This clause implements the Balance of Payments Program by providing a preference for domestic construction material. The Contractor shall use only domestic 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; or

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

Excavation and Fill, Sand, Aggregate, Asphalt, Cement, Fired Brick, Concrete Masonry Units, Stone, Fuel, Windows and Glass, Doors and Hardware, Terrazzo Flooring, Vinyl Flooring, Paint, Plumbing, Heating, Electrical.

(End of clause)

252.232-7003 ELECTRONIC SUBMISSION OF PAYMENT REQUESTS AND RECEIVING REPORTS (MAR 2008)

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

(1) Contract financing payment and invoice payment have the meanings given in section 32.001 of the Federal Acquisition Regulation.

(2) Electronic form means any automated system that transmits information electronically from the initiating system to all affected systems. Facsimile, e-mail, and scanned documents are not acceptable electronic forms for submission of payment requests. However, scanned documents are acceptable when they are part of a submission of a payment request made using Wide Area WorkFlow (WAWF) or another electronic form authorized by the Contracting Officer.

(3) Payment request means any request for contract financing payment or invoice payment submitted by the Contractor under this contract.

(b) Except as provided in paragraph (c) of this clause, the Contractor shall submit payment requests and receiving reports using WAWF, in one of the following electronic formats that WAWF accepts: Electronic Data Interchange, Secure File Transfer Protocol, or World Wide Web input. Information regarding WAWF is available on the Internet at https://wawf.eb.mil/.

(c) The Contractor may submit a payment request and receiving report using other than WAWF only when--

(1) The Contracting Officer authorizes use of another electronic form. With such an authorization, the Contractor and the Contracting Officer shall agree to a plan, which shall include a timeline, specifying when the Contractor will transfer to WAWF;

(2) DoD is unable to receive a payment request or provide acceptance in electronic form;

(3) The Contracting Officer administering the contract for payment has determined, in writing, that electronic submission would be unduly burdensome to the Contractor. In such cases, the Contractor shall include a copy of the Contracting Officer's determination with each request for payment; or

(4) DoD makes payment for commercial transportation services provided under a Government rate tender or a contract for transportation services using a DoD-approved electronic third party payment system or other exempted vendor payment/invoicing system (e.g., Power Track, Transportation Financial Management System, and Cargo and Billing System).

(d) The Contractor shall submit any non-electronic payment requests using the method or methods specified in Section G of the contract.

(e) In addition to the requirements of this clause, the Contractor shall meet the requirements of the appropriate payment clauses in this contract when submitting payments requests.

(End of clause)

-END OF SECTION-

SECTION 00150

THE DESIGN/BUILD PROCESS

PART 1 - GENERAL

1. DESIGN/BUILD (DB) PROCESS

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

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

2. OUTLINE DESCRIPTION OF THE DB PHASE

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

2.1 PROPOSAL PHASE

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

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

2.2 DESIGN PHASE

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

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

a. Part 1 will be the basic services required to develop the first submittal which represents: 100% complete drawings and specifications for site preparation work, utility construction, paving, foundation, and structural diaphragm of all work and approximately 35% complete drawings and specifications of all other required construction documents.

After approval of the Part 1 drawings and specification submittal, the Government may issue a Clearance for Construction letter to commence with the Build Phase for all site and off-site utilities, clearing, grubbing, rough grading the site, demolition work, parking lot base course, foundation, and structural framing.

A Pre-design meeting will be conducted to distribute as-built drawings to the DB contractor, finalize and clarify technical information, and clarify other necessary information.

b. Part 2 shall include all design services required to complete the second design submittal: 100% complete drawings and specifications for site preparation work, utility construction, paving, foundation, and structural diaphragm of all work and approximately 65% complete drawings and specifications of all other required construction documents. Part 2 design shall not begin until an approval of the Part 1 submittal is issued.

c. Part 3 shall include all design services required to complete the third design submittal (100%). Part 3 design shall not begin until an approval of the Part 2 submittal is issued.

3. BUILD PHASE

The Build Phase will be initiated by an authorization letter.

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

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

4. 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. Prospective offerors shall be required to submit a complete schedule for design and construction that meets or exceeds the overall time goals of the Government for this project.

Notice to Proceed	following Award of Contract (upon written notification)
Design Phase - Basic Services Pre-design Meeting	within 7 days from Award of Contract
Design Submittal Due	within 30 days following Award of Contract
Submittal Review Conference ***(location TBD)***	within 7 days following submittal review
Incorporate Changes to Submittal (Re-Submit for Review and Approval	within 7 days following review conference

100% design submittal)

Build Phase Authorization for Remainder of Work	Upon approval of design submittal
Total Design and Construction Period	420 days (performance period includes design and construction phases)

4. LIQUIDATED DAMAGES:

Liquidated damages in the amount of **$1,566.00** every calendar day of delay shall be assessed and charged to the Contractor.

All days are in calendar days.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

-END OF SECTION-

SECTION 00555

DESIGN CONCEPT DOCUMENTS

PART 1 GENERAL

1.1 GENREAL

This section identifies documents issued with this RFP 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.

1.2 ENGINEERING AND DESIGN CRITERIA

General design requirements are set forth in this RFP herein. The Specification 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 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.

1.3 APPENDIX DOCUMENTS

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

1.4 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 Design Build 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 during the Second Design Submittal of the Design Phase, Part II.

1.5 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. Contract Award Document and referenced publications therein.
2. Written requirements supersede drawings.

1.6 MANDATORY CRITERIA

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

Work Plan
Boundary survey plan
Topographic survey plan- Not Required
Any mandatory criteria referenced within Project Program.
Any other criteria listed herein which is listed, shown or implied as mandatory.

1.7 ADDITIONAL DOCUMENTS/CRITERIA FURNISHED BY THE GOVERNMENT

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

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

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

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

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-END OF SECTION-

SECTION 01010

SCOPE OF WORK

GENERAL

The project consists of the design and construction of a new campus facility for the Afghanistan National Army, Regional Military Training Center at Shindand Airfield, Afghanistan. Site is located to the northwest of the existing runway as shown in Appendix A. The project is defined as the design, material, labor, and equipment to construct buildings, parking, utilities and other infrastructure for a design population of 3,000 personnel. The work within this contract shall meet and be constructed in accordance with current U.S. design and International Building Codes (IBC), Life Safety Codes (NFPA-101), Force Protection and security standards. A partial listing of references is included herein:

IBC, International Building Codes 2006
NFPA 101, Life Safety Codes
UFC 4-010-01, DoD Minimum Anti-Terrorism Standards for Buildings.

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.

SUBMITTALS

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

COST ESTIMATE

The contractor shall prepare a parametric construction cost estimate for AED Engineering data collection purposes. The contractor shall prepare a thorough, well-supported, estimate reflecting the final design features, construction schedule and conditions, and any construction phasing requirements. The cost estimate shall be submitted as part of the 35%, 99% and Final design submittals.

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.

ELECTRICAL WORKERS QUALIFICATIONS

Electrical work shall be performed by Qualified Personnel 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.

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 Afghanistan Engineer District, US of the Army Corps of Engineers.

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.

LOCATION

The site is located in Herat Province, Afghanistan, as shown below .

Corner 1	33.410278 N	62.247778 E
Corner 2	33.406944 N	62.250556 E
Corner 3	33.404167 N	62.247222 E
Corner 4	33.407500 N	62.261111 E

UNEXPLODED ORDNANCE (UXO)

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

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

Mohammad Sediq, Chief of Operations,

Email: sediq@unmaca.org
Cell: +93 070 295207

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

NOTE 2: The contractor should be aware that many areas demined by NGOs and other groups may have only been cleared to a depth of 13 cm for humanitarian purposes. If construction will take place, a minimum of 1 meter in depth is mandatory.

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

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

SUMMARY OF WORK

CONTRACTOR REQUIREMENTS

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

GENERAL REQUIREMENTS FOR FACILITIES

All requirements set forth in the Scope of Work, but not included in the Technical Requirements, shall be considered as set forth in both, and vice versa. Provide heating and cooling for facilities unless otherwise stated in Section 01010 or 01015. All toilets shall be eastern style and shall face north or south.
All standard construction amenities and details such as heating, lighting, site drainage, utility connections, etc. shall be implied as a design and construction requirement. Drawings referenced are contained in Section 01015 or Appendix A. Aggregate walkways are required to connect all buildings, facilities, and features such as parking lots, power plants, etc.
The design population for the RMTC is 3,000 persons.
The design and construction work shall include but not be limited to the following sub-paragraphs.
In general, this project consists of designing and constructing of the following:

Base Bid

- Design Cost, Site Survey and Master Plan
- As-Built Drawings
- Mobilization, Demobilization and General Site Work

- Test Water Well
- Potable Water Supply System
- Sanitary Sewer Collection and Treatment System
- Site Electrical Power and Distribution System
- Road Network and Foot Paths
- Access Points (2)
- RMTC HQ Building
- Instructors Offices (3)
- Classroom Building, 200 Students (2)
- Classroom Building, 2 x 100 Students (2)
- Dining Facility (DFAC), with Propane Storage and Dry Storage Yard
- NCO/Officer Barracks (5)
- Enlisted Barracks (6)
- Latrines, Large, with Toilets/Shower/Ablution/Laundry (6)
- Latrines, Small, with Toilets (3)
- BWT Barracks Security Fence
- Medical Clinic
- PX / Finance Office
- Laundry
- Small Arms Storage and Security fence
- ASP and Security Fence
- Motor Pool and Security Fence
- Vehicle Maintenance Building
- POL Storage, Fuel Point and Fuel Pumps
- RMTC Storage, Bridmals and BWT Storage and Security Fence

Option Items

- Parade Ground with Review Stand
- Trash Collection Points (6)
- Personnel Bunkers (12)
- Classroom Building, 4 x 50 Students (3)
- Vehicle Wash Rack

SITE PLANNING

The Contractor shall prepare a site Master Plan based on information contained in the Request for Proposal. The development of the master plan will include participation in a design charrette that will be conducted at location to be determined by the Contracting Officers Representative (COR). Drawings provided are only concept level. The Contactor must verify the space requirements and code compliance in accordance with Sections 01010 and 01015 of this contract.

The Project construction site is approximately 475 meter by 475 meter (approximately 225,625 SM). The Contractor is highly encouraged to verify actual site conditions before submitting proposals.

WATER SYSTEM

Design a potable water system, to include a ground well water source, water well pump, and hydro-pneumatic water storage tank, and underground pipe distribution system. The well shall be constructed to deliver a flow rate that is

twice the required daily demand. The storage tanks shall provide capacity for a minimum of 100 percent of the required average daily demand (ADD) based on 155 L/capita/day (41 gal/capita/day). Per customer, fire flow and irrigation systems shall not be included in design calculations. Provide an enclosed water well house.

Test well

In order to assure that the site has a sufficient water supply source prior to any construction on site the contractor shall drill a test well in accordance with AED Design Requirements – Well Pumps & Well Design/Specifications, June 2009. This work shall be coordinated with the COR for material submittals and test data and shall be the first feature of work to be constructed.

SANITARY SEWER SYSTEM

A sewer collection system (to include lift stations and force mains if required) and wastewater treatment and surface water disposal system. Waste water treatment system shall be either a facultative pond or partial-aerated lagoon system. A minimum of three cells shall be provided which shall allow for one of the primary lagoons to be bypassed for maintenance. System requirements shall be as stated in the applicable paragraphs of Section 01015. Provide a wastewater effluent reuse system for landscape irrigation. A separate effluent storage and distribution system including effluent pump shall be sized for the minimum daily summer irrigation requirement for the landscaped based on technical requirements in Section 01015. The separate treated effluent irrigation system shall be constructed to serve only the landscapd areas. Irrigation water shall be distributed from hose bibs that are permanently marked “not for consumption - nonpotable water” in Dari, Pashto and English.
Sanitary sewer collection and treatment system shall be designed and constructed by contractor. Sewer collection system shall consist of gravity sewer pipe and appurtenances such as manholes, cleanouts and building service connections. The gravity sewer collection system shall connect to the sewage treatment and effluent disposal system. Septic tank shall be underground and shall be located at proposed locations as shown. Sanitary sewer system shall be designed to accommodate future expansion. System capacity shall be calculated based on a hydraulic waste load that is equivalent to 80 percent of the Average Daily Demand for the water system as specified in these technical requirements, or as 33 gallons per capita per day (gpcd), whichever is greater. A geotechnical investigation of the proposed sewage treatment site is required and the contractor shall design the sewage treatment system to be compatible with site and soil conditions. Sewage treatment system shall be a facultative pond system or partial aerated lagoon system that is low maintenance, cost effective system. The sewage collection system and wastewater treatment system and effluent disposal shall be designed to accommodate the total facility compound population of 3,000 personnel.

DEMOLITION AND GRADING

Minor site demolition is required prior to construction of new work. Grading at the site is required and shall conform to requirements within references herein. All grading and site drainage features required for development of approximately 225,600 square meter facility. Exact area as determined from the project corner coordinates. Native crushed stone 100 mm thick shall be placed around all buildings, from the building wall or building landscaping out 2000 mm and all areas of anticipated foot or vehicle traffic to reduce erosion and to provide dust control. Provide 100 mm thick by 1500 mm wide aggregate foot paths between buildings and parking areas.

SITE ELECTRICAL DISTRIBUTION SYSTEM

POWER SYSTEM: The contractor shall design and construct a power system for supply and distribution to all buildings to include generation with fuel storage, and underground electrical distribution. All electrical design and installation shall meet NEC (NFPA 70) requirements. All wiring shall be run and pulled through conduits. Electrical receptacles shall be provided as indicated. Conductors and circuits shall be sized for the specific loads. Primary

voltage shall be20kV, 50Hz. Secondary voltage shall be 220/380v 50HzThe power plant shall include prime power generators, switchgear, and all appurtenances necessary to meet the electrical demand. Provide an enclosed a generator house
GENERATORS: Contractor shall provide generators based on the N+2concept. Where 'N' would be the required number of generator(s) and ‘2’ being a 'stand-by' units. Generation shall supply 120% of the maximum calculated demand load plus the stand-by generator in reserve. Generator size is not to exceed 1 MW (1,000 kW). The generators shall be provided with a synchronizer-switch, so that when total power demanded from one generator reaches 90% of the generators maximum, an additional generator shall automatically start and supplement the running generators, sharing the load between the generators equally.
GENERATOR FUEL STORAGE: The Contractor shall provide a design for aboveground horizontal fuel storage tanks. The design will provide capability for fuel delivery from two locations – one from outside the wall surrounding the compound and one directly into the fuel tanks. The delivery point outside the compound wall shall be lockable and securable from tampering or sabotage. A road shall be provided leading to the outside fuel delivery point with a place for trucks to turn around.
Contractor shall design and all interior electrical systems as described in section 01015 Technical Requirements and shall design and install any required exterior lighting, as described in section 01015.

FORCE PROTECTION MEASURES

The Contractor shall design and construct force protection measures to include chain link fencing, sliding access gates and guard shacks, illumination system, and communication systems. The designer shall incorporate force protection setbacks for new facilities to maximum extent possible as permitted by size of the site and the requirements of the user. Force protection design shall be in accordance with Joint Security Directorate Antiterrorism/Force Protection Guide, March 2002.

SECURITY fence

Chain link fencing shall be constructed around the RMTC Perimeter for an estimated distance of 1.9 km. Provide separate security fences around the BWT Barracks, Motor Pool, Storage Area, ASP and Small Arms Storage areas. The height of the security fence shall measure at least 3 meters from the inside and outside grades. The fence shall be topped with barbed wire outriggers and single-coil concertina style razor wire. The ground grade shall slope away from the wall for at least 5 meters and shall be kept a minimum of 3 meters below the top of fence for a minimum distance of 10 meters.

sliding Gates

The gates shall be sliding type. Sliding gates shall be at least 7.3 m wide x 3 m high, constructed of steel plates, 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. Gates shall slide on track system supported by no less than 3 steel wheels and be supported by a reinforced concrete foundation. Provide a locking mechanism that is capable of holding the gates in the closed position.

Guard shacks

The Contractor shall design and construct guard shacks at each access point sliding gate of the force protection fence. Guard shack shall be a minimum of 3000 mm x 3000 mm in size. Each guard shack shall be constructed of reinforced CMU walls with a lockable hollow metal door and horizontal sliding windows, 1200 mm high x 1200 mm wide. Windows shall be located on 2 sides to provide a viewing area of access road. Windows shall not be screened. The guard shack shall be supported on reinforced concrete footings. Footings shall be located below the frost line or a minimum of 800 mm, whichever is greater.

The sloped metal roof (2:10) shall have a gutter and downspout system to evacuate rain accumulation. The down spout shall run the entire height of the shack and drain at the finished ground level to a splash block.
Guard shacks shall be provided with general lighting and shall be fitted with one 360-degree omni-directional searchlight. One weather-resistant duplex receptacle shall be provided as required for general use. Provide a 3000 mm crushed aggregate apron around each guard shack, graded to drain away from structure.

For communications, provide rigid metal conduit with pull strings in each guard shack.
Force Protection measures also include the requirements of UFC 4-010-01, Design: Minimum DoD Antiterrorism Standards for Buildings, 8 Oct 2003 and UFC 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings, 8 Oct 2003 and Joint Security Directorate Antiterrorism/Force Protection Guide, March 2002.

ROAD NETWORK, SIDEWALK, AND PARKING

The Contractor shall design and construct the entire road and parking network. The roads shall be designed to carry traffic of a 18,000 kg (20 ton) ESAL. A storm drainage system shall also be included. The road layout shall provide access to access points, parking lots, vehicle maintenance facilities, fuel points, generator yard, sewage septic tank, and the trash collection point. Provide parking area for 20 vehicles inside the compound. Road design shall be designed per Section 01015, Technical Requirements. Roadways are required as shown on attached drawings and shall be designed and constructed based upon recommendations from geotechnical analysis as required herein. Provide a culvert under the access road entrance to the primary entry gate.
Provide a convoy assembly area accommodating 2 sets of vehicles parallel parked at near approach to the main Entry Control Point. The Assembly area shall be paved at least 100 meters in length and at least 14 meters in width including road network.
The Contractor shall design and provide landscaping for the compound. Design and provide a network of aggregate sidewalks to connect the buildings.

parade grounds and reviewing stand

Provide an 80 meter x 60 meter Parade Ground located near the RMTC HQ Building. No landscaping shall be provided. The parade grounds shall be graded to ensure that site drainage does not erode the field. Provide a compacted surface composed of satisfactory fill materials. The reviewing stand shall be a raised concrete platform, 1500 mm above the surrounding finished grade, provided with four access stairways with railings, with railings around the platform perimeter, a sloped metal roof (2:10), and room to seat up to 50 people comfortably. Provide the reviewing stand with four weather resistant duplex outlets and weather resistant fluorescent ceiling lamps.

TRASH collection POINTs

The Contractor shall design, in a location convenient for easy removal, six (6) trash collection points. They shall be located inside the compound walls. Each trash point shall be a 1800 mm X 1800 mm concrete pad with a chain link fence around the perimeter 1800 mm tall. One side shall have a 1200 mm wide entrance gate.

RMTC HQ Building

The Contractor shall design and construct one (1) Battalion HQ Administration facility of approximately **880** SM. Provide conference rooms, file rooms, storage areas, restrooms, break areas, and other special spaces in the building in addition to office areas. Provide a conference room with a large conference table near the Commander's office. All corridors (for this building and all facilities within the scope of this project) must be one hour fire rated with 20

minute fire doors. No doors in the corridor shall have glazing. Panic hardware is required on all exterior egress doors. Storage room and utility rooms require one hour fire rated walls with 45 minute rated doors. Toilet and utility rooms shall have door louvers for ventilation.
Provide power outlets in walls no more than three (3) meters apart. Floors shall be smooth concrete finished with epoxy floor paint and concrete or stone wallboard up to 120 mm above finished floor surface, walls and ceilings flat paint finish. Provide a minimum of 10% exterior wall area for operable windows with double insulated glazing for natural light and ventilation, extruded aluminum or extruded PVC windows. Provide two pair of RJ45 outlets (for telephone and data) in each room with wires connected to central location in the building and a connection point to the exterior of the building which will be able to link to the communication system in the garrison. These shall be connected to the communications room within the HQ building. Provide a minimum of communication conduits (backbone only) and space requirements in the HQ Communications Room as well as a looped communication system for perimeter security functions. Run feeds to both guard shacks, Classrooms, Instructor's Offices, DFAC, Storage and Motor Pool and to a specified location in each barracks from the Command HQ.
Toilet room floors shall be finished with terrazzo tile and walls shall have ceramic tile wainscot to 2000 mm above the floor. Walls and ceilings shall be painted with a gloss enamel finish. All toilets shall be eastern-style. All fixtures should be durable and detention grade.
Provide a sloped metal roof (2:10) with gutters and downspouts.

Communications room

Design and construct a communications room in the RMTC HQ Building. The communications room serves as the installation's center for telecommunications, switching, and automation networking (including internet service) and shall have year-round climate control for the sensitive electronic equipment. Provide ductless split pack heat pumps for heating and cooling, and ceiling fans for air circulation. Windows shall be extruded aluminum. Exterior doors shall be insulated hollow metal. Interior doors shall be hollow metal.
Power to the communications room shall meet the ultimate demand load plus 25% spare capacity, but shall not be less than a 250 amp service. A grounding grid tested to 5 ohms or less shall be distributed throughout the room. The room shall have ventilation to outdoors and house an uninterrupted power supply (UPS) that will be capable of providing power to the critical building loads for ten minutes while the emergency generator is started. The critical loads are equal to 60% of the total building load.
Install four (4) 50mm conduit passing from the communications room to the roof of the building. The roof penetration shall have a weatherproof box on top and shall be flashed or patched as necessary to prevent water leakage. The four (4) 50mm or larger communication conduits shall be typical with the following installation criteria: Manhole or hand-hole systems shall have no more than 150 meters between access points. Per NEC Code, there shall not be more than 3 bends per run of conduits. The radius bends shall be between 609mm to 914mm radius bends.

INstructor's offices (3)

Provide three (3) identical instructor's buildings at 200 SM each (total of 600 SM) to accommodate up to 30 personnel each with shared office space. Provide one large open area to serve as a conference room in each building. Provide epoxy sealed concrete floor slabs. Windows shall be a minimum of 10% exterior wall area for operable windows with double insulated glazing for natural light and ventilation, extruded aluminum or extruded PVC windows, hollow metal doors, and duplex receptacles every 3000 mm. Provide two pair of RJ45 outlets (for telephone and data) every 3000 mm with wires connected to central location in the building and a connection point to the exterior of the building which will be able to link to the communication system in the garrison. Provide a sloped metal roof (2:10) with gutters and downspouts. Building locations are as identified on the Master Plan.

Classroom buildings (7)

Provide two (2) identical classroom buildings for 200 students each.

Provide two (2) identical classroom buildings, each with two (2) classrooms for 150 students.
Provide three (3) identical classroom buildings, each with four (4) classrooms for 50 students.
Provide epoxy sealed concrete floor slabs. Provide a minimum of 10% exterior wall area for operable windows with double insulated glazing for natural light and ventilation, extruded aluminum or extruded PVC windows, hollow metal doors, and duplex receptacles every 4000 mm. Provide two pair of RJ45 outlets (for telephone and data) every 4000 mm with wires connected to central location in the building and a connection point to the exterior of the building which will be able to link to the communication system in the garrison. Provide a sloped metal roof (2:10) with gutters and downspouts. Building locations are as identified on the Master Plan.

DFAC, Dining Facility, with Propane storage, and dry Storage Yard

Design and construct a 2204 SM DFAC in accordance with the drawings contained in Appendix A. Windows shall be extruded aluminum. Exterior doors shall be insulated hollow metal. Interior doors shall be hollow metal except PVC shall be used for interior doors at toilet, rooms. This facility provides seating for up to 1000 seats.
This facility shall provide cafeteria-style feeding, short order and regular style meals. Spaces include dining areas and kitchen facilities outfitted with built-in liquid propane-burning stoves installed in accordance with manufacturer's instructions. Provide all the features listed below.

(a) The kitchen shall be physically separated from the rest of the dining facility with a 2-hour fire rated wall with 90 minute rated doors (fire rated wall up to the roof superstructure, not ceiling). At openings for serving line and dirty dish return provide 90 minute fire rated shutters. Height of ceiling clear space in both kitchen and dining rooms shall be 3000 mm AFF.
(b) The backsplash and front and side surfaces of stove enclosures shall be terrazzo with heat resistant grout. The top of the stove enclosure shall be finished concrete. Edges will be covered by a [metal "L" angle] [rubber-like material "L" angle] to prevent damaging edges during pot movement. [Option – the backsplash can be of sheet metal if the designer feels adhesives & grouting for terrazzo tiles will not withstand normal usage]
(c) The height of the stove from the floor to the burners shall be 50cm
(d) The floor in front of the row of burner enclosures shall be slightly sloped towards the floor drain to direct water overflowing from pots or spigots near the pots away from the work area in front of the stove enclosures.
(e) New propane stoves shall be installed with consideration to ease of cooking operation and daily cleanup. New stoves shall be set into a formed concrete openings such that they can easily be removed for replacement, maintenance and cleaning. Stove dimensions are 72 cm long x 72 cm wide x 50 cm high. Height includes the grill. Desired stove to stove clearance is 72 cm.
(f) Each propane stove shall be provided with three burners. The propane stoves shall be of commercial quality and be capable of producing the highest BTU heat output with all three burners on. The center burner is low heat, center and middle burner is medium heat and all three burners is high heat. A shut off valve for each burner shall be provided at the face of the propane appliance.
(g) Propane storage tanks shall be provided and installed in accordance with NFPA 58. The propane storage tanks shall contain a 28 day supply and shall be installed on a concrete pad, and placed within a covered, secure enclosure to protect tanks from the elements. Provide an access gate for removal and replacement of propane tanks. The access gate shall able to be secured and locked. Propane tanks shall be secured such that none move or topple over.
(h) The Contractor shall coordinate with the DFAC staff and Contracting Officer in determining amount of propane fuel required daily for the DFAC. The propane fuel requirement shall be calculated based on consumption of fuel every cooking cycle, cooking frequency, and required "surge" capacity. The Contractor shall provide an agreed to amount of fuel tanks filled with propane fuel at time of project completion.
(i) Piping from propane tanks to their respective propane stoves shall be of wrought iron, ASTM B36.10M or steel (black or galvanized), ASTM A53. The steel piping shall terminate in front of the propane stoves with a shut off valve and quick disconnect nipple. A stainless steel flexible hose (Gastite or equal) shall connect the propane stove to the steel piping per NFPA 58 section 5.8.6. Each end of the flexible hose shall be provided with quick disconnect dielectric fittings.

(j) Propane supply piping shall be installed in concrete trenches. Piping may also be surface mounted provided it is not susceptible to damage, or causes any safety hazards.

(k) Piping passing through the exterior wall and concrete platforms shall be provided with pipe sleeves.

(l) Ventilation hoods

- Hoods shall be designed to capture and confine cooking odors, vapors, and residues.
- Hood exhaust rate shall be 400 cubic feet per minute per linear foot (CFM/ft) (620 L/s per m) of open hood.
- Hoods shall be constructed of 20 gauge stainless steel.
- Hoods shall be provided with a side panel at each end to close in the area between the stove and the hood. Side panels shall be the width of the hood and shall extend to the rear wall at 45 degrees. Approximate dimensions are 37 inches by 37 inches by 45 degrees (925 mm by 925 mm by 45 degrees). If a non-combustible wall abuts a stove, then a side panel shall not be required on that side of the hood.
- Joints, seams and penetrations shall be externally welded or brazed to form a watertight seal with a smooth surface that is readily cleanable.
- All surfaces shall be designed to be easily and thoroughly cleanable.
- Hoods shall be securely supported with non-combustible materials.
- Hoods shall extend a minimum of 9 inches (225 mm) beyond the front edge of the stove and shall be installed a maximum of 4 feet (1200 mm) above the surface of the stove.
- Hoods shall be sealed to the rear wall.
- The center hood of each bank of fans shall have one electrical switch on the front face to operate the exhaust and make-up air fans.
- Grease filters will not be required. Hoods shall be constructed so that grease filters can be installed at a later date.

(m) Ductwork

- Ductwork shall be protected against corrosion.
- Ducts shall be constructed of 18 gauge stainless steel.
- Supply and exhaust systems for each hood shall be independent of other duct systems.
- 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.
- Airflow in the ductwork shall be not less than 500 feet per minute (150m/min).
- Ducts shall be placed a minimum of 18 inches (450 mm) from combustible material or 3 inches (75mm) from gypsum wallboard attached to non-combustible structures.
- Ductwork terminating through the roof shall extend a minimum of 18 inches (450 mm) 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 3 feet (900 mm) from exterior openings. Ductwork shall be pitched to drain back to hood.
- All ductwork terminations shall be a minimum of 10 feet (3000 mm) horizontally from other buildings and property lines.

(n) Exhaust Fans

- Exhaust fans 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 40 inches (1000 mm) above the roof.
- Up-blast fans shall be hinged and supplied with a flexible weatherproof electrical cable to permit inspection and cleaning.
- Connection between ductwork and exhaust fan shall be flanged, gasketed, and bolted.
- Each exhaust fan shall be electrically interlocked with its corresponding make-up air fan to prevent system operation without both fans in service.

(o) Make-up Air Fans
- Make-up air inlet locations shall take into consideration the prevailing wind direction and shall be placed upstream of exhaust outlets.
- Wherever possible, make-up air inlets shall be located a minimum of 10 ft (3000 mm) from exhaust outlets.
- Where make-up air inlets are located within 10 ft (3000 mm) of an exhaust outlet, the make-up air inlet shall be located a minimum of 3 ft (920 mm) below the exhaust outlet.
- Each make-up air fan shall supply a maximum of 110 CFM/ft (170 L/s per m) of perforated diffuser.
- Each make-up air fan shall be electrically interlocked with its corresponding exhaust fan to prevent system operation without both fans in service.

(p) Testing
- A performance test shall be conducted upon completion and before final acceptance of the system installation.
- The test shall verify the rate of exhaust and make-up air flow.
- The test shall be witnessed by the COR.

(q) All interior walls shall be CMU construction; no gypsum wall board interior wall construction is allowed.

(r) Floor trench drains shall be incorporated into the dining area with the floor sloped to drain.

(s) Trench type floor drains shall be provided in the kitchen cooking and dishwashing areas.

(t) Hand wash stations in the entry vestibule shall be provided. Trough type sinks shall be used. Use ratio of one hand washing station per 15 diners.

(u) Install large wash basins with a low rim height designed for washing very large pots as indicated on floor plans.

(v) Run water lines to and install wall mounted spigots next to each cooking station in order to permit pots to be filled during cooking without having to move them..

(w) The Contractor shall provide and install **walk-in refrigerators and walk-in freezers** as shown in drawings.

(x) Fire protection shall be provided by fire extinguishers throughout the facility at easily accessible locations.

(y) Install ducted packaged heat pump units for heating and cooling of the dining area.

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

(aa) Provide Latrines for facility workers

(bb) Provide Janitor room with Mop sink

(cc) Provide Office space for a minimum of two personnel and office equipment

(dd) Provide dining areas for officers and enlisted

(ee) Provide Dish washing area

(ff) Provide Food preparation area

(gg) Provide Serving area

(hh) Grease Separator shall be a hydro-mechanical model as defined in Standard PDI G101, revised 2007. Provide exterior grease trap.

BARRACKS

Provide barracks building(s) in accordance with the drawings contained in Appendix A. **provide five (5) NCO / BOQ Barracks, and six (6) Enlisted Open Bay Barracks.** A total of 3000 people is the billeting population. Windows shall be extruded aluminum. Exterior doors shall be insulated hollow metal. Interior doors shall be hollow metal except PVC shall be used for interior doors at toilet, shower, and ablution rooms.
The Contractor shall incorporate the following special features into the barracks:
(a) Heating and Ventilation. Provide ceiling fans for summer ventilation and electric wall / ceiling mounted unit heaters for winter.

(b) Clotheslines shall be installed behind each barracks, approximately 5000 mm in length with 4 lines across spaced 410 mm apart and of sufficient strength to prevent sagging when all of the lines are loaded
(c) Concrete stoops with boot scrapper shall be provided at all exterior doors (except utility rooms).
(d) Provide one duplex power outlet every 4000 mm. In the NCO / BOQ Barracks, provide at least one duplex outlet per wall in bedrooms.
(e) Toilet / shower rooms shall be finished with ceramic tile from floor to ceiling, slope floor to drain. Floors shall be terrazzo floor tile.

<u>Personnel bunkers (12)</u>

Provide Culvert Bunkers with dimensions of 1520 mm x 6090 mm (5 ft x 20 ft) as shown on the site plan in Appendix A. Provide two bunkers behind each Enlisted Open Bay Barracks. The bunker(s) shall be constructed from reinforced concrete culvert sections covered with sandbags. The Culvert shall have the approximate inside dimensions of 1520 mm x 1520 mm (5 ft x 5 ft) and be approximately 150 mm (6 in) thick. The contractor shall fill and place sandbags on all sides of the concrete culvert to a minimum depth of 450 mm (18 in). The sandbags shall be placed in rows with overlapping joints so each bag interlocks with the next. A Hesco wall shall be placed at each end of the open bunker The Hesco wall shall be constructed with 2 MIL 1B Hesco containers. The total measurement of Hesco wall at each end shall be 1400 mm tall x 1100 mm wide x 2440 mm long (4.6 ft tall x 3.6 ft wide x 8 feet long).

latrines, large, with TOILETs, SHOWERs, ABLUTION AND LAUNDRY (6)

Provide six (6) 342 SM Latrine Buildings with toilets, showers, ablution, and laundry in accordance with the drawings contained in Appendix A. Windows shall be extruded aluminum or extruded PVC. Exterior doors shall be insulated hollow metal. Interior doors shall be hollow metal except PVC shall be used for interior doors at toilet, shower, laundry, and ablution rooms. HVAC system requirements: refer to 01015.
Plumbing fixtures shall be provided in accordance with the International Plumbing Code. Toilet fixtures shall be eastern-style units facing North and South. The Contractor shall incorporate the following special features into the building:
(a) All eastern-style toilets shall be provided with a wall-mounted hose bib on the right side of the toilet stall as the occupant faces the stall door. Stalls shall be no less than 2000 mm x 1500 mm and shall have a PVC door.
(b) All sinks shall be trough type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse.

(c) Shower stalls shall be large enough to allow room to dress and undress between an outer and inner shower curtain. Stalls shall be no less than 2000 mm x 1500 mm and shall have a PVC door.
(d) Showers shall contain a single mixing valve for hot and cold water mixing and a wall mounted shower head.
(e) Ablution area shall be trough type, constructed by depressing the slab 200 mm out to 600 mm from wall mounted faucets. Finish for trough shall be sealed concrete.
(f) The laundry room shall have concrete trough sinks capable of withstanding abuse. Size of basins shall be approximately 600mm wide x 600mm long x 350mm deep. Provide clothes lines similar to that provided for Enlisted Barracks outside the building.
(g) Provide electric hot water heaters for the showers and sinks.
(h) Provide electric cabinet heaters or unit heaters suitable for wet areas to provide heat in the facility.
(i) The building shall be constructed with exhaust fans to ventilate steam to the outside environment and, where required, insulated piping to prevent freezing of water pipes in winter.
(j) All exposed water supply plumbing galvanized metal. PVC may be used where water supply piping is concealed.
(k) Accessories include, but are not limited to: toilet paper holders, soap dishes, curtains and curtain rods, robe hooks, mirrors, paper towel dispensers, wall mounted metal shelves, and grab bars.

latrines, small, with TOILETs

Provide one (1) 224 SM Latrine Building (Bldg # 126 on the Master Plan) to provide a minimum of 18 toilets and 18 hand washing stations. Provide two (2) 106 SM Latrine Buildings (Bldg # 134 and 135 on the Master Plan) to provide a minimum of 12 toilets and 12 hand washing stations each.
Windows shall be extruded aluminum or extruded PVC. Exterior doors shall be insulated hollow metal. Interior doors shall be hollow metal except PVC shall be used for interior doors at toilets. HVAC system requirements: refer to 01015.
Plumbing fixtures shall be provided in accordance with the International Plumbing Code. Toilet fixtures shall be eastern-style units facing North and South. The Contractor shall incorporate the following special features into the building:
(a) All eastern-style toilets shall be provided with a wall-mounted hose bib on the right side of the toilet stall as the occupant faces the stall door. Stalls shall be no less than 2000 mm x 1500 mm and shall have a PVC door.
(b) All sinks shall be trough type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse.
(c) Provide electric hot water heaters for the sinks.
(h) Provide electric cabinet heaters or unit heaters suitable for wet areas to provide heat in the facility.
(i) The building shall be constructed with exhaust fans to ventilate steam to the outside environment and, where required, insulated piping to prevent freezing of water pipes in winter.
(j) All exposed water supply plumbing galvanized metal. PVC may be used where water supply piping is concealed.
(l) Accessories include, but are not limited to: toilet paper holders, soap dishes, robe hooks, mirrors, paper towel dispensers, and wall mounted metal shelves.

Medical clinic

Provide one (1) Medical Clinic at 288 SM. Provide medical grade sheet vinyl flooring over concrete. Provide a minimum of 10% exterior wall area for operable windows with double insulated glazing for natural light and ventilation, extruded aluminum or extruded PVC windows, hollow metal doors, and duplex receptacles every 3000 mm. Provide two pair of RJ45 outlets (for telephone and data) in each room with wires connected to central location in the building and a connection point to the exterior of the building which will be able to link to the communication

system in the garrison. Provide a sloped metal roof (2:10) with gutters and downspouts. Building location is as identified on the Master Plan.

PX / Finance Office

Provide one (1) PX / Finance Office Building at 100 SM, with a floor to roof height wall separating the building in two. Provide epoxy sealed concrete floor slabs. Provide a minimum of 10% exterior wall area for operable windows with double insulated glazing for natural light and ventilation, extruded aluminum or extruded PVC windows, hollow metal doors, and duplex receptacles every 4000 mm. Provide two pair of RJ45 outlets (for telephone and data) in each half of the building with wires connected to central location in the building and a connection point to the exterior of the building which will be able to link to the communication system in the garrison. Provide a sloped metal roof (2:10) with gutters and downspouts. Building location is as identified on the Master Plan.

Laundry

Provide one (1) 50 SM Laundry Building (Bldg # 121 on the Master Plan) to provide a minimum of eight (8) combination commercial-grade stacked washer/dryer units. Provide four (4) stainless steel laundry tubs, four (4) stainless steel tables, and wall mounted clothing hooks. Provide a minimum of 10% exterior wall area for operable windows with double insulated glazing for natural light and ventilation, extruded aluminum or extruded PVC windows and hollow metal doors. Provide electric hot water heaters for the sinks. Provide electric unit heaters suitable for wet areas to provide heat in the facility. The building shall be constructed with exhaust fans to ventilate, and, where required, insulate pipes to prevent freezing of water pipes in winter. All exposed water supply plumbing shall be galvanized metal. PVC may be used where water supply piping is concealed.

small arms storage and security fence

Design and construct the 95 SM Arms Storage Building. Exterior doors shall be heavy duty steel security grade. Provide wooden racks for storing long-arm weapons vertically. Racks shall not be furnished with locking bars. The facility shall be of solid reinforced concrete (250mm thick concrete roof slab and solid CMU wall) with no windows, high security door, and explosion-proof lighting. The Contractor shall provide power outlets in walls no more than 4 m apart. Concrete stoops shall be provided at exterior doors. Wall mounted electric forced air AC units shall be used to maintain a minimum temperature of 18 degree Celsius during winter and maximum 30 degree Celsius during summer. The floor is smooth concrete finished with gray epoxy floor paint, walls, and ceilings flat paint finish. Provide a Small Arms Storage Compound with 150 mm of compacted crushed aggregate, sufficient for parking and general movement of vehicles; provide a clear area around the Small Arms Storage of 23000 mm on all sides. Provide a 3000 mm high chain link security fence with Y-channel, triple strand concertina wire. Area to be enclosed is a minimum of 3150 square meters. Provide 1 lockable vehicle access gate.
Provide exterior lighting on the corners of all buildings sufficient to light an area 30 meters from the buildings. Provide exterior pole mounted lighting along the fence line to provide illumination for night-time operations and safe movement of vehicles within the compound.

asp and security fence

Locate site within the RMTC perimeter as far as possible form buildings or at an alternate adjacent site to be approved by the government. Access drive shall also be provided. Design and construct the 95 SM Ammunition Supply Point building in accordance with the drawings contained in Appendix A. Exterior doors shall be heavy duty steel security grade. Provide heavy duty wooden shelving around the perimeter for storing boxes of ammunition. The facility shall be of solid reinforced concrete (250mm thick concrete roof slab and solid CMU wall) with no windows, high security door, and explosion-proof lighting. The Contractor shall provide power outlets in walls no

more than 4000 mm apart. Concrete stoops shall be provided at exterior doors. Wall mounted electric forced air AC units shall be used to maintain a minimum temperature of 18 degree Celsius during winter and maximum 30 degree Celsius during summer. The floor is smooth concrete finished with gray epoxy floor paint, walls, and ceilings flat paint finish. Provide an ASP Compound with 150 mm of compacted crushed aggregate, sufficient for parking and general movement of vehicles; provide a clear area around the ASP of 23000 mm on all sides. Provide a 3000 mm high chain link security fence with Y-channel, triple strand concertina wire. Provide 1 lockable vehicle access gate. Provide exterior lighting on the corners of all buildings sufficient to light an area 30 meters from the buildings. Provide exterior pole mounted lighting along the fence line to provide illumination for night-time operations and safe movement of vehicles within the compound.

MOTOR POOL

Provide a Storage Compound with 150 mm of compacted crushed aggregate, sufficient for parking and general movement of vehicles. Minimum enclosed aggregate surface area of 13680 SM. Provide a 3000 mm high chain link security fence with Y-channel, triple strand concertina wire. Provide 2 vehicle access gates and 2 personal gates. Motor pool shall allow for organizational vehicle parking and enclose vehicle maintenance building, POL storage, wash rack and fuel storage areas as shown. See Appendix A for designated areas.
Provide exterior lighting on the corners of all buildings sufficient to light an area 30 meters from the buildings. Provide exterior pole mounted lighting along the fence line to provide illumination for night-time operations and safe movement of vehicles within the compound.

Vehicle Maintenance Building

Provide a vehicle maintenance building with one (1) drive-through maintenance bay with coiling overhead doors at either end. Coiling overhead doors shall be 4500 mm high x 3000 mm wide. Provide two (2) 200 mm dia x 1000 mm high concrete filled steel bollards at each jam of coiling overhead doors. Provide a smooth finished concrete floor designed to support 7-ton vehicles and a 5000 mm wide concrete apron that runs the length of each end of the building. The clear distance between the finished floor and the bottom of the roof structure shall be no less than 6000 mm (19’ – 8”). The building shall have storage areas, office areas, tool rooms, spare parts room and a compressor room. Provide a vehicle exhaust system with hose reel. Provide a maintenance pit with curbs for accessing the underside of the vehicles. Provide a waste oil collection system at each end of the maintenance bay. Provide extruded aluminum or extruded PVC windows and hollow metal doors. Provide a sloped metal roof (2:10) with gutters and downspouts.
Mechanical: Provide an overhead vehicle tailpipe exhaust removal system. Coordinate the location of the system such that it does not interfere with vehicle access and that the exhaust hose will connect to the vehicle exhaust tail pipe. Provide a low pressure (less than 862 KPa) compressed air system to include air compressor, piping, hose reel, and hose. Locate air compressor outside and to the rear of the building. Coordinate location of hose reel and hose such that it will not conflict with vehicle access and such that hose will easily access the maintenance bay. Provide an emergency eye-wash station on both sides of the maintenance bay. Do not provide any floor drains in the vehicle maintenance bays.
Electrical: Provide switched lighting that will illuminate the entire area. Provide lights capable of operating in the year-round temperature ranges expected to occur in this area. Provide electrical receptacles, equally spaced, with three receptacles on the all walls. Provide receptacles on the garage walls for drop lights and other electrical power tools. Receptacles may be grouped together but will have dedicated circuits and will be configured to draw no more than 16 amperes. One dedicated circuit will be installed for the use of a 10.5 kg/sq cm (150 psi) electric air compressor. Provide charging outlets in Battery Room every 500 mm along back wall.

Fuel storage and VEHICLE RE-FUELING POINT

The Contractor shall design and construct a low profile vehicle re-fueling point in the Motor Pool area, as specified in Section 01015. Provide 2 diesel and 2 MOGAS fuel pumps and dispensers. Provide an 8 SM Fuel Operators Building. Provide 200 mm dia x 1000 mm high concrete filled steel bollards around pumps and tanks to prevent vehicle damage. Enclose the fuel storage and refueling area with a 3000 mm high chain link fence with Y-channel, triple strand concertina wire. Provide a pair of double-leaf gates at the entrance and exit of the flow through fuel pad. Each leaf shall be a minimum of 2000 mm in length and shall be capable of being locked. Provide concrete containment slabs to contain possible fuel spills on both sides of the fuel pumps. Provide a sloped metal roof (2:10) with gutters and downspouts over the Vehicle Re-Fueling Point. Provide explosion proof light fixtures and controls. The Contractor shall provide a full supply of fuel to the tanks at the time of turnover to the Government.

POL storage Building

The POL storage building will be located adjacent to the Vehicle maintenance facility, minimum size 25 m^2. A design is provided in Appendix A. Provide two equally sized rooms separated by a 200 mm thick reinforced concrete wall, extending from floor to ceiling, with an internal metal fire door. Entry into each room shall be through a metal double door wide enough for a standard warehouse pallet. Provide a sloped metal roof (2:10) with gutters and downspouts. Provide bollards at all four corners of the building exterior to protect the building for adjacent traffic.

Vehicle wash rack

Provide an uncovered wash rack with water service, spigot, water hose, and nozzle. Provide broom finished concrete on an elevated pad with positive drainage and run off to prevent flooding, drain away from adjacent structures. Size the wash rack elevated pad for one 7 ton vehicle wide with a minimum length of 14300 mm.

storage compound

Provide a Storage Compound covered with 150 mm of compacted crushed aggregate, sufficient for parking and general movement of vehicles and the loading and unloading of goods. Minimum area to be enclosed is 10500 square meters (SM) around the warehouse & storage facilities. Provide a 3000 mm high chain link security fence with Y-channel, triple strand concertina wire. Provide 2 vehicle access gates and 3 personal gates. See Appendix A for designated area.
Provide exterior lighting on the corners of all warehouse buildings sufficient to light an area 30 meters from the buildings. Provide exterior pole mounted lighting along the fence line to provide illumination for night-time operations and safe movement of vehicles within the compound.

rmtc General purpose storage

Provide an 890 SM storage facility with a 6500 mm x 4200 mm office in one corner of the facility. Clear height inside the facility shall be 5000 mm. Provide 2 coiling overhead doors, 3000 mm wide x 3500 mm high. Provide two (2) 200 mm dia x 1000 mm high concrete filled steel bollards at each jam of coiling overhead doors. Provide a sealed concrete floor throughout. Provide one personnel door into the office area and two personnel doors into the storage bay. Provide a sloped metal roof (2:10) with gutters and downspouts.

Bridmals and bwt storage

Provide an 890 SM storage facility with similar to the RMTC General Purpose Storage facility. Provide a floor to ceiling reinforced concrete block wall separating the building 60:40 with the larger area designated for BWT

Storage. Clear height inside the facility shall be 5000 mm. Provide 2 coiling overhead doors, 3000 mm wide x 3500 mm high. Provide two (2) 200 mm dia x 1000 mm high concrete filled steel bollards at each jam of coiling overhead doors. Provide a sealed concrete floor throughout. Provide two personnel doors into each storage bay. Provide a sloped metal roof (2:10) with gutters and downspouts.

HVAC, Heating Ventilation Air-Conditioning

Environmental control of the facilities shall be achieved by HVAC equipment proposed by the contractor and approved by the U.S. Government. See section 01015 for scope of work required.

LIFE SAFETY

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

LIGHTING

General lighting shall be provided as indicated and shall meet recommendations from IESNA for each building type and function within each building. Design and installation shall meet NEC 70 requirements.
Exterior lighting shall be high intensity discharge luminaires (high pressure sodium on 10 meter high minimum spun aluminum or galvanized steel poles. Exterior lighting shall be provided for street lights , parking areas, building entrances, and walkways.

FENCING AND BARRICADES

Fencing shall consist of the types shown or described herein. Barricades shall consist of either Hesco Bastion Container barriers or concrete type. Refer Drawings for required types and locations. Barricades are not intended to resist a certain horizontal load and are not required to be permanently anchored to ground.

FOUNDATION DESIGN

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

COMPLETION OF WORK

All work required under this contract shall be completed within 420 calendar days including government review time from Notice to Proceed for site work.

All work under this contract shall be completed and buildings ready for beneficial occupancy in accordance with the following schedule:
Work Items to be completed no later than **420** calendar days after Task Order award:

- Design Cost, Site Survey and Master Plan
- As-Built Drawings
- Mobilization, Demobilization and General Site Work
- Test Water Well
- Potable Water Supply System

- Sanitary Sewer Collection and Treatment System
- Site Electrical Power and Distribution System
- Road Network and Foot Paths
- Access Points (2)
- RMTC HQ Building
- Instructors Offices (3)
- Classroom Building, 200 Students (2)
- Classroom Building, 2 x 100 Students (2)
- Dining Facility (DFAC), with Propane Storage and Dry Storage Yard
- NCO/Officer Barracks (5)
- Enlisted Barracks (6)
- Latrines, Large, with Toilets/Shower/Ablution/Laundry (4)
- Latrines, Small, with Toilets (3)
- BWT Barracks Security Fence
- Medical Clinic
- PX / Finance Office
- Laundry
- Small Arms Storage and Security fence
- ASP and Security Fence
- Motor Pool and Security Fence
- Vehicle Maintenance Building
- POL Storage, Fuel Point and Fuel Pumps
- RMTC Storage, Bridmals and BWT Storage and Security Fence

Option Items

- Parade Ground with Review Stand
- Trash Collection Points (6)
- Personnel Bunkers (12)
- Classroom Building, 4 x 50 Students (3)
- Vehicle Wash Rack

SPARE PARTS

Refer to other sections herein for requirements.

REFERENCES

Refer to Section 01015 for required references.

-END OF SECTION-

SECTION 01015

TECHNICAL REQUIREMENTS – DESIGN/BUILD

GENERAL

COMPLIANCE

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

MINIMUM & ALTERNATE REQUIREMENTS

The design and product requirements stated within these documents are minimum requirements. The design technical requirements listed in the references and codes, section 1.8 shall apply to this project. Any deviation from the technical requirements shall be approved by the Contracting Officer. Request for deviations shall be submitted for approval. The Contractor may 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 the Section 01335, 3.6.4 Variations for all variations to make a comprehensive comparison of the proposed alternate. All variations of approved designs must be approved by the Contracting Officer.

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.

SAFETY

Unexploded Ordnance (UXO)

It is the responsibility of the Contractor to be aware of the risk of encountering UXO/mines and to take all actions necessary to assure a safe work area to perform the requirements of this contract. If during construction, the contractor becomes aware of or encounters UXO/mines or potential UXO/mines, the contractor shall immediately notify the COR, mitigate any delays to scheduled or unscheduled contract work, and clear/remove the UXO/mines. The contractor may only provide clearance/removal services via UNMACA accredited entities. Clearance/removal may only be undertaken in accordance with IMAS/AMAS standards. The Contractor assumes the risk of any and all personal injury, property damage or other liability arising out of or resulting from any Contractor action taken hereunder.

Scrap metal shall be the property of the Host Government. The scrap metal on site shall be moved to an area away from the site perimeter as directed by the Contracting Officer's Representative and left for the Host Government to remove and/or salvage.
NOTE: For previous UXO/mine information, and a copy of the clearance certification the following points of contact from the UN Mine Action Center of Afghanistan are provided:
Mohammad Sediq, Chief of Operations,
Email: sediq@unmaca.org
Cell: +93 070 295207
Hansie Heymans, Chief Information Officer,
Email: hansie@unmaca.org
Cell: +93 070 294286

Unexploded Ordnance (UXO) Safety Support During Construction.

It is the responsibility of the Contractor to be aware of the risk of encountering UXO and to take all actions necessary to assure a safe work area to perform the requirements of this contract. If during construction, the contractor becomes aware of or encounters UXO/Mine or potential UXO/Mine, the contractor shall immediately stop work at the site of encounter, clearly mark the area of UXO/Mine, move to a safe location, notify the COR, and mitigate any delays to scheduled or unscheduled contract work. Once the contractor has informed the COR, the contractor will await further direction. The Contractor assumes the risk of any and all personal injury, property damage or other liability arising out of or resulting from any Contractor action taken hereunder.

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

LIMITATION OF WORKING SPACE

The Contractor shall, except where required for service connections or other special reason(s), confine his operations strictly within the boundaries of the site. Workmen will not be permitted to trespass on adjoining property. Any operations or use of space outside the boundaries of the site shall be by arrangement with all interested parties. It must be emphasized that the Contractor must take all practical steps to prevent his workmen from entering adjoining property and in the event of trespass occurring the Contractor will be held entirely responsible.
Areas located immediately outside the construction area are known to contain mines and unexploded ordnance (UXO). Contractors assume all risks when venturing in or out of the designated work area.

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.

SUBCONTRACTORS

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

LIST OF CODES AND TECHNICAL CRITERIA:

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

ACI 301M Specifications for Structural Concrete (latest edition)
ACI 318 Building Code Requirements for Structural Concrete (latest edition), American Concrete Institute
Air Force Manual 32-1071, Security Engineering, volumes 1-4, 1 May 1994
American Water Works Association, ANSI/AWWA C651-99 standard
ASCE 7, Minimum Design Loads for Buildings and Other Structures (latest edition)
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 WellsAWS - American Welding Society
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)
EIA ANSI/TIA/EIA-607: (1994) Commercial Building Grounding/Bonding Requirement Standard
Factory Mutual (FM) Approval Guide-Fire Protection (2002)
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
IMC – International Mechanical Code
IPC – International Plumbing Code
Lighting Handbook, IESNA, latest edition
MIL-HDBK-1190, Facility Planning and Design Guide
Codes and Standards of the National Fire Protection Association (NFPA)
[as applicable and enacted in 2002 or later, unless otherwise noted]
National Electrical Safety Code (NESC), Institute of Electrical and Electronic Engineers (IEEE C2), 2002 edition
NFPA 1, General Fire Protection, latest edition
NFPA 10, Portable Fire Extinguishers, 2002 edition
NFPA 70, National Electrical Code, 2005 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 96, Fire Protection for Commercial Kitchens, 2008 edition
NFPA 101, Life Safety Code, 2006 edition
NFPA 110, Standard for Emergency and Standby Power Systems, 2005 edition
Plumbing and Drainage Institute (PDI-WH-201) water hammer arrestors
NFPA 1141, Site Fire Protection, latest edition
International Mine Action Standards, latest edition; (see http://www.mineactionstandards.org for copy of standards)
TM 5-805-4 Noise and Vibration
TM 5-811-1 Electrical Power Supply and Distribution
TMS 402-08 / ACI 530-08 / ASCE 5-08, Building Code Requirements and Specifications for Masonry Structures, 2008 MSJC.
UFC 1-200-01, Design: General Building Requirements
UFC 1-300-07A Design Build Technical Requirements
UFC 3-220-03fa Soils and Geology
UFC 3-230-03a, Water Supply, 16 Jan 2004
UFC 3-230-04a, Water Distribution, 16 Jan 2004
UFC 3-230-06a, Subsurface Drainage, 16 Jan 2004
UFC 3-230-07a, Water Supply: Sources and General Considerations, 16 Jan 2004
UFC 3-230-08a, Water Supply: Water Treatment, 16 Jan 2004
UFC 3-230-09a, Water Supply: Water Storage, 16 Jan 2004

UFC 3-230-10a, Water Supply: Water Distribution, 16 Jan 2004
UFC 3-230-13a, Water Supply: Pumping Stations, 16 Jan 2004
UFC 3-230-17FA, Drainage in Areas Other than Airfields, 16 Jan 2004
UFC 3-240-03N, Operation and Maintenance: Wastewater Treatment System Augmenting Handbook, 16 Jan 2004
UFC 3-240-04a, Wastewater Collection, 16 Jan 2004
UFC 3-260-01, Airfield and Heliport Planning and Design, 1 Nov 2001 with changes dated 19 May 2006
UFC 3-260-02, Pavement Design for Airfields, 30 June 2001
UFC 1-300-09N, Design Procedures
UFC 3-310-01, Structural Load Data
UFC 3-310-02A, Structural Design Criteria for Buildings
UFC 3-410-04N, Industrial Ventilation, 25 October 2004
UFC 3-420-01, Plumbing Systems Design, 19 June 2003
UFC 3-501-03N, Electrical Engineering Preliminary Considerations, 16 Jan 2004
UFC 3-520-01, Interior Electrical Systems, 10 June 2002
UFC 3-530-01AN, Design: Interior and Exterior Lighting and Controls, 19 Aug 2005
UFC 3-535-01, Visual Air Navigation Facilities, 17 November 2005
UFC 3-540-04N Design: Diesel Electric Generating Plants, 16 Jan 2004
UFC 3-550-03FA Design: Electrical Power Supply and Distribution Systems, 1 Mar 2005
UFC 4-010-01, Design: Minimum DoD Antiterrorism Standards for Buildings, 22 Jan 2007
UFC 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings, 19 Jan 2007
UFC 4-020-01FA, Security Engineering: Project Development, 1 Mar 2005
UFC 4-020-02FA, Security Engineering: Concept Design, 1 Mar 2005
UFC 4-020-03, 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 16 January 2004
UFC 4-722-01, Design: Dining Facilities, 27 January 2003
Underwriters' Laboratories (UL) Fire Protection Equipment Directory (2002)
UL Standards (as applicable)
UL 710, Exhaust Hood for Commercial Cooking Equipment, latest edition
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 (most recent version) shall be required for use in design and construction specifications as indicated in the following documents. The following design criteria shall be used:

AED Design Requirements - Site Layout Guidance, March 2009
AED Design Requirements - Well Pumps & Well Design/Specifications, June 2009
AED Design Requirements – Water Tank and Water Distribution Systems, July 2009
AED Design Requirements - Booster Pumps, March 2009
AED Design Requirements – Chlorinators, March 2009
AED Design Requirements - Hydro-Pneumatic Tanks, March 2009
AED Design Requirements - Jockey Pumps, March 2009
AED Design Requirements - Water Tanks, March 2009

AED Design Requirements – Hydrology July 2009
AED Design Requirements - Culvert and Causeway Design, June 2009
AED Design Requirements - Sanitary Sewer and Septic Systems, July 2009
AED Design Requirements - Grease Trap, March 2009
AED Design Requirements - Oil-Water Separator, March 2009
AED Design Requirements - Package Wastewater Treatment Plants and Lagoons July 2009
AED Design Requirements - Vertical Curves, March 2009
AED Design Requirements – Horizontal Curves & Super elevation March 2009
AED Design Requirements – Geotechnical Investigations for USACE Projects July 2009

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.

SITE DEVELOPMENT

GENERAL

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

eNVIRONMENTAL PROTECTION

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.

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.

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.

Disposal

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

CIVIL SITE DEVELOPMENT

Site Plan

The contractor shall prepare plat or plan of property as part of the design package consists of a Boundary Survey of the ANA RMTC located in Shindand Airfield in the city of Shindand, Afghanistan. The survey shall show the closure of the property boundary consisting of identifying all property corners, establishing horizontal and vertical control listing all bearing and distances of property lines from the centerline of all adjacent roads. The contractor shall place property corner markers and a monument on the property showing site elevations, coordinate grid systems and WGS 84 latitude longitude. This survey shall meet the requirements of World Geodetic System 1984 (WGS 84 UTM Zone 41N in decimal degrees. The survey design shall include topographic map and the locations of all building corners, structures, major trees, road right of ways, names of roads, widths of roads, easements, right of ways, setbacks, parking and paving areas, storage containers, stoops, sidewalks and walkways, above ground utilities, electrical and bunker locations. The contractor shall identify and show perimeter walls, fences, Hesco barriers, guard towers and entry control point structures. The contractor shall locate the facilities in general agreement with the drawings included and any requirements in the Scope of Work 01010. All site features shall be clearly defined and dimensioned on the site plan. Buildings shall be located to provide access for emergency vehicles and fire fighting. Roads and parking areas shall be designed for turning radius of the largest vehicle entering the compound. The site plan shall show geometric design of the site, including applicable dimensions of all exterior facilities, mechanical equipment, pavements, utilities, etc. Required facilities are described in the following sections of this specification. All roads and areas where tractor-trailer vehicles will travel shall be designed for the worst case turning radius. Design and construction of roads and pavements shall be based on recommendations from geotechnical investigation required herein. All site plans and master plans shall be drawn in the following projection and datum for incorporation into the U.S. Army Corps of Engineers GIS system:

WGS 1984 UTM Zone 41 N

Demolition

Demolition shall include removal of all structures, foundations, pavements, and utilities, and clear and grubbing. All refuse and debris shall be disposed of off of the site. Holes and depressions shall be backfilled. Fill materials shall be composed of satisfactory soils or aggregates defined in ASTM D 2487 as GW, GP, GM, SP, SM, and SW. Minimum soil compaction shall be 95 percent of maximum density as defined in ASTM D 1557

Site Grading & Drainage

The contractor will provide all necessary site grading to insure adequate drainage so that no areas will be flooded due to a rainfall of a 10-year frequency. Drainage of the area should be compatible with the existing terrain. Building floor elevation shall be a minimum 150mm above grade and slope away from the building on all sides at a minimum of 5% for 3 meters. Protection of facilities from flood waters originating offsite of an installation shall be based on a rainfall for a 25-year frequency event. This shall include the design or evaluation of bridges (not culverts or causeways) on road projects.

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 July 2009 shall be used by extrapolating the rainfall intensity information from the stations in closest proximity to the project. Under no circumstances will relationships developed by extrapolation from foreign countries be used for hydrologic studies.

Roads

Paved roads are required within the compound. All roads shall be of Hot-Mix Asphalt (HMA) wearing surface 7.3 meters (24 feet) wide, unless otherwise noted, graded for proper drainage, provided with necessary drainage structures and completed with prescribed surfaces in accordance with applicable sections of TM 5-822-2 and TM 5-822-5 standards. Aggregate pavement surface should consist of a minimum of 75mm (3 inches) thick HMA, 150mm (6 inches) thick aggregate base course material compacted to 95% maximum proctor density, placed above 150mm of scarified subgrade compacted to 95% maximum density. Provide 1.0 meter wide shoulder on both sides of roadways, consisting of a surface of aggregate base course material and it should be 150mm thick @ 2.0% slope. Contractor shall notify the Contracting Officer immediately if initial site survey determines that the area hydrology requires major drainage structures or bridges.

Bridges and Site Grading Plan

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

Parking Areas and Motor Pools

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

FORCE PROTECTION DESIGN

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

Perimeter Security fence

Chain link fence shall be constructed around the perimeter of the site. The height of the fence shall measure at least 3 meters from the inside grade. Inside grade shall in all cases be higher than outside grade. The foundation shall be based on USACE standard drawings. Outriggers, see paragraph 2.3.5.2.3, to support barbed wires and a single-coil concertina style razor wire shall be provided and installed by the contractor. Site grading must slope away from the walls for at least a distance of 5 meters. 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.

Perimeter fence Access Gates

SLIDING GATES

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

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.

REINFORCED BARBED TAPE

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

CHAIN-LINK FENCE AND TRASHPOINT GATES

Provide chain-link fence and gates around the BWT Barracks, ASP, Small Arms Storage, RMTC Storage, Motor Pool, Well House, Trash Point, and Perimeter of the compound. 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 unless noted otherwise. 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 install on its hinges. Gates shall have a sufficient number of hinges, anchor mounted to the exterior masonry walls, to support each gate leaf. Provide a locking mechanism that holds the gates together when in the closed position as well as a drop bolt that engages a steel sleeve embedded in the pavement.

parade grounds

Provide an 80 meter x 60 meter Parade Ground located near the Battalion HQ Administration Building. No landscaping shall be provided. The parade grounds shall be graded as to ensure the site drainage does not erode the field. Provide a compacted surface composed of satisfactory fill materials Satisfactory materials for the parade grounds ONLY shall be defined as GW, GP, GM, SW, SP, SC, ML, or other material approved by the COR.

CIVIL UTILITIES

General

The design of the water and sanitary systems shall be sized to provide flow and discharge based a combination of Average Daily Demand (ADD) and on a fixture unit basis. Water supply and storage shall be based on ADD basis after appropriate factors are applied; water distribution systems including booster pump stations or hydro pneumatic tank facilities shall be based on unit fixture flow basis. Wastewater quantities for wastewater treatment and disposal systems shall be based on ADD, after appropriate factors are applied; sewer conveyance including gravity sewers, force mains and lift stations shall be based on unit fixture basis. The design drawings shall show all utility lines, line sizes, valves, manholes, backflow preventers, bends, thrust blocking, cleanouts, disinfection systems, piping materials, invert elevations, piping profiles (for water and sewer lines), and applicable details associated with water and sanitary system designs. Specifications covering water lines, valves, pumps, controls, sanitary sewers and storm sewers shall be submitted as part of the design and shall require standard materials that are available in-country. Contractor shall install and connect exterior sanitary sewer collection and water supply piping to service connection points of each facility requiring such.

Water

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 demand (ADD) shall be the quantity derived from 155 liters (or 41 gallons) per capita per day (lpcd) . A capacity factor shall be multiplied times the average daily demand based on UFC 3-230-07a, Water Supply: Sources and General Considerations guidance. The capacity factor shall be utilized as described in the following paragraph. In the event potable or non-potable use water is required prior to completion of the water facilities infrastructure the Contractor may be issued a Request for Proposal to provide non-potable (tank truck) and potable (bottled or other reliable source) consumption. Provide a minimum of one (1) outside water hydrant (hose spigot) for all buildings with water service. All building 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 and total dynamic head (TDH) based on one average daily demand (ADD) times the capacity factor over a 16 hour period

- Water Tanks - Capacity based on average daily flow times the capacity factor

- Booster Pumps – Discharge capacity and total dynamic head (TDH) based on 2 times the average daily flow; a minimum of two pumps shall be provided, one for duty service and one standby whose operation shall be rotated to achieve equal wear; a jockey pump sized at one-third the average daily flow for the same system pressure as the primary pumps may be required. At installations with total effective population of less than 50, the booster pump may be sized on the basis of fixture unit flow.

- Hydro pneumatic tanks – Volume and pressure regulation to maintain a pressure range provided in the technical requires based on a rate equal to the average daily flow

- Water Mains – Diameter based on the two times the average daily flow unless minimum diameter specified is adequate to provide flow and required maximum velocity; 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

Water wells

The contractor shall construct water well(s) inside the compound, to provide sufficient supply for the facility. The new well capacity shall be based on the allowable safe yield of the new well determined by a well pump test as described in the USACE-AED Water Well Guide Specification. The new well site shall be at a location specified 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 Water Well Guide Specification. If unavailable within the compound, Contractor shall immediately notify the COR for resolution. Off site water wells then may be considered upon approval by the COR. Unless noted elsewhere, wells shall be capable of supplying one day demand with 16 hours of pumping time. Well shall be drilled to a minimum depth of 20 m below the existing water table.
Well construction shall be in accordance with AED Design Requirements - Well Pumps & Well Design/Specifications, June 2009. 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.
Casing – In unconsolidated material, casing shall be extended to the top of the well screen. In rock formations (drilled wells) the hole may be left open 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 will 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. Well construction materials and specifications are contained in USACE-AED Well Pumps & Well Design Guide with Attachment A – Guide Specifications for Drinking Water Wells, June 2009
Sealing - The drilling process will create a hole (borehole) larger than the casing. The entire space between the casing and the edge of the borehole will be filled with gravel, overburden, or concrete as follows:

1. The upper 3 m of the well bore will be sealed with cement grout. Grout shall be placed in one continuous mass and be impermeable.

2. The space around the well screen will be filled with material that will form a filter and not clog the slots in the screen (e.g. washed coarse sand for a fine bore wall material).

3. The space between the top of the filter pack and the base of the grout seal may be backfilled with overburden or other clean earth material.

4. 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 um	8 +/- 4

All aggregate shall contain less than 5% 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.

Source protection - Surface drainage within 30 m of 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. 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

Well Pump – A submersible, centrifugal pump shall be installed inside the casing set no more than 1.5 meters from the base of the excavation. 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.

Quality control and testing

Well pump testing

Well pump testing and water clarity testing after well development shall be per the requirements in AED Design Requirements - Well Pumps & Well Design/Specifications, June 2009 or most recent version. Water Quality Sampling and Analysis

The Contractor shall perform water quality sampling and testing at the source. The Contractor shall utilize well-qualified and equipped testing capability in the project site area, if available. If professional testing services are not available in the area, the Contractor will submit an alternative practical testing source for approval. Raw water quality criteria for Water Quality and Criteria Standards, and shall address the

See USACE-AED Well Pumps & Well Design Guide with Attachment A – Guide Specifications for Drinking Water Wells, June 2009 for requirements for laboratory testing.

Well House

At new wells or springs, construct a permanent well house with reinforced concrete slab floor. The floor of the well house shall slope away from the casing approximately 3 mm per 300 mm (1/8" per foot) and drain to the outside. Floor of well house shall be minimum 300mm above adjacent grade. The well house design should be such that the well pump, motor, and drop pipe could be removed readily by providing an insulated hatch in the building roof provided with a hasp and lock. The well house shall protect valves and pumping equipment plus provide freeze protection for the pump discharge piping beyond the check valve. The well house shall be insulated and have a heating unit provided. The entry door shall be made of heavy duty metal and metal frame with no louvers. The well shall be protected from unauthorized use by a security fence with lockable gate. Provide outriggers, barbed wire and concertina wire on fence and gate.

Well Water Pumps (for Hydro-pneumatic system)

An electric submersible well pump will pressurize the system by supplying water to a hydro-pneumatic tank and be capable of providing output for twice the average daily demand and provide hydro-pneumatic tank pressure. A mechanical hand pump capable of providing a flow equal to 5 gallons per minute is required as a backup. The hand

pump will be connected directly to the electric well pump effluent piping thereby allowing the system to be pressurized by either pump. In the event that the well is in excess of 100 meters a mechanical hand pump will not be required. The pumps and controls shall be designed to supply and maintain acceptable system pressure throughout the distribution network given the full range of flow conditions (low flow to peak). The pump discharge shall have a gate valve, check valve, pressure gage, and air relief valve.

Raw Water Disinfection

Contractor shall perform disinfection of the well water in accordance with AED Design Requirements - Well Pumps & Well Design/Specifications, June 2009. 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.

Service Booster Pumps

Contractor shall provide a booster pump station with end suction or split case double suction horizontal split case (frame mounted) centrifugal pumps arranged in parallel for pumping water storage into the main distribution system. The pumps and controls shall be designed to supply and maintain acceptable system pressure throughout the distribution network given the full range of flow conditions (low flow to peak). For conditions of low demand and to prevent short cycling of primary pumps, provide a low demand jockey pump with capacity of one-third (1/3) of the Average Daily Demand (ADD), if hydro-pneumatic tank(s) are not to be used. Each booster pump shall be capable of delivering 2 times the ADD. A minimum of two booster pumps are required to provide a redundant system. Provide suitable expansion tank for booster pump system sized for anticipated pressure surges, if hydro pneumatic tanks are not to be used. The suction side of the service booster pumps shall have an eccentric reducer and gate valve installed. The discharge side shall have a gate valve, check valve between the pump and the gate valve and concentric reducer, pressure gage and air relief valve.

Water Storage Tank

Contractor shall provide a steel or concrete ground storage reservoir (GST) to be located on the ground surface. Volume of the GST shall be a minimum storage volume of a full days demand. The Contractor shall verify storage volume requirements based on final design population. The storage facility shall be located above drainage areas and locations subject to flooding as approved by the Contracting Officer. The storage facility shall be located on the higher elevations of the site to promote gravity flow and reduce pumping requirements. Overflow and air vents shall be screened so that birds, rodents and debris cannot enter the reservoir. The tank shall meet all applicable codes for potable water storage. The interior coatings for the tank shall meet NSF/ANSI 61 requirements.

HYDRO-PNEUMATIC WATER STORAGE TANK

The Contractor shall provide horizontally mounted and insulated above ground hydro-pneumatic tank(s) containing water and compressed air located adjacent to the well house to maintain system pressures between 275 kPa to 282 kPa (40 psi to 70 psi).. A compressor is required to charge the tank with air. At low level the water remaining in the tank shall be at least ten percent of the capacity of the tank. The tank size shall be determined such that the pump cycles not less than 4 times per hour nor more than 10 times per hour. Storage may be divided between duplicate units in cases where a single tank would be too long to easily transport to the site. Volume of the tank shall be a minimum storage volume of a full days demand. The Contractor shall verify storage volume requirements based on final design population. The storage facility shall be located above drainage areas and locations subject to flooding as approved by the Contracting Officer.

Disinfection & Chlorination System

Use hypochlorite compounds for disinfection. A hypo-chlorinator shall be used to feed a sodium hypochlorite solution of 5-15% available chlorine into the system. Hypochlorite compound may be a liquid or solid form. The hypo chlorination system shall consist of a chemical solution tank for hypochlorite, diaphragm-type pump, power supply, water pump, pressure switch and storage tank (optional hydro-pneumatic/storage). The pump shall feed a hypochlorite solution in proportion to the water demand. The hypo-chlorinator shall have a pumping rate, liters per day (lpd) (gallons per day (gpd)) adequate to deliver 5 percent (%) available hypochlorite solution adjustable to the quantity of water being produced from the source. Dosage rate will vary somewhat depending on actual pump production rate and available residual chlorine in the system. Contractor shall determine the required dosage rate milligrams per liter (mg/l) to maintain the required chlorine residual (usually 0.2-0.4mg/l) in the distribution system. Chlorine solution tank shall be large enough to hold a three days supply of hypochlorite solution. A fresh solution shall be prepared every two or three days because the solution may lose its strength over time and this will affect the actual chlorine feed rate. The hypochlorite shall be stored in a cool dry place. Sodium hypochlorite can lose from two to four percent of its available chlorine content per month at room temperature. Contractor shall verify required minimum residual chlorine in accordance with local requirements verified and approved by the Contracting Officer. The chlorination system shall have the capability for manually adjusting the dosage rate and be installed in such a manner that the system can be easily disconnected and bypassed in the event of health safety or routine maintenance and repair. Disinfection of water mains shall be in accordance with AWWA standard C651-86 and disinfection of storage facilities in accordance with AWWA standard C652-86.

Chlorine Shelter

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

Water Distribution System

General

The Contractor shall provide a water distribution system. The distribution network shall be laid out in a combination grid and looped pattern with dead ends not exceeding 30m (99 feet). Use similar piping materials for all buildings and pipe runs in the distribution system for efficiency of future maintenance activities. Distribution lines shall be a minimum of 100mm (4 inches) in diameter. Dead end sections shall not be less than 150mm (6 inch) diameter and shall either have blow off valves or fire hydrants (flushing valves) installed for periodic flushing of the line. Any pipe with a fire hydrant on the line shall be at least 150mm (6 inch) in diameter. Water supply distribution shall connect to a building service at a point approximately 1.5m (5 feet) outside the building or structure to which the service is required. All piping and joints shall be capable of at least 1.03 MPA (150 psi) leakage testing and 1.38 MPa (200 psi) hydrostatic test pressure unless otherwise specified. Pipes should be adequate to carry the maximum quantity of water at acceptable velocities not to exceed 1.5m/sec (5 ft/sec) at maximum flows not to exceed 2.8m/sec (9.2ft/sec). Pressure shall be from 276kPa (40 psi) to 517kPa (75 psi) at all points of the distribution system. If high pressures greater than 690kPa (100 psi) cannot be avoided, pressure-reducing valves shall be used. A lower system operating pressure other than stated above 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. Pipe material shall meet the requirements of 2.5.3.2 Pipe.
Adequate cover must be provided for frost protection. A minimum cover of 800mm (2'-8") is required to protect the water distribution system against freezing. Water lines less than 1.25 meters (4 feet) deep under road crossings shall have a reinforced concrete cover of at least 150 mm (6 inch) thickness around the pipe extending out to 1m from each road edge.

Pipe

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

WATER MAINS AND BRANCHES

Water pipe material for water mains and branches shall be PVC or Ductile Iron (DI). The exterior surface of the pipe must be corrosion resistant. Pipe diameters shall be 300mm (12 inch), 250mm (10 inch), 200mm (8 inch), 150mm (6 inch) and 100mm (4 inch). If Ductile Iron (DI) pipe is installed underground the pipe shall be encased with polyethylene in accordance with AWWA C105. Ductile iron pipe shall conform to AWWA C104.. DI fittings shall be suitable for 1.03MPa (150psi) pressure unless otherwise specified. Fittings for mechanical joint pipe shall conform to AWWA C110. Fittings for use with push-on joint pipe shall conform to AWWA C110 and C111. DI fittings shall be cement mortar lined (standard thickness) in accordance with C104. All pipes and joints shall be capable of at least 1.03 MPa (150 psi) and 1.38 MPa (200psi) hydrostatic test pressure unless otherwise specified herein. Polyvinyl Chloride (PVC) pipe shall conform to ASTM D 1785. Plastic pipe coupling and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. PVC screw joint shall be in accordance with ASTM D 1785, Schedules 40, 80 and 120. 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.

WATER SERVICE

Water service connections to 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. Pipes for service connections may be smaller as required by plumbing code (IPC). 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 either HDPE for any of the water pipes.

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, July 2009 or most recent version.

Pressure Test

After the pipe is laid, the joints completed, and the trench partially backfilled leaving the joints exposed for examination, the newly laid piping or any valved section of piping shall, unless otherwise specified, be subjected for 1 hour to a hydrostatic pressure test of 1.38 MPa (200 psi). Each valve shall be opened and closed several times during the test. Exposed pipe, joints, fittings, hydrants and valves shall be carefully examined during the partially opened trench test. Joints showing visible leakage shall be replaced or remade as necessary. Cracked or defective pipe, joints, fittings, hydrants and valves discovered following this pressure test shall be removed and replaced and retested until the test results are satisfactory.

Leakage Test

Leakage tests shall be conducted after all pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least 2 hours, and, during the test, water lines shall be subjected to not less than 1.38 MPa (200 psi). Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section, necessary to maintain pressure to within 34.5kPa (5 psi) of the specified leakage test pressure after the pipe has been filled with water and all air expelled. Pipe installation will not be accepted if leakage exceeds the allowable leakage, as determined by the following formula:

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

L = Allowable leakage in gallons per hour
N = Number of joints in the length of pipeline tested
D = Nominal diameter of the pipe in inches
P = Average test pressure during the leakage test, in psi gauge

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

Bacteriological Disinfection

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.

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.

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.

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.

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.

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 meter (3'-4") square, for all valve boxes.

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.

BLOW-OFF VALVES

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

<u>Thrust Blocking</u>

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.

Sanitary Sewer

General

There are no functional or salvageable sanitary sewer collection, treatment or disposal facilities at this site. The Contractor shall obtain topographic information or other maps that show vegetation, drainage channels and other land surface features such as underground utilities and related structures that may influence the design and layout of the collection system. If maps are not available, or do not provide satisfactory information or sufficient detail of the site, field surveys shall be performed. Sanitary sewers less than 1.25 meters (4 feet) under road crossings shall have reinforced concrete cover at least 150 mm (6 inch) thick around the pipe. 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. All sewers shall be located outside of the roadways as much as practical, and minimize the number of roadway crossings. To the extent practical, a sewer from one building shall not be constructed under another building, or remain in service where a building is subsequently constructed over it. Construction required shall include appurtenant structures and building sewers to points of connection with building drains 1.5m (5 feet) outside the building to which the sewer collection system is to be connected.

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

Follow slopes of natural topography for gravity sewers.

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.

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

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.

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.

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

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

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

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

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

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

Protection of Water Supplies

The Contractor shall ensure that the sewer design meets the following criteria:
Sanitary sewers shall be located no closer than 30m (100 feet) horizontally to water wells or reservoirs to be used for potable water supply.

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

Sanitary sewers crossing above potable water lines shall be constructed of suitable pressure pipe or fully encased in concrete for a distance of 2.7m (9 feet) on each side of the crossing. Pressure pipe will be as required for force mains in accordance with local standards and shall have no joint closer than 1m (3 ft) horizontally to the crossing, unless the joint is fully encased in concrete.

Quantity of Wastewater

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

Gravity Sewer

Sanitary sewers shall be designed to flow at a maximum in the following way: 1) sanitary sewer laterals, mains and trunk lines flow velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps) or 2.0 feet per second (fps) at the ADD flow rate, 2) a minimum velocity of 0.8 to 1.05 mps (2.5-3.5fps) at the peak diurnal flow rate, 3) flows shall be based on allocating the proportion of the average daily or peak daily flow to each building or facility on the basis of fixture unit flow developed for the plumbing design, and 4) minimum pipe slopes shall be provided regardless of the calculated flow velocities to prevent settlement of solids suspended in the wastewater. The minimum slopes are shown in the following table from AED Design Requirements for Sanitary Sewer and Septic Systems. This table does not state that slopes are are designed at this slope regardless of flow depth and velocity. Other criteria must also be used to determine grade stated above. The word “minimum” is defined as “the least quantity or amount possible, assignable, allowable, or the like”. Greater slopes shall be used as needed to achieve all the design requirements.

Unless otherwise indicated (see Building Connections and Service Lines), gravity sewer pipe shall be installed in straight and true runs in between manholes with constant slope and direction. Adequate cover must be provided for frost protection. A minimum cover of 800 mm (2’-8”) will be required to protect the sewer against freezing.

Minimum Slopes for Sewers	
Sewer Pipe Size (mm)	Minimum Slope in meters per 100 meters
100	1.00

150	0.62
200	0.40
250	0.28
300	0.22
350	0.17
400	0.15
450	0.14
500	0.12
550	0.10
600	0.08

Manholes

The Contractor shall provide standard depth manholes (MH), (depth may vary) an inside dimension of 1.2m (4 ft). Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover. Alternate pre-cast manhole option shall taper to a 750 mm (30-inch) cast iron frame that provides a minimum clear opening of 600 mm (24 inches). In every case, the manholes, frames and covers shall be traffic rated, H-20 load rating. All manholes shall be provided with a concrete bench with a flow line trough, smoothly formed to guide waste flow to the outlet pipe from the inlet pipe(s). The top surface of the bench shall be above the crown of all pipes within the manhole. All surfaces of the bench shall be sloped smoothly toward the trough to guide flow, even under peak flow conditions. Sanitary sewer lines shall enter at the manhole flow line. Where the invert of the inlet pipe would be more than 0.5 meter above the manhole floor, a drop inlet shall be provided. No internal drop structures shall be permitted at lift stations. Inlet to lift station wet wells shall enter below the lowest water level of the pump operating range, and if necessary a drop inlet approach pipe external to the lift station may be used to avoid cascading influent flow.

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.

SPACING

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

PIPE CONNECTIONS

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

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.

STEPS FOR MANHOLES

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

Pipe

Pipe shall conform to the respective specifications and other requirements as follows: Provide Polyvinyl Vinyl Chloride (PVC) conforming to ASTM D 3034, Type PSM with a maximum SDR of 35, size 380 mm (15inch) or less in diameter. PVC shall be certified as meeting the requirements of ASTM D 1784, cell Class 12454 B. Minimum pipe sizes for the main lines shall be 200mm (8 inch) diameter and service lines/laterals shall be a minimum of 100 mm (4 inch) diameter. Contractor may use uPVC or HDPE pipe provided the SDR and strength properties of the pipe equal or exceed the properties of ASTM D 1784 for PVC.

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.

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.

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 0.8m (2 ft 8”).

BUILDING CONNECTIONS AND SERVICE LINES

Building connections and service lines will be planned to eliminate as many bends as practical and provide convenience in rodding. Bends greater than 45 degrees made with one fitting should be avoided; combinations of elbows such as 45-45 or 30-60 degrees should be used with a cleanout provided. Connections to other sewers will be made directly to the pipe with standard fittings rather than through manholes. However, a manhole must be used if the connection is more than 31m from the building cleanout. Tee connections to the main or branch are not allowed. Service connection lines will be a minimum of 150 mm (6 inch) diameter and laid at a minimum 1% grade. Service laterals shall be 200 mm (8 inch) and sloped to maintain the minimum velocity as described in paragraph “Gravity Sewer.”

CLEANOUTS

Cleanouts must be installed on all sewer-building connections to provide a means for inserting cleaning rods into the underground pipe. Install manufactured wye fittings. In lieu of a wye fitting, an inspection chamber may be installed. The inspection chamber shall be of the same construction as a manhole. Preferably the cleanout will be of the same diameter as the building sewer, and never be smaller than 150mm (6 in). Cleanouts shall be located within 1m from the building.

Grease Interceptors

Grease interceptors 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 interceptor prior to the sanitary sewer system. The only waste lines upstream of the grease interceptor shall be grease laden waste from the kitchen or other areas. Grease interceptor design shall be based on AED Design Requirements - Grease Trap, March 2009. The grease interceptor 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 interceptors shall in be installed in a concrete pit and shall be epoxy-coated to resist corrosion as recommended by the manufacturer. Concrete shall have 21 MPa minimum compressive strength at 28 days. The grease interceptor 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 interceptor 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.

Field Quality Control

FIELD TESTS AND INSPECTIONS

The Contracting Officer will conduct field inspections and witness field tests specified in this section. The Contractor shall perform field tests and provide labor, equipment and incidentals required for testing.
Check each straight run of pipeline for gross deficiencies by holding a light in a manhole; it shall show a practically a full circle of light through the pipeline when viewed from the adjoining end of the line. When pressure piping is used in a non-pressure line for non-pressure use, test this piping as specified for non-pressure pipe.
Test lines for leakage by either infiltration tests or exfiltration tests. Prior to testing for leakage, backfill trench up to at least lower half of the pipe. When necessary to prevent pipeline movement during testing, place additional backfill around pipe to prevent movement during testing, but leaving joints uncovered to permit inspection. When leakage or pressure drop exceeds the allowable amount specified, make satisfactory correction and retest pipeline section in the same manner. Correct visible leaks regardless of leakage test results.
Infiltration tests and ex-filtration tests: Perform these tests for sewer lines made of specified material, not only concrete, in accordance with ASTM C 969M, ASTM C 969. Make calculations in accordance with the Appendix to ASTM C 969M and ASTM 969.
Low-pressure air tests: Perform tests as follows:
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;

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;

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.

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.

Wastewater Treatment Systems

Permanent base waste water treatment plants shall be designed in accordance with Unified Facilities Guide Specifications UFGS 44 41 13, Prefabricated Biochemical Wastewater Treatment Plant, Oct 07.
Package wastewater treatment plants and lagoons shall be designed in accordance with AED Design Requirements - Package Wastewater Treatment Plants and Lagoons July 2009 or most recent version. Package WWTP or lagoon treatment systems may be considered for installation size greater than 300 effective design population.
Septic systems shall be designed and installed in accordance with AED Design Requirements - Sanitary Sewer and Septic Systems, January 2009. Contractor shall provide a minimum 4 m wide access road to the septic tank. Bollards shall be installed around the absorption field as well as the septic tank. The access road shall be of the same thickness and material as the roadway on the compound. The access roadway shall tie to the nearest road network. Septic tank and leach field disposal systems shall be limited to effective design populations under 300 personnel. Contractor shall not use sewage holding tanks for wastewater disposal system unless specifically required as the only method in the contract section 01010 or receiving the approval of the USACE-AED Engineering Branch, only for facilities with 60 personnel or less as considered on a case by case basis.
Medical waste water treatment shall be designed in accordance with UFC 4-51-01 Design: Medical Military Facilities. Contractor shall provide a medical waste incinerator for all regulate medical waste (RMW) as defined in the UFC. The facility shall be located on a reinforced concrete pad with minimum 2 m high chain link fence and gate per Section 1015.

Wastewater Treatment Plant

Wastewater treatment Plant Capabilities

The wastewater treatment system shall be designed to accommodate the total facility compound population as specified in the Scope of Work and verified by the Contractor with the project manger prior to design. System capacity shall be calculated based on a hydraulic waste load equivalent to 80 percent of the Average Daily Demand (ADD) water usage rate adjusted by an 80 percent factor as noted in 2.4.4.3 Quantity of Wastewater unless otherwise stated in the contract section 01010. A capacity factor shall be multiplied times the average daily demand based on UFC 3-240-09fa, Domestic Wastewater Treatment guidance. The wastewater treatment plant shall be designed and constructed such that it operates with the ability to process inflow rates to the wastewater plant headwork 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.

Requirements of Design

Design Population: See equivalent design population in Section 01010, 1. General.
Wastewater Hydraulic Load: Individual waste water generation rate of 80 percent domestic waster use rate of iters (gallons) per person per day as stated above.

Influent Characteristics of Wastewater:
BOD_5 – 400 mg/L or based on 0.09 kilograms (0.20 pounds) per person per day whichever is greater loading
TSS –400 mg/L
TKN – 80 mg/L
Fecal Coliform – 10^8 MPN /100 mL

Effluent Criteria Limitations for Direct Surface Water Discharge:

BOD_5
The 30-day average will not exceed 30 mg/L.
The 7-day average will not exceed 45 mg/L.
$CBOD_5$ may be substituted for BOD_5. In those cases the following limits will apply:
30-day average will not exceed 25 mg/L.
The 7-day average will not exceed 40 mg/L.

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

TSS
The 30-day average will not exceed 30 mg/L.
The 7-day average will not exceed 45 mg/L.

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

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

Processes: To be determined by the Contractor as part of the scope of work subject to Government approval as required in AED Design Requirements - Package Wastewater Treatment Plants and Lagoons July 2009They shall include the generic components: preliminary treatment, primary treatment, secondary treatment, sludge digestion and disposal, effluent disposal including disinfection. A modular connex box shall be provided for the onsite laboratory.

Site Survey and Plan Requirements

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

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

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

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

Modular Container Laboratory. Provide 8 feet by 20 feet modular connex unit to be used as the onsite laboratory. Provide heating and cooling using a split pack heat pump unit, exhaust fan with makeup air opening and two counter mounted stainless steel sinks. Provide hot and cold water, drain and venting for the sinks. Provide a floor drain and hose bib to facilitate wash down of the laboratory.

Wastewater Reuse Plan. If required by the contract section 01010, provide a wastewater resue plan for landscape irrigation. Show reuse plan requirements described in the AED Design Requirements - Package Wastewater Treatment Plants and Lagoons July 2009.

Submittal Requirements:

The Contractor shall perform all design work required to provide a fully functional wastewater treatment system for the project at 65% submittal. The design may include but is not limited to:

Wastewater treatment plant site plan. The plan shall identify required setbacks, buried utilities (other than sewer) and potential points of connection to the existing electrical distribution system (existing on the compound). The set back requirements for the wastewater treatment plant site shown on a drawing to identify the buildable footprint. Setback requirements shall be obtained from applicable technical criteria listed in Section 01015.

5. Prepare a summary of basis of design report to include the following:

1. Design average daily loading for the wastewater treatment plant based on the design equivalent population (See Section 01010) to be used as the basis for wastewater loading. Provide the design peak hourly flow rates for the lift station, flow conveyance facilities including head works of the plant, and effluent outfall system. The anticipated waste loading in terms of biochemical oxygen demand (BOD_5) and total suspended solids (TSS) loading shall be shown for the plant.

2. Prepare a treatment train diagram that includes process modules: lift station pumping and flow metering, headwork processes (e.g. grit, trash and scum removal), equalization chamber, primary treatment processes (e.g. sedimentation and aeration), secondary treatment process including aeration and secondary clarification, sludge and scum recirculation systems, effluent chlorination and outfall system, sludge holding/digestion and disposal. All process component tankage shall be above ground tank. The biological treatment process shall be activated sludge as described in the AED Design Requirements – Package Wastewater Treatment Plants and Lagoons. The general dimensions shall be shown for each module shall be specified based on the design capacity requirements of each module. The lift station pumps, wet well, hatches, and pump controls, inlet bar screen, distribution weirs and pipe sizes, pump capacity and power requirements, the aeration equipment (diffusers, piping, and blower), and froth control equipment requirements shall be stated. Actual oxygen transfer rates used in the sizing of aeration equipment based on site elevation and high summer temperature range (see Mechanical) shall be shown. Return ratio ranges for sludge recirculation shall be estimated. Provide pipe and pump capacities on sludge recycling and wasting and calculated sludge storage and disposal volumes required.

3. Provide catalogue information for the proposed lift station and treatment plant equipment. Include information on manufactured steel tanks. Information shall include material standards for field welding of tanks, piping, valves, pumps, pump control equipment, bolts, gaskets, electrical enclosures, central systems control panels, motors and generators, aerators, air piping, blowers, bar screens, handrails, access ladders and service walkway gratings. Provide an access ladder anti-climb gate a minimum of 4 feet above the ladder base to secure the plan from unauthorized entry. Include product coating and lining, and cathodic protection specifications for applicable equipment.

4. An evaluation of the sludge disposal options and recommendation of the preferred disposal option. The proposed sludge disposal equipment/process requirements shall be shown on the plan drawings.

6. All WWTP projects shall include a proposed start-up testing and training program in including operation and maintenance manuals. When the wastewater system construction nears completion and all units are operative, the contractor shall commence a commissioning and startup procedure for the treatment system. The treatment system includes all lift stations, force main, gravity sewers, treatment plant units and associated equipment, sludge holding and digestion, septage dump pad, and laboratory building. The contractor will operate the treatment facility for a trial period of 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.

Percolation Testing

At proposed sites for holding ponds and the absorption field, the Contractor shall perform percolation tests. Percolation testing may be carried out with a shovel, posthole digger, solid auger or other appropriate digging instruments. Percolation tests shall be accomplished uniformly throughout the area where the absorption field is to be located. Percolation tests determine the acceptability of the site and serve as the basis of design for the liquid absorption. - Percolation tests will be made as follows (see Figure 1). All percolation testing shall be submitted promptly according the submittal schedule in Section 01335.

Six or more tests will be made in separate test holes uniformly spaced over the proposed absorption field site. The average of the six tests shall be determined and will be used as the final result. The location of each test shall be clearly and accurately shown on the site plan submitted to AED.

Dig or bore a hole to the required depth of the proposed trenches or bed, with dimensions necessary to enable visual inspection during percolation testing.

Carefully scratch the bottom and sides of the excavation with a knife blade or sharp-pointed instrument to remove any smeared soil surfaces and to provide natural soil interface into which water may percolate. Add 50 mm of gravel (of the same size that is to be used in the absorption field) to the bottom of the hole. In some types of soils the sidewalls of the test holes tend to cave in or slough off and settle to the bottom of the hole. It is most likely to occur when the soil is dry or when overnight soaking is required. The caving can be prevented and more accurate results obtained by placing in the test hole a wire cylinder surrounded by a minimum 25 mm layer of gravel (of the same size that is to be used in the absorption field.).

Carefully fill the hole with clear water to a minimum depth of 300mm above the gravel or sand. Keep water in the hole at least 4 hours and preferably overnight. In most soils it will be necessary to augment the water as time progresses. Determine the percolation rate 24 hours after water was first added to the hole. In sandy soils containing little clay, this pre-filling procedure is not essential and the test may be made after water from one filling of the hole has completely seeped away.

The percolation rate measurement is determine by one of the following methods:

1. If water remains in the test hole overnight, adjust the water depth to approximately 150 mm above the gravel. From a reference batter board, as shown in Figure 1, measure the drop in water level over a 30-minute period. This drop is used to calculate the percolation rate.

2. If no water remains in the hole the next day, add clean water to bring the depth to approximately 150mm over the gravel. From the batter board, measure the drop in water level at 30-minute intervals for 4 hours, refilling to 150mm over the gravel as necessary. The drop in water level that occurs during the final 30-minute period is used to calculate the percolation rate.

3. In sandy soils (or other soils in which the first 150mm of water seeps away in less than 30 minutes after the overnight period), the time interval between measurements will be taken as 10 minutes and the test run for 1 hour. The drop in water level that occurs during the final 10 minutes is used to calculate the percolation rate.

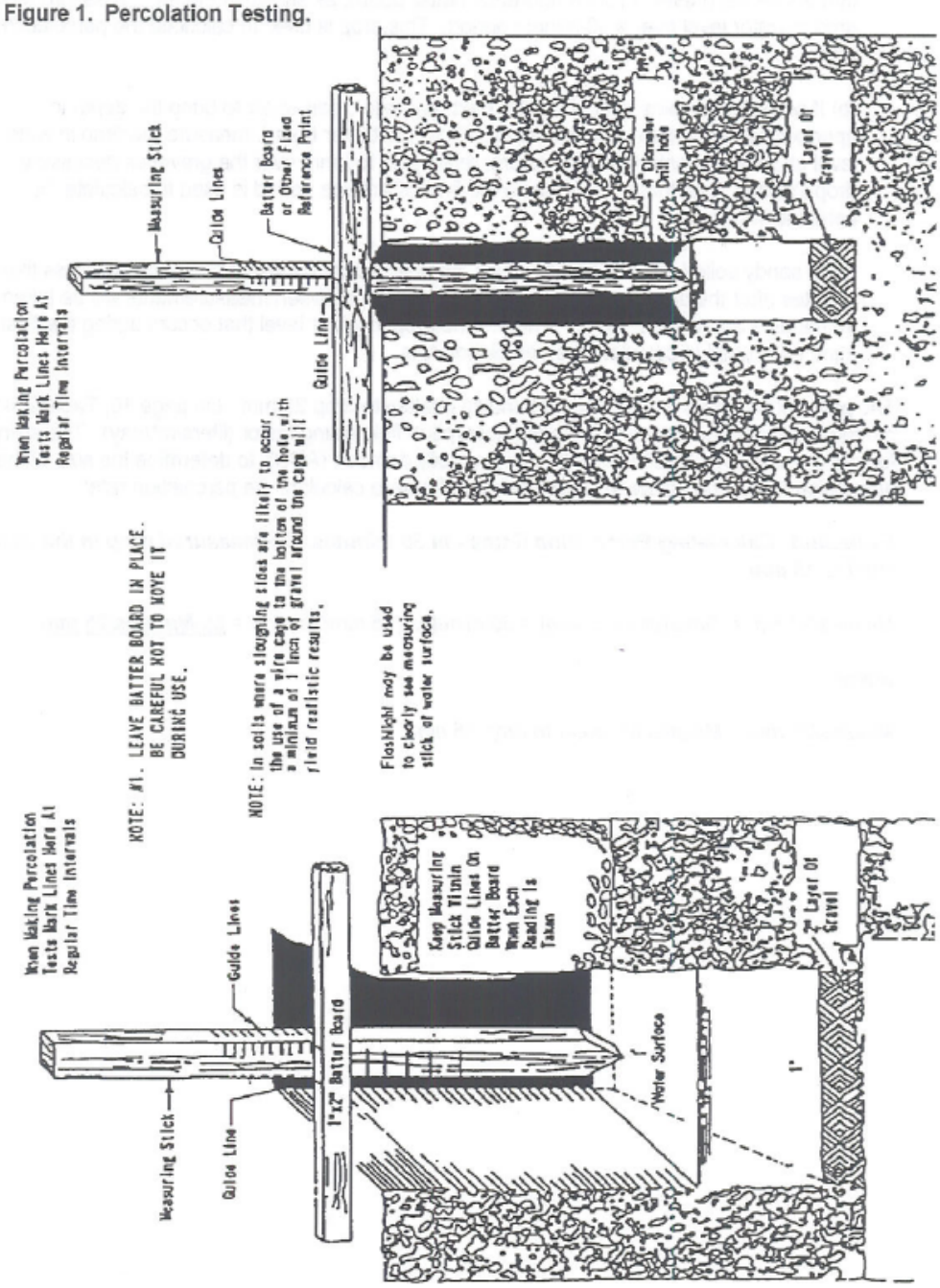
7. The percolation rate is the number of minutes it takes to drop 25 mm. Table 2 lists percolation rates and the corresponding absorption field sizing factor (liters/m^2/day). The sizing factors are used, in conjunction with average daily demand (ADD), to determine the size of the absorption field.

8. Example: Calculating the percolation rate:

1. In 30 minutes, the measured drop in the water level is 15 mm.

2. Minutes/25mm = Time/ (drop/25mm) = 30 minutes/ (15mm/25mm) = 50 Minutes/25 mm, where Minutes/25mm = Minutes for water to drop 25 mm.

Figure 1. Percolation Testing.



As-Builts

Upon completion of installing the sanitary sewer and septic systems, the Contractor shall submit editable CAD format As-Built drawings. The drawings shall show the final product as it was constructed in the field, with the exact dimensions, locations, materials used, and any changes made to the original design.

Storm Sewer Systems

2.3.6.5.1 Design Storm Return Period (baseline frequency)

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

2.3.6.5.2 Storm Drainage System Design

The Contractor shall be responsible for the complete design of the storm drainage system. Drainage of runoff from turf areas onto pavements shall be minimized. If storm drain piping is required it shall comply with the requirements in this section. Where storm drain pipes are of different diameters, the pipe crown elevations should be matched at the drainage structure. Storm drain lines shall be located outside of paved areas to the extent possible. Under no circumstance shall storm drain lines be located beneath buildings. Erosion control shall be provided for all storm drain structures during construction. Water from roof down spouts shall be drained off building site. All storm drain pipe and structures shall comply with the requirements specified in Section 33 40 01 STORM-DRAINAGE.

2.3.6.5.3 Hydraulic Design

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

2.3.6.5.4 Area Inlets

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

2.3.6.5.5 Concrete Pipe

Reinforced concrete pipe shall be a minimum Class III. Type I cement may be used only when sulfates in the soil are 0.1 percent or less and dissolved sulfates in the effluent are 150 ppm or less. Type II cement may be used only when sulfates in the soil are 0.2 percent or less and dissolved sulfates in the effluent are 1,500 ppm or less. Only Type V cement may be used if sulfates in the soil exceed 0.2 percent or dissolved sulfates in the effluent exceed 1,500 ppm. Concrete pipe shall be assumed to have a minimum design service life of 50 years unless the Contractor determines that conditions at the site will reduce the service

life. Concrete culverts and storm drains shall be protected by a minimum of 1 meter of cover during construction to prevent damage by heavy construction equipment.

2.3.6.5.6 Corrugated Metal Pipe

Corrugated Metal Pipe shall not be used.

2.3.6.5.7 Plastic Pipe

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

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.

GEOTECHNICAL

SOIL INVESTIGATION

Existing geotechnical information is not available at the project site. Any site-specific geotechnical data required to develop foundations, materials, earthwork, and other geotechnical related design and construction activities for this project shall be the Contractor's responsibility. The Contractor shall develop all pertinent geotechnical design and construction parameters by appropriate field and laboratory investigations and analyses. The Contractor shall produce a detailed geotechnical report containing field exploration and testing results, laboratory testing results (particle sizes and distribution, liquid and plastic limit test, and moisture and density test, etc.). Information in the report shall include, but not limited to: existing geotechnical (e.g. surface and subsurface) conditions, location of subsurface exploration logs on site plan, exploration point, allowable soil bearing capacity and foundations recommendations, bearing capacity, pavement design criteria (e.g. CBR values, K values), ground-water levels, and construction materials (e.g. concrete cement, asphalt, and aggregates). For standard penetration test (SPT), the Contractor shall use ASTM D1586. All geotechnical laboratory and field work shall be based on standards set forth in the ASTM. Contractor shall not use any DIN standards for penetration tests in lieu of ASTM D 1586. Soil investigations shall conform with AED Design Requirements: Geotechnical Investigations for USACE Projects, July 2009, or most recent version.
For foundation design, allowable soil bearing pressures, shall be based on the International Building Code (IBC) 2006 Table 1804.2. The contractor shall conduct soils classification per ASTM D 2487-06. There shall be no variation from the values listed in the table above, unless the soils investigation indicates lower allowable values should be used.
The contractor shall submit a geotechnical investigation plan prior to commencing any field investigation to the USACE-AED Engineering Branch through the COR for review and approval. Once the plan is reviewed and approved, the Contractor can start the field investigation. The Geotechnical report shall be submitted with all the design review submittals as specified in the 01335. No design review submittal shall be considered complete without an approved geotechnical report. Geotechnical investigation plans and report of investigations shall be submitted promptly in accordance with Section 01335.

GEOTECHNICAL QUALIFICATIONS

A geotechnical engineer or geotechnical firm responsible to the Contractor shall develop all geotechnical engineering design parameters. The geotechnical engineer or geotechnical firm shall be qualified by: education in geotechnical engineering; professional registration; and a minimum of ten (10) years of experience in geotechnical engineering design. The geotechnical firm conducting either the field investigation or laboratory work shall be certified by the Chief, Quality Assurance Branch USACE-AED. Certification document shall be submitted as part of the Geotechnical Report.

STRUCTURAL

GENERAL

The project consists of various structures. Reinforced Concrete foundations shall be properly placed on suitable compacted ground area and shall be in accordance with the recommendations from the geotechnical investigation. Building foundations shall be founded a minimum of 800mm below grade. Foundation designs shall be corroborated with the geotechnical findings and recommendations.

DESIGN

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

STANDARDS

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

Concrete	ASTM C 39 and ACI 318; 28 MPa (f'_c = 4,000psi) minimum specified compressive strength @ 28 days, and maximum water-cement ratio of 0.45.
Steel Reinforcement	ASTM A 615; 420 MPa (F_y = 60ksi) yield strength.
Welded Wire Fabric	ASTM A 185.
Anchor Bolts	ASTM F 1554; Grade 36 steel.
Bolts and Studs	ASTM A 307.
Plaster	ASTM C 926; 14 MPa (f'_c = 2,000psi).
Concrete Masonry Units	ASTM C 90; Type I (normal weight, moisture control).
Mortar	ASTM C 270; Type S (Ultimate compressive strength of 13 MPa) Proportion: 1 part cement, 0-½ part lime and 4-½ parts aggregate.
Grout	ASTM C 476; 14 MPa (2,000psi) minimum compressive strength @ 28 days (Slump between 200 mm to 250mm).
CMU Joint Reinforcement	Standard 9 gauge minimum, Ladder Type.
Structural Steel	ASTM A 36; 250 MPa (F_y = 36,000psi).
Welding	AWS D1.1-2002 (American Welding Society).

DEAD AND LIVE LOADS

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

WIND LOADS

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

SEISMIC

The building and all parts thereof shall be designed for the seismic requirements as defined by the International Building Code referenced herein.
Spectral ordinates shall be S_s = 0.28g and S_1 = 0.12g.

STRUCTURAL CONCRETE

Concrete structural elements shall be designed and constructed in accordance with the provisions of the American Concrete Institute, Building Code Requirements for Structural Concrete, ACI 318 (latest edition). A minimum cylinder 28 day compressive strength of 28 MPa (4,000 psi) shall be used for design and construction of all concrete, except that 24 MPa (3,500 psi) shall be used for Shotcrete applications. Reinforcing steel shall be deformed bars conforming to American Society for Testing and Materials publication ASTM A 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. Concrete shall have maximum water-cement ratio of 0.45. No concrete shall be placed when the ambient air temperature exceeds 32 degrees C (90 degrees F) unless an appropriate chemical retardant is used. In all cases when concrete is placed at 32 degrees C (90 degrees F) or hotter it shall be covered and kept continuously wet for a minimum of 48 hours. Concrete members at or below grade shall have a minimum concrete cover over reinforcement of 75 mm (3 inches).

MASONRY

Masonry shall be designed and constructed in accordance with the provisions of Building Code Requirements and Specifications for Masonry Structures, 2008 MSJC (TMS 402-08 / ACI 530-08 / ASCE 5-08). Mortar shall be Type S and conform to ASTM C 270. Masonry shall not be used below grade. 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.

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

Steel Roof Joists

Steel roof joists shall be placed according to the roof design and roof manufacturer specifications. Steel purlins shall be installed perpendicular to the steel beams. Use continuous metal roof sheets from ridge to eave to avoid constructing roof seams. In lieu of the continuous metal roof sheets, the Contractor can submit a plan for roofing seams; however, the plan must show a detail of how leaks will be avoided, and the Contracting Officer before application must approve the plan. Steel “hat channels” can be installed for the connection to the CONEX box

module. Provide all necessary metal framing for roof fascia and soffits. See structural paragraph for structural characteristics of steel joists.

Open Web Steel Joists

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

METAL DECK

Metal deck units shall conform to SDI Publication Number 29. Panels of maximum possible lengths shall be used to minimize end laps. Deck units shall be fabricated in lengths to span three or more supports with flush, telescoped or nested 50 mm (2 inch) laps at ends, and interlocking, or nested side laps. Metal deck units shall be fabricated of steel thickness required by the design and shall be galvanized.

FOUNDATIONS

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

EARTHWORK AND FOUNDATION PREPARATION

Capillary Water barrier

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

Satisfactory Materials

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

Unsatisfactory Materials

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

Clearing and Grubbing

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

Stripping

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

Excavation and Compaction of Fill

Excavate to contours, elevation, and dimensions indicated. Reuse excavated materials that meet the specified requirements for the material type required at the intended location. Keep excavations free from water. Excavate soil disturbed or weakened by Contractor's operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be removed as directed. Refill with satisfactory material and compact to at least 95 percent of the maximum dry density, as determined by the Modified Proctor laboratory procedure. ASTM D 1557 shall be used for producing the Modified Proctor moisture-density curve, unless the soil to be compacted includes more than 30% retained on the 19 mm (3/4") sieve. In this case, the Contractor must replace the ASTM D 1557 laboratory compaction procedure with AASHTO T 180, Method D, corrected with AASHTO T 224.
During compaction, the moisture content of the soil shall be within 1.5 percent of the optimum moisture content, as determined by the Modified Proctor laboratory procedure. The thickness of compacted lifts shall not exceed 15 cm and the dry density of each compacted lift shall be tested by either sand cone (ASTM D 1556) or nuclear gage (ASTM D 2292). If the nuclear gage is used, it must first be compared to sand cone tests for each soil type to verify the accuracy of the nuclear gage measurements for moisture content, wet density, and dry density. Furthermore, every tenth nuclear gage test must be accompanied by a sand cone test and these verification data must be summarized and submitted to the Contracting Officer. Density tests shall be performed at a frequency of not less than one test for each 200 square meters and not less than two tests per compacted lift.

Structures with Spread Footings

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

ARCHITECTURAL REQUIREMENTS

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.

DESIGN CRITERIA

Provided in the appendix A, are schematic designs for the facility types requested in this proposal. These designs shall be used to create a complete and usable facility meeting the minimum requirements placed herein. Exceeding minimum requirements as improvements to the design stated herein is highly encouraged at no additional cost and as approved by the government. The Codes, Standards, and Regulations listed herein 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

LIFE SAFETY/ FIRE PROTECTION/ HANDICAPPED ACCESSIBILITY

A life safety and fire protection analysis shall be completed prior to construction commencement. This analysis shall be documented in plans and in the design analysis. All spaces shall be classified following NFPA 101 or IBC. Whichever code used shall be stated and referenced on the life safety plan. The facility shall comply with all other safety requirements of the NFPA 101. To the extent possible, all facilities will be designed in accordance with recognized industry standards for life safety and building egress. An adequate fire alarm system, fire extinguishers, and smoke alarms shall all be included as required. 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 into this project. Due to the war contingency requirement, it is assumed that only able-bodied military and civilian personnel will use the facilities listed herein.

ANTITERRORISM/ FORCE PROTECTION

Force protection/anti-terrorism measures for this location shall be followed and incorporated into this project as indicated, in accordance with the referenced DoD Regulations. Information regarding force protection may be found herein and at the following link: www.tisp.org/files/pdf/dodstandards.pdf . UFC 04-010-01DoD Minimum Antiterrorism standards for buldings, including change 1, 22 January 2007; is the primary DoD AT/FP regulation for projects.

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 2.280280280 (R 13)
• Ceilings/roof	• RSI 5.284284284 (R 30)
• Floor (over unheated space)	• RSI 3.346346346 (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.

concrete & masonry

finish

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

concrete

Place 150 mm (6”) of capillary water barrier below areas to receive a concrete slab on properly compacted soil free of organic material. Concrete flooring in wet areas shall slope to the floor drain and not allow for water to puddle. Concrete slabs in all areas shall not be placed prior to inspection and approval of piping and sub-surface by the Contracting Officer. Foundation trenches shall be level and free of loose material. Trenches shall be inspected and approved by the Contracting Officer prior to placing of any concrete foundations. See paragraph 4 for structural characteristics of concrete and reinforcing steel for foundations and slabs.

Insulated Concrete Sandwich Wall System (3-D Building System)

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

Concrete Masonry units

Storage of masonry materials shall be in a dry place or materials shall be covered with a plastic protective layer. Cover open walls each day to keep them protected and dry. Concrete masonry units (CMU) for exterior walls shall be either 190 mm or 290 mm wide x 390 mm x 190 mm high as shown on drawings. They shall b e 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.

Masonry

Stone type shall be identified for approval in design. Mortar shall be of lower strength than stone and weep holes shall be provided in cavity wall systems. CARPENTRY

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

Wood Purlins

If Contractor chooses to utilize wood purlins, provide and install roof purlins of natural wood, locally available material 1 meter on center securely wedged between steel H structural joists. Tightly fit 25mm or 30 mm boards over roof structure and nail into wood purlins. New roofing shall extend a minimum of600 mm past the exterior surface of the wall.

Wood Battens

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

ROOFING AND WEATHERPROOFING

All buildings shall have a sloped metal roof, with metal eaves, and soffits. All exterior entry ways to be covered and protected by rain gutters and diverters to prevent water falling on the entry ways to all buildings.

Sloped Roofs

Sloped roofs shall be as defined in the IBC. Provide .70 mm (24 gauge) galvanized steel in either corrugated or standing seam design. Metal roofing shall be anchored to the steel “Z” purlins or wood deck sub-surface using exposed fasteners at 300 mm on center at all seams and at 600 mm on center in the panel field. Fasteners shall be placed at the top of the corrugation taking care not to dent panel. Roof sealant or adhesive shall be placed over each anchor head. Roofing system shall include all edge, ridge and penetration flashings necessary for a watertight installation and as described in this section. Roofing shall be galvanized mil finish. Panels shall be overlapped two corrugations side to side and be continuous sheets from ridge to eave. Provide continuous ridge vents on all gable roofs. Roof slopes shall be 2:10 unless noted otherwise.

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.

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.

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.

flashing and sheet Metal

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.

STEEL SHEET, ZINC-COATED (GALVANIZED)

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

ALUMINUM WALL CAPPING

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

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.

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.

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.

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.

WALL CAPPING

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

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.

continues soffit vent

Enclose soffits and return to vertical wall. Provide continuous soffit venting of all overhangs on the under side 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.

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.

screen

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

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 joint shall be water proof.

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 600mm overlap, jointing with approved crimping or welding shall provide a continuous gutter along the building eaves.

Downspouts

DOWNSPOUTS SHALL BE DESIGNED AND FABRICATED FOR EACH SPECIFIC APPLICATION. UNLESS OTHERWISE SPECIFIED OR INDICATED, EXPOSED EDGES SHALL BE FOLDED BACK TO FORM A 13 MM (1/2 INCH) HEM ON THE CONCEALED SIDE, AND BOTTOM EDGES OF EXPOSED VERTICAL SURFACES SHALL BE ANGLED TO FORM DRIPS. BITUMINOUS CEMENT SHALL NOT BE PLACED IN CONTACT WITH ROOFING MEMBRANES OTHER THAN BUILT-UP ROOFING. DOWNSPOUTS SHALL BE RIGIDLY ATTACHED TO THE BUILDING WITH SUPPORTS A MINIMUM OF 1500 MM APART. PROVIDE CONCRETE SPLASH BLOCKS AT THE BASE OF EACH DOWNSPOUT TO ELIMINATE DAMAGE TO THE BUILDING AND FOUNDATION DUE TO RAIN WATER RUNOFF TOWARD THE BUILDING.

Sealants

Provide a sealant compatible with the material(s) to which it is applied. Do not use a sealant that has exceeded shelf life or has jelled and cannot be discharged in a continuous flow from the gun. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without air pockets. Tool smooth fresh sealant after application to ensure adhesion. Sealant shall be

uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints; apply sealant, and tool smooth as specified. Sealer shall be applied over the sealant when and as specified by the sealant manufacturer.

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.

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.

Floor Joint Sealant

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

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.

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.

Backing

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

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.

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.

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.

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.

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.

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

b. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent-moistened cloth.

Windows

Materials

a. Aluminum Extrusions: Provide alloy and temper recommended by the window manufacturer for the strength, corrosion resistance, and application of required finish, meeting the DIN 1725 raw material requirements, but not less than 215 N/mm2 ultimate tensile strength and not less than 1.5 mm thick at any location for main frame and sash members. Note: At the contractor's option extruded PVC windows may be provided in lieu of aluminum windows.

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.

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

10. 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.

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.

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

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.

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

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.

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.

Metal Window Sills

Galvanized metal window sills, 1 mm (20-gage), shall be installed on the exterior of all windows. The metal window sills shall have a turn down of 50 mm over the exterior masonry and stucco. Metal sills shall extend from side to side of the masonry opening in a single piece. 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 6mm to the exterior and not allow water to puddle.

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

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.

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.

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.

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.

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.

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.

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.

Welded Frames

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

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.

Fire and Smoke Doors and Frames

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

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.

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.

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.

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.

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.

Keying system

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

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.

Water-Resistant Sealer

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

Fabrication and Workmanship

Finished doors and frames shall be strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle. Molded members shall be clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded and soldered joints smooth. Design door frame sections for use with the wall construction indicated. Corner joints shall be well formed and in true alignment. Conceal fastenings where practicable. On wraparound frames for masonry partitions, provide a throat opening 3 mm larger than the actual masonry thickness. Design other frames in exposed masonry walls or partitions to allow sufficient space between the inside back of trim and masonry to receive calking compound.

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.

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.

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.

Doors

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

Protection and Cleaning

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

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.

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.

glazing

All glazing shall be double laminated and insulating. Laminated glazing shall be constructed of two panes of minimum 3 mm annealed 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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

FINISHES

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

Exposed exterior steel

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

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

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.

Exterior Walls

The exterior of all buildings shall be stucco and/or plaster conforming to ASTM C926. A temperature of between 4 and 27 degrees C shall exist for a period of not less than 48 hours prior to application of plaster and for a period of at least 48 hours after plaster has set. Control joints shall be designed for expansion and contraction of plaster work due to thermal exposure. Control joints shall comprise of back to back casing beads. **Provide heavy duty metal lath up to 8'-0" (2400mm) above grade, and standard metal lath after that.** Apply stucco in 2 coats. The first coat shall be a scratch coat approximately 10 mm thick. Allow 7 days to cure before applying second coat. 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 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.

Interior Walls

Harden interior walls

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

gypsum walls

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

Interior Ceilings

Plaster ceilings

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

gypsum board ceilings

Gypsum board may be used in lieu of plaster but framing supports for Gypsum board shall be as follows: For 13 mm (½") thick gypsum board structural fastener supports shall be not further apart than 400 mm. If gypsum board is thicker follow guidelines in ASTM C 840 for supports and fastener frequency. Fire rated gypsum board: follow NFPA 252 guidelines. The minimum for one hour fire rating is two layers of 15 mm type X GWB or European EN 520 equivalent. On one side.

CONCRETE CEILINGS

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

Kitchen areas shall be covered with terrazzo flooring. Walls in kitchen shall be ceramic tile up to 2000 mm above finished floor. Floor in Dining area shall be terrazzo tile.

All other floors are to be completely cleaned and sealed epoxy. Color to be selected by the Contracting Officer from samples provided by the Contractor.

SPECIALTIES

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.

Toilet Paper Holders

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

Shower Curtain Rods & Shower Curtain

Shower curtain rods, stainless steel, heavy duty, 18 gauge shall be mounted between the walls of each shower stall. Mount rod at 2000 mm above finished floor. Provide a shower curtain with support rings for each shower stall.

Grab-Bars

Stainless steel grab-bars, heavy duty, 18 gauge, two each 900 mm and 1050 mm long, 40 mm diameter shall be mounted behind and beside all eastern toilets, and bathtubs as they occur. Mount grab-bars between 610 mm - 900 mm height on the walls. Each bar shall support no less than 91 Kg (200 lbs) in any direction.

Paper Towel Dispensers

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

Light Duty Metal Shelf

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

Robe Hooks

Provide a minimum of two robe hooks on all toilet and shower stalls.

Dining Facilities

Steel Cook Top

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

Pass-Through Counter Top

Provide 1.6 mm (16 gauge) stainless steel, or 40 mm marble, pass through counter tops at openings between the kitchen and dining area. Edges shall be turned down 30 mm and corners shall be welded and ground smooth. Provide anchor angles welded to the bottom of the counters to anchor tops to masonry walls below. Provide six (6) anchors on the Dish Return Counter, three (3) on each side of the wall. Provide eight (8) anchors on the Serving Counter, four (4) on each side of the wall. Anchor angles to wall with masonry expansion sleeves and stainless steel screws. Counter tops are to be 600 mm wide x length of opening shown.

Fire Counter Shutter (Dining Facilities)

Fire Counter Shutters shall be installed in conjunction with the Pass-Through Counter Tops described in the paragraph above. Fire counter shutters shall be used to separate the kitchens from the dining areas, and shall be U.L labeled for gypsum board, masonry and steel openings, and rated at 90 minutes in full compliance with NFPA-80 standards. Finish of shutter, guides and hoods shall be stainless steel. System shall be activated by 74˚ C (1 65˚ F) fusible links, and by electrical switches located near exit doors. Bottom bar sliding bolt locks shall be provided to secure the shutters in the down position; bolts shall be operated from the kitchen side of the shutter.

COLD STORAGE ROOMS

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

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

c. Refrigeration piping shall be annealed or hard drawn seamless copper tubing in conformance with ASTM B280. Refrigeration systems shall be remote type.
d. Electrical characteristics shall match local power 380v/3ph/50Hz and 220v/1ph/50Hz.
e. Preservation and packing shall be commercial grade.

f. Provide a recording thermometer.

g. Provide temperature alarm with connector to remote temperature alarm.

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

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

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

k. Submit a copy of installation instructions to the Contracting Officer covering both assembly and installation of the refrigeration equipment prior to start of

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

Time, dates and duration of tests:

- Inside dry-bulb and wet-bulb temperatures maintained in each room during the tests employing recording instruments calibrated before the tests.

- Outside dry-bulb and wet-bulb temperatures obtained from recording instruments calibrated and checked hourly with a sling psychrometer.

- Evaporator and condenser entering and leaving temperatures taken hourly with the compressors in operation.

- The make, model, and capacity of each evaporator and condensing unit.

- Voltmeter and ammeter readings for condensing units and evaporators.

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

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

o. Upon completion of the work and at a time designated by the Contracting Officer,

provide instruction to designated personnel in the operation and maintenance of each refrigeration system. The period of instruction shall not be less than one 8-hour day.

Ceiling finish

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

Building Systems

Arch Span

Insulated Arch-Span metal roofing systems shall be supported by reinforced concrete stem walls approximately 2.5 m in height. Stem walls shall be insulated and finished with gypsum board or plaster on the interior, and finished with stucco on the exterior. The floor slab shall be reinforced concrete with a minimum thickness of 150mm placed on a clean vapor barrier above a capillary water barrier of 150mm minimum thickness on properly compacted soil. Exterior walls shall be insulated with a minimum of R-13 insulation,,, and provide a minimum of R-30 insulation for the roof. The roof insulation system shall be spray applied and harden to a durable rigid surface, as per the arch span manufacturer's standards.
Ribbed steel roof panels shall be mechanically fabricated from prefinished steel coil and joined by machines and operators, all certified by the arch span building manufacturer. The contractor shall present certificates of manufacturer's training for machine operators, and certificates of authenticity for proprietary machines and equipment.
Only prefinished steel coil certified by the arch-span system manufacturer shall be used on this project. Fasteners for accessories shall be manufacturer's standard. All materials and Concealed fasteners for steel roof panels shall be zinc-coated steel, aluminum, corrosion resisting steel, or nylon capped steel. Fasteners for structural connections shall provide both tensile and shear strength of not less than 350 kg per fastener.

Pre-Engineered Metal Building Systems

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

MECHANICAL

GENERAL

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

SPECIALIST SUB-CONTRACTORS QUALIFICATIONS

The heating, ventilation, and air-conditioning works shall be executed by an air-conditioning specialist sub-contractor experienced in the design and construction HVAC equipment to include conventional compression systems, heat pump units, space heaters and knowledge in fabricating specialized units consisting of supplemental

electric resistance heaters in satisfying the specified indoor design conditions. HVAC equipment will normally consist of split pack heat pump units with supplemental electric heating elements, ducted packaged heat pump units with supplemental duct mounted electric resistance heaters, industrial quality unit heaters, air ventilation systems and specialized industrial ventilation systems. The HVAC heating and cooling load calculations shall be prepared using recognized HVAC load analysis programs such as Trane "Trace" or Carrier "HAP". The heating and cooling load calculations shall take into account the site elevation and ambient design temperatures when determining required HVAC equipment capacities and airflows. The HVAC specialist shall submit the complete HVAC analysis at the 65% design submittal. The HVAC analysis shall clearly state the type of systems to be used and how the system will satisfy the specified indoor design conditions. Provide related psychrometric charts showing the air wet bulb and dry bulb temperatures at each section of the heat/cool unit during both design heating and cooling operation.
Provide complete, edited specifications using the UFGS specs for selected HVAC system. The edited specifications shall be submitted along with the 65% design submittal. The specifications shall be coordinated with the manufacturer of the equipment.

CODES, STANDARDS AND REGULATIONS

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

DESIGN CONDITIONS

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

Farah area
Latitude – (approx.) 32.22 deg. North
Longitude – (approx.) 62.11 deg. East
Elevation – (approx.) 700 M (2297 ft.)
Summer – 41.1 deg C (106 deg F) Dry Bulb (DB) [& 22.5 deg C (72.5 deg F)] Wet Bulb (WB)]
Winter – (1.6 deg C/35 deg F)
Daily Range – data unknown)

Indoor Design Condition

Enlisted Barracks	No cooling	Heating 20 C (68 F)
Senior Barracks	No cooling	Heating 20 C (68 F)
Administrative buildings/Offices	No cooling	Heating 20 C (68 F)
DFAC (Dining Area)	Cooling 25.6 C (78 F)	Heating 20 C (68 F)
Toilet/Shower/Laundry bldgs	No cooling	Heating 20 C (68 F)
Maintenance facilities	No cooling	Heating 12.7 C (55 F)
Communication Centers	Cooling 25.6 C (78 F)	Heating 20 C (68 F)
Storage buildings	No cooling	No heating
Arms Storage	No cooling	Heating 12.7 C (55 F)
Ammunition Supply Point	No cooling	No Heating
Gymnasiums	No cooling	Heating 20 C (68 F)

Guard House	No cooling	Heating 20 C (68 F)

Warehouses do not normally require any temperature control unless materials requiring special temperature control are stored. In general, warehouses, laundry, and storage buildings and vehicle maintenance bays shall be provided with ventilation to maintain the indoor conditions to 10 F above the summer ambient DB temperature. Vehicle maintenance bays shall be provided with unit heaters.

Noise Level

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

Internal Loads

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

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

Outdoor Air: Outdoor ventilation air shall be provided per ASHRAE Standard 62.1 with the exception of guard towers, guard shacks, and storage facilities. In general this requires 2.5 L/s/Person (5 CFM/Person) and 0.3 L/s per square meter of floor space (0.06 CFM/sqft); outdoor air requirements can be satisfied by opening windows and doors for facilities without a ducted system.

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

Building Pressurization: 1.3 mm W.G. (0.05 in W.G.); Maintain negative pressure in latrine areas. This is only applicable for buildings provided with central ducted forced air systems

NEW AIR CONDITIONING & HEATING EQUIPMENT

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

Facility Type	Cooling	Heating	Type of HVAC System	Remarks
Barracks	None	20C 68 F	Unit Heaters	Provide ceiling fans
Battalion HQs	None	20C 68 F	Unit Heater	Provide ceiling fans
Bathroom/Shower/ Laundry	None	20C 68 F	Unit Heaters	Provide adequate ventilation
Storage Warehouse	None	None		Provide roof ventilators
DFAC (Dining Area)	25.6C 78 F	20C 68 F	Ducted packaged heat pump units	

Elect/Comm	25.6C 78 F	20C 68 F	Split pack heat pump unit	
Gymnasium	None	20C 68 F	Unit Heaters	Provide ceiling fans
POL Storage	None	7.2 C 45 F	Unit heaters	Provide adequate ventilation
Arms Storage	None	7.2 C 45 F	Unit heaters	Provide adequate ventilation
Vehicle Maintenance	None	12.7 C 55 F	Unit heaters	Provide adequate ventilation
Guard House	None	20C 68 F	Unit Heaters	Provide ceiling fan

Unitary Ducted Heat Pump Units

Ducted, packaged heat pump units shall be provided for all large occupied buildings such as DFACs, Administrative, barracks and operational facilities. Ducted forced air systems are required to satisfy the indoor air quality as specified in ASHRAE 62.1 and to maintain positive pressure of 1.3 mm W.G. in the buildings. Ducted heat pump units shall be unitary in design and factory manufactured ready for installation. Heat pump units shall provide cooling during summer and heating during winter. The unit shall consist of DX coil, blower, supplemental electric heater elements, washable filter, and condenser unit containing the compressor, condenser coil, fans and all internal controls/fittings complete all mounted in a weatherized housing finished for exposed installation. The unit shall be suitable for exterior installation and be mounted on steel supports or on a concrete pad. Copper refrigerant suction and liquid piping shall be sized, insulated and installed in accordance to unit manufacture recommendations. Unit temperature control shall include wall mounted adjustable thermostat, blower on-off-auto switch and heating-cooling change over control. Heat pump units shall be limited to 10 tons each. Facilities requiring more than 10 tons of cooling shall be provided with multiple heat pump units.

Unitary (ductless split) Heat Pump Units

Unitary ductless split pack heat pump units shall be provided for small and isolated rooms, such as the guard tower, guard shed and remote small buildings. Ductless split units shall be unitary in design and factory manufactured ready for installation. Heat pump units shall provide cooling during summer and heating during winter. Heat pump units shall be suitable for low ambient operation. Evaporator unit shall consist of a DX coil, blower, and washable filter all mounted in a housing finished for exposed installation. Cooling coil condensate piping shall be routed to the exterior and drain onto a concrete splash block. The condensing unit will contain compressor, condenser coil, and all internal controls/fittings complete to include a weatherized housing. Outdoor condensing unit shall be mounted on steel supports or on a concrete pad. Copper refrigerant suction and liquid piping shall be sized, insulated and installed in accordance to unit manufacture recommendations. Unit temperature control shall be hard wired and securely mounted to the wall. Unit controller shall operate blower on-off-auto switch, temperature levels, and heating-cooling change over control.

DUCTWORK

Air shall be distributed from central Air Handling Units (AHUs) to achieve proper airflow throughout the facility by means of air distribution ductwork. Air distribution system shall be comprised of supply and return ductwork, fittings, grilles, registers, and/or diffusers. Ductwork shall be constructed of galvanized steel or aluminum sheets and

installed as per SMACNA "HVAC Duct Construction Standards (Metal and Flexible)." Flexible non-metallic duct may be used for final unit/diffuser connection in ceiling plenums. These flexible duct run-outs shall be limited to 3 meters in length.

Duct Insulation

Duct insulation shall be provided for all supply ductwork that is not located in the conditioned space and for return ductwork not located within the conditioned space. All ductwork exterior to the building shall be insulated with a minimum RSI=0.88 (R5).
In general interior ducts shall be exposed to the rooms and will not be insulated. The heat lost or gained from the un-insulated ducts shall be considered as part of the heating or cooling of the conditioned space.

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.

Branch Take-offs

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

Wall Penetrations

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

Air Filtration

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

Control Wiring and Protection Devices

Control wiring and protection of the air conditioning units being offered must be the manufacturer's standard, pre-wired, installed in the unit at the factory or as recommended. Thermostats shall be located near the unit return, and shall include lockable housing that allows viewing of settings without permitting access. For units serving more than one area, the thermostat shall be located near the return of the space with the highest heat generation.

COLD STORAGE ROOMS & CONEX BUILDINGS

Shop Drawings

Contractor shall provide the Contracting Officer shop drawings for approval of

appropriately sized walk-in refrigerator and freezer to include proposed manufacturer, construction details, manufacturer's instructions, evacuation and charging procedures, operation and maintenance date, start-up and initial operational tests.

Modular Construction

Walk-in coolers shall be panel type modular construction. Doors shall be swing type. Refrigeration equipment shall be remote located on the exterior of the building. Provide a temperature/ alarm system. Provide interior lighting with exterior switch. Floors of cool rooms shall be insulated panelized construction from the manufacturer of the cool rooms. The concrete floor will not be depressed.
Walk-in freezer shall be able to maintain the product temperature between -10 to 0 deg F.
Walls, ceiling and flooring of the coolers and freezer shall not contain any wood or wooden material. Walls and ceiling shall be made of sandwiched panels filled with polystyrene or urethane insulation material. Panels shall be aluminum or stainless steel.
Ramps shall be provided at the door of the cooler and freezers.

Piping

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

Electrical

Electrical characteristics shall match local power 380v/3ph/50Hz and 220v/1ph/50Hz.

Packing Material

Preservation and packing shall be commercial grade.

Temperature Record & Control

Provide a recording thermometer. Provide temperature alarm with connector to remote temperature alarm.

Outdoor Condensing Unit

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

Refrigeration Equipment

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

cleaning. Provide a drip pan and drain connection. When the cold storage room is used for freezing, provide an automatic electric heat defrosting system. Provide a timer type defrost controllers.

Drain Lines

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

Installation Instructions

Submit a copy of installation instructions to the Contracting Officer covering both assembly and installation of the refrigeration equipment prior to start of work

Testing

Start up and initially operate the systems upon completion of the installation
of the equipment and refrigerant piping. Adjust the safety and automatic controls to place them in operating sequence. Record manufacturer's recommended readings hourly. Operational test shall cover a period of not less than 24 hours. Upon completion of Operational test the systems shall be performance tested. Test duration shall not be less than 8 hours. Test shall include the following information to be in the report with conclusions regarding the adequacy of the systems:
Time, dates and duration of tests:
Inside dry-bulb and wet-bulb temperatures maintained in each room during the tests employing recording instruments calibrated before the tests.

Outside dry-bulb and wet-bulb temperatures obtained from recording instruments calibrated and checked hourly with a sling psychrometer.

Evaporator and condenser entering and leaving temperatures taken hourly with the compressors in operation.

The make, model, and capacity of each evaporator and condensing unit.

Voltmeter and ammeter readings for condensing units and evaporators.

Operations & Maintenance

Provide chart showing the layout of the refrigeration systems, including piping, valves, wiring, and control mechanisms. Submit printed instructions covering the maintenance and operation of refrigeration equipment. Tag shutoff valves in accordance with the instructions. Provide any special tools necessary for repair and maintenance of the systems. Upon completion of the work and at a time designated by the Contracting Officer, provide instruction to designated personnel in the operation and maintenance of each refrigeration system. The period of instruction shall not be less than one 8-hour day.

Clean-up

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

VENTILATION AND EXHAUST SYSTEMS

All fans shall be used for building ventilation and pressurization with capacities to be selected for minimum noise level generated. Unit mounted fans either used for supply or exhaust shall be centrifugal forward curved, backward inclined, or airfoil fans with non-overloading characteristics of high efficiency and quiet running design. The fans shall be of the heavy-duty type with durable construction and proved performance in a desert environment. Each exhaust fan shall be provided with motorized or gravity dampers which close automatically when the fan is not running. Also, each fan shall be complete with vibration isolator, external lubricators, and all accessories and sound attenuators as necessary.
Consideration shall be given to the use of gravity type or turbine ventilators for warehouse and storage buildings. Gravity type and turbine ventilators require no electrical power to operate. Application of gravity or turbine ventilators shall be incorporated as much as practically possible.
Supply intake openings shall be provided with motorized dampers which are interlocked with the exhaust fan. The dampers open or close when the exhaust fan is on or off respectively.
Maintenance shops and similar spaces that use solvents and oils shall be provided with mechanical exhaust air systems. Exhaust fans shall be centrifugal wall mounted type. Intake openings shall be provided with motorized dampers which are interlocked with the exhaust fans. The systems shall consist of centrifugal fan, ductwork, exhaust grills, and interlock controls. Comply with Industrial Ventilation UFC 3-410-04N.
Supply intake openings for gravity type or turbine ventilators shall be a louvered opening. Intake openings shall be adequately sized to induce convection flow through the gravity or turbine ventilators.
To reduce sand and dirt migration, outside air intakes shall be installed as high as possible within architectural constraints or a minimum of 1.5 meters above the ground. The intakes shall be sized so that the free air velocity is below 2.5 m/s (500 fpm).
Toilet and Wash Area: Minimum exhaust ventilation shall be the largest of 35 m3/h / m2 floor or 85 m3/h / toilet (WC). At extreme cold in winter these values can be reduced for short periods to 10 m3/h / m2 or 40 m3/h / toilet (WC) to conserve heat. Provide two speed fans.

Kitchen Hood Exhaust and Make-up Air

As required and as per Kitchen design specialist and equipment supplier requirements. Kitchen exhaust hood shall be constructed out of 20 gauge stainless steel material. Exhaust flow rate shall be a minimum of 400 cfm per linear foot of hood length. The air velocity in the exhaust duct shall be limited to 1500 feet per minute. The designer shall take special note that multiple large propane stoves will be installed in the kitchen. The steam generated by the local style of cooking with large pots is immense in comparison to western standards, and the additional need for ventilation must be accounted for in the design. Also, the cooks are accustomed to standing on top of the stoves in order to stir the large cauldrons of food. This common cooking practice should be taken into consideration when designing the exhaust hood. The height of the hood above the stovetop should be such that a man of average stature could stand upright without risk of hitting his head on the hood. Design per NFPA 92A, 96, 204, and 211. Make up air intake shall be integral with the hood system or be located as close to the exhaust intake to prevent cold drafts. Non-integral makeup air shall be tempered within ten degrees of ambient air temperature.
To reduce sand and dirt migration, outside air intakes shall be located as high as possible within architectural constraints. The intakes shall be sized so that free air velocities are below 2.5 m/s (500 fpm). For inhabited buildings locate all air intakes at least 1.5 (center-line of intake) meters above the ground. Each air intake shall be provided with a motorized damper which is interlocked with the exhaust fan.

Battery Room Exhaust

Battery room exhaust shall comply with UFC 3-520-05 dated 14 April 2008. The UFC is available at http://www.wbdg.org/. The exhaust fan for the lead acid shop shall be sized to maintain concentrations of hydrogen gas in the battery room to below 1 percent concentration. The exhaust fan shall be sized larger when required for

mechanical ventilation cooling. The fan shall have a non-sparking wheel and the motor shall be located out of the airstream. 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 10% more air than is supplied. Supply air for the shop shall be 100% outside air.

Submittals

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

ELECTRIC HEATERS

Unit Heater

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

Submittals

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; manufacturer's certificate stating that each unit will perform to the conditions stated, catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; complete shop drawings indicating location and installation details.
The manufacturer shall also submit a 2 year warranty for each of the units.

TEST ON COMPLETION

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

Ambient DB and WB temperatures

Room Inside Conditions:

1. Inside room DB & WB temperatures

2. Air flow supply, return and/or exhaust

3. Plot all temperatures on psychrometric chart

11. 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.

12. Following readings shall be made:

4. Supply, return and outside air CMH (CFM) supplied by each air conditioning system.

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

6. Motor speed, fan speed and input ampere reading for each fan

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

13. Electric Motors: For each motor:

8. (1) Speed in RPM

9. (2) Amperes for each phase

10. (3) Power input in KW

ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT

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

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

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

2. Condenser: Provide internal thermal overload protection.

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

CEILING FANS

Ceiling Fan

Provide 1320mm blade ceiling fans at one per 40 square meters of floor space. Fans shall have reversible motors. Center or distribute evenly in room. Coordinate placement with the lighting plan to prevent conflict or casting shadows. Fan mount shall be flush, standard, or angle mount depending on ceiling height. Fan shall be mounted such

that the fan blade is approximately 2.44 meters above the finished floor. The fan shall be provided without light kit. The finish shall be factory painted white. The controls shall be from either a single pole switch or from two 3 way switches to provide on/off operation. The electrical supply shall be 230volts, single phase, and 50 hertz. Install per manufacturers' instructions.

Submittals

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

PROPANE COOKING STOVE

Cooking area shall be provided canopy type exhaust only kitchen hoods and associated exhaust fans. These exhaust hoods shall include baffle type aluminum filters to trap grease/oil. The exhaust fan sizing calculations should recognize the use of propane stoves in the kitchen. Sizing should accommodate all propane burning stoves running simultaneously. Additionally, the placement of the exhaust hood should allow enough clearance for an average sized male to stand on top of the stove platform unobstructed, for standing on the stove is common local cooking practice. The higher than average placement of the hood will require the extension of the lip of the hood out further than normal, in order to catch the majority of the smoke and adequately vent the area. Propane tank shall be located outside the DFAC.

New propane stoves shall be installed with consideration to ease of cooking operation and daily cleanup. The new propane stoves shall be set into a formed concrete opening such that it can easily be removed for replacement, maintenance and cleaning.

Each propane stove shall be provided with three burners. The propane stoves shall be of commercial quality and be capable of producing the highest BTU heat output with all three burners on. The center burner is low heat, center and middle burner is medium heat and all three burners is high heat. A shut off valve for each burner shall be provided at the face of the propane appliance.

Piping from the propane tanks to the respective propane stoves shall be wrought iron, ASTM B36.10M or steel (black or galvanized), ASTM A53. The steel piping shall terminate in front of the propane stoves with a shut off valve and quick disconnect nipple. A stainless steel flexible hose shall connect from the propane stove to the steel piping. Each end of the flexible hose shall be provided with quick disconnect fittings.

The propane piping shall not be embedded in the concrete floor. Installation of the 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.

Propane Fuel Storage/Distribution

Propane Storage and Distribution shall be provided to support operation of the propane stoves for cooking and boiling tea. The bulk storage of fuels shall consist of above-ground horizontal steel tank sized to store a 28-day supply of fuel. This single tank shall be complete with fill fittings, tank gauge, vent, and other fittings and appurtenances required for full and safe operation. Tank shall be provided with support saddles, platform/stair and concrete pad. Bulk storage capacity shall be based on minimum four-week full load operation of the kitchen. Metal fuel tank saddles should not be placed directly on fuel containment area slabs. They should be elevated on piers to avoid moisture corrosion. Propane storage tanks shall be provided and installed in accordance with NFPA 58. The propane storage tank shall be installed on a concrete pad, and provided within an enclosure to protect the tank from the elements. The Contractor shall coordinate with the User and the Contracting officer in determining the capacity of propane fuel required. The propane fuel capacity shall be based on frequency of cooking, consumption of fuel

every cooking cycle, frequency and availability of replacement fuel tanks and spare capacity. This project will require that the Contractor provide the agreed to amount of fuel tanks filled with propane fuel at time of completion. Provide a cover over the tank and chain link fence and gates around entire propane storage facility. Fence shall match perimeter Force protection fence with lockable gates, and concertina wire etc. Provide fuel filling system for unloading fuel from fuel tanker into individual bulk storage tanks comprising of truck pad(s), duplex fuel transfer pumps, piping manifold and valves as required for a complete system.

OPERATIONS AND 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 contractors 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.

PLUMBING

General

The Contractor shall design and build domestic cold and hot water systems, waste, drain and vent systems, waste-oil collection and storage and fuel-oil storage and distribution systems required in the facilities identified in Section 01010 Scope of Work and as described herein. The Contractor shall also be responsible for complete design and construction of all domestic and special plumbing systems required for full and safe operations in the Generator Plant, Water Storage and other facility or structures required in this contract.
The work covered in this scope also includes the delivery to site, erection, setting to work, adjusting, testing and balancing and handing over in full operating condition all of the plumbing equipment and associated plumbing works.

Sub-Contractors Qualifications

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

Standard Products

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

CODES, STANDARDS AND REGULATIONS

The design and installation of equipment, materials and work covered under the plumbing services shall conform to the following standards, codes and regulations where applicable except where otherwise indicated under particular clause(s). The publications to be taken into consideration shall be those of the most recent editions. Standards other than those mentioned herein may be accepted provided that the standards chosen are internationally recognized and

meet the minimum requirements of the specified standards. The Contractor shall submit proof of equivalency if requested by the Contracting Officer.
IPC – International Plumbing Code
NFPA - National Fire Protection Association
ASHRAE – American Society of Heating, Refrigeration and Air-Conditioning Engineers
ASME – American Society of Mechanical Engineers
ASTM – American Society for Testing and Materials
AWS – American Welding Society
UFC 4-229-01N dated 16 January 2004

PLUMBING SYSTEMS REQUIREMENTS

Water

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

Piping Materials

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

Plumbing Fixtures

The following typical plumbing fixtures shall be provided:

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

Western style toilets 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.

Lavatories. All sinks 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. Lavatories inside the prison cells shall be tamper-proof with integral spout, soap depression, and outlet connection to slip 40mm OD tubing.

Sink Faucets. LN faucets shall be copper alloy with hot and cold water valves for manual mixing. Faucet handles shall be chrome plated brass or bronze alloy. **No goose neck faucet fixtures shall be used**.

Janitor's Sink. Floor mount janitor, enameled cast iron with copper alloy rim guard. Provide hot and cold water valves with manual mixing. Faucet handles shall be chrome plated brass or bronze alloy. Include a stainless steel shelf and three mop holders.

Shower. 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 AFF with hot and cold-water controls, mixing valve and a diverter type valve so water can be directed to either the shower or to the lower faucet. Shower shall be provided with low flow shower head. The shower head shall be heavy duty type and securely fastened to the wall.

Emergency Shower and Eye Wash Assembly. Provide emergency shower and or eye wash assembly in Power Plant and in other facilities where appropriate. Provide a floor drain in the area, if appropriate (where emergency water flowing on the floor may lead to additional safety or operational complications).

Service Sink. Standard trap type, enameled cast iron. Service sinks provided in maintenance areas shall be concrete. Service sinks in battery rooms shall be acid resistant.

Kitchen Sink. Single bowl shall be corrosion resisting formed stainless steel. Faucet bodies and spout shall be cast or wrought brass or bronze alloy. Handles, drain assembly, and stopper shall be chrome plated brass or 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. Provide each station with hot and cold water valves with manual mixing. Faucet handles shall be chrome plated brass or bronze alloy.

Grease Interceptor (Exterior only). Shall be steel construction manual cleaning type with removable checker-plate cover complete with flow control valve. Tested and rated in accordance with PDI G-101. Concrete shall have a minimum compressive strength of 21 MPa (3045 psi) in 28 days (kitchen use only).

Floor Sink (P-13). Provide floor sink, circular or square, 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.

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.

Trench Drains: Floor trench shall be concrete construction with a cast iron grate. The cast iron grate shall be sectionalized and hinged so that it can easily be opened to clean out the trench. Iron grates shall be fabricated in sections in length not greater than 1500 mm. The floor trench shall be provided with perforated aluminum pan inserts which can be removed to clean out large food particles. The floor trench drain shall be adjustable perforated or slotted chromium plated bronze, nickel-bronze, or nickel brass strainer consisting of a grate and threaded collar. This style of floor trench shall be installed in the kitchen area of the DFACs in response to kitchen cleaning practices of the local national staff.

Room hose bibs and floor drains shall be provided as required. Afghan dining facility kitchen area clean-up hose bib to be supplied with connecting hose on reel including approximately 12 meters of hose. Provide clean-up spray nozzle with hose assembly.

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

Large Pot sink, provide clean-up spray nozzle with hose assembly. Pot sink shall be floor mounted against a wall with concrete curbs on three sides. The concrete curb shall be approximately 750 mm high.

Hot Water

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

Hot Water Heaters

The hot water shall be generated by electric water heaters. The unit(s) shall be typically located inside a mechanical room and be wall or floor-mounted on a 100 mm (4 inches) raised concrete pad. The unit(s) shall be of the commercially available tank type having low or medium watt density electric heating elements.
In cases where the pressure of the water coming into the tank will violate manufacturer recommendations, a pressure reducer shall be installed in the line before the water heater. Also, all water heaters shall be equipped with a temperature and pressure relief valve that discharges into a nearby floor drain. The drain shall terminate 50 mm (2 inches) above the floor or floor drain.

WASTE, DRAIN AND VENT SYSTEM

Floor drains shall be provided in each room that contains a water source. Floor drains shall be provided in the mechanical equipment and toilet rooms as required. Floor drains shall be provided next to the electric water heaters. In mechanical rooms, floor drains shall be provided to avoid running drain piping long distances above or over the floor. A trench drain shall be provided for the DFAC Kitchen. All waste and vent piping shall be provided in accordance with the latest edition of IPC. Drain outlet shall use p-trap system to trap sewer gases. P-trap drain should be a one-piece system without removable parts.
Every trap and trapped fixture shall be vented in accordance with the IPC. Consider incorporating circuit venting and combination drain and vent principles, as applicable, to reduce the vent piping.
IPC Section 708.3 states that cleanouts be provided no more than 100 feet apart measured from the upstream entrance of the cleanout. AED standard is to provide cleanouts at 25 feet intervals due to the nature of Afghans plugging up the drains and the limitation of the cleanout routers available in Afghanistan

PLUMBING FOR BATTERY ROOMS

Water, drain and associated plumbing features for the battery room shall comply with requirements in Part 6 of UFC 4-229-01N.

SPECIAL PLUMBING SYSTEMS

Contractor shall design and construct compressed air 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 at 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.

Compressed Air Systems

Compressed air system shall be in accordance with UFC 4-229-01N. Compressed air shall be provided using a packaged air-cooled electric motor driven compressor and ASME rated receiver with air cooler and moisture separator to remove moisture and oil. Compressed air system shall be capable of operation up to 200 psig maximum for 125 psig normal units. High-pressure system (above 200 psig) shall be provided to supply compressed air to equipment where required. Provide an engine driven air compressor where generator electrical power is unreliable. 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. Noise level of air compressor should not exceed acceptable db limits.

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.
Waste oil storage tanks shall be provided for collection of waste oil in the power plant and vehicle maintenance facilities. Waste oil storage tank shall be underground double-wall fiberglass or double-wall steel. Provisions should be made in the design of the underground storage tank that enable manual detection of leaks, prevent overfilling, facilitate liquid level detection, and allow for vapor release.

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.

Generator Fuel Storage/Distribution

Fuel Oil Storage and Distribution shall be provided to support operation of diesel engine generators at the Power Plant. The bulk storage of fuels shall consist of above-ground horizontal steel tanks sized to store a 28-day supply of fuel, with containment dikes. The containment dike shall be sized to contain 110% of the total fuel in the tanks. These tanks shall be complete with fill tube and cap, suction tube, tank gauge, vent, and other fittings and appurtenances required for full and safe operation. Tanks shall be provided with support saddles, platform/stair and concrete pad. Fuel shall be transferred from the bulk storage tanks by duplex transfer pumps into individual day tanks. Fuel piping shall be fiberglass for underground and steel for piping located above grade. Bulk storage capacity shall be based on minimum four-week full load operation of the plant. Metal fuel tank saddles should not be place directly on fuel containment area slabs. They should be elevated on piers to avoid moisture corrosion. Fuel containment area should have a sump or manually controlled water release valves for water removal.
Contractor shall fill the tanks with fuel upon turnover to the Government.

Filling System

Provide fuel filling system for unloading fuel from fuel tanker into individual bulk storage tanks comprising of truck pad(s), duplex fuel transfer pumps, piping manifold and valves. The system shall provide remote fuel level monitoring panels at the pad(s).

Motor Pool Fuel Point (Storage/Dispensing)

Fuel storage and distribution shall be provided to support the vehicles used at various locations on base. The fuels shall be stored in one or more above-ground horizontal steel tank as per capacity schedule given below.
Motor Pool: 38,000 liters of Diesel and 10,000 liters of MOGAS.
These tanks shall be complete with fill tube and cap, suction tube, tank gauge, vent, and other fittings and appurtenances required for full and safe operation. Tanks shall have overfill protection devices and remote overfill alarm. Tanks shall be provided with support saddles, platform/stair, concrete pad and leak spillage containment provisions. Fuels shall be transferred from the storage tanks by transfer pumps located within the fuel dispensing units. Fuel piping shall be fiberglass for underground and steel for piping located above grade. Provide separate dispensing units for diesel and MOGAS. Each dispensing unit shall be equipped with dual nozzles and key control. Fuel dispensing unit shall be installed on an island such that two vehicles can simultaneously fuel on either sides of the dispensing unit. Coordinate site design and route all contaminated drainage water from the fuel dispensing pad through an oil/water separator. Provide containment per applicable criteria.
Contractor shall fill the tanks with fuel upon turnover to the Government.
Fuel point and ammo storage protection consists of reinforced concrete barriers that can be prefabricated or constructed at the site. The protection and should be placed over at least two sides and have a concrete top.

TESTING AND COMMISSIONING

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

FIRE PROTECTION

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).

ELECTRICAL

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.

DESIGN CRITERIA

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.

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).

MATERIAL

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.

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.

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.

Restrictions

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

DESIGN REQUIREMENTS

Electrical Distribution System

The contractor shall provide generator power as described in the paragraph **Generator Power System** as a prime source of power for the facilities

The contractor shall provide 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 distribution system shall be in direct buried schedule 80 duct banks, except for under roadways and heavy traffic areas, with the ducts not less than 1220mm below grade. Manholes and hand holes 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 duct banks with more than 2 ducts. Hand holes 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 a medium voltage 20kV primary distribution system 3 distribution feeders to supply power to pad mounted transformers. The pad mounted transformers shall be loop feed, dead front type with load break elbows. The system shall be configured as a loop system and the feeders shall be provided with tie capabilities through the use of pad mounted load-break switches. Each pad mounted 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 a power plant building sized to contain the required generators and their associated switchgear and equipment. The building shall also contain space for future planned generators as well as their associated switchgear in the switchgear lineup and other equipment. The switchgear lineup shall contain 20kV vacuum circuit breakers including one for each generator, a tie breaker, one for each feeder and a utility breaker sized for the total load of the site. The contractor shall provide all required conduit stub ups to connect all equipment (both present and planned) to the switchgear lineup. If the generators supply power at less than the distribution voltage, the contractor shall provide pad mounted step up transformers and the required conduits to connect the generators to their respective transformer and the transformers to the switchgear lineup. See Appendix A for examples of switchgear and powerhouse configurations.

380V, 4 pole load bank shall be provided. The load bank shall have automatic steps of 20% each. The load bank shall have the same kVA rating as the individual generators

Transformer substations shall be strategically located close to the loads. Dedicated transformer substations shall be provided for large loads. Transformers shall be Primary'Delta' and Secondary 'Wye' connected. Primary side load-break disconnecting means shall be provided with all transformers. Transformer substations shall be dead front, loop-feed, pad-mounted, compartmental, self-cooled type. Transformers shall come complete from manufacturer; use

of third party transformer housings or add-on transformer housings shall not be permitted. Transformers shall have no exposed live components. Transformer selection, design, and installation shall be governed by NEC, NESC, ETL 1110-3-412, TM 5-684, UFC 4-510-01, UFC 3-550-03FA, UFC 3-550-03N, IEEE C57.12.28, ANSI/IEEE C57.12.22, IEEE C57.12.34, and C57.12.80.
Size of transformers, generators, and power feeds shall be governed by UFC 4-510-01, NFPA 99, and the NEC. In case of conflict between transformer design criteria between the above named standards, UFC 4-510-01 shall govern; in cases where UFC 4-510-01 cannot resolve the conflict, it shall be brought to the attention of the Contracting Officer for resolution.
The contractor shall provide a street lighting distribution system to supply power to the site's street lighting circuits. The street lighting system shall be The street lighting ducts shall be concrete encased in areas subject to vehicular traffic, such as road crossings and parking areas.
Secondary electrical distribution system shall be 380/220 volt, 3-phase, 4 wire, 50 hertz. 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 ultimate demand loads, plus 25% spare capacity.

The contractor shall provide service entrance feeders from the distribution system to the service entrance equipment located inside of each facility and sized to the rating of the service entrance equipment. Service entrance equipment shall include a distribution panelboard sized to supply the total load of each facility. Service entrance feeder lengths shall be kept as short as possible to minimize voltage drop. They shall be underground not less than 1220mm below grade in concrete encased 100mm minimum thin-wall PVC from pad mounted transformers. A spare conduit of equal size shall be provided.
All panelboards shall be circuit breaker 'bolt-on' type panels. Minimum size circuit breaker shall be rated at no less than 20-amperes. 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 flush mounted in finished areas and surface mounted in unfinished areas. All circuit breakers shall be labeled with an identification number corresponding to the panel schedule. A 3-pole circuit breaker shall be a single unit and not made up of 3 single pole circuit breakers connected with a wire or bridge to make a 3-pole breaker. All branch circuit wiring shall be copper, minimum #4 mm^2 (#12 AWG) installed in metal conduit. Wiring shall be concealed in finished areas and surface mounted in unfinished areas. Flush mounted panels shall be provided with spare empty conduits from panel to unfinished area for future use. All panels shall be provided with a minimum of 25% spare capacity for future load growth. Power receptacles (outlets) shall be duplex type 220 V, 50 hertz, type CEE 7/7 with Earth Ground rated for 20A or better 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). For large panels (225 Ampere and above) provide an ammeter, voltmeter and kilowatt-hour meter to monitor energy usage. Selector switches shall be provided for each meter to read all 3 phases. Receptacle locations shall be coordinated with architectural requirements.
Contractor shall design and provide circuits for all mechanical equipment and any other equipment that requires power and make the final connections.
All loads shall be coordinated to provide balanced loading. Phase imbalance at each panel shall not exceed 5%.
Voltage Drop for branch circuits shall be limited to no more than 3%; voltage drop for branch and feeder circuits combined shall be limited to no more than 5%.
All circuit breakers shall use down-stream coordination to ensure the breaker nearest a fault or overload is the first to trip.

<u>Generator Power System</u>

The generator power system, , shall be configured as an N+2 system with the N representing the number of generators needed to supply the site's total load and the[+2 representing the number of additional generators of the

same size required as spares. The site's total load is defined as the site's total demand load + 25% spare capacity. The generators shall supply power at 380 V and then stepped up to 20kV for distribution. The generator system shall also include a "black start" generator to supply power to the power plant until the main generator(s) come online.

Generators shall be derated as necessary for the ambient temperature and altitude of the site. Each generator shall be provided with an automatic load bank matched to 40% of its rated capacity (with load steps every 20% of the load bank's rating) to prevent the generator from "wet stacking" under low load conditions.
The generator power system shall be provided with a make-before-break, 4-pole, automatic transfer switch (ATS) rated for the capacity of the system. The ATS shall be capable of automatically and manually transferring the site's distribution system to generator power upon loss of local utility power and transferring back automatically and manually to local utility power upon its restoration.
The ATS shall be equipped with synchronizing/paralleling equipment to allow the generators to share the load of the site. When generator power is required at least one (1) generator shall be online at all times. When the site's load reaches 90% of the online generator's capacity, the standby generator(s) shall start. The generator that synchronizes first shall come online and share the load equally. When the site's load drops below 80% of the online generators' combined capacity, the generator(s) shall drop off line, one at a time, keeping a minimum of one generator operating online.
Whenever a generator starts, it shall go through a cool down cycle prior to shutdown. All relaying shall be automatically reset for automatic restart and stopping of generators as the load increases or decreases. Load sharing by the standby generator(s) shall be adjustable between 50% and 95% of the load on the online generator(s).
Sequence of operation shall be PLC controlled A properly sized main switchboard shall be provided to distribute the power produced by the generator(s) to the facilities on the site.
Generator fuel storage capacity shall be based on usage at total load for a minimum of 30 days. Fuel storage shall either be in aboveground single wall steel tank(s) with containment pit.

Lighting

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

Living room/Quarters	35 FC (350 Lux)
Toilets, Showers, Latrines, washrooms	20 FC (200 Lux)
Mechanical/Electrical rooms	30 FC (300 Lux)
Corridors and Stairways	20 FC (200 Lux)
Offices (private)	50 h/5 v FC (500 h/50 v Lux)
Office areas (open)	30 h/5 v FC (300 h/50 v Lux)
Kitchens (commercial)	70 h/3 v FC (700 h/30 v Lux)
Dining Areas	20 h/3 v FC (200 h/30 h Lux)
Auditoriums (assembly)	100 h (10 h Lux)
Auditoriums (social)	5 h/3 v FC (50 h/30 v Lux)
Conference	30 h/5 v FC (300 h/50 v Lux)
Video Conference	50 h/30 v FC (500 h/300 v Lux)
Armories	30 h/3 v FC (100 h/30 v Lux)
Reading (in chair-casual)	30 h/5 v FC (300 h/50 v Lux)
Reading (in chair-serious)	50 h/10 v FC (500 h/100 v Lux)
Reading (at desk-casual)	30 h/3 v FC (300 h/30 v Lux)
Reading (at desk-serious)	50 h/10 v FC (500 h/100v Lux)
Patient Rooms (general)	Per UFC 4-510-01
Patient Rooms (critical)	Per UFC 4-510-01
Egress path (incl. exterior)	10 Lux

Areas adjacent to egress path	0.5 Lux

FC = FootCandle
h = horizontal component
v = vertical component

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

Light Fixtures

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

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 6 inches (150 mm) in height and on matte white background. Illuminations shall be with LEDs.

Above Mirror Lights

Above mirror lights shall be provided in toilet rooms.

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.

Light Switches

Light switch shall be single pole. Minimum of one light switch shall be provided in every room. Lighting in large rooms/areas may be controlled from multiple switches. Three-way or four-way lighting shall be provided in all rooms / areas with multiple entrances.

Receptacles

General-purpose receptacles shall be as required herein. All receptacles shall be duplex, unless otherwise specified in this section, the NEC, or other referenced standard.
Receptacles shall be placed at a maximum of 3-meter (10 feet) intervals. Areas with computer work-stations or similar equipment will have additional receptacles. Sinks will have a receptacle above, with one duplex receptacle serving two sinks that are side-by-side. Receptacles in wet/damp areas or within 1 meter (~3 feet) of sinks, lavatories, or wash-down areas shall be ground fault circuit interrupter (GFCI) type or residual current disconnect (RCD) type, with the trip setting of [4 to 6] milliamperes or less. Total number of duplex receptacles shall be limited to six (6) per 20-ampere circuit breaker.

Conductors

All cable and wire conductors shall be copper. Conductor jacket or insulation shall be color coded to satisfy NEC requirements. The use of 75 or 90 degree C (minimum) terminals and insulated conductors is required. Use of 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.

Grounding and Bonding

Grounding and bonding shall comply with the requirements of NFPA 70. Underground connections shall be exothermally welded. All exposed non-current carrying metallic parts of electrical equipment in the electrical system shall be grounded. Insulated grounding conductor (separate from the electrical system neutral conductor) shall be installed in all feeder and branch circuit raceways. Grounding conductor shall be green-colored, unless the local authority requires a different color-coded conductor. Ground rods shall be 20 millimeters (0.75 inches) in diameter and 3 meters (~10 feet) long made of copper-clad steel. Final measurement of the ground resistance shall be in compliance with the requirements of the local authority but shall not exceed 25 ohms when measured more than 48 hours after rainfall.

Enclosures

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

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, addressable Fire Alarm Control Panel (FACP), manual pull stations, horns, strobes, and smoke and/or heat detectors (with alarm verification feature). The system shall be capable of automatically transmitting the alarm signal, via telephone lines, to the local fire department/fire station or other location designated by the Contracting Officer. Fire alarm system shall be complete and a standard product of one manufacturer.

Transient Voltage Surge Suppression (TVSS)

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

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 located in masonry walls. Smallest conduit size shall be no less than 20mm (0.75 inch) in diameter. All empty conduits shall be furnished with pull wire or cord or rope (depending on the size of conduit and length of run). System design and installation shall be per NFPA 70 requirements. Exterior conductors below grade shall be installed in concrete encased PVC conduit at a depth of 1220 millimeters.

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 300mm (12 inch) and rung spaced at 150mm (6 inch). Nominal depth shall be 100mm (4 inch). System design and installation shall be per NFPA 70 requirements.

Identification Nameplates

Major electrical equipment, such as transformers, panelboards, and load centers, etc. shall be provided with permanently installed engraved identification nameplates.

Schedules

All panel boards and load centers shall be provided with a directory. Directory shall be typed written in English, Dari and Pashto
Single Line Diagram
Complete single line diagrams shall be provided for all systems installed. All major items in each system shall be identified and labeled for respective ratings. Single line diagrams for each system, installed in a clear plastic frame, shall be provided.

OPERATIONS AND MAINTENANCE (O&M) FOR ELECTRICAL

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

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.

COMMUNICATIONS SYSTEM

Applicable Specifications

The Publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by designation only.
United States Department of Agriculture, Rural Utilities Service
RUS Bulletin 1751F-643 (2002) Underground Plant Design
RUS Bulletin 1751F-644 (2002) Underground Plant Construction
RUS Bulletin 1753F-151 (2001) Construction of Underground Plant,
Parts II & III
RUS Bulletin 1753F-201 (1997) Acceptance Test and Measurements
Of Telecommunications Plant
RUS Bulletin 1753F-208 (1993) Specifications for Filled
Telephone Cables with Expanded
Insulation (PE-89)
RUS Bulletin 1753F-401 (1995) Standards for Splicing Copper
And Fiber Optic Cable (PC-2)
RUS Bulletin 1753F-601 (1994) Specifications for Filled
Fiber Optic Cables (PE-90)
RUS Bulletin 1753E-001 (1996) RUS General Specification for Digital, Stored Program
Controlled, Central Office Equipment, RUS Form 522.
RUS Publication IP 344-2 (2006) List of Materials Acceptable
For Use on Telecommunications Systems of RUS Borrowers.
RUS Bulletin 345-65 (1978) Shield Bonding Connectors (PE-33)
RUS Bulletin 345-83 (1982) REA Specification for Gas Tube
Surge Arrestors (PE-80)
RUS Bulletin 1753E-001 (1996) RUS General Specification for
Digital Stored Program Controlled Central
Office Equipment, (Form 522)
American National Standards Institute/Telecommunications Industry Association/Electronics Industry Association
ANSI TIA/EIA 606-A (2002) Administration Standard for
The Telecommunications Infrastructure ANSI TIA/EIA 607-A (2002) Commercial Building Grounding (Earthing)
and Bonding Requirements for Telecommunications
The Telecommunications Infrastructure
ANSI TIA/EIA 607-A (2002) Commercial Building Grounding (Earthing) and Bonding Requirements for
Telecommunications
ANSI TIA/EIA 568 (2001) Commercial Building Telecommunications Cabling Standard
ANSI TIA/EIA 569-B (2004) Commercial Building Standard for Telecommunications Pathways and Spaces
ANSI TIA/EIA 758-A (2004) Customer-owned Outside Plant Telecommunications Infrastructure Standard

Communication Systems Design

The communications system for Shindandis to be designed, supplied and constructed by the Contractor. The design and construction of the systems shall be in accordance with the references and the requirements contained herein. All communications lines shall originate from the communications room of the headquarters building. A backup generator shall be provided for the communications room and 60% of the remainder of the building. The backup generator shall have a automatic transfer switch that would start the generator and trans the load to the generator in the event of failure of the primary power.

Exterior Communication Manhole System

The contractor shall [provide a][extend the existing] manhole/handhole and duct system. The manholes and hand-holes shall be constructed in accordance with the contract drawings. The maximum distance between manholes and/or hand-holes shall be 140 m (450 ft). The ducts shall be direct buried with a minimum of 1000 mm of properly tamped dirt/backfill on the top. Hand-holes shall be installed in laterals in between manholes and buildings and only where the distance between the main duct system and the building is 100 meters or more. The maximum number of ducts in a hand-hole wall shall be two, with one having four (4) inner ducts installed unless there are two buildings close by and can be fed from one hand hole. In this case, four (two with inner ducts) conduits can be installed in the walls.

Exterior Conduit

The underground conduit for the manhole and duct system shall be direct buried (1 meter below surface), 100 mm DB type PVC or schedule 40, PVC. Inner ducts shall be four (4) 25mm PVC or PE inner ducts field installed in the outer-duct. The inner ducts shall be installed in the duct face and secured with properly sized duct plugs which expand to seal the duct. The ducts will be reinforced concrete encased where a road or taxi way is crossed. The ducts (inner and outer) shall be listed on the RUS list of materials acceptable for use on RUS projects. Cable racking diagrams (manhole/hand-hole butterflies) shall be provided for the manholes and hand-holes. The minimum duct configuration in the main duct system shall be a six way duct, being three conduits wide by two conduits deep (3 X 2) with two of the conduits having inner-ducts installed. Laterals off of the main duct system manhole to manhole shall be a minimum of a 4 way (2x2) with one duct having inner ducts. The duct system from the manhole/hand hole to a building with cable installed shall be a 1x 2, 100 mm PVC duct bank with one duct having inner ducts. The duct system from a manhole/hand hole to a building with allocations only shall be two (2), four inch (100mm) 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.

Exterior Telephone Cable

The Contractor shall install copper and fiber optic cable in accordance with the references and the cable requirements listed below. The copper cable shall be 24 AWG, RUS PE89 type, foam skin polyolefin, with an outer layer of solid colored polyolefin and a copolymer coated 8 mil aluminum tape shield. The fiber optic cable shall be a single mode, RUS PE90 type, with a 6 mil, copolymer coated steel shield. The fiber shall not have any internal splices and have a maximum loss of .4dB/Km at 1310nm and .3dB/Km at 1550nm. The copper and fiber optic cable shall be installed, grounded/bonded, spliced and tested in accordance with RUS standards.

Splices

<u>Copper Splices</u>

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

Fiber Optic Splices

The fiber optic splice closure shall be equipped with splice trays that properly hold the fusion splice protectors (stainless steel rod with heat shrink tube). The splice loss shall be .02dB or less as measured by the fusion splicing machine and .2dB as measured by an OTDR. The fiber optic splice closure shall be flash tested with nitrogen in accordance with the manufacturer's recommendations and also be listed in RUS IP 344-2. All bonding hardware shall also be listed in RUS IP 344-2. Bonding and grounding shall be in accordance with the RUS standards. The fiber optic splice closure shall be installed by the fiber optic splicer only. The fiber optic cable splicer (s) shall have 7 years documented unsupervised experience in the installation of the splice closure being used and with RUS cable. The fiber optic splice shall also have a minimum of 7 years documented unsupervised experience with fusion splicing machines and a minimum of three years with the particular make and model of the machine that will be used.

Main Distribution Frame

The contractor shall route all communications to the communications room in the headquarters building.

Protected Entrance Terminals

Building Protected Entrance Terminal, 25, 50 or 100 Pair
The PETs shall consist of an input splice chamber with punch down blocks for the copper cable pairs, a protector field for 5 pin connectors and a factory installed output punch down block terminal for each outside plant cable pair. The PET shall be listed in RUS 344-2. The station cables shall be terminated on a field installed category 5e, 110 type punch down block and jumpers shall be installed between the PET block and the field installed block to connect dial tone to the outlet.

Protected Entrance terminal, 6 or 12 pair.

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

Patch Panels

Fiber Optic Patch panels, all buildings with data outlets.

The fiber optic terminations shall consist of the outside plant cable being fusion spliced to single mode pigtails with factory installed SC connectors. The fusion splice shall have a splice loss of .02 dB or better as measured by the splicing machine and .2dB as measured by an OTDR. The pigtails shall have a singlemode insertion loss of less than .35dB with the typical being 15 dB and a singlemode return loss better than -55dB. The fusion splices shall be protected by a stainless steel sleeve and heat shrink tube and placed in a splice tray. The terminations shall be contained in a wall mounted hinged door enclosure. The enclosure shall be equipped with hardware to properly store 1 meter of fiber slack. The enclosure shall be designed to handle adapter panels with three duplex SC connectors per adapter panel. The SC connectors shall have zirconia ceramic sleeves. The enclosure shall be capable of mounting four (4) adapter panels. Blank adapter plates shall be used wherever there are no fiber optic adapter panels. One duplex single mode fiber optic patch cord shall be provided for each duplex fiber optic port. The fiber patch cords shall have a mated pair insertion loss of less than .35dB with a typical loss of.15dB and a typical mated return loss of less than -55dB.

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

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

Outside Plant Cable

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

Spare Cable Pairs and Fiber Optic Strands

There shall be spare cable pairs and fiber strands in the manholes/hand holes as required ensuring that standard sized cables are used. Dead Cable pairs shall be spliced through and cleared and capped in proper connectors. The 25 pair binder grouping of the cable shall be maintained. When the smaller (6 pair or 12 pair) counts are used, the first 6 pair count or first two 6 pair counts are used, the 13th pair of the count is cleared and capped, and then the second pair counts 14th through 25 pair count will be used. Under no circumstances will a split binder count be used. The 6 strand grouping of the fiber optic cable plant shall also be maintained.
The Contractor shall provide cable (copper and fiber optic cable) count provisions, either installed in the building or allocated in cable stubs in manholes/handholes for all buildings on the site plan, (contracted buildings and future). Conduit stub outs in manholes/handholes shall be
provided for all buildings on the site plan. The following buildings will either have the cables installed and terminated in the building OR have the cables allocated in the cable counts and left in the manhole/handhole cable stub out closures.

Telephone/Data Cabling Distribution System for each building.

The Contractor shall provide two telephone/data boxes per bedroom, one box on each of the long interior walls. The Contractor shall provide a telephone/data box every three meters along the wall for open offices.. Conference rooms shall have two telephone/data boxes on each interior wall, three interior walls per conference room. Each box shall have dual RJ-45 outlets, one for telephone and one for data. Interior copper cable to each outlet shall be 4 pair, unshielded twisted pair (UTP), Category 5e or better. Each telephone/data junction box shall be fitted with two RJ-45 jacks (1-voice / 1-data). Two runs of Category 5e (UTP) or better data cable shall be installed from each junction box back to the patch panel in the communications room and labeled on both ends with room number and jack number. Contractor shall be responsible for providing one enclosed 480 mm wide, 1 800 mm tall communications equipment rack with top-mounted cooling fans and front & rear closing doors. Contractor shall provide two 480 mm 48-port patch-panel mounted in the rack. Contractor shall coordinate the location of the communications rack (first or second floor) with the Contracting Officer Representative (COR). Termination configuration shall be EIA/TIA T568B. Two 103 mm empty conduits shall be provided from the room to the outside for to facilitate future telephone cabling installation into the building. Two additional 103 mm empty conduits shall be provided between the communications rooms of both buildings. Provide all empty conduits with a pull rope. Incoming telephone and data service is to be provided by others. Properly sized metallic conduit and cable tray shall be used as appropriate to

distribute the telephone/data cabling throughout the building. Minimum conduit size shall be 20 mm inside diameter. Data/communications face plates shall be surface mounted to the wall.

INDIVIDUAL BUILDING COPPER AND FIBER OPTIC RUNS

Each building shall have 12 pair of copper and 6 strands of fiber optic cable supplied to the building from the headquarters communications room except for the following:

Instructors Offices: 24 pair of copper and 12 strands of fiber.
Medical Clinic: 24 pair of copper and 12 strands of fiber
Barrack: 24 pair of copper and 12 strands of fiber.

-END OF SECTION-

SECTION 01060

SPECIAL CLAUSES

PART 1 GENERAL

1.1 PRECONSTRUCTION CONFERENCE

1.1.1 Schedule of Meeting

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

1.1.2 Meeting Minutes

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

1.2 AREA USE PLAN

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

1.3 CONTRACTOR'S MOBILIZATION AREA

The Contractor will be permitted to use an area 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.

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1.3.1.5 Appearance of Mobilization Site Facilities and/or Trailers

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

1.3.1.6 Maintenance of Storage Area

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

1.3.1.7 Security Provisions

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

1.3.1.8 Sanitation

a. Sanitary Facilities: The Contractor shall 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.

1.3.3.1 Barricades

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

1.3.4 Host Nation Authorizations, Permits and Licenses

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

1.4 RESPONSIBILITY FOR PHYSICAL SECURITY

Prior to mobilization, the Contractor shall submit his proposed means of providing project security to prevent unauthorized access to equipment, facilities, materials and documents, and to safeguard them against sabotage, damage, and theft. The Contractor shall be responsible for physical security of all materials, supplies, and equipment of every description, including property which may be Government-furnished or owned, for all areas occupied jointly by the Contractor and the Government, as well as for all work performed.

1.5 DUST CONTROL

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

1.6 DIGGING PERMITS

1.6.1 Requirements for Digging Permits

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

1.6.2 Requests for Digging Permits

Requests for Digging Permits shall be submitted to Contracting Officer a minimum of seven (7) days prior to the start of the work activity covered by the permit. The request for a Digging Permit shall include a narrative description of the work to be performed and a detailed map of the area of the excavation clearly marking the location of all known utilities or other obstructions. If the work activity covered by the Digging Permit request also requires a

utility outage, a separate request for the outage shall be submitted in accordance with the paragraph entitled CONNECTIONS TO EXISTING UTILITIES.

1.6.3 Preparation of Requests for Digging Permits

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

1.6.4 Existing Underground Utilities

The Contractor shall exercise utmost care in researching locations of existing utilities and reducing damage to existing utilities. Any utilities damaged by the Contractor shall be promptly repaired by the Contractor. The Contracting Officer will review and approve any proposed repairs. Any damage to existing utilities will be immediately reported to the Contracting Officer and the Base Commander.

1.7 CONNECTIONS TO EXISTING UTILITIES

1.7.1 General

Any outage involving disruption of electrical service beyond the site area shall be requested in writing at least ten (10) days in advance of the date requested for the commencement of the outage. The Contractor shall provide a request, detailing the type of outage needed (water, sewer, electrical, steam, etc.), the time needed to perform the work, the reason for the outage, and the known affected facilities. The Contracting Officer shall be contacted prior to the outage to confirm the time and date. If the Contractor fails to initiate work at the approved time, the Contracting Officer may cancel the approved outage and may direct the Contractor to resubmit a new request. No part of the time lost due to the Contractors failure to properly schedule an outage shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

1.7.1.1 Performance of Work During Non-Standard Hours

To minimize outage impact to the mission of the installation, all outages shall be scheduled on weekends or from 2100 – 0530 hours on duty days and/or as directed by Contracting Officer Representative (COR). The period proposed for performance of the outage shall include sufficient contingencies to preclude impact to the peak working hours 0530 – 1800 hours during the workweek.

1.7.1.2 Exterior Night Lighting

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

1.7.2 Existing Underground Utilities

The Contractor is provided notice that existing utilities may be present in the construction area. The Contractor shall exercise the utmost care in researching locations of existing utility lines by implementing control measures to eliminate, or reduce to a level acceptable to the Contracting Officer, the chance of damaging or destroying existing utilities.

1.7.2.1 Use of Underground Utility Detecting Device

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

1.7.2.2 Hand Excavation

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

1.7.3 Repair of Damaged Utilities

The Contractor shall be responsible to repair any utilities damaged by him. The method of repair and schedule for performance of the repair shall be coordinated with, and subject to the approval of, the Contracting Officer. The repair work and any temporary work required to keep the system operational while repairs are being completed, shall be performed at no cost to the Government.

1.8 WATER

Water is not available on site.

1.9 SPECIAL FACILITIES AND SERVICES TO BE FURNISHED BY THE CONTRACTOR

1.9.1 USACE Offices & Quarters Facility

The Contractor shall provide a 240 SM facility with Offices in one suite, and quarters in an adjoining suite under one roof. See Appendix B-1 for the conceptual layout.

1.9.1.1 Quarters

The Contractor shall provide for the USACE offices and living quarters at a location designated by the COR. Contractor shall provide and furnish complete life support services to include western style food service, a four person office, and six bedrooms to accommodate four permanent Corps of Engineers project personnel and two bedrooms for visitors. Contractor shall install blast mitigation measures to include the interior roofing of the office and quarters.

Six bedrooms will be designed and constructed for one individual in each room @ 12 SM each. Heat and cool with split pack units throughout. Provide three full bathrooms with a toilet, lavatory, and shower. All facilities, fixtures, closets/cabinets, desks, chairs, beds and equipment shall be in new condition to be accepted by the government representative. The Contractor shall fully maintain and repair the facility provided. Office and bedroom furniture will be provided by the contractor. The facilities cannot be portable facilities, such as a prefabricated trailer. The facilities shall be of steel permanent type and firmly secured to a foundation at the project site. Force protection walls shall be installed to provide a safe and secure living environment. The facilities shall include steel fold down covers on windows. Windows shall have laminated and insulating glazing; see Section 01015 for requirements. Units shall have the following insulation R-30 @ Floor and Ceiling and R-19 in Walls. All facilities, furnishings, materials, and equipment shall be new when furnished at the site. The Contractor shall fully maintain and repair all facilities, furnishings and equipment listed below. All facilities and equipment furnished and/or installed by the Contractor

under this clause shall remain the property of the Afghanistan Government at the completion of the contract, and shall be vacated by Corps of Engineers personnel at completion of the contract, or later, at the discretion of the Commander of the facilities, if their remaining is in the interest of the Afghanistan Government. The generators for the Field office and the field housing shall be protected on all sides by standard fencing. Facility shall be connected to the standby generator. The life support services shall be completed within 120 days after NTP.

1.9.1.2 Field Offices

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

Laundry room shall be provided with (2) washers and (2) dryers.

Provide adequately sized water tanks and sewage holding tanks for the Facility.

Provide a Communications Room in the Field Office Facility for the electronics. Provide an Air Conditioned Communications Room with sufficient Lighting in the USACE office building for the electronics. The Communications Room size requirement is 10 feet (3.048 m) by 8 feet (2.438 m), or if more appropriate, 3 meters (9 ft, 10 in) by 2.5 m (8 ft, 2 in). Room shall be air tight and sealed to prevent dust from entry. Communication conduit entrance requirement is one 4 inch conduit with pull string. Conduit is to be trenched from the concrete satellite pad at a minimum depth of 18” preferably 24” with Digging/Caution Tape at a depth of 12” to the outside wall penetrating into the communications room with an LB or 12”x 12”x 6” Waterproof Junction Box. Conduit at satellite pad must be bent (see below) so that opening is pointing down (not up) with at least 18 inches clearance from the pad surface. Conduit enters the Communications Room above ground, using a Weatherhead at the dish location. Opening into the Communications Room should be at 18 inches above the communications floor, horizontal entry. Contractor shall provide 2 8’ Ground Rods with a minimum of 8’ separation in the Communications Room with ground clamps. Conduit should be one piece, PVC Schedule 40 minimum or thicker. Interior must be free of protrusions and completely butted up at all the joints to allow smooth, non-cutting surfaces for the wire or fiber optics that will eventually be pulled through. Conduit is to be installed with a pull string or rope. Each bend must continue through a minimum of 36 inches of straight pipe before the next bend using a minimum 24” preferably 36” sweeps and installation of a 4’X4’X4’ hand hole in between every 3 sweeps. Bends shall be long radius sweeps.

Conduit must be buried no less than 24 inches, 36 inches if there is a possibility of tank or other heavy equipment passage with Digging/Caution Tape at a depth of 12”. Conduit is intended for communications only and must maintain a minimum of 36” separation from all power lines. If Power is also to be run, it must be in a separate conduit, separated from the communications conduit by a minimum of 36 inches. Power conduit is not specified herein. Consult with the electrical engineer for requirements.

Provide a 4 m X 4m X 200 mm concrete pad for anchoring the satellite antenna. Antenna weighs 1,800 pounds, design the base to anchor the antenna and withstand high winds on site. Provide 80 CMU Cinder blocks and 2 8’ Ground Rods with clamps for proper grounding.

In both residence and office, install raceways, run category 6 or better Ethernet cable (UTP 23 AWG solid 4-pair) and terminate on RJ-45/Keystone Style CAT6 jack. Free ends are to be pulled and labeled into Communications Room and terminated on a CAT6 Patch Panel leaving a minimum of 20 feet extra cable inside the Communications

Room, all terminations will be to the 568B standard. In the office space a duplex / dual outlet box will be installed every 6' along the interior walls, and will have (2) data connections each. In the residence space a duplex / dual outlet box will be installed along both long interior walls, and will have (2) data connections each. All Phone and Data connections will use CAT6 cable terminated in a 568B configuration. See Appendix A USACE Facility.

In both Residence and Office, install raceways, run category six (6) Ethernet cable and terminate on RJ-45 connecting block arranged for 568B wiring at each workstation, printer location and table/desk in residence. Free ends are to be pulled and labeled into Communications Room and left un-terminated with a minimum of 15 feet exposure inside the Communications Room.

Provide personnel bunkers at the COE living quarters/ office for 6 people. Bunker shall have bench seating. Contractor shall revise the bunker design depicted in Appendix sheet A-105 and size it for 6 people. Approximate bunker size should be based on 15 SF/person.

1.9.2 Services for the Office and Residence Building

a. Provide and maintain all utility systems required to support the facilities. Provide heat and air conditioning to the facilities and a standby generator in case of power outage.
b. Provide janitorial services to the facilities.
c. Provide operation and maintenance of building structure, all furnishings and equipment contained therein, including painting and incidental repairs.
d. Provide dust control in area adjacent of the buildings.
e. Provide vector control services, including insect and rodent control in the areas adjacent to the buildings.
f. Provide potable water as required for the given population and sewage tank pump out services as necessary.
g. If no existing electrical supply, Contractor shall provide two (2) generators and provide fuel for same during the duration of the Contract period.

1.9.3 Equipment

Immediately upon completion of both the AED office and life support facilities for AED personnel and through the period of performance for this Contract, provide one diesel powered, four wheeled drive all terrain equipment with roll bar, similar to Kawasaki MULE 3010 diesel off highway style. The equipment shall be with automatic transmission, heavy duty cooling system, heater, windshield, fabric top and doors, fire extinguisher, and Red Cross approved First Aid Kit. The Contractor shall provide insurance to the full requirements of local jurisdiction law. Maintenance including major repairs shall be accompanied in a timely manner. When repairs require more than four (4) hours in effort, a similar substitute shall be provided for the CE's use. The Contractor shall provide insurance to the full requirements of local jurisdiction law. The Contractor shall maintain licensing, registration and ownership of this vehicle. The equipment shall be provided no later than 120 days after notice to proceed (NTP) of this contract. This equipment shall not become Government property at the completion of this contract.

The contractor shall provide one laser printer (with network interface card (NIC) (similar to: HP LaserJet M9050 MFP multi-function copier/scanner/fax; wide carriage printer capable of printing on 11"X17" paper). The contractor shall maintain the printer and fax as required, including maintenance kits, toner cartridges, other consumable supplies and paper. Provide four (4) each two-way radios, and charge stands. This equipment shall not become Government property at the completion of this contract.

1.10 ELECTRICITY

Electricity is not available on site.

1.11 WORK OUTSIDE REGULAR HOURS

If the Contractor desires to carry on work outside regular base duty hours, or on holidays, including the following U.S. holidays: New Year's Day, Martin Luther King Jr Birthday, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving and Christmas. the Contractor shall submit an application to the Contracting Officer. Due to reliance upon local national laborers and time off due to local observances, there may be disruptions. Potentials dates are the following local observances: National Islamic Holiday of Ashura, Ramadan (actual date varies – check with local authorities). The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. At night, exterior lighting shall be provided in conformance with EM-385-1-1 entitled "Safety and Health Requirements Manual".

1.12 SCHEDULING OF WORK IN EXISTING FACILITIES

As soon as practicable, but in any event not later than thirty (30) calendar days after award of this contract, the Contractor shall meet in conference with the Contracting Officer, or his duly authorized representatives, to discuss and develop mutual understanding relative to the scheduling of work in and access to the existing facilities where work has to be performed under this contract, so that the Contractor's proposed construction schedule is coordinated with the operating and security requirements of the installation.

1.13 SPECIAL FACILITIES AND SERVICES TO BE FURNISHED BY THE CONTRACTOR

The Contractor shall furnish the facilities and services listed in this clause for Corps of Engineers personnel and other persons as designated by the Contracting Officer. 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.
The Contractor is required to provide a fully functional office and living accommodations for 6 personnel (individual rooms) to be located at a location designated by the COR. Contractor shall provide internet access, all utilities, and maintain the facilities for the duration of the contract.

1.14 PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR)

1.14.1 As-Built Drawing Submittals

a. Government approval is required for As-Built drawings as below in accordance with Section 01335, SUBMITTAL PROCEDURES.

b. Drawings showing final as-built conditions of the project. The local language of Afghanistan shall be added to project As-Built drawings. The final CADD as-built drawings shall consist of two sets of electronic CADD drawing files in the specified format, and one half-size and two full-size paper copies of the approved as-built drawings.

1.14.2 As-Built Drawings

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

1.14.2.1 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.

1.14.2.2 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.

1.14.3 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.

1.14.4 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 V8 format compatible with a Windows XP operating system. The electronic files will be supplied on compact disc, read-only memory (CD-ROM). The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings.

b. Prior to submittal of the first design submittal involving 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. CADD colors shall be the "base" colors of red, green, and blue. Color code for changes shall be as follows:

(1) Deletions (red) - Deleted graphic items (lines) shall be colored red with red lettering in notes and leaders.

(2) Additions (Green) - Added items shall be drawn in green with green lettering in notes and leaders.

(3) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes shall be in blue.

d. The Contract Drawing files shall be renamed in a manner related to the contract number (i.e., 98-C-10.DGN) as instructed in the Pre-Construction conference. Marked-up changes shall be made only to those renamed files. All changes shall be made on the layer/level as the original item. There shall be no deletions of existing lines; existing lines shall be over struck in red. Additions shall be in green with line weights the same as the drawing. Special notes shall be in blue on layer#63.

e. When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 5 mm 3/16 inch high. All other contract drawings shall be marked either "As-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

f. After Government approval of all of the working as-built drawings for a phase of work, the Contractor shall prepare the final 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.

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

1.14.5 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.

1.15 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in accordance with Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company involved and shall contain the name and address of the Contractor, the project name and location, description and the quantity of the items

involved, and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material.

1.16 ACCIDENT PREVENTION

The Contractor shall comply with all applicable Host Country laws and with such additional measures as the Contracting Officer may find necessary in accordance with CONTRACT CLAUSE 52.236-13 entitled ACCIDENT PREVENTION (NOV1991)-ALTERNATE 1 (APR 1984). Applicable provisions of the Corps of Engineers manual entitled Safety and Health Requirements Manual EM 385-1-1 will be applied to all work under this contract. The referenced manual may be obtained from the Contracting Officer at the jobsite or from the Afghanistan Engineer District at Kabul, Afghanistan.

1.16.1 Accident Prevention Program

Within fifteen (15) days after award of this contract, and at least ten (10) days prior to the accident prevention pre-work conference, four (4) copies of the Accident Prevention Plan required by the CONTRACT CLAUSE 52.236-13 entitled ACCIDENT PREVENTION (NOV 1991)- ALTERNATE I shall be submitted for review by the Contracting Officer. The Contractor shall not commence physical work at the site until the Accident Prevention Plan (APP) has been reviewed and accepted by the Contracting Officer. The APP shall meet the requirements listed in Appendix "A" of EM385-1-1. The program shall include the following: TAC Form 61 " Accident Prevention Program Hazard Analysis (Activity Hazard Analysis)" fully completed and signed by an executive officer of the company in block No. 13. The Activity Hazard Analysis is a method in which those hazards likely to cause a serious injury or fatality are analyzed for each phase of operations. Corrective action is planned in advance, which will eliminate the hazards. An analysis is required for each new phase of work. On large or complex jobs the first phase may be presented in detail with the submittal of the Accident Prevention Plan rather than presenting the complete analysis. If the plan is to be presented in phases, a proposed outline for future phases must be submitted as a part of the initial Accident Prevention Plan submittal. Accident Prevention Plans will be reviewed for timeliness and adequacy at least monthly with a signature sheet signed and dated documenting that these reviews took place. Copy of company policy statement of Accident Prevention and any other guidance as required by EM 385-1-1, Appendix A.

1.16.2 Ground Fault Circuit Interrupter (GFCI) Requirement – Overseas Construction

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

1.16.3 Temporary Power - Electrical Distribution Boxes

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

Contractors shall:

a. Make no modifications that might void any CE or manufacturer certification.

b. Test the installed systems to demonstrate that they operate properly and provide the 10 ma earth leakage protection.

c. Ensure GFCIs will have an integral push-to-test function. The testing shall be performed on a regular basis.

d. Check that proper grounding is checked regularly and flexible cords, connectors, and sockets inspected before each use.

1.17 HAZARDOUS MATERIALS

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

1.18 SPARE PARTS

1.18.1 General

The requirements of this clause are in addition to any requirements for the provision of specific spare parts to be provided by the Contractor included in Technical Provisions. The Contractor shall furnish spare parts as directed by the Contracting Officer under the provisions of this clause for all equipment for which O&M data is to be provided under Clause OPERATION AND MAINTENANCE (O&M) DATA of this contract. The term "spare parts" as used herein shall include spare parts, special tools and test equipment.

1.18.2 Selection of Spare Parts to be Furnished

The Contractor shall provide master parts lists, recommended spare parts lists and lists of special tools and test equipment as a part of the equipment O&M data required by Clause OPERATION AND MAINTENANCE (O&M) DATA. The master parts list shall include the supplier's price for each part. After review of the lists, the Contracting Officer will select spare parts and furnish written direction to the Contractor indicating quantities and types of spare parts to be furnished by the Contractor. Written directions for spare parts orders may be provided on an incremental basis as reviews of O&M data submitted by the Contractor are completed but will not necessarily be issued in the sequence in which the Contractor submitted the equipment O&M data.

1.18.3 Procurement and Delivery of Spare Parts

The Contractor shall procure and be responsible for delivery, receipt, handling, placing in storage, inventory, and turnover to the Contracting Officer all spare parts selected by the Contracting Officer. In addition to the recommended spare parts list required in paragraph SELECTION OF SPARE PARTS TO BE FURNISHED above, the Contractor is responsible to have one (1) year supply of manufacturer's recommended spare parts on site ready to turn over to the Contracting Officer at the time of acceptance of the facility.

1.18.3.1 Shipment and Delivery

The Contractor shall be responsible for the shipment and delivery of spare parts to the location on or near the site in Afghanistan as selected by the Contracting Officer. The Contractor shall provide all manpower and equipment required to receive and place into designated storage areas all spare parts purchased under this clause. The

Contractor shall give the Contracting Officer thirty (30) calendar days notice of arrival at the site of the first shipment.

1.18.3.2 Turnover of Spare Parts

The Contractor shall notify the Contracting Officer seventy-two (72) hours prior to delivery of spare parts to the designated storage area. The Contractor and the Contracting Officer will perform a joint inventory of the spare parts and the spare parts will be turned over to the Contracting Officer. Spare parts purchased under this clause shall not be used by the Contractor.

1.18.3.3 Parts and Package Identification

Prior to shipment from point of purchase, each spare part shall be tagged or otherwise marked or labeled. Such labeling may be placed or affixed to the container, box or packaging in which spare parts are located when it is not feasible to place or affix such labeling directly on each spare part. Tags or labels shall include, but not necessarily be limited to; part number, description, parent equipment name and number location, project and/or other data as directed by the Contracting Officer.

1.18.3.4 Preservation and Packaging Instruction

a. Items ordered under this contract shall be preserved and packed for a minimum of three (3) years shelf life storage. All items shall be individually packaged except when the manufacturer specifies that the items are to be used in sets. Appropriate identification labels must be affixed to the items protective box or package. After the spare parts are packaged, the manufacturer shall weigh the spare parts and packaging and place the weight and size of the packaged container on the label with other information as outlined herein. Each item, not normally identified with manufacturer's name and part number, shall have an appropriate label affixed to it with manufacturer's name and part number.

b. Machined spare parts shall be lubricated or coated in order to withstand extensive periods of storage in a highly corrosive atmosphere.

c. Large items (greater than 22.7 kg (50 lbs.), or larger than 0.03 CM (one cubic foot) shall be packaged in waterproof wooden boxes and properly braced. Cushioning shall be used to prevent damage to the item and to the packaging material.

d. Solid state components, such as diodes, transistors, integrated circuits or equipment consisting of such parts that can be damaged as a result of static electricity and other stray electro-magnetic fields shall be packaged in heat-sealed, aluminum foil, laminated, flexible packages.

e. All other spare parts shall be packaged in heat sealed plastic bags or wrap. Delicate and more fragile items such as test equipment shall be cushioned or wrapped with transparent bubble wrap material prior to being inserted into the plastic package.

1.18.4 Warranty

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

1.18.5 Payments for Spare Parts

Payments for spare parts ordered under the paragraph entitled "Selection of Spare Parts To Be Furnished" will be made under the work item of the Work Breakdown Sheet entitled "Spare Parts". Payments for spare parts specifically required elsewhere in this contract shall be considered as part of those equipment costs and shall be included in other payment items as appropriate. Payments for spare parts ordered under this clause shall be based on the invoice price (FOB supplier) plus certified invoice price of surface shipment to the site in Afghanistan. The invoice price (FOB supplier) shall include the separately listed cost for preservation and packaging by the manufacturer as specified herein. The Contractor shall provide invoices and any additional backup, which may be required to demonstrate that the invoices presented represent the cost of spare parts, preservation and packaging, and cost of surface shipment to the site. Payment for handling, delivery, inventory, turnover, customs, overhead or profit shall not be paid or allowed under this Contract Provision, and shall be included in the cost for installation of this equipment under the other appropriate payment items of this contract. Price increases over prices furnished under paragraph SELECTION OF SPARE PARTS TO BE FURNISHED shall be fully substantiated. Payment for spare parts will be made after the spare parts have been accepted at the site by the Contracting Officer. If the total payments under the work item entitled "Spare Parts" does not reduce the balance of this work item to zero, the remaining balance will be deducted from the final contract amount. If orders exceed the work item entitled "Spare Parts", a modification for equitable adjustment will be issued in accordance with Contract Clause 52.243-4 entitled CHANGES. Payments for spare parts ordered under this clause shall constitute full payment for all cost of the spare parts and associated cost of preservation and packaging, and cost of surface shipment to the site. Other ancillary costs shall be included by the Contractor under the other appropriate work items of this contract and no additional cost except as provided herein will be allowed.

1.19 OPERATION AND MAINTENANCE (O&M) DATA

1.19.1 General

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

1.19.2 Submittals

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

1.19.3 Operation and Maintenance (O&M) Data

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

1.19.4 Recommended Spare Parts List

The Contractor shall furnish a recommended spare parts list containing equipment manufacturers' recommendations for five (5) years; two (2) years and one (1) year spare parts stock levels in Afghanistan. Current unit price and effective date, lead time, shelf life for each individual part, and total cost of all recommended parts shall be furnished.

1.19.5 Supplemental Submittals of Data

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

1.19.6 Framed Instructions for Systems

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

1.19.7 Additional Submittals/Re-submittals

The Contracting Officer reserves the right to determine whether the above specified information, as furnished by the Contractor, is adequate and complete and to require such additional submittals by the Contractor as necessary to insure that adequate information has been furnished to provide the satisfactory operation and maintenance of the various items of equipment and to fulfill the intent of the specifications. Additional submittals or 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.

1.20 INSTRUCTIONS AND TRAINING FOR OPERATION AND MAINTENANCE

1.20.1 General

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

Title	Duration of Training
Mechanical Systems	10 Days
Electrical Systems	10 Days

1.20.2 Operation and Maintenance Training

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

1.20.3 Arrangements

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

1.20.4 Scheduling

The Contractor shall contact the Contracting Officer for the purpose of preliminary planning, scheduling, and coordination of training, to maximize effectiveness of the training program for available operating and maintenance personnel. The Contractor shall initiate and make arrangements for such contact within thirty (30) calendar days after receipt of notification of award of contract; and shall include all significant times in scheduling and completing training in his PROJECT SCHEDULE. The Contractor shall provide a draft outline of training outline in sufficient detail to provide a broad indication of the type of scope of training to be given. It shall include but not be limited to; (a) a list of subjects to be presented; (b) estimated amounts of classroom and on-the-equipment instruction for each subject; (c) a list of minimum qualifications for instructors; and (d) discussions concerning the types and amounts of visual aids, reference materials, tools and test equipment, mock-up and other training materials that will be employed during training.

1.20.5 Preliminary Plan

The Contractor shall submit seven (7) copies of an outline of his proposed training plan to the Contracting Officer for review and approval not later than 60 calendar days after award of this contract. The plan will be reviewed and coordinated with the content of the O&M manuals.

1.20.6 Plan

The Contractor shall submit seven (7) copies of his proposed training plan to the Contracting Officer for approval not later than ninety (90) calendar days prior to start of any training. The plan shall include the following; (a) a weekly outline showing overall form and design of training presentation; (b) a day-by-day schedule showing time intervals, the major and subordinate subjects to be covered in each, the name of the instructor(s) and qualification summary of each, and identification of related handouts; (c) summary of the number of hours of classroom and on-the-equipment training; (d) a list of reference materials to be provided by the Contractor to the trainees; and (e) a list and description of the training materials to be used, such as text, visual aids, mock-up, tools, etc. The Contractor shall be responsible for furnishing all training materials except the following: The Government will provide space,

chairs, and tables for classroom training, and three (3) sets of the five (5) sets of O&M Manuals required by the Contractor per Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD of the specifications. Provision of these manuals is solely for reference purposes, and in no way relieves the Contractor from providing all instruction and materials necessary for training personnel designated by the Government. All costs for resubmission of training plans, training materials, etc., as requested by the Contracting Officer shall be borne by the Contractor. Resubmittals shall be made within twenty (20) days of notice from the Contracting Officer.

1.20.7 Attendance Roster/TAC Form 356

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

1.21 CONTRACTOR FURNISHED EQUIPMENT LISTS

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

1.22 TIME EXTENSIONS

1.22.1 General

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

MONTHLY ANTICIPATED UNUSUALLY SEVERE WEATHER CALENDAR DAYS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
15	**11**	**6**	**6**	**1**	**0**	**0**	**0**	**0**	**2**	**9**	**15**	**65**

1.22.2 Time Extensions

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

1.22.3 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.

1.23 STANDARDIZATION

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

1.24 COMPLIANCE WITH HOST COUNTRY RULES AND CUSTOMS

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

1.24.1 Contractor's Responsibilities

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

a. Official language and type of accounts required to satisfy the officials of the Local Government.

b. Entry and exit visas, residence permits, and residence laws applicable to aliens. This includes any special requirements of the Host Government, including those required by local Labor Offices, which the Contractor may have to fulfill before an application for a regular block of visas will be accepted.

c. Passports, health and immunization certificates, and quarantine clearance.

d. Compliance with local labor and insurance laws, including payment of employer's share of contribution, collecting balance from employee and paying into insurance funds.

e. Strikes, demonstrations and work stoppage.

f. Collection through withholding and payment to local Government, of any Host Country income tax on employees subject to tax.

g. Arranging to perform work in the Host Country, to import personnel, to employ non-indigenous labor, to receive payments and to remove such funds from the country.

h. Operating under local laws, practices, customs and controls, and with local unions, in connection with hiring and firing, mandatory wage scales, vacation pay, severance pay, overtime, holiday pay, 7th day of rest, legal notice or pay in lieu thereof for dismissal of employees, slowdown and curtailed schedules during religious holidays and ratio of local labor employed in comparison to others.

i. Possibility of claims in local bureaus, litigation in local courts, or attachment of local bank accounts.

j. Compliance with workmen's compensation laws and contributions into funds. Provisions of necessary medical service for Contractor employees.

k. Special license required by the local Government for setting up and operating any manufacturing plant in the Host Country, e.g. concrete batching, precast concrete, concrete blocks, etc.

l. Sales within the host country of Contractor-owned materials, and equipment.

m. Special licenses for physicians, mechanics, tradesmen, drivers, etc.

n. Identification and/or registration with local police of imported personnel.

o. Stamp tax on documents, payments and payrolls.

p. Base passes for permanent staff, day laborers, motor vehicles, etc.

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

1.25 EMPLOYEE ACCESS TO PROJECT SITE

1.25.1 Employee Identification

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

1.25.1.1 Preparation of Identification Badges

The Contractor shall be required to prepare a written application inclusive color photographs and provide all materials and labor necessary to prepare an identification badge, laminated in plastic, containing the employee's name, badge number, color photo, height and weight, the name of the Contractor's organization and for requiring

each employee engaged on the work to display this identification as directed by the Contracting Officer. The Contractor shall submit each application and draft badge through the Contracting Officer to the Base Security Office. A minimum of thirty-five workdays shall be allowed for Government review and certification of badges. The Base Security Office will certify each draft badge by signature, stamp, seal or any combination thereof. Upon certification by the Base Security Office, the badges will be returned to the Contractor for final preparation, lamination, and issuance. Badges shall not be taken out of country during periods of travel or absence. During such periods, the Contractor may be permitted to issue temporary identification badges.

1.25.1.2 Employee Background and Historical Information

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

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

1.25.2 Identification of Contractor Vehicles

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

1.25.3 Security Plan

The Contractor shall submit to the Contracting Officer, within ten (10) calendar days after award of this contract, his proposed personnel and vehicular access plan. This plan shall cover all elements for issuance of the access passes, safeguarding of passes not issued, construction security operations, lost passes, temporary vehicle passes, and collection of passes for employee's and vehicles on 1)- temporary absence; 2)- termination or release; and 3)- termination or completion of contract. The plan shall address in detail the contractors proposed procedures, and organization necessary to produce and maintain effective security within the contract limits twenty-four (24) hours a day seven (7) days a week.

1.26 RADIO TRANSMITTER RESTRICTIONS

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

1.28 PUBLIC RELEASE OF INFORMATION

1.28.1 Prohibition

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

1.28.2 Subcontract and Purchase Orders

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

1.29 ATTACHMENTS

TAC FORM 61 - Accident Prevention Program Hazard Analysis

TAC FORM 356 - Operation and Maintenance Training Validation Certificate

PART 2 LOCAL CLAUSES

2.1 APPLICATION OF US CRIMINAL JURISDICTION

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

2.2 ATTACKS FROM HOSTILE ENTITIES

This contract is firm fixed-price. Costs incurred in the performance of project execution that arise from the attacks of hostile entities, such as costs arising from damage to or destruction of contractor equipment and facilities, and damage to or destruction of the project prior to Government acceptance, are the sole responsibility of the contractor. The Government makes no guarantee to provide the contractor with security, and bears no obligation to reimburse the contractor for costs arising from the attacks of hostile entities. When appropriate, the Contracting Officer may provide the contractor with an equitable adjustment with respect to time – but not cost – in accordance with clause 52.249-10; see 52.249-10(b)(1)(i) and (2).

2.3 INSTALLATION ACCESS AND BADGING

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

2.4 CUSTOMS CLEARANCE

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

2.5 TRAVEL WARNINGS

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

2.6 DRUG-FREE WORKFORCE

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

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

A copy of the employee notification statement as required by clause 252.222-7006(d) ***shall be furnished to the contracting officer upon award of the contract***, along with a certification by an authorized company representative attesting to the provision of the notification to contractor personnel.

-END OF SECTION-

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

PART 1: GENERAL

1.1 GENERAL

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

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

1.1.1 Correspondence and Electronic Communications

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

1.1.2 Other Factors

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

1.2 QCS SOFTWARE

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

1.3 SYSTEM REQUIREMENTS

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

Hardware

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

Software

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

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

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

1.4.2 Contractor Quality Control (CQC) Training

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

1.5 CONTRACT DATABASE

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

1.6 DATABASE MAINTENANCE

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

1.6.1 Administration

1.6.1.1 Contractor Information

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

1.6.1.2 Subcontractor Information

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

1.6.1.3 Correspondence

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

1.6.1.4 Equipment

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

1.6.1.5 Management Reporting

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

1.6.2 Finances

1.6.2.1 Pay Activity Data

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

1.6.2.2 Payment Requests

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

1.6.3 Quality Control (QC)

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

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by specification 01451 “CONTRACTOR QUALITY CONTROL”.

1.6.3.2 Deficiency Tracking.

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

1.6.3.3 Three-Phase Control Meetings

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

1.6.3.4 Accident/Safety Tracking.

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

1.6.3.5 Features of Work

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

1.6.3.6 QC Requirements

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

1.6.4 Submittal Management

The Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

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

1.6.6 Requests for Information (RFI)

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

1.6.7 Import/Export of Data

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

1.7 IMPLEMENTATION

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

1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

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

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

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

-END OF SECTION-

SECTION 01321

PROJECT SCHEDULE

PART 1 GENERAL

1.1 SUBMITTALS

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

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

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

3.2 BASIS FOR PAYMENT

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

3.3 PROJECT SCHEDULE

3.3.1 Schedule of Construction

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

3.3.2 Non-Compliance

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

3.3.3 Network Analysis System

a. Schedule Requirements. The design network analysis schedule shall be updated at least monthly or submitted as part of the design submittals, whichever occurs first. When the construction network analysis schedule is submitted and accepted by the Contracting Officer, it will then be considered the "Baseline Network Analysis Schedule". The Baseline Network Analysis Schedule will then be used by the contractor for planning, organizing, and directing the work; reporting progress; and requesting payment for work accomplished. The contractor shall update the schedule monthly and shall be submitted with the payment requests to reflect the status of the work. Submittal and acceptance of the Baseline Network Analysis Schedule for Design and Baseline Network Analysis Schedule and accurate updated schedules accompanying the pay requests are both conditions precedent to processing pay requests. Only bonds will be paid prior to acceptance of the Baseline Schedule.

b. Software: The scheduling software to be used on this project shall be compatible to Primavera Project Planner (P3) by Primavera Systems, Inc. The contractor shall provide electronic files in a format that is compatible with the Contracting Officer's current software version. The contractor shall provide to the Government one licensed copy of the same version of the software that the contractor is using to prepare schedules for this project. Software that is not compatible to Primavera Project Planner (P3) by Primavera Systems, Inc. will not be accepted for use on this project.

c. The contractor shall designate a part time Scheduler that will be responsible for the development, preparation, and maintenance of an accurate, computerized Network Analysis Schedule. Part-time is defined as the Scheduler performing on-site coordination, attending project meetings, and updates in addition to other duties in a typical work week. The Scheduler shall have previous experience in developing, creating, and updating at least two computer schedules of similar size and complexity to this project. A resume for the Scheduler shall be submitted to the Contracting Officer for acceptance. If, at a later date, the Contracting officer considers the contractor's Scheduler to be less competent than necessary or objects to the quality of the schedule presented, the contractor shall propose a new Scheduler.

d. Format: The network system shall consist of time scaled logic diagrams and specified reports. The logic diagrams shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned. Diagrams shall be work phase/work area and sorted by early start date and will show a continuous flow from left to right with no logic (relationship lines) from right to left. With the exception of the contract award, project start, and project completion milestone activities, no activities will be open-ended; each activity will have a predecessor and successor ties. The diagram shall clearly show the activities of the critical path. Once an activity exists on the schedule, it may not be deleted and must remain in the logic. No more than 20 percent of the activities may be critical or near critical. Critical will be defined as having zero days of Total Float. "Near Critical" will be defined as having Total Float in the range of 1 to 14 days. Show the following information on the diagrams for each activity:

   i. Activity ID
   ii. Activity Description
   iii. Original Duration in Work Days
   iv. Remaining Duration
   v. Actual Duration in Work Days
   vi. Early Start Date
   vii. Early Finish Date
   viii. Total Float

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

3.3.4 Cost

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

3.3.5 Scheduled Project Completion

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

3.3.6 Projected Earning Curve

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

3.3.7 Construction Schedule

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

3.3.8 Submission With Partial Payment Estimate

Each time the Contractor submits a payment request under this contract he shall also submit three (3) copies of the Network Analysis Schedule. The Network Analysis Schedule shall be annotated by indicating the percent complete for each activity directly on the bar. The Projected Earnings Curve shall be annotated by plotting actual earnings versus time on the same graph. Those work items reflecting performance which is behind schedule by fifteen (15) calendar days or more shall be fully explained in detail giving the reason for delay and the Contractor's plan for timely completion within the schedule.

3.3.9 Modifications

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

3.4 PERIODIC PROGRESS MEETINGS

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

3.4.1 Update Submission Following Progress Meeting

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

3.4.2 Progress Meeting Contents

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

3.4.3 Earnings Report

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

3.4.4 Cost Completion

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

-END OF SECTION-

SECTION 01335

SUBMITTAL PROCEDURES FOR DESIGN-BUILD PROJECTS

PART 1 GENERAL

1.1 REFERENCE

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

NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS)

Unified Master Reference List (UMRL)
National Institute of Building Sciences
1090 Vermont Avenue, NW, Suite 700
Washington, DC 20005-4905
Email: nibs@nibs.org
FAX: (202) 289-1092
Tele: (202) 289-7800

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows.

1.2.1 DESIGN SUBMITTALS

Contractor furnished design submittals are the various design documents which primarily consist of field investigations, calculations, design analysis, drawings and specifications.

In addition, for every Design Submittal, the Contractor shall submit all non-administrative modifications issued for the Contract as part of the Design Submittal package to enable AED to validate that these modifications have been incorporated into this design submittal.

The Contractor shall clearly label and date all Design Submittals to reflect the current design stage and date of submission to the Government to avoid confusion between current and previous submittals. The Design-Build Contractor shall not begin construction work until the Government has reviewed the Design-Build Contractor's concept, intermediate and final designs and has cleared them for construction. Clearance for construction shall not be construed as meaning Government approval. Unless otherwise indicated, the risk for the design is the sole responsibility of the Design-Build Contractor.

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

Concept design - 35%

General design - 65%

Final design review - 99%

Cleared For Construction review - 100%

1.2.1.1 CONCEPT DESIGN (35%)

The review of this submittal is primarily to ensure that the Contractor has taken an inventory of the existing conditions at each proposed site, has established the most desirable functional relationships between the various project elements, has provided the technical solution as to how the functional and technical requirements will be met, and to show Contractor compliance (or justify noncompliance) with the design parameters and/or requirements. As a minimum, the following documents shall be submitted:

It is crucial that the submittal is complete and includes all components noted below and any other pertinent information not listed which the Contractor requires to enable construction to begin as soon as possible. As a minimum, for each Contract project location the submittal shall contain:

a. Complete design analysis, plans and specifications for any contract feature(s) that the Contractor would like Partial Clearance for Construction on once the 35% Design Submittal has been approved, including project components with long ordering, fabrication and delivery times. Other preliminary drawings, specifications and design analysis of work features that are intended for submittal/approval at the 65% Design Submittal, or later, stage shall be included such that a thorough and complete understanding of this work can be accomplished as part of the 35% review. Specifications for contract features proceeding after approval of this Design Submittal shall include those Construction Submittal items requiring Government Approval (GA).

For work shown but incomplete and still under design, the Contractor should clearly indicate on the ENG Form 4025 what is being submitted for review and approval.

b. Outline of all Construction Specification Sections to be used and those Specification items requiring Government Approval (GA).

c. Well design at each project site location to include a determination of water demand, water availability evaluation, and water quality analysis. Water demand evaluation shall be determined based on the requirements of the 01010 SOW and 01015 Technical Requirements. Water availability evaluation shall include data concerning study of existing water wells in the vicinity, study of hydrological data, and study of geological data. Well hydraulics data shall also be included from the test well or if available from vicinity wells. Water quality analysis shall include physical, chemical, and bacteriological analyses of water from either a test well or an existing well within the same aquifer of the proposed well.

   Drawing for the well design shall include, at a minimum, material and dimensions of well pipe and casing, type and dimensions of screen, type and range of sizes of gravel surrounding screen and at bottom of well shaft, type of grouting for well seal, well pad, location and connection detail for hand pump if required by the 1010. Also required would be a detail of the wellhead with all associated valves, flowmeters, and chlorination system.

d. Results of the site topographic survey (in accordance with Paragraph 3.9.6.3 through 3.9.6.5 of this Section) which shall include highlighting of significant features (wadis, adjacent properties and structures, roads, etc.) to provide a detailed, overall understanding of the project site and surrounding area; demolition plan for existing site features; complete grading and drainage plan with existing grades, proposed grades, and building finished floor elevations based on Contract technical requirements;

e. Any necessary adaptations of the Concept Plan and detailed design drawings furnished with this Contract that might be required due to actual site constraints, to include: water supply/storage location and distribution layout plan; wastewater collection or treatment location and tie-in to all required buildings; electrical generation and distribution plan; connection of existing roads with ECP location(s); and any other changes required due to adjacent property or existing topography. This would also include proposed changes to any furnished detailed drawings if site conditions or other requirements mandate revisions.

f. 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.

g. Septic Tank drawings and details (if required by Section 01010 of the SOW), showing tank depth and sizing based on expected sanitary load, and all connecting piping, with dimensions.

h. Percolation test locations and results, and complete leachfield design (if required by Section 01010 of the SOW), which indicate the site will accommodate such a system for the given project requirements, and alternatives proposed if, and only if, the site characteristics will not support such a system.

i. Preliminary 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.

j. Preliminary cross sections of roads and sidewalks, showing all essential dimensions, materials, layers, and proposed fore and back slopes of adjacent drainage features.

k. All preliminary sketches of site storm drainage structures, including calculations in the design analysis for sizing and sloping of pipe runs and ditches. Provide cross sections of drainage structures such as ditches and culverts.

l. Remaining features of work shown on 35% design complete Plans;

1.2.1.2 GENERAL DESIGN REVIEW (65%):

The review of this submittal is primarily to insure that the contract documents and design analysis are proceeding in a timely manner and that the Contract requirements and design criteria are being correctly understood and adhered to. The submittal shall consist of the following:

a. Complete design analysis, plans and specifications for any contract feature(s) that the Contractor would like Partial Clearance for Construction on once the 65% Design Submittal has been approved, including list of those Construction Submittal items requiring Government Approval (GA).

b. For all other work, provide a Draft Construction Specifications complete - all anticipated sections, edited to include only applicable requirements.

c. Construction Drawings complete for all work to be completed until the 99% Final Design Review Submittal is provided, with all past Design Review comments incorporated. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.

For work shown but incomplete and still under design, the Contractor should clearly indicate on the ENG Form 4025 what is being submitted for review and approval.

1.2.1.3 FINAL DESIGN REVIEW (99%):

The review of this submittal is primarily to insure that the contract documents and design analysis are nearing completion and that the Contract requirements and design criteria are being correctly understood and adhered to. The submittal shall consist of the following:

a. Design Analysis complete with all prior comments incorporated.

b. Draft Construction Specifications complete - all anticipated sections, edited to include only applicable requirements.

c. Construction Drawings complete with all 65% comments incorporated. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall be finalized at this time including the incorporation of any design review comments generated by all past design reviews. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction.

1.2.1.4 “CLEARED FOR CONSTRUCTION” SUBMITTAL (100%):

The review of this submittal is to insure that the design is in accordance with all Contract requirements and any directions provided the Contractor during the design process. The only effort remaining between the Final Design Review Submittal and the "Cleared For Construction" Design Review Submittal is the incorporation of all Government review comments. The Contractor shall submit the following documents for this review:

a. Design Analysis, only if changes have occurred since 99% Design Submittal. The Design Analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the Final Drawings and Specifications.

b. Construction Specifications, complete.

c. Construction Drawings, complete.

Once the design documents have been "Cleared for Construction" by the Contracting Officer, the Contractor shall clearly identify each document by annotating it as "Cleared for Construction."

1.2.2 PARTIAL DESIGN SUBMITTALS

In the interest of expediting construction, the Contracting Officer may approve partial design submittals, procurement of materials and equipment, as well as issue the Notice To Proceed (NTP) for construction of those elements of the design which have been cleared for construction. Such partial notices to proceed shall be solely at the discretion of the Contracting Officer. The Contractor must obtain the approval of the Designer of Record (DOR) and the Government’s concurrence for any Contractor proposed revision to the professionally stamped and sealed design reviewed and Cleared for Construction by the Government, before proceeding with the revision. The Government reserves the right to non-concur with any revision to the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and cleared for construction design. Any revision to the design, which deviates from the contract requirements (i.e., the RFP and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision. Unless the Government initiates a change to the contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the contract requirements, which results in additional cost, shall strictly be at the Contractor's expense. The Contractor shall track all approved revisions to the reviewed and cleared for construction design and shall incorporate them into the As-Built design documentation, in accordance with Section 01780A, CLOSEOUT SUBMITTALS, Paragraphs 1.1 and 1.2, which lists all requirements associated with submission of editable CADD format As-Builts required as part of this contract. The Designer of Record shall document its professional concurrence on the As-Builts for any revisions by affixing its stamp and seal on the drawings and specifications.

1.2.3 USE OF DrChecks$_{SM}$ FOR DESIGN SUBMITTAL COMMENT AND RESPONSE

1.2.3.1 DrChecks$_{SM}$ WEB LINK

All AED Design Submittal review comments will be documented using the standard design review tool for the U.S. Army Corps of Engineers, a web-based application called "DrChecks$_{SM}$". The web link to DrChecks$_{SM}$ is: https://www.projnet.org/projnet/binKornHome/index.cfm

1.2.3.2 DrChecks$_{SM}$ VENDOR IDENTIFICATION AND TUTORIAL

Upon notification of award, the contractor shall immediately coordinate with the Chief, Engineering Branch, AED to acquire a vendor identification and a brief tutorial on the use of DrChecks$_{SM}$. The contractor is responsible for providing their own DrChecks$_{SM}$ Administrator within their own design staff personnel to access and accomplish actions within DrChecks$_{SM}$.

1.2.3.3 NOTIFICATION OF DrChecks$_{SM}$ FILE ACCESS

The Afghanistan Engineer District will complete a review at every Design Submittal stage for conformance with the technical requirements of the Contract and document all comments in DrChecks$_{SM}$. At completion of the review, a notification will be issued to the Contractor by the Contracting Officer's representative that the particular DrChecks$_{SM}$ file will be opened to the Contractor. Until this time, the Contractor is not able to view any AED comments for that particular Design Submittal.

1.2.3.4 FURTHER CONTRACTOR INFORMATION AFTER DrChecks$_{SM}$ REVIEWS

See Paragraph 3.7.4, Government Review, for further procedures and requirements associated with Design Submittal reviews.

1.2.4 CONSTRUCTION SUBMITTALS

1.2.4.1 Contractor Furnished Government Approved Construction Submittals (GA)

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

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

a. CIVIL FEATURES

TESTING RESULTS: Data will include information on the locations and depths of all viable water supply sources at the site(s) involved and a water quantity and water quality analysis for each source from the Ministry of Public Health or other certified testing firm.

b. MECHANICAL FEATURES

EQUIPMENT SUBMITTALS: Manufacturer's standard catalog data, installation, Operation and Maintenance (O&M) manuals and construction details for water wells, water tanks, control valves, pipe insulation, water pumps, and fans.

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

1) The date the tests were performed. 2) A list of equipment used, with calibration certifications. 3) A copy of measurements taken. 4) The parameters to be verified. 5) The condition specified for the parameter. 6) The inspection results, signed, dated, and certified by the installer. The certification

shall state that required procedures were accomplished, that the procedures were conducted in compliance the plans and specifications. 7) A description of adjustments performed.

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

c. ELECTRICAL FEATURES

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

DESIGN DATA: lightning protection and grounding.

TEST DATA: Lightning protection and grounding.

d. ARCHITECTURAL FEATURES

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

COLOR BOARD: Architectural finishes

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

SHOP DRAWINGS: Casework/Cabinetry

1.2.4.2 For Information Only Construction Submittals (FIO)

All submittals not requiring Designer of Record or Government approval will be for information only. These construction submittals shall be checked, stamped, signed and dated by the Contractor's Quality Control Engineer, certifying that such submittal complies with the contract requirements. All Contractor submittals shall be subject to review by the Government at any time during the course of the contract. Any Contractor submittal found to contain errors or omissions shall be resubmitted as one requiring "approval". No adjustment for time or money will be allowed for corrections required as a result of noncompliance with plans or specifications. Normally submittals For Information Only will not be returned. Approval of the Contracting Officer is not required on FIO submittals. These submittals will be used for information purposes. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications and will not prevent the Contracting Officer from requiring removal and replacement if nonconforming material is incorporated in the work.

1.2.4.3 Variations

After design submittals have been reviewed and cleared for construction by the Contracting Officer, no submittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered by the Government unless submitted in accordance with the paragraph entitled VARIATIONS.

1.2.4.4 Additional Shop Drawings and Submittals

In accordance with the paragraph entitled DESIGN DISCREPANCIES, the Government may request the Design-Build Contractor to provide additional shop drawing and submittal type data subsequent to completion of the design.

1.2.4.5 Incomplete Design

The Design-Build Contractor shall not use construction submittals as a means to supplant and/or supplement an incomplete design effort.

1.3 SUBMITTAL CERTIFICATION

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

1.3.1 Effective Quality Control System

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

1.3.1.1 Organizational Responsibility

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

1.3.1.2 CQC System Manager Review and Approval

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

1.3.1.3 Determination of Compliance

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

1.3.2 Responsibility for Errors or Omissions

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

1.3.2.1 Government Review

Government review, clearance for construction, or approval of Design and construction submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as it is the sole responsibility of the Contractor to certify that each Submittal has been reviewed in detail and is in strict conformance with all the contract documents and design criteria referenced therein.

1.3.3 Substitutions

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

1.3.4 Additional Submittals

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

1.3.5 Untimely and Unacceptable Submittals

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

1.3.6 Stamps

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

Contractor (Firm Name)
Contract Number
Contract Name

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

Name of CQC System Manager: _____

Signature of CQC System Manager: _____

Date: _____

1.4 ENGLISH LANGUAGE

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

1.5 UNITS OF MEASUREMENT

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

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

1.5.1 Drawings

1.5.1.1 Site Layout

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

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

1.5.1.2 Geo-reference

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

1.5.2 Design Calculations

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

1.5.3 Specifications

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

1.6 WITHHOLDING OF PAYMENT FOR SUBMITTALS

1.6.1 Design Submittals

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

1.6.2 Construction Submittals

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

PART 2 PRODUCTS

2.1 GENERAL

The following are contract deliverables which expound upon and finalize the design parameters/requirements outlined within the contract documents. They shall be prepared in such a 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 Request For Proposal (RFP) Sections 01010 and 01015 (and any additional RFP sections that are appropriate). The RFP Section 01010 and 01015 shall be the latest version. Any subsequent changes to the RFP shall be clearly marked and highlighted with explanation for the changes. The Project Narrative shall also contain the general description of the project and a discussion of the design approach and design features for the project.

2.3 DESIGN ANALYSIS

2.3.1 Submittal

A design analysis, written in the English language with SI units of measure, shall be submitted for review by the Government. The design analysis is a written explanation of the project design which is expanded and revised (updated) as the design progresses. The design analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the final drawings and specifications. The design analysis contains the criteria for and the history of the project design, including criteria furnished by the Government, letters, codes, references, conference minutes, and pertinent research. Design calculations, computerized and manual, are included in the design analysis. Narrative descriptions of design solutions are also included. Written material may be illustrated by diagrams and sketches to convey design concepts. Catalog cuts and manufacturer's data for all equipment items, shall be submitted. Specific requirements for the design analysis, listed by submittal phase, are noted in Paragraph 1.2.1.

2.3.2 Format

Format of design analysis shall closely match the standard format referenced within the RFP.

2.4 DESIGN CALCULATIONS

All design calculations shall be presented such that they are easily understood, correlated with RFP requirements (Section 1010 and 1015 criteria; codes; all other applicable or pertinent criteria) and all final conclusions clearly documented and summarized. The Design Submittal must include complete information (Soil Report, percolation test results, concrete design strengths, steel material properties, electrical loads, heat gain/loss assumptions, etc.) necessary to support all design calculations in order to easily and efficiently verify the accuracy of this information and the resulting project components shown in plans and specifications.

2.4.1 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 shall be prepared in accordance with the Construction Specifications Institute (CSI) format. The Contractor-prepared specifications shall include as a minimum, all applicable specification sections referenced by the CSI. Where the CSI does not reference a specification section for specific work to be performed by this contract, the Design-Build Contractor shall be responsible for creating the required specification.

2.5.1 Use of Unified Facilities Guide Specifications (UFGS)

UFGS (Uniform Federal Guide Specifications) are required for this project. Current UFGS information may be obtained at the following location: http://www.wbdg.org/ccb/browse_org.php?o=70.

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

2.5.2 Quality Control and Testing

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

2.5.3 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.

2.5.4.2 Non U.S. Industry Standards

If non-U.S. industry standards (e.g., codes, regulations, or technical references and norms) are authorized for use under this contract and are incorporated in the Contractor's design, one (1) copy of each standard referenced shall be provided to the Government.

Where a U.S. design and/or construction standard cannot be referenced due to non-availability of products and/or systems, another specification format using the CSI guidelines may be utilized for that particular product and/or system. If a majority of the specifications within this project reference non-U.S. products due to availability and/or other factors, the entire set of specifications are not required to be in UFGS and SpecsIntact format.

2.6 DRAWINGS

2.6.1 Computer Assisted Design and Drafting (CADD)

Computer Assisted Design and Drafting (CADD) is required for all work related to this contract. Only personnel proficient in the preparation of CADD drawings shall be employed to modify the contract drawings or prepare new drawings. The CADD deliverables shall meet the requirements of the A/E/C CADD Standard (Release 3.0). Emphasis is on drawings meeting sheet layout standards, level/layer naming standards and sheet naming conventions. The CADD 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.
The Contractor shall furnish all softcopy design submittals (and As-Builts) using software applications in either .dwg (AutoCAD, AutoDesk release 2005 or later) or in .dgn (MicroStation, Bentley Systems version 8.0 or later) format. In addition, the Contractor is required to submit the softcopy design submittals in .pdf (Adobe

Acrobat) format. Drawings prepared in any convention other than CADD, must have the written approval of the Contracting Officer.

2.6.2 Drawings

Drawings shall be prepared in the English language with metric (SI) units of measure. All the drawings and details of the working drawings shall be adequately labeled and cross-referenced. Complete, thoroughly checked, and coordination with other engineering disciplines design drawings shall be submitted. 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.

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”, 279 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 CADD Standard (pg. 13, Table 2-1 of the A/E/C CADD standards) 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

CADD files shall be organized in a folder structure to what is 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

CADD files shall be organized to what is described in “Option 2 – Use of Design Model Only” (page 10, Figure 2-3 of the A/E/C CADD Standard). This method will utilize one view and the use of “paper space” is not used. The border sheet shall be X-REF into each model file and scaled up to the applicable scale.

2.6.7 Model Files

Model files represent the building’s physical layout and components such as floor plans and elevations. Model files shall be drawn to full size (1:1) in the default view. Floor Plan Model files represent one floor. Model files shall have coordinates (x,y,z) of 0,0,0 in paper space on layout. The exception for model files with coordinates 0,0,0 shall be the civil site plan (see section 1.5.1.2 Georeferencing).

2.6.8 Border Sheet Files

Border sheet files are used to assemble model files for plotting and viewing purposes. Every border sheet file has a drawing area, title block, border and represents one plotted drawing.

2.6.9 Layer/Level names

Layer or level files names shall follow the guidelines of appendix A and B of the A/E/C CADD standards. For AutoCAD, .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.

2.6.10 Drawing File Naming Convention

CADD files shall follow the naming convention as described in the A/E/C CADD Standards. For model files reference pg 12 - 16, figure 2-4, tables 2-1 and 2-2. for sheet files reference pg 18 – 22, figure 2-5, table 2-3.

2.6.11 Sheet Identification Block

The sheet identifier will follow the name of the border sheet file. This will consist of the discipline designator, the sheet type designator and the sheet sequence number as referenced in pg 23, figure 2-6 of the A/E/C CADD Standards.

2.6.12 Drawing Scales

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

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

	1:200
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 Standard Release 3.0 or current version (see Appendix D of the A/E/C CADD Standards). The approved symbols, line styles, and patterns associated with AutoCAD software maybe downloaded in the following link: https://tsc.wes.army.mil/products/standards/aec/aecstdsym.asp

2.6.14 Plotter Prepared Original Drawings

Plotter prepared original drawings shall be prepared on 20 pound bond paper, unless otherwise approved and shall be plotted on the matte side. Raster plotters must provide a minimum resolution of 400 dpi while vector plotters shall provide a minimum resolution of 0.0010 inch with an accuracy of +0.1% of the move and a repeatability error of not more than 0.005 inch. Drawings produced from dot matrix plotters are not acceptable. Plots accompanied by the digital design file may be prepared on vellum: translucent bond is not acceptable. Line density shall be equivalent to that produced by black India ink: half tone plots are only acceptable where the half-tone color setting of RGB (red, green blue) settings equal a value of 153 (see pg. 27, Table 3-4 of the A/E/C CADD Standards). Drawings plotted in color is not acceptable. Manual changes to plotted originals are not acceptable.

2.6.15 Title and Revision Block

Title and revision block shall match examples shown in 1335a-Attachments-AED.pdf, Figures 1 through 4, furnished as an attachment to this RFP.

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 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 total plan shall be placed on one sheet at a smaller scale. Appropriate key plans and match lines shall appear on segmented drawings. Key plans shall be used not only to relate large scale plans to total floor plans but also to relate individual buildings to complexes of buildings. Key plans shall be drawn in a convenient location and shall indicate the relative location of the represented plan area by crosshatching.

2.6.19 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 CADD files. A revision area 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

At the Preconstruction meeting, the Contractor shall be provided a CD that shall contain the AED border sheet, the A/E/C CADD standards, and various other files related to the compliancy of CADD files to the A/E/C CADD standards.

PART 3 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 Government review and comment in DrChecks$_{SM}$. If the Contractor fails to submit design submittals in a timely fashion, or repetitively submits design submittals that are not in strict conformance with the Contract documents, no part of the time lost due to such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.5.2 Construction Submittals

Contractor furnished Government Approved Construction Submittals (GA) for items noted in Paragraph 1.2.4 of this Section, or others as required by the COR, shall be submitted to the Area or Resident Office, per directions given at the Pre-Construction meeting. Adequate time (a minimum of fourteen (14) full calendar days exclusive of mailing time) shall be allowed for AED review and comment.

3.5.3 Post Design Construction Submittals

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of fourteen (14) full calendar days exclusive of mailing time) shall be allowed for review and approval. If the Contractor fails to submit post design construction submittals in a timely fashion, or repetitively submits submittals that are not in strict conformance with the Contract documents, no part of the time lost due to actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.6 SUBMITTAL PROCEDURE

3.6.1 Design Submittals

3.6.1.1 Afghanistan Engineer District

Two (2) half-size hard copy and one (1) soft copy on CD-ROM (electronic version) of all design submittals (calculations, reports of field tests, design analysis, plans, specifications, etc) shall be transmitted to the Government at the following address, by means of ENG Form 4025:

AFGHANISTAN ENGINEER DISTRICT
(1) U.S. Postal or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District-South
Kandahar Air Field, Afghanistan
Attention: Engineering Branch
APO, AE 09355

One (1) half-size hard copy and one (1) soft copy on CD-ROM (electronic version) of all design submittals (calculations, reports of field tests, design analysis, plans, specifications, etc) shall be transmitted to the Government at the following address, by means of ENG Form 4025:

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

The Contractor shall scan the soft copy (electronic version) of each Design Submittal using most up-to-date version of recognized Industry-standard anti-virus software (Symantec, Norton, etc.) to insure that no viruses are contained in it prior to acceptance by AED. The label shall indicate it has been scanned for viruses and the anti-virus software and version clearly indicated.

3.6.1.2 Resident/Area Engineer Office

Two (2) half-size hard copy and one (1) soft copy on CD-ROM (electronic version) of all design submittals (calculations, reports of field tests, design analysis, plans, specifications, etc) shall be transmitted to the Government at the following address, by means of ENG Form 4025:
U.S. Army Corps of Engineers
Afghanistan Engineer District-South
Camp Tombstone, Afghanistan
Attention: Quality Assurance Branch
FPO, AE 09372

Complete design submittals shall be provided to the Area and/or Resident Engineer Office such that these are received **at the same time** as the Contractor provides them to the address noted in Paragraph 3.6.1.1. The Contractor shall scan the soft copy (electronic version) of each Design Submittal using most up-to-date version of recognized Industry-standard anti-virus software (Symantec, Norton, etc.) to insure that no viruses are contained in it prior to acceptance by AED. The label shall indicate it has been scanned for viruses and the anti-virus software and version clearly indicated.

3.6.1.3 Editable CADD Format As-Builts

This is a Design-Build project and in accordance with Contract Clause 52.227-7022 GOVERNMENT RIGHTS (UNLIMITED), the Government has non-exclusive rights to use the design on other projects. Therefore, the As-Builts furnished to the Government must be in an editable format. See Section 01780A CLOSEOUT SUBMITTALS, Paragraphs 1.1 and 1.2, for all requirements associated with submission of editable CADD 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
(1) DHL, FEDEX, UPS, U.S. Postal, or any other courier service:

U.S. Army Corps of Engineers
Afghanistan Engineer District-South
Kandahar Air Field, Afghanistan
Attention: Engineering Branch
APO, AE 09355

3.6.3 Submittal Numbering System

Instructions on the numbering system to be used for construction submittals follows.

3.6.3.1 Submittals

Shop drawings and materials are listed on the Submittal Register (ENG Form 4288) as follows:

a. List is prepared according to contract specifications and drawings, picking up all items involved in the project.

b. This list is divided into sections as indicated in the specifications. For example:

Section 01015 "Technical Requirements"
Section 01335 “Design Submittals”
Section 02831 "Chain-Link Fence"
Section 02710 "Subdrainage System"
Section 03300 "Concrete For Building Construction"
Section 04200 "Masonry"

3.6.3.2 Numbering procedures for transmittal on ENG FORM 4025

Each Specification Section will have various requirements for submittals (design information, product data, test reports, procedures, etc.) to the Government for Approval (GA) or For Information Only (FIO). Items from different Sections cannot be submitted on the same ENG Form 4025. When furnishing one or more items from the same Section at a given time, a single ENG Form 4025 can be used to identify and submit these items. Block ‘b” of the 4025 entitled “DESCRIPTION OF ITEM SUBMITTED” should provide an accurate and

unique description of each item being proposed by the Contractor. Item numbers (block “a” of the 4025 entitled “ITEM NO.”) will be automatically generated in QCS for each ENG Form 4025. QCS will track and automatically generate the “ITEM NO.” for all following ENG Form 4025s for the same Section number. To illustrate, a transmittal for the 35% Design Submittal required by Section 01335 might have the following Items:

ITEM NO. 1	Topographic Information
ITEM NO. 2	Geotechnical Report
ITEM NO. 3	Foundation Design
ITEM NO. 4	35% Plans
ITEM NO. 5	Outline of Construction Specifications to be used

If this was the first submittal furnished by the Contractor for Section 01335, then a Transmittal Number of 01335-1 would be generated using QCS. As new transmittals are generated in QCS, the last digit of the transmittal is increased incrementally, as follows:

Transmittal No. 01335-2
Transmittal No. 01335-3
Transmittal No. 01335-4

and so forth. The first transmittal submitted from each Specification Section will be “-1”, in other words, there will never be a “Transmittal No. 01335-0”.

The above illustration is true for all other Specification Sections included in the Request for Proposal or in the Construction Specifications compiled by the Contractor in the prosecution of work under the RFP.

3.6.3.3 Resubmittals

Should the Contractor be required to resubmit any transmittal due to one or more items on that transmittal being Coded “C” (Cleared for Construction, except as noted in attached comments, Resubmission Required) or “E” (NOT Cleared for Construction, see attached comments, Resubmission Required) by the Government, QCS will be used to generate the same transmittal number followed by the number "-1" for the first resubmittal, "-2" for the second resubmittal, "-3" for the third resubmittal, etc.

As an example, assume the 65% Design Submittal is provided to the Government as Transmittal 01335-9. Due to omissions or errors in that Submittal which result in a Code “E” being given, then the subsequent 65% Design Resubmittal #1 would be “Transmittal 01335-9.1”. Should a resubmittal again be necessary, it would be Design Resubmittal #2 and would be submitted as “Transmittal 01335-9.2”.

The purpose of this system is to avoid deviations from the Submittal Register and to track submittals in both RMS and DrChecks$_{SM}$. <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 “1335a-Attachments-AED.pdf” (Figures 1-4) for required Title Block Required Annotations drawing guidance.

3.6.4 Variations

If Design or construction submittals show variations from the contract parameters and/or requirements, the Contractor shall justify such variations in writing, at the time of submission. Additionally, the Contractor shall also annotate block "h" entitled "variation" of ENG FORM 4025. After design submittals have been reviewed

and cleared for construction by the Contracting Officer, no resubmittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered unless accompanied by the following:

a. Reason or purpose for proposed variation, substitution, or revision.

b. How does quality of variation compare with quality of the specified item? This shall be in the form of a technical evaluation tabulating differences between the item(s) originally specified and what is proposed.

c. Provide a cost comparison. This shall include an acquisition and life cycle cost comparison.

d. For proprietary materials, products, systems, and patented processes a certification signed by an official authorized to certify in behalf of the manufacturing company that the proposed substitution meets or exceeds what was originally specified.

e. For all other actions, a certification signed by a licensed professional engineer or architect certifying that the proposed variation or revision meets or exceeds what was originally specified.

f. Advantage to the Government, if variation is approved, i.e. Operation and Maintenance considerations, better product, etc.

g. Ramifications and impact, if not approved.

If the Government review detects any items not in compliance with contract requirements or items requiring further clarification, the Contractor will be so advised. Lack of notification by the Contracting Officer of any non-complying item does not relieve the Contractor of any contractual obligation.

3.6.5 Non-Compliance

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

3.7 REVIEW OF CONTRACTOR PREPARED DESIGN DOCUMENTS

3.7.1 General

The work under contract will be subject to continuous review by representatives of the Contracting Officer. Additionally, joint design review conferences with representation by all organizations having a direct interest in the items under review may be held. The Contractor shall furnish copies of all drawings and related documents to be reviewed at the review conference on or before the date indicated by the Government. Additional conferences pertaining to specific problems may be requested by the Contractor or may be directed by the Contracting Officer as necessary to progress the work. The Contractor shall prepare minutes of all conferences and shall furnish two copies to the Contracting Officer within seven (7) days after the conference.

3.7.2 Independent Design Review

The Contractor shall have someone other than the Designer or Design Team perform an Independent Technical Review of all specifications, drawings, design analysis, calculations, and other required data prior to submission to the Government. This review shall insure the professional quality, technical accuracy, and the coordination of all design analysis, drawings and specifications, and other services furnished under this contract have been accomplished. Work must be organized in a manner that will assure thorough coordination

between various details on drawings, between the various sections of the specifications, and between the drawings and specifications. The Contractor shall thoroughly cross-check and coordinate all work until he is professionally satisfied that no conflicts exist, vital information has not been omitted, and that indefinite language open to interpretation has been resolved. Upon completion of this review, the Contractor shall certify that each design submittal is complete, accurate, is in strict conformance with all contract requirements, that repetition has been avoided, that all conflicts have been resolved, and that the documents have thoroughly coordinated and cross checked against all the applicable disciplines to prevent the omission of vital information.

3.7.3 Contractor's Quality Control Organization Review

The Contractor shall thoroughly review each submittal prior to submission to the Contracting Officer to assure it is complete, correct and unified. This review shall be for the purposes of eliminating errors, interferences, and inconsistencies, and of incorporating design criteria, review comments, specifications, and any additional information required. The Contractor will give evidence of such review of all items in each submittal ENG Form 4025, by annotating Column “g” (titled “For Contractor Use Code”) of this Form with the letter “A,” meaning the Contractor has reviewed it and is indicating it is “Approved as Submitted”. Design submittals submitted to the Contracting Officer without evidence of the above requirements or the Contractor's certified approval will be returned for resubmission. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7.4 Government Review

a. Within 14 days after Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated in calendar dates. The Contractor shall update this schedule monthly. After receipt, the Government will be allowed fourteen (14) full days to review and comment on all Design Submittals, except as noted below. This time period starts on the next full day after delivery of the Design Submittal to the Government.

b. If a design submittal is deficient (errors on ENG Form 4025, incorrect drawing title block information, missing or incomplete features required in the Submittal, etc.), it will be returned immediately without further review for correction and resubmission. The review time will begin when the corrected submittal is received. The Contractor may be liable for liquidated damages owed to the Government for returned design submittals due to deficiencies.

c. The contractor shall not begin construction work until the Government has reviewed the Contractor's Design Submittal and cleared it for construction. Clearance for construction does not mean Government approval. Government review shall not be construed as a complete check but will evaluate the general design approach and adherence to contract parameters. The Government Review is often limited in time and scope. Therefore, the Contractor shall not consider any review performed by the Government as an excuse for incomplete work.

d. Upon completion of the review the Contractor will be notified by the Contracting Officer Representative that the DrChecks$_{SM}$ file is open for viewing and response to AED comments. The Contracting Officer will indicate whether the Design Submittal, or portions thereof, has or has not been cleared for construction using the following action codes:

A – Cleared for Construction

B – Cleared for Construction, except as noted in attached comments

C – Cleared for Construction, except as noted in attached comments,
Re-submission required

E - NOT Cleared for Construction, see attached comments,
Re-submission required

FX – Receipt acknowledged, does not comply as noted with contract requirements.

These codes shall NOT be used by the Contractor.

Design submittals Cleared for Construction by the Contracting Officer shall not relieve the Contractor from responsibility for any design errors or omissions and any liability associated with such errors, nor from responsibility for complying with the requirements of this contract.

3.7.4.1 Incorporation of Government Review Comments

a. The Contractor shall review each comment, furnish a complete response in DrChecks$_{SM}$ as to how the comment will be addressed in the Design Analysis, Plans and Specifications, or other Design Submittal stipulations required in this Contract. The Contractor will then incorporate each comment into the design submittal along with other work required at the next Design Submittal stage. The Contractor shall furnish disposition of all comments in DrChecks$_{SM}$, with the next scheduled submittal. The disposition shall identify action taken with citation of location within the relevant design document. Generalized statements of intention such as "will comply" or "will revise the specification" are not acceptable. During the design review process, comments will be made on the design submittals that will change the drawings and specifications. The Government will make no additional payments to the Contractor for the incorporation of comments. Review comments are considered part of the contract administration process.

b. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after close of review period in order that the comment can be resolved.

c. The Contractor is cautioned that if he believes the action required by any comment exceeds the requirements of this contract, he should flag the comment in DrChecks$_{SM}$ as a scope change, and notify the COR in writing immediately.

d. If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period may be extended 7 days. Submittal date revisions must be made in writing at least five (5) days prior to the submittal.

3.7.4.2 Conferences

As necessary, conferences will be conducted between the Contractor and the Government to resolve review comments.

A review conference may be held at the completion of AED review and subsequent Contractor response for each design submittal. The review conference will be held at the Corps District Office in Kabul, Afghanistan. The Contractor shall bring the personnel that developed the Design submittal to the review conference.

3.7.4.3 Design Deficiencies

Design deficiencies noted by the Government shall be corrected prior to the start of design for subsequent features of work which may be affected by, or need to be built upon, the deficient design work.

3.7.5 Design Discrepancies

The Contractor shall be responsible for the correction of incomplete design data, omissions, and design discrepancies which become apparent during construction. The Contractor shall provide the Contracting Officer with a proposed recommendation for correcting a design error, within three (3) calendar days after notification by the Contracting Officer. The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after

receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor. Should extensions of design, fabrication plans and/or specific manufacturer's details be required as a result of a Government issued Change Order, the Government will make an equitable adjustment in accordance with Contract Clause 52.243-4 entitled CHANGES.

3.8 Phased or "Fast-Track" Design

3.8.1 General

If approved by the Government, design and construction sequencing may be effected on an incremental basis as each approved phase or portion (e.g., demolition, geotechnical, site work, exterior utilities, foundations, substructure, superstructure, exterior closure, roofing, interior construction, mechanical, electrical, etc.) of the design is completed.

3.8.2 Design Phases

Complete or partial design phasing may or may not have been specified by the Government elsewhere in this contract. For construction sequencing or phasing that the Government has not specifically mandated, the Design-Build Contractor may submit a proposed phasing plan. Design phasing proposed by the Design-Build Contractor shall be submitted to the Government for approval.

3.8.3 Sequence of Design-Construction (Fast-Track)

After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements and obtain Government review of each submission. The contractor may begin construction on portions of the work for which the Government has reviewed the final design submission and has determined satisfactory for purposes of beginning construction. The Contracting Officer will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the Government, the initial submission failed to meet the minimum quality requirements as set forth in the contract.

3.8.4 Notice-to-Proceed for Limited Construction

If the Government allows the Contractor to proceed with limited construction based on pending minor revisions to the reviewed Final Design submission, no payment will be made for any in-place construction related to the pending revisions until they are completed, resubmitted and are satisfactory to the Government.

3.8.5 In-Place Construction Payment

No payment will be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

3.8.6 Commencement of Construction

Construction of work may begin after receipt of the clearance for construction (Notice to Proceed) for each design phase. Any work performed by the Contractor prior to receipt of the clearance for construction, shall be at the Contractor's own risk and expense. Work cleared for construction that does not conform to the design parameters and/or requirements of this contract shall be corrected by the Contractor at no additional cost or time to the Government.

3.9 Conduct of Work

3.9.1 Performance

Perform the work diligently and aggressively, and promptly advise the Contracting Officer of all significant developments.

3.9.2 Telephone Conversations

Prepare a summary, and promptly furnish a copy thereof to the Contracting Officer, of all telephone conversations relating to the design work under this contract.

3.9.3 Cooperation with Others

Cooperate fully with other firms, consultants and contractors performing work under the program to which this contract pertains, upon being advised by the Contracting Officer that such firms or individuals have a legitimate interest in the program, have need-to-know status, and proper security clearance where required.

3.9.4 Technical Criteria

All designs, drawings, and specifications shall be prepared in accordance with the contract documents and with the applicable publications referenced therein. As soon as possible, the Contractor shall obtain copies of all publications applicable to this contract. Availability of publications (where to purchase) is contained in Specification Section 01420 entitled: SOURCES FOR REFERENCE PUBLICATIONS. Any deviations from the technical criteria contained in the contract documents or in the applicable publications, including the use of criteria obtained from the user or other sources, must receive prior approval of the Contracting Officer. Where the technical criteria contained or referred to herein are not met, the Contractor will be required to conform his design to the same at his own time and expense.

3.9.5 Conflicts

Any conflicts, ambiguities, questions or problems encountered by the Contractor in following the criteria shall be immediately submitted in writing to the Contracting Officer with the Contractor's recommendations. Prior to submission to the Government the Contractor shall take appropriate measures to obtain clarification of design criteria requirements, to acquire all pertinent design information, and to incorporate such information in the work being performed.

3.9.6 Design Priorities

The design of this project shall consider the remote location and harsh environment of this project and the impact this will have on sources of technical supply, the cost of construction, the low level of maintenance, and the difficulty of obtaining replacement parts. Unless stated otherwise in this contract, the following design priorities shall be followed.

3.9.6.1 Construction Life Span Levels

Permanent Construction. Buildings and facilities shall be designed and constructed to serve a life expectancy of more than 25 years, to be energy efficient, and to have finishes, materials, and systems that are low maintenance and low life-cycle cost.

3.9.6.2 Operability

Systems including but not necessarily limited to mechanical, electrical, communications, etc., must be simple to operate and easy to maintain.

3.9.6.3 Standardization

Use of standardized materials, products, equipment, and systems is necessary to minimize the requirements for replacement parts, storage facilities, and service requirements.

3.9.6.4 Topographic Surveys, Easements, and Utilities

Unless otherwise stated in the contract, the Contractor will be responsible for detailed topographic mapping, available easements, and utility information for the project.

3.9.6.5 Horizontal and Vertical Control

The mapping shall be based on the base coordinate system. If the base system cannot be found, the surveyor shall use any established monuments. If monuments have been destroyed or do not exist, an assumed horizontal and vertical datum shall be established, using arbitrary coordinates of 10,000n and 10,000e and an elevation of 1,000 meters. The horizontal and vertical control established on site shall be a closed loop with third order accuracy and procedures. Provide three (3) concrete survey monuments at the survey site. All of the control points established at the site shall be plotted at the appropriate coordinate point and shall be identified by name or number, and adjusted elevations. The location of the project site, as determined by the surveyor shall be submitted in writing to the Contracting Officer. The site location shall be identified by temporary markers, approved by the Contracting Officer before proceeding with the surveying work.

3.9.6.6 Topography Requirements

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

The contours shall accurately express the relief detail and topographic shapes. In addition, 90 percent of the elevations or profiles interpolated from the contours shall be correct to within one-half of the contour interval and spot elevations shall be correct within plus or minus 20 millimeters.

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

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

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

3.9.6.7 Geotechnical Investigation

Unless otherwise stated in the contract, the Contractor will be responsible for Geotechnical investigation, including subsurface explorations, sampling, field and laboratory testing, and water studies where applicable.

3.9.6.8 Cathodic Protection and Earth Resistance

Unless otherwise stated in the contract, the Contractor will be responsible for determining whether cathodic protection on buried structures and underground utility systems are needed for special electrical grounding and counterpoise systems, and for gathering the field data necessary for design.

3.9.6.9 Water Supply and Quality Data

Unless otherwise stated in the contract, the Contractor will be responsible for obtaining all water supply and water quality data. This data will include information on the locations and depths of all viable water supply sources at the site(s) involved and a water quantity and water quality analysis for each source.

3.9.6.10 Occupational Safety and Health Act

The facilities, systems, and equipment designed under this contract shall comply with the Occupational Safety and Health Act (OSHA), Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926. Any problems in incorporating these standards due to conflicts with other technical criteria shall be submitted to the Contracting Officer for resolution.

3.9.6.11 Asbestos Containing Materials

Asbestos containing material (ACM) will not be used in the design of new structures or systems. In the event no other material is available which will perform the required function or where the use of other material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from AED.

3.9.6.12 Existing Construction

Asbestos containing materials (ACM) presently included in existing construction to be rehabilitated or otherwise modified as a result of this project shall be removed and a non-asbestos containing material substituted in lieu thereof.

3.9.6.13 Suspected Asbestos Containing Materials

All such structures and systems shall be inspected to determine the presence or probable presence of ACM. When ACM is suspected, a documented survey will be performed. The survey will be developed into an abatement design and will be made a part of the design documents. In the event no other material is available which will perform the required function or the use of a substitute material would be cost prohibitive due to initial cost and tear-out of existing construction, a waiver for the retention of the asbestos containing material must be obtained from the Contracting Officer.

3.10 VALUE METHODOLOGY/VALUE ENGINEERING

The Contractor during the course of his design shall be alert for and shall identify those high-cost low-value items or areas which he considers may be accomplished in different ways that will increase the value of the project at the same or less cost. Potential value engineering study items shall be reported to the Value Engineer through the Contracting Officer.

3.10.1 Performance Oriented Value Engineering Change Proposal (VECP)

In reference to Contract Clause 52.248-3, "Value Engineering - Construction", the Government may refuse to entertain a "Value Engineering Change Proposal" (VECP) for those "performance oriented" aspects of the Contract Documents which were addressed in the Contractor's accepted contract proposal and which were evaluated in competition with other Proposers for award of this contract. For purposes of this clause, the term "performance oriented" refers to those aspects of the design criteria or other contract requirements which allow the Proposer or the Contractor certain latitude, choice of and flexibility to propose in its accepted contract offer a choice of design, technical approach, design solution, construction approach or other approach to fulfill the contract requirements. Such requirements generally tend to be expressed in terms of functions to be performed, performance required or essential physical characteristics, without dictating a specific process or specific design solution for achieving the desired result.

3.10.2 Prescriptive Oriented Value Engineering Change Proposal (VECP)

The Government may consider a VECP for those "prescriptive" aspects of the Solicitation documents, not addressed in the Contractor's accepted contract proposal or addressed but evaluated only for minimum conformance with the Solicitation requirements. For purposes of this clause, the term "prescriptive" refers to those aspects of the design criteria or other Solicitation requirements wherein the Government expressed the design solution or other requirements in terms of specific materials, approaches, systems and/or processes to be

used. Prescriptive aspects typically allow the Proposers little or no freedom in the choice of design approach, materials, fabrication techniques, methods of installation or other approach to fulfill the contract requirements.

3.11 ATTACHMENTS

The following attachments form an integral part of this specification:

ENG FORM 4025R, Mar 95 - Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificate of Compliance (2 pages)

ENG FORM 4288-R. Mar 95 - Submittal Register

Figure 1 – AED Title Block

Figure 2 - AED Management Block

Figure 3 - AED Issue Block & Required Notations

Figure 4 - Border Sheet Size

-END OF SECTION-

SECTION 01415

METRIC MEASUREMENTS

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM E 621	(1994; R 1999e1) Use of Metric (SI) Units in Building Design and Construction (Committee E-6 Supplement to E380)
ASTM SI 10	(2002) American National Standard for Use of the International System of Units (SI): The Modern Metric System

1.2 GENERAL

This project includes metric units of measurements. The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by 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.

1.3 USE OF MEASUREMENTS IN SPECIFICATIONS

Measurements in specifications shall be either in SI or I-P units as indicated, except for soft metric measurements or as otherwise authorized. When only SI or I-P measurements are specified for a product, the product shall be procured in the specified units (SI or I-P) unless otherwise authorized by the Contracting Officer. The Contractor shall be responsible for all associated labor and materials when authorized to substitute one system of units for another and for the final assembly and performance of the specified work and/or products.

1.3.1 Hard Metric

A hard metric measurement is indicated by an SI value with no expressed correlation to an I-P value. Hard metric measurements are often used for field data such as distance from one point to another or distance above the floor. Products are considered to be hard metric when they are manufactured to metric dimensions or have an industry recognized metric designation.

1.3.2 Soft Metric

a. A soft metric measurement is indicated by an SI value which is a mathematical conversion of the I-P value shown in parentheses (e.g. 38.1 mm (1-1/2 inches)). Soft metric measurements are used for measurements pertaining to products, test values, and other situations where the I-P units are the standard for manufacture, verification, or other controlling factor. The I-P value shall govern while the metric measurement is provided for information.

b. A soft metric measurement is also indicated for products that are manufactured in industry designated metric dimensions but are required by law to allow substitute I-P products. These measurements are indicated by a manufacturing hard metric product dimension followed by the substitute I-P equivalent value in parentheses (e.g., 190 x 190 x 390 mm (7-5/8 x 7-5/8 x 15-5/8inches)).

1.3.3 Neutral

A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

1.4 COORDINATION

Discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the

drawings shall be brought to the attention of the Contracting Officer for resolution.

1.5 RELATIONSHIP TO SUBMITTALS

Submittals for Government approval or for information only shall cover the SI or I-P products actually being furnished for the project. The Contractor shall submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise instructed or approved. The Contractor shall use ASTM SI 10 and ASTM E 621 as the basis for establishing metric measurements required to be used in submittals.

-END OF SECTION-

SPECIFICATION SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1: GENERAL

1.1 REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-1-12 (1993)	Quality Management
EM 385-1-1	Safety and Health Requirements Manual

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clauses and this specification section. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 CQM TRAINING REQUIREMENT

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

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

Pervaiz

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

3.3 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than five (5) days after receipt of Notice-to-Proceed (NTP) the proposed Contractor Quality Control (CQC) Plan. The plan shall identify personnel, procedures, control, instructions, records, and forms to be used.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both on site and off-site, including work by subcontractors, fabricators, suppliers and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, consultants, and purchasing agents. These procedures shall be in accordance with Specification 01335 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test.

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control

(DQC) plan:

(1) The Contractor shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents shall be technically reviewed by competent, independent reviewers identified in the DQC Plan. The same element that produced the product shall not perform the independent technical review (ITR). The Contractor shall correct errors and deficiencies in the design documents prior to submitting them to the Government.

(2) The Contractor shall include the design schedule in the master project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This should be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. The schedule shall include review and correction periods associated with each item. This should be a forward planning as well as a project monitoring tool. The schedule reflects calendar days and not dates for each activity. If the schedule is changed, the Contractor shall submit a revised schedule reflecting the change within 7 calendar days. The Contractor shall include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. These completed checklists shall be submitted at each design phase as part of the project documentation. Example checklists can be found in ER 1110-1-12.

(3) The DQC Plan shall be implemented by an Design Quality Control Manager who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated. This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. The Contractor shall notify the Contracting Officer, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

The Contracting Officer will notify the Contractor in writing of the acceptance of the DQC Plan. After acceptance, any changes proposed by the Contractor are subject to the acceptance of the Contracting Officer.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

Notification of Changes. After acceptance of the QC plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Pre-construction Conference, before start of construction, and prior to acceptance by the Government of the Quality Control Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 5 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part

of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures, which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify an individual within his organization at the site of the work who shall be responsible for overall management of the CQC and have the authority to act in all CQC matters for the Contractor. The CQC system manager shall be a graduate engineer, graduate architect, or a graduate construction manager, with experience on construction projects similar in type to this contract OR a construction person with a minimum of ten (10) years in related work. The CQC System Manager shall be on the site at all times during construction and shall be employed by the Contractor. The CQC System Manager shall be assigned no other duties. An alternate for the CQC System Manager will be identified in the plan to serve in the event of the CQC system manager’s absence. The requirements for the alternate will be the same as for the designated CQC manager.

3.4.3 Not Used.

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements, the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered by the government, and inquiries as to the next course offering may be directed to the local construction field office.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in the STR titled SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase.

This phase shall be performed prior to beginning work on each definable feature of work, after all required documents and materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards, in the English language unless specifically approved otherwise by the Contracting Officer, applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. A check to assure that provisions have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to verify that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. Reviews of the appropriate activity hazard analysis to ensure safety requirements are met.

h. Discussion of procedures for constructing the work including repetitive deficiencies, construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the Contracting Officer has accepted the portion of the plan for the work to be performed.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 24 hours in advance of beginning any of the required action of the preparatory phase. This phase shall include a meeting conducted by the CQC system manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC system manager and attached to the daily QC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase.

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of preliminary work to ensure that it is in compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verification of full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC system manager and attached to the daily QC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work on-site, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase.

Daily checks shall be performed to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted, and all noted deficiencies corrected, prior to the start of additional features of work that may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases may be required by the Contracting Officer on the same definable features of work if the quality of on-going work is unacceptable; if there are changes in the applicable QC staff or in the on-site production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product that conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Costs incidental to the transportation of samples or materials shall be borne by the Contractor.

Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the Quality Control report for the date taken. Specification paragraph/item reference, location where tests were taken, and the sequential control number identifying the test will be given. Actual test reports may be submitted later, if approved by the Contracting Officer, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly to the Contracting Officer. Failure to submit timely test reports, as stated, may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Offsite surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within forty-eight (48) hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

In accordance with Specification 01312 QUALITY CONTROL SYSTEM, the contractor shall use the forms produced by and printed from QCS. Samples of any forms required to meet the requirements of this section which are not produced by that system shall be included in the contractors Quality Control Plan.

3.11 NOTIFICATION OF NONCOMPLIANCE

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

part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-END OF SECTION-

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

PART 1 GENERAL

For contractor safety on projects associated with this program, compliance with EM 385-1-1 safety requirements will be the long-term goal reached by growing a safety culture. This compliance will, by necessity, be achieved through a phased-in process. In the Commander's letter at the preface of the EM 385-1-1, he acknowledges that in OCONUS locations, strict compliance with the manual may not be possible – and through the hazard analysis process, safety measures can be developed to attain the same degree of safety.

This specification consists of two parts:

1) Part 1: Sections 1.1 through 3.11, which are the standard safety specifications for work in Europe District

2) Part 2: Execution

1.1 REFERENCES

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

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.32	Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI Z359.1(1992; R 1999)	Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
ASME B30.3(1996)	Construction Tower Cranes

ASME INTERNATIONAL (ASME)

ASME B30.22(2000)	Articulating Boom Cranes
ASME B30.5(2004)	Mobile and Locomotive Cranes

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10(2002)	Portable Fire Extinguishers
NFPA 241(2000)	Safeguarding Construction, Alteration, and Demolition Operations
NFPA 51B(2003)	Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70(2005)	National Electrical Code
NFPA 70E(2004)	Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1(2008) Safety Safety and Health Requirements

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910 Occupational Safety and Health Standards (OSHA)

29 CFR 1910.146 Permit-required Confined Spaces

29 CFR 1915 Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment

29 CFR 1919 Gear Certification

29 CFR 1926 Safety and Health Regulations for Construction

29 CFR 1926.500 Fall Protection

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SR SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G, ACC

Activity Hazard Analysis (AHA); G, ACC

Crane Critical Lift Plan; G, ACC

Proof of qualification for Crane Operators; G, ACC

SD-06 Test Reports

Reports: Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports

Monthly Exposure Reports

Crane Reports

Regulatory Citations and Violations

SD-07 Certificates

Confined Space Entry Permit

Contractor Safety Self-Evaluation Checklist; G, ACC

Submit one copy of each permit/certificate attached to each Daily Quality Control Report.

1.3 DEFINITIONS

a. Competent Person for Fall Protection. A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.

b. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

c. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

d. Qualified Person for Fall Protection. A person with a recognized degree or professional certificate, extensive knowledge, training and experience in the field of fall protection who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.

e. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

(1) Death, regardless of the time between the injury and death, or the length of the illness;

(2) Days away from work (any time lost after day of injury/illness onset);

(3) Restricted work;

(4) Transfer to another job;

(5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

f. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

1.4 DRUG PREVENTION PROGRAM

Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employee uses illegal drugs or consumes alcohol during work hours. Ensure there are no employees under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine, or saliva specimens and test the injured and involved employees for the influence of drugs and alcohol. A copy of the test shall be made available to the Contracting Officer upon request.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person can only be the SSHO on this project if approved by the Contracting Officer. Any project exceeding 1 Million US dollars in value shall have a full time SSHO. The SSHO shall meet the following requirements: A minimum of 1 year safety work on similar projects; 30-hour OSHA construction safety class or equivalent within the last 3 years. Competent person training as needed.

1.6.1.2 Competent Person for Confined Space Entry

Provide a competent person meeting the requirements of EM 385-1-1 who is assigned in writing by the Government Designated Authority (GDA) to assess confined spaces and who possesses demonstrated knowledge, skill and ability to:

a. Identify the structure, location, and designation of confined and permit-required confined spaces where work is done;

b. Calibrate and use testing equipment including but not limited to, oxygen indicators, combustible gas indicators, carbon monoxide indicators, and carbon dioxide indicators, and to interpret accurately the test results of that equipment;

c. Perform all required tests and inspections specified in Section 06.I of EM 385-1-1;

d. Assess hazardous conditions including atmospheric hazards in confined space and adjacent spaces and specify the necessary protection and precautions to be taken;

e. Determine ventilation requirements for confined space entries and operations;

f. Assess hazards associated with hot work in confined and adjacent space and determine fire watch requirements; and,

g. Maintain records required.

1.6.1.3 Crane Operators

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily quality control report.

b. Conduct mishap investigations and complete required reports. Maintain an accident/injury log such as the OSHA Form 300 or host nation equivalent, and Daily Production reports for prime and sub-contractors.

c. Maintain applicable safety reference material on the job site.

d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

e. Implement and enforce accepted APPS and AHAs.

f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.

g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6.3.2 Safety Meetings

Shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily quality control report.

1.7 TRAINING

1.7.1 New Employee Indoctrination

New employees (prime and sub-contractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

1.7.2 Periodic Training

Provide Safety and Health Training in accordance with USACE EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for all onsite employees.

1.7.3 Training on Activity Hazard Analysis (AHA)

Prior to beginning a new phase, training will be provided to all affected

1.8 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP in both English and in the host nation language. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and quality control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment.

Copies of the accepted plan will be maintained at the Contracting Officer's office and at the job site.

The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.8.1 EM 385-1-1 Contents

In addition to the requirements outlines in Appendix A of USACE EM 385-1-1, the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be. The duties of each position shall be specified.

b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of

chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

c. Confined Space Entry Plan. Develop a confined space entry plan in accordance with USACE EM 385-1-1, Section 06.I, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:

(1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of EM 385-1-1, Section 22.F.

(2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.

e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised every six months for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and maintained at the job site for the duration of the project. The Fall Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1, and shall be written in both English and the host nation language. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.10 DISPLAY OF SAFETY INFORMATION

Within 1 calendar day after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project. Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. The Government has no responsibility to provide emergency medical treatment. Military medical clinics may provide emergency treatment for serious injuries; the contractor is responsible for coordination with the local military medical clinic prior to mobilization.

1.13 REPORTS

1.13.1 Accident Reports

For recordable injuries and illnesses, and property damage accidents resulting in at least $2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

1.13.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than $2,000. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.13.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.13.4 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

1.14 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the Installation. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) six kilogram ABC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged,

approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in fire fighting techniques and remain on-site for a minimum of 120 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone numbers. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION/DEPARTMENT IMMEDIATELY.

PART 2 EXECUTION

2.1 CONSTRUCTION AND/OR OTHER WORK

Before initiation of work at the job site, an accident prevention plan, written by the Contractor for the specific work and hazards of the contract and implementing in detail the pertinent requirements of EM 385-1-1, will be reviewed and found acceptable by designated Government personnel. Specific requirements for development of the accident prevention plan are found in sections 01.A and Appendix A of EM 385-1-1.

Before beginning each activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform the work, activity hazard analysis (AHA) shall be prepared by the Contractor performing the work activity. See paragraph 01.A.09 of EM 385-1-1.

The Contractor shall require subcontractors to submit their plan of operations showing methods they propose to use in accomplishing major phases of work.

The Contractor shall be prepared to discuss the plans in conferences convened by the Contracting Officer prior to starting work on each major phase of operation. Plans shall include all pertinent information such as layout of haul roads, access roads, storage areas, electrical distribution lines, methods of providing minimum exposure to overhead loads, and methods of access to work areas. The plan for accomplishing the initial work phase shall be submitted within 15 calendar days after award of the contract. Plans for subsequent major phases of work shall be submitted not later than 15 calendar days prior to initiation of work on each major phase.

All areas where construction, demolition, alteration, building, or similarly related activities take place, all workers shall have the following minimum personal protective clothing and equipment:

1. Short sleeve shirt.
2. Long trousers.
3. Steel-toed safety boots.
4. Hard hat.

2.1.1 Falling Object Protection

All areas must be barricaded to safeguard employees. When working overhead, barricade the area below to prevent entry by unauthorized employees. Construction warning tape and signs shall be posted so they are clearly visible from all possible access points. When employees are working overhead all tools and equipment shall be secured so that they will not fall. When using guardrail as falling object protection, all openings shall be small enough to prevent passage of potential falling objects.

2.1.2 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose Government or Contractor employees to any unsafe or unhealthful conditions. Adequate

protective measures must be taken to prevent Government or Contractor employees from being exposed to any hazardous condition that could result from the work or storage. The Prime Contractor shall keep a complete inventory of hazardous materials brought onto the work-site. Approval by the Contracting Officer of protective measures and storage area is required prior to the start of the work.

2.1.3 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

2.1.4 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

2.2 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

2.2.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.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 05.H. and 05.I. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with USACE EM 385-1-1 and host nation requirements, whichever is more stringent.

2.2.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1 or European Union equivalent. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

2.2.3 Fall Protection for Roofing Work

Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

(1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized.

(2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

2.2.4 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI Z359.1 or European Union equivalent. Exiting horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.2.5 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2.

2.2.6 Guardrails and Safety Nets

Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 or Host Nation requirements, whichever is more stringent.

2.2.7 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in

the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

2.3 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

2.4 EQUIPMENT

2.4.1 Material Handling Equipment

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks shall be trained/licensed in accordance with Host Nation requirements.

2.4.2 Weight Handling Equipment

a. Cranes and derricks shall be equipped as specified in EM-385-1-1 section 16.

b. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.

c. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person. All testing shall be performed in accordance with the manufacturer's recommended procedures.

d. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.

e. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11.

f. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves to the satisfaction of the Contracting Officer that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.

g. Portable fire extinguishers shall be inspected, maintained, and recharged.

h. All employees shall be kept clear of loads about to be lifted and of suspended loads.

i. The Contractor shall use cribbing when performing lifts on outriggers.

j. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

k. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

l. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

m. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.

n. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

o. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations the contractor shall set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

2.5 EXCAVATIONS

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect, and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

2.5.1 Utility Locations

Prior to any excavation, all underground utilities in the work area must be positively identified by the contractor utilizing a) a private utility locating service in addition to any station locating service, and/or b) a metal and/or cable-detecting device along the route of the excavation. All underground utilities discovered will be flagged a distance of one-half (1/2) meter on each side of the location, and any markings made during the utility investigation must be maintained throughout the contract.

Damage occurring to existing utilities, when the above procedures are not followed, will be repaired at the Contractor’s expense.

2.5.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground

system. Digging within 0.61 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

2.5.3 Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

2.5.4 Trenching Machinery

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

2.6 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

2.7 ELECTRICAL

2.7.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. 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 06.I of USACE EM 385-1-1. Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures). All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Ensure the use of rescue and retrieval devices in confined spaces greater than 1.5 m (5 feet) in depth. Conform to Sections 06.I.08, 06.I.09 and 06.I.10 of USACE EM 385-1-1.

d. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

e. Include training information for employees who will be involved as entrants and attendants for the work. Conform to Section 06.I.07 of USACE EM 385-1-1.

f. Daily Entry Permit. Post the permit in a conspicuous place close to the confined space entrance.

2.9 CRYSTALLINE SILICA

Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica, shall comply with USACE EM 385-1-1, Appendix C. The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

2.10 DEMOLITION

2.10.1 Demolition Plan

The Contractor shall submit a written demolition plan for all demolition work to be carried on the site. In addition, the demolition plan shall be signed by a Professional Registered Engineer and meet the requirements of the Corps of Engineers Safety and Health Manual, EM 385-1-1, section 23. The demolition plan shall be submitted to the COR at least 1 week before the beginning of the work, including structural calculations for the demolition, if necessary. The demolition work shall not begin before the Contractor has received a written approval from the COR.

2.10.2 Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workers remove debris or perform other work in the immediate area.

2.10.3 Protection of Structures

Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the COR. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

Interior concrete or masonry walls shall be demolished from the top down unless a Registered Engineer can demonstrate that an alternate method poses no additional safety hazards

2.11 HOUSEKEEPING

2.11.1 Clean-Up

The Contractor shall be responsible for cleaning up. The Contractor shall require his personnel to keep the immediate work site clean of all dirt and debris resulting from work under this contract. Accumulated dirt and debris shall be hauled off and disposed of in accordance with local law and at least once a week by the Contractor. Additionally, all debris in work areas shall be cleaned up daily or more frequently if necessary. Construction debris may be temporarily located in an approved location, however garbage accumulation must be removed each day.

Stairwells used by the Contractor during execution of work shall be cleaned daily. Cloths, mops, and brushes containing combustible materials shall be disposed of or stored outside of the buildings in tight covered metal containers. Paints and thinners shall not be poured into inlets of the interior or exterior sewage system. Paint, stains, and other residues on adjacent surfaces or fixtures caused by the Contractor shall be carefully removed and cleaned to original finish. Upon completion of the work, the Contractor shall remove all construction equipment, materials and debris resulting from the work. The entire work site and the area used by Contractor personnel shall be left clean.

-END OF SECTION-

SPECIFICATION SECTION 01770

CLOSEOUT PROCEDURES

PART 1: GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01335 SUBMITTAL PROCEDURES:

SD-10 Operation and Maintenance Data
Equipment/Product Warranty List; G
Submit Data Package 1 in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals
As-Built Drawings; G
Record Of Materials; G
Equipment/Product Warranty Tag; G

1.2 PROJECT RECORD DOCUMENTS

1.2.1 As-Built Drawings

As built drawings shall be submitted in accordance with Section 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.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-END OF SECTION-

SECTION 01780A

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01335 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

As-Built Drawings

Drawings showing final as-built conditions of the project. The local language of Afghanistan shall be added to project As-Built drawings. The final CADD as-built drawings shall consist of **one set** of electronic CADD drawing files in the specified format, and **one half-size and two full-size paper copies** of the approved as-built drawings.

SD-03 Product Data

As-Built Record of Equipment and Materials

Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

Warranty Management Plan

One set of the warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. The Contractor shall furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.

Warranty Tags

Two record copies of the warranty tags showing the layout and design.

Final Cleaning

Two copies of the listing of completed final clean-up items.

1.2 PROJECT RECORD DOCUMENTS

1.2.1 As-Built Drawings

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

1.2.1.1 Government Furnished Materials

One set of electronic 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 V8 format compatible with a Windows XP operating system. The electronic files will be supplied on compact disc, read-only memory (CD-ROM). The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings.

b. Prior to submittal of the first design submittal involving 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. CADD colors shall be the "base" colors of red, green, and blue. Color code for changes shall be as follows:

(1) Deletions (red) - Deleted graphic items (lines) shall be colored red with red lettering in notes and leaders.

(2) Additions (Green) - Added items shall be drawn in green with green lettering in notes and leaders.

(3) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes

shall be in blue.

d. The Contract Drawing files shall be renamed in a manner related to the contract number (i.e., 98-C-10.DGN) as instructed in the Pre-Construction conference. Marked-up changes shall be made only to those renamed files. All changes shall be made on the layer/level as the original item. There shall be no deletions of existing lines; existing lines shall be over struck in red. Additions shall be in green with line weights the same as the drawing. Special notes shall be in blue on layer#63.

e. When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 5 mm 3/16 inch high. All other contract drawings shall be marked either "As-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

f. After Government approval of all of the working as-built drawings for a phase of work, the Contractor shall prepare the final 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.

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

1.2.1.5 Payment

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

1.2.2 As-Built Record of Equipment and Materials

The Contractor shall furnish one copy of preliminary record of equipment and materials used on the project 15 days prior to final inspection. This preliminary submittal will be reviewed and returned 2 days after final inspection with Government comments. Two sets of final record of equipment and materials shall be submitted 10 days after final inspection. The designations shall be keyed to the related area depicted on the contract drawings. The record shall list the following data:

RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA

Description	Specification Section	Manufacturer and Catalog,	Composition and Size	Where Used

Model, and
Serial Number

1.2.3 Final Approved Shop Drawings

The Contractor shall furnish final approved project shop drawings 30 days after transfer of the completed facility.

1.2.4 Construction Contract Specifications

The Contractor shall furnish final as-built construction contract specifications, including modifications thereto, 30 days after transfer of the completed facility.

1.2.5 Real Property Equipment

The Contractor shall furnish a list of installed equipment furnished under this contract. The list shall include all information usually listed on manufacturer's name plate. The "EQUIPMENT-IN-PLACE LIST" shall include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, spare parts list, manufacturer's catalog, and warranty. A draft list shall be furnished at time of transfer. The final list shall be furnished 30 days after transfer of the completed facility.

1.3 WARRANTY MANAGEMENT

1.3.1 Warranty Management Plan

The Contractor shall develop a warranty management plan which shall contain information relevant to the clause Warranty of Construction. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase shall be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Approved information shall be assembled in a binder and shall be turned over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. A joint 4 month and 9 month warranty inspection shall be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

c. A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.

5. Names, addresses and telephone numbers of sources of spare parts.
6. Warranties and terms of warranty. This shall include one-year overall warranty of construction. Items which have extended warranties shall be indicated with separate warranty expiration dates.
7. Cross-reference to warranty certificates as applicable.
8. Starting point and duration of warranty period.
9. Summary of maintenance procedures required to continue the warranty in force.
10. Cross-reference to specific pertinent Operation and Maintenance manuals.
11. Organization, names and phone numbers of persons to call for warranty service.
12. Typical response time and repair time expected for various warranted equipment.

d. The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

e. Procedure and status of tagging of all equipment covered by extended warranties.

f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.3.2 Pre-Warranty Conference

Prior to contract completion, and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor shall furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, shall be continuously available, and shall be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.3.3 Contractor's Response to Construction Warranty Service Requirements

Following oral or written notification by the Contracting Officer, the Contractor shall respond to construction warranty service requirements in accordance with the "Construction Warranty Service Priority List" and the three categories of priorities listed below. The Contractor shall submit a report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframes specified, the Government will perform the work and backcharge the construction warranty payment item established.

a. First Priority Code 1. Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

b. Second Priority Code 2. Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

c. Third Priority Code 3. All other work to be initiated within 3 work days and work continuously to completion or relief.

d. The "Construction Warranty Service Priority List" is as follows:

Code 1-Air Conditioning Systems

1) Recreational support.
2) Air conditioning leak in part of building, if causing damage.
3) Air conditioning system not cooling properly.

Code 1-Doors

1) Overhead doors not operational, causing a security, fire, or safety problem.
2) Interior, exterior personnel doors or hardware, not functioning properly, causing a security, fire, or safety problem.

Code 3-Doors

1) Overhead doors not operational.
2) Interior/exterior personnel doors or hardware not functioning properly.

Code 1-Electrical

1) Power failure (entire area or any building operational after 1600 hours).
2) Security lights
3) Smoke detectors

Code 2-Electrical

1) Power failure (no power to a room or part of building).
2) Receptacle and lights (in a room or part of building).

Code 3-Electrical

Street lights.

Code 1-Gas

1) Leaks and breaks.
2) No gas to family housing unit or cantonment area.

Code 1-Heat

1) Area power failure affecting heat.
2) Heater in unit not working.

Code 2-Kitchen Equipment

1) Dishwasher not operating properly.
2) All other equipment hampering preparation of a meal.

Code 1-Plumbing

1) Hot water heater failure.
2) Leaking water supply pipes.

Code 2-Plumbing

1) Flush valves not operating properly.
2) Fixture drain, supply line to commode, or any water pipe leaking.
3) Commode leaking at base.

Code 3 –Plumbing

Leaky faucets.

Code 3-Interior

1) Floors damaged.
2) Paint chipping or peeling.
3) Casework.

Code 1-Roof Leaks
Temporary repairs will be made where major damage to property is occurring.

Code 2-Roof Leaks
Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

Code 2-Water (Exterior)
No water to facility.

Code 2-Water (Hot)
No hot water in portion of building listed.

Code 3-All other work not listed above.

1.3.5 Warranty Tags

At the time of installation, each warranted item shall be tagged with a durable, oil and water resistant tag approved by the Contracting Officer. Each tag shall be attached with a copper wire and shall be sprayed with a silicone waterproof coating. The date of acceptance and the QC signature shall remain blank until project is accepted for beneficial occupancy. The tag shall show the following information.

a. Type of product/material_____.

b. Model number_____.

c. Serial number_____.

d. Contract number_____.

e. Warranty period_____from_____to_____.

f. Inspector's signature_____.

g. Construction Contractor_____.
Address_____. Telephone number_____.

h. Warranty contact_____.
Address_____. Telephone number_____.

i. Warranty response time priority code_____.

j. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

1.4 MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Prior to final inspection and transfer of the completed facility; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems shall be submitted to and approved by the Contracting Officer as specified inapplicable technical specification sections.

1.5 OPERATION AND MAINTENANCE MANUALS

Three (3) copies of all Operation and Maintenance (O&M) manuals shall be submitted as follows:

AFGHANISTAN ENGINEER DISTRICT
(1) DHL, FEDEX, UPS, U.S. Postal, or any other courier service:

U.S. Army Corps of Engineers
Afghanistan Engineer District-South
Kandahar Air Field, Afghanistan
Attention: Engineering Branch
APO, AE 09355

Operation manuals and maintenance manuals shall be provided in a common volume, complete, clearly differentiated and separately indexed.

1.6 FINAL CLEANING

The premises shall be left broom clean. Stains, foreign substances, and temporary labels shall be removed from surfaces. Carpet and soft surfaces shall be vacuumed. Equipment and fixtures shall be cleaned to a sanitary condition. Filters of operating equipment shall be replaced. Debris shall be removed from roofs, drainage systems, gutters, and downspouts. Paved areas shall be swept and landscaped areas shall be raked clean. The site shall have waste, surplus materials, and rubbish removed. The project area shall have temporary structures, barricades, project signs, and construction facilities removed. A list of completed clean-up items shall be submitted on the day of final inspection.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-END OF SECTION-

SECTION 01781

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 SUBMISSION OF OPERATION AND MAINTENANCE DATA

Submit Operation and Maintenance (O&M) Data specifically applicable to this contract and a complete and concise depiction of the provided equipment, product, or system. Organize and present information in sufficient detail to clearly explain O&M requirements at the system, equipment, component, and subassembly level. Include an index preceding each submittal. Submit in accordance with this section and Section 01335 SUBMITTAL PROCEDURES.

1.1.1 Package Quality

Documents must be fully legible. Poor quality copies and material with hole punches obliterating the text or drawings will not be accepted.

1.1.2 Package Content

Data package content shall be as shown in the paragraph titled "Schedule of Operation and Maintenance Data Packages." Comply with the data package requirements specified in the individual technical sections, including the content of the packages and addressing each product, component, and system designated for data package submission.

1.1.3 Changes to Submittals

Manufacturer-originated changes or revisions to submitted data shall be furnished by the Contractor if a component of an item is so affected subsequent to acceptance of the O&M Data. Changes, additions, or revisions required by the Contracting Officer for final acceptance of submitted data, shall be submitted by the Contractor within 30 calendar days of the notification of this change requirement.

1.2 TYPES OF INFORMATION REQUIRED IN O&M DATA PACKAGES

1.2.1 Operating Instructions

Include specific instructions, procedures, and illustrations for the following phases of operation:

1.2.1.1 Safety Precautions

List personnel hazards and equipment or product safety precautions for all operating conditions.

1.2.1.2 Operator Prestart

Include procedures required to set up and prepare each system for use.

1.2.1.3 Startup, Shutdown, and Post-Shutdown Procedures

Provide narrative description for Startup, Shutdown and Post-shutdown operating procedures including the control sequence for each procedure.

1.2.1.4 Normal Operations

Provide narrative description of Normal Operating Procedures. Include Control Diagrams with data to explain operation and control of systems and specific equipment.

1.2.1.5 Emergency Operations

Include Emergency Procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include Emergency Shutdown Instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance and procedures for emergency operation of all utility systems including required valve positions, valve locations and zones or portions of systems controlled.

1.2.1.6 Operator Service Requirements

Include instructions for services to be performed by the operator such as lubrication, adjustment, inspection, and recording gage readings.

1.2.1.7 Environmental Conditions

Include a list of Environmental Conditions (temperature, humidity, and other relevant data) that are best suited for the operation of each product, component or system. Describe conditions under which the item equipment should not be allowed to run.

1.2.2 Preventive Maintenance

Include the following information for preventive and scheduled maintenance to minimize corrective maintenance and repair.

1.2.2.1 Lubrication Data

Include preventative maintenance lubrication data, in addition to instructions for lubrication provided under paragraph titled "Operator Service Requirements":

a. A table showing recommended lubricants for specific temperature ranges and applications.
b. Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities.
c. A Lubrication Schedule showing service interval frequency.

1.2.2.2 Preventive Maintenance Plan and Schedule

Include manufacturer's schedule for routine preventive maintenance, inspections, tests and adjustments required to ensure proper and economical operation and to minimize corrective maintenance. Provide manufacturer's projection of preventive maintenance work-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft. For periodic calibrations, provide manufacturer's specified frequency and procedures for each separate operation.

1.2.3 Corrective Maintenance (Repair)

Include manufacturer's recommended procedures and instructions for correcting problems and making repairs.

1.2.3.1 Troubleshooting Guides and Diagnostic Techniques

Include step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

1.2.3.2 Wiring Diagrams and Control Diagrams

Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits including factory-field interfaces. Provide a complete and accurate depiction of the actual job specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type, identically to actual installation configuration and numbering.

1.2.3.3 Maintenance and Repair Procedures

Include instructions and a list of tools required to repair or restore the product or equipment to proper condition or operating standards.

1.2.3.4 Removal and Replacement Instructions

Include step-by-step procedures and a list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings and adjustments required. Instructions shall include a combination of text and illustrations.

1.2.3.5 Spare Parts and Supply Lists

Include lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead-time to obtain.

1.2.4 Corrective Maintenance Work-Hours

Include manufacturer's projection of corrective maintenance work-hours including requirements by type of craft. Corrective maintenance that requires completion or participation of the equipment manufacturer shall be identified and tabulated separately.

1.2.5 Appendices

Provide information required below and information not specified in the preceding paragraphs but pertinent to the maintenance or operation of the product or equipment. Include the following:

1.2.6 Parts Identification

Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number that will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies in accordance with the manufacturer's standard practice. Parts data may cover more than one model or series of equipment, components, assemblies, subassemblies, attachments, or accessories, such as typically shown in a master parts catalog

1.2.6.1 Warranty Information

List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents in order to keep warranties in force. Include warranty information for

primary components such as the compressor of air conditioning system.

1.2.6.2 Personnel Training Requirements

Provide information available from the manufacturers that is needed for use in training designated personnel to properly operate and maintain the equipment and systems.

1.2.6.3 Testing Equipment and Special Tool Information

Include information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.2.6.4 Contractor Information

Provide a list that includes the name, address, and telephone number of the General Contractor and each Subcontractor who installed the product or equipment, or system. For each item, also provide the name address and telephone number of the manufacturer's representative and service organization most convenient to the project site. Provide the name, address, and telephone number of the product, equipment, and system manufacturers.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 TRAINING

Unless provided for elsewhere, the Contractor shall provide operational and maintenance training for all systems furnished under this contract in accordance with this section. The training shall not take place until the operation and maintenance manuals are submitted and approved.

Training will be given to personnel responsible for the operation and maintenance of the system at the installation. Orient training to the specific system being installed under this contract. Use operation and maintenance manual as the primary instructional aid in contractor provided activity personnel training. Manuals shall be delivered for each trainee with two additional sets delivered for archiving at the project site. Submit a training course schedule, syllabus, and training materials 14 days prior to the start of training. Obtain approval of the training course before beginning that phase of training. Furnish a qualified instructor approved by the system manufacturer to conduct training for the specific system.

Training manuals shall include an agenda, defined objectives and a detailed description of the subject matter for each lesson. Furnish audio-visual equipment and all other training materials and supplies. A training day is defined as 8 hours of classroom or lab instruction, including two 15 minute breaks and excluding lunch time, Monday through Friday, during the daytime shift in effect at the training facility. For guidance, the Contractor should assume the attendees will have a high school education.

The Contractor shall videotape the training session on VHS tapes and provide the tapes to the Government.

-END OF SECTION-

Attachments:
1335a-Attachments-AED.pdf
APPENDIX RMTC 1Sep09.pdf

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.	CLASSIFICATION: INFORMATION ONLY o.	GOVERNMENT APPROVED p.	REVIEWER q.	CONTRACTOR SCHEDULE DATES: SUBMIT r.	APPROVAL NEEDED BY s.	MATERIAL NEEDED BY t.	CONTRACTOR ACTION: CODE u.	DATE v.	SUBMIT TO GOVERN-MENT w.	GOVERNMENT ACTION: CODE x.	DATE y.	REMARKS z.

ENG FORM 4288-R, MAR 95 EDITION OF SEP 93 IS OBSOLETE. PAGE 1 OF ____ PAGES (Proponent: CEMP-CE)

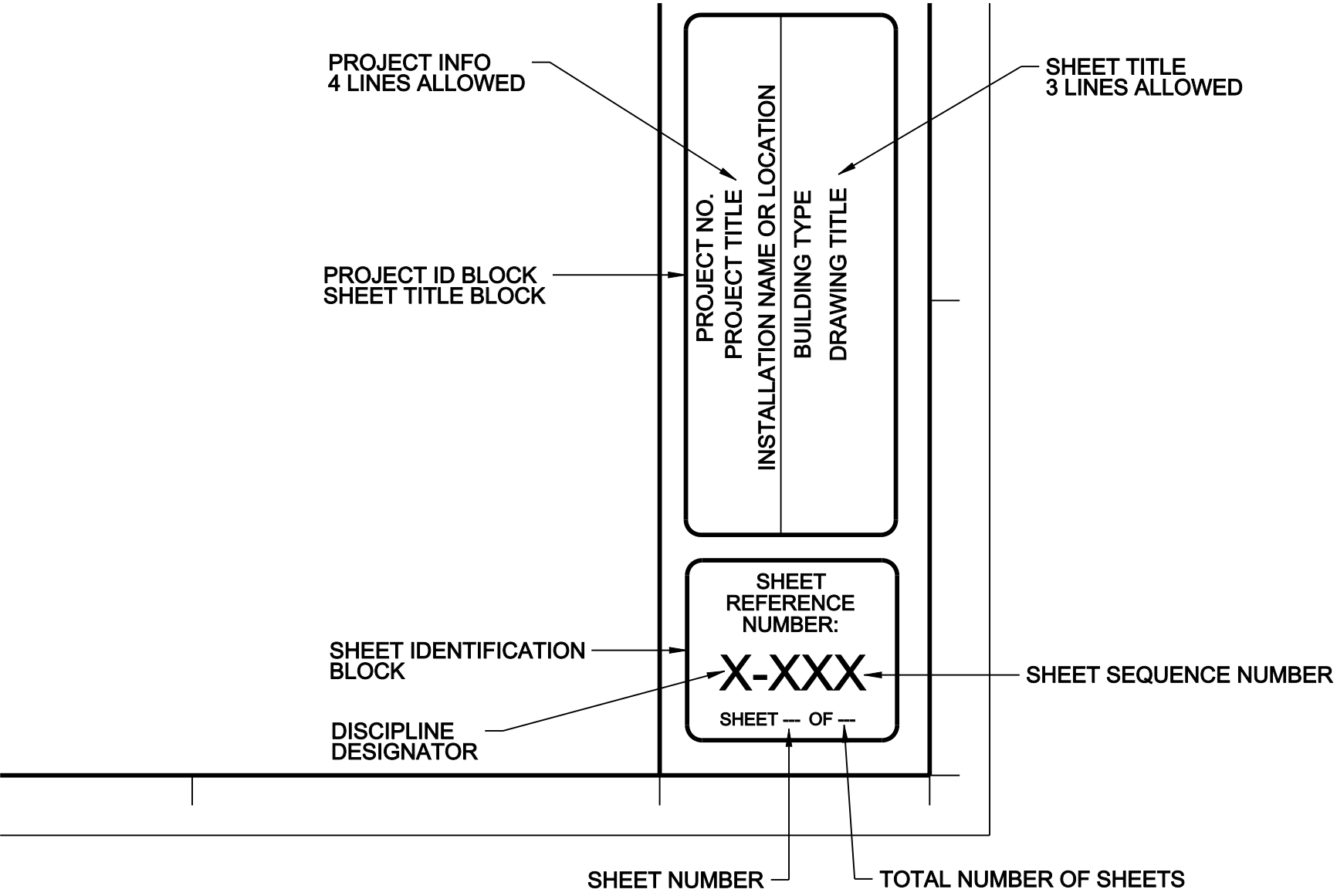


FIGURE 1 - AED TITLE BLOCK

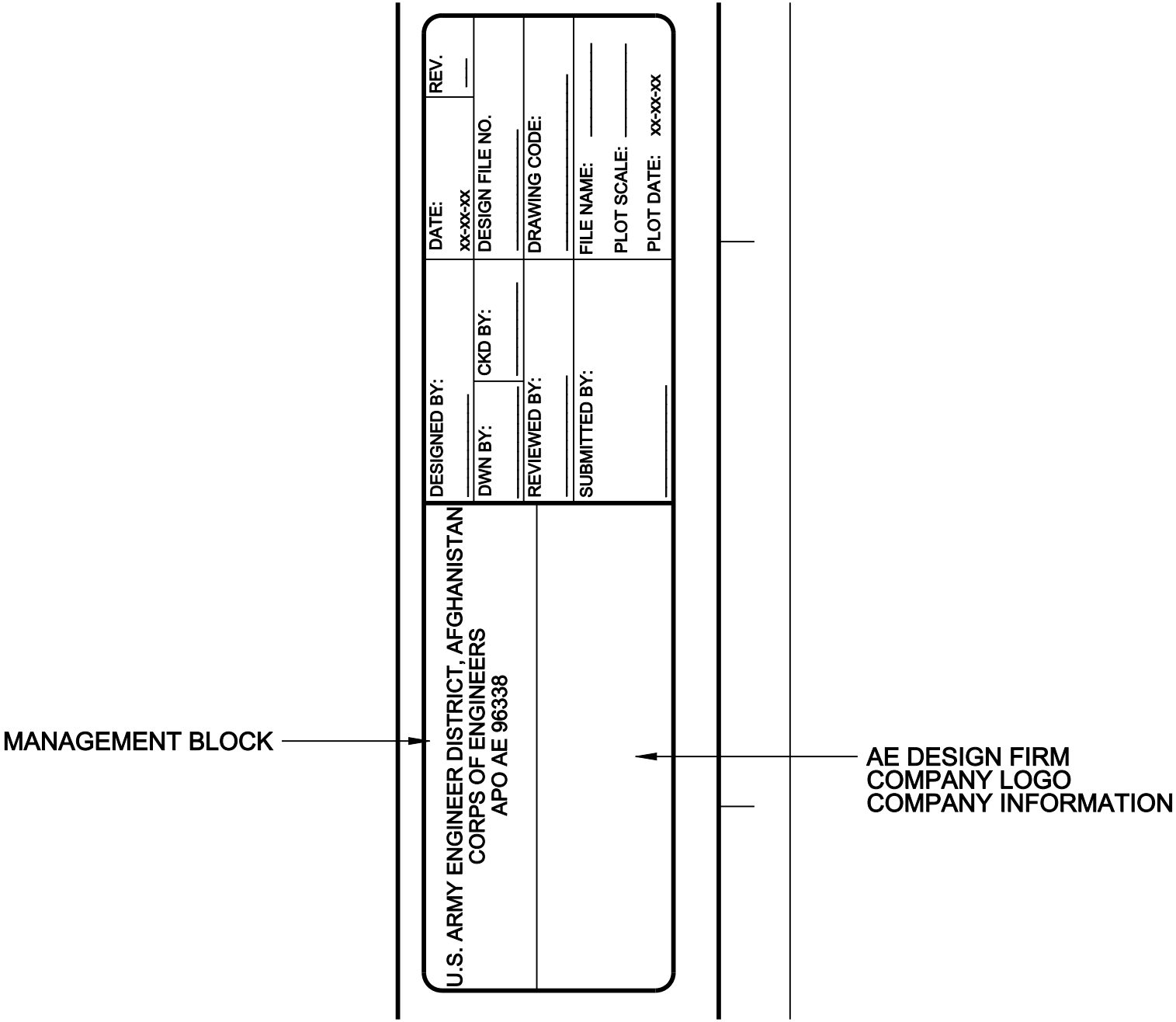


FIGURE 2 - AED MANAGEMENT BLOCK

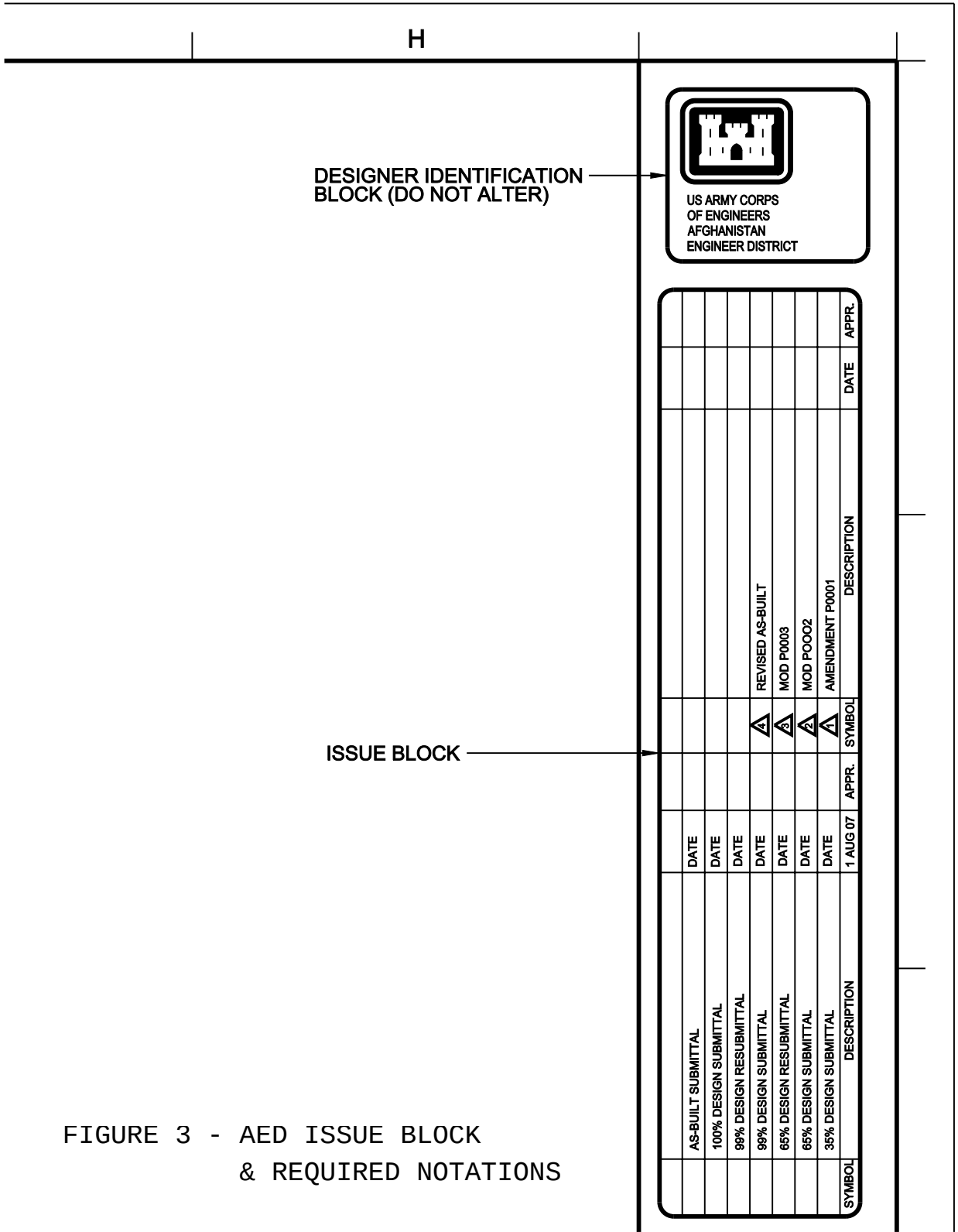


FIGURE 3 - AED ISSUE BLOCK
& REQUIRED NOTATIONS

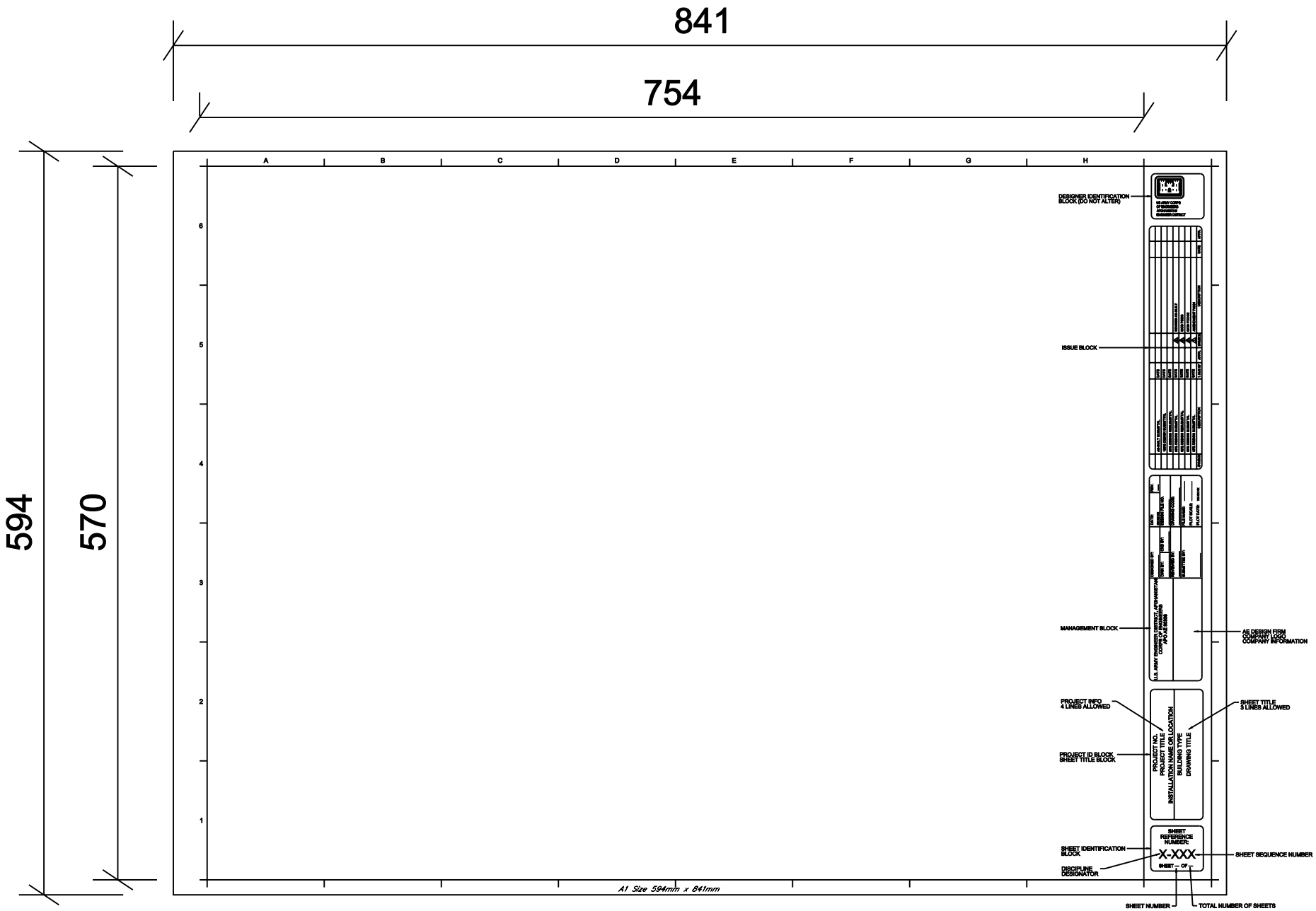


FIGURE 4 - BORDER SHEET SIZE

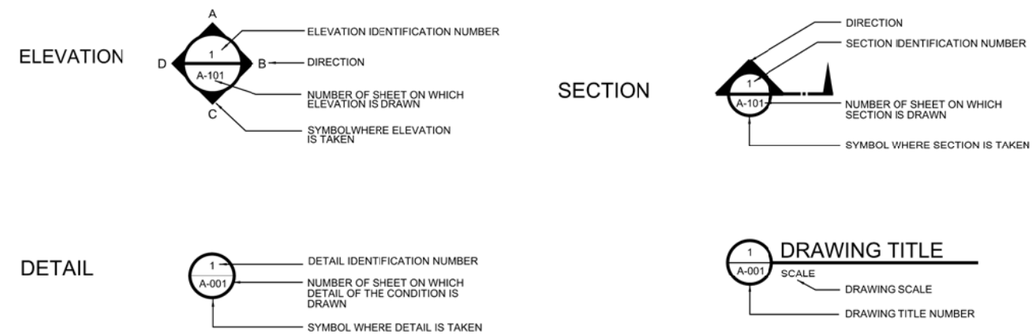
ENGINEERING AND CONSTRUCTION DIVISION
US ARMY ENGINEER DISTRICT, AFGHANISTAN
APO AE, 09356

APPENDIX A

REGIONAL MILITARY TRAINING CENTER (RMTC)

SHINDAND, AFGHANISTAN

SECTION/DETAIL CROSS REFERENCING CONVENTIONS



SCHEDULE OF DRAWINGS

SHEET NO	DWG CODE	SHEET REFERENCE NO	DESCRIPTION	REV STATUS
			GENERAL	
		G-001	TITLE SHEET & SCHEDULE OF DRAWINGS	
		SHEET	RMTC SHINDAND - VICINITY MAP	
			CIVIL SECTION	
		C-101	OVERALL SITE PLAN	
		ANA-E-01	POWER PLANT ELECTRICAL SITE UNDERGROUND	
			CONDUIT ROUTING PLAN (EXAMPLE SHEET)	
			ARCHITECTURAL SECTION	
		A-101	FIRST FLOOR PLAN (BOQ BARRACKS)	
		A-102	SECOND FLOOR PLAN (BOQ BARRACKS)	
		A-103	FIRST AND SECOND FLOOR (ENLISTED BARRACKS)	
		A-104	GUARD SHACK	
		A-105	PERSONAL BUNKERS	
		CLC-A-102	CLINIC BUILDING	
		29-A02	RMTC HQ BUILDING ONE STORY	
		DFAC	DINING FACILITY	
		403-A-112	DFAC #1 GAS STORAGE	
		A-101	LARGE LATRINE	
		DETAIL	WASHING MACHINE WALL BOX	
		SHEET	RMTC GENERAL STORAGE & BRIDMALS AND BWT	
			STORAGE WAREHOUSE	
		SHEET	VEHICLE MAINTENANCE FACILITY SINGLE BAY	
		A-01	POL BUILDING	
		SHEET	FLOOR TRENCH DETAIL	

SHEET NO	DWG CODE	SHEET REFERENCE NO	DESCRIPTION	REV STATUS
		G-001	AMMUNITION SUPPLY POINT - INDEX	
			STRUCTURAL SECTION	
		S-001	STRUCTURAL GENERAL NOTES	
		S-002	STRUCTURAL BASIS OF DESIGN	
		S-101	FOUNDATION AND ROOF FRAMING PLANS	
		S-501	STRUCTURAL SECTIONS AND DETAILS	
		S-502	STRUCTURAL SECTIONS AND DETAILS	
		S-601	STRUCTURAL SCHEDULES	
			ARCHITECTURAL SECTION	
		A-101	FIRST FLOOR PLAN (BOQ BARRACKS)	
		A-201	ELEVATIONS AND BUILDING SECTIONS	
		A-601	DOOR AND FINISH SCHEDULES AND DETAILS	
			ELECTRICAL SECTION	
		E-001	ELECTRICAL SYMBOLS AND ABBREVIATIONS	
		E-101	LIGHTING, POWER, AND LIGHTNING PROTECTION PLANS	
		E-601	LIGHTING FIXTURE AND ELECTRICAL PANEL SCHEDULES	

PROJECT COORDINATION

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN

PROJECT MANAGER — DATE

CHIEF, ENGINEERING BRANCH — DATE

THIS PROJECT WAS DESIGNED BY AFGHANASTAN ENGINEER DISTRICT OF THE U.S ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APP

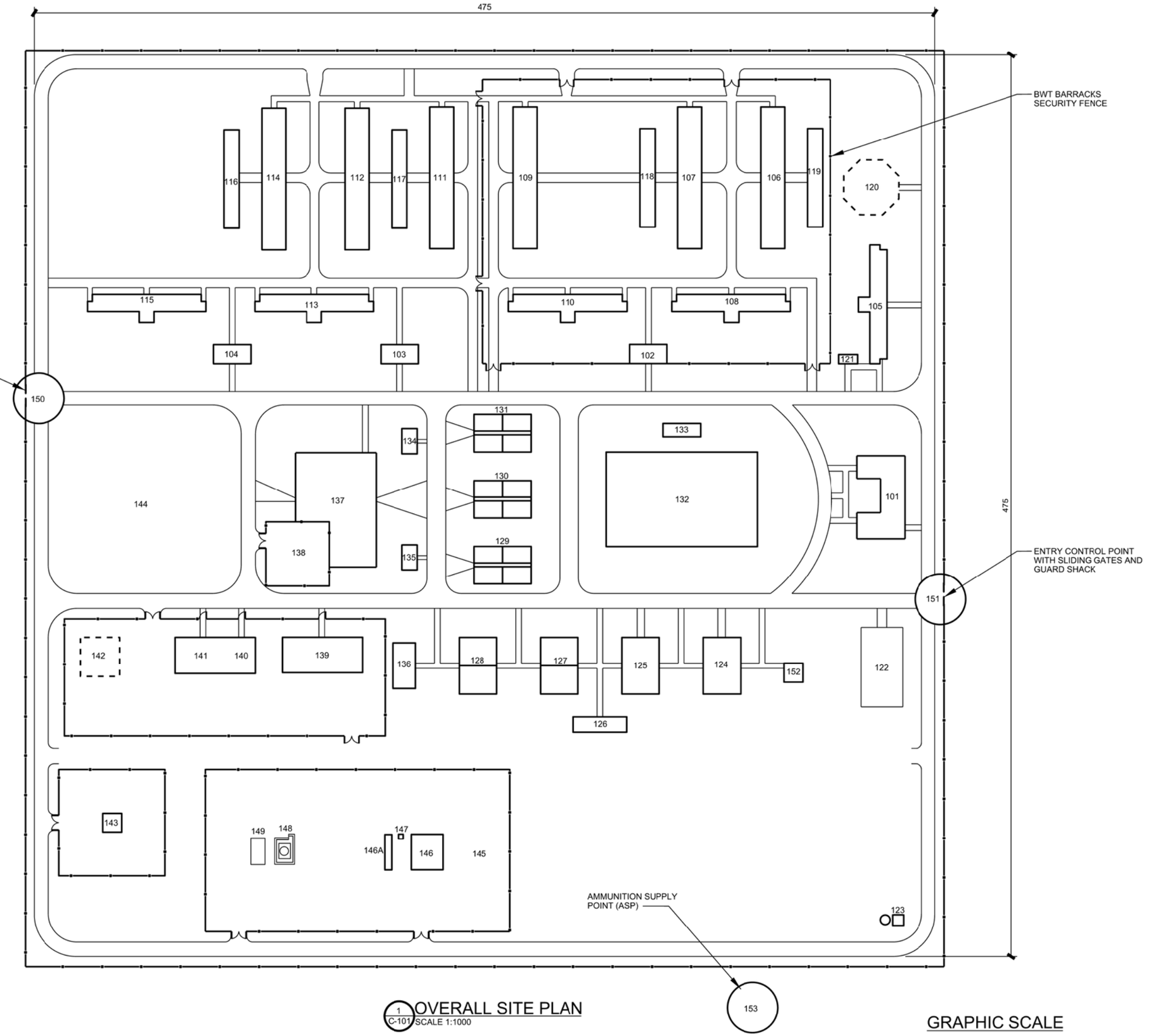
DESIGNED BY: ARED
DWN BY: CKD BY:
REVIEWED BY:
SUBMITTED BY:
DATE: 31MAY08
DESIGN FILE NO.
DRAWING CODE:
REV.
FILE NAME: G-TS.dgn
PLOT SCALE: AS SHOWN
CONTRACT NO. XX-XX-XX

TITLE SHEET
SCHEDULE OF DRAWINGS

SHEET REFERENCE NUMBER:
G-001
SHEET -- OF --

SHINDAND AIR BASE – INSTALLATION LAYOUT

WGS 84 Military Grid System						
PID	Y	X	Lat	Long		
1	33.395925	62.247928	33 23 45.33N	62 14 52.54E	Original 6,060,648 SM	Combined ROE 23,495,362 SM
2	33.407358	62.244894	33 24 26.49N	62 14 41.62E		
3	33.414328	62.261875	33 24 51.58N	62 15 42.75E		
4	33.403508	62.269836	33 24 12.63N	62 16 11.41E		
5	33.378905	62.268898	33 22 44.058N	62 16 8.031E		
6	33.374497	62.261925	33 22 28.19N	62 15 42.93E		
7	33.374747	62.258692	33 22 29.09N	62 15 31.29E		
8	33.381369	62.249794	33 22 52.93N	62 14 59.26E		
9	33.386872	62.247386	33 23 12.74N	62 14 50.59E		
10	33.384642	62.280835	33 23 4.711N	62 16 51.007E	Additional ROE 17,434,714 SM	
11	33.406867	62.293418	33 24 24.722N	62 17 36.304E		
12	33.424772	62.288467	33 25 29.178N	62 17 18.480E		
13	33.419171	62.238255	33 24 59.061N	62 14 14.460E		



MASTER PLAN KEY

100	Series Generic Conceptual Master Plan Facilities
101	Main HQ
102	Admin (Instructor Offices)
103	Admin (Instructor Offices)
104	Admin (Instructor Offices)
105	BOQ (HQ) Barrack
106	Enlisted Barrack
107	Enlisted Barrack
108	BOQ Barrack
109	Enlisted Barrack
110	BOQ Barrack
111	Enlisted Barrack
112	Enlisted Barrack
113	BOQ Barrack
114	Enlisted Barrack
115	BOQ (Support Staff) Barrack
116	Latrine and Shower
117	Latrine and Shower
118	Latrine and Shower
119	Latrine and Shower
120	Future Mosque
121	Laundry
122	Parking
123	Water Well and Pump House
124	200 Students Classroom
125	200 Students Classroom
126	Latrine
127	2 150 Students Classrooms
128	2 150 Students Classrooms
128a	8 Classrooms Building
129	4 50 Students Classrooms
130	4 50 Students Classrooms
131	4 50 Students Classrooms
132	Parade Ground
133	Review Stand
134	Latrine
135	Latrine
136	Medical Clinic
137	DFAC
138	DFAC Loading and Storage Area
139	RMTC Storage
140	Bridmals Storage
141	BWT Storage
142	Future Storage Area
143	Small Arms Storage
144	Future Assault Course Area
145	Motor Pool
146	Vehicle Maintenance Building
146a	Wash Rack
147	POL Storage
148	Fuel Storage
149	Fuel Point and Fuel Pump
150	Entry Gate
151	Entry Gate
152	PX/ Finance Office
153	Ammunition Supply Point (ASP)

1 C-101 OVERALL SITE PLAN
SCALE 1:1000

GRAPHIC SCALE

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APPR.

SYMBOL	DESCRIPTION	DATE	APPR.

DESIGNED BY: DATE: XX-XX-XX REV: __
DWN BY: CKD BY: DESIGN FILE NO.
REVIEWED BY: DRAWING CODE
SUBMITTED BY: FILE NAME: PLOT SCALE: PLOT DATE: XX:XX:XX

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

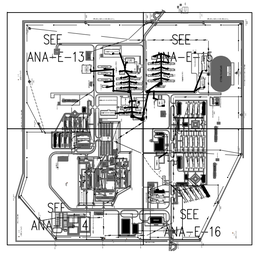
ENGINEERING AND CONSTRUCTION DIVISION

RMTC
SHINDAND, AFGHANISTAN

OVERALL SITE PLAN

SHEET REFERENCE NUMBER:
C-101
SHEET --- OF ---

A1 Size 594mm x 841mm

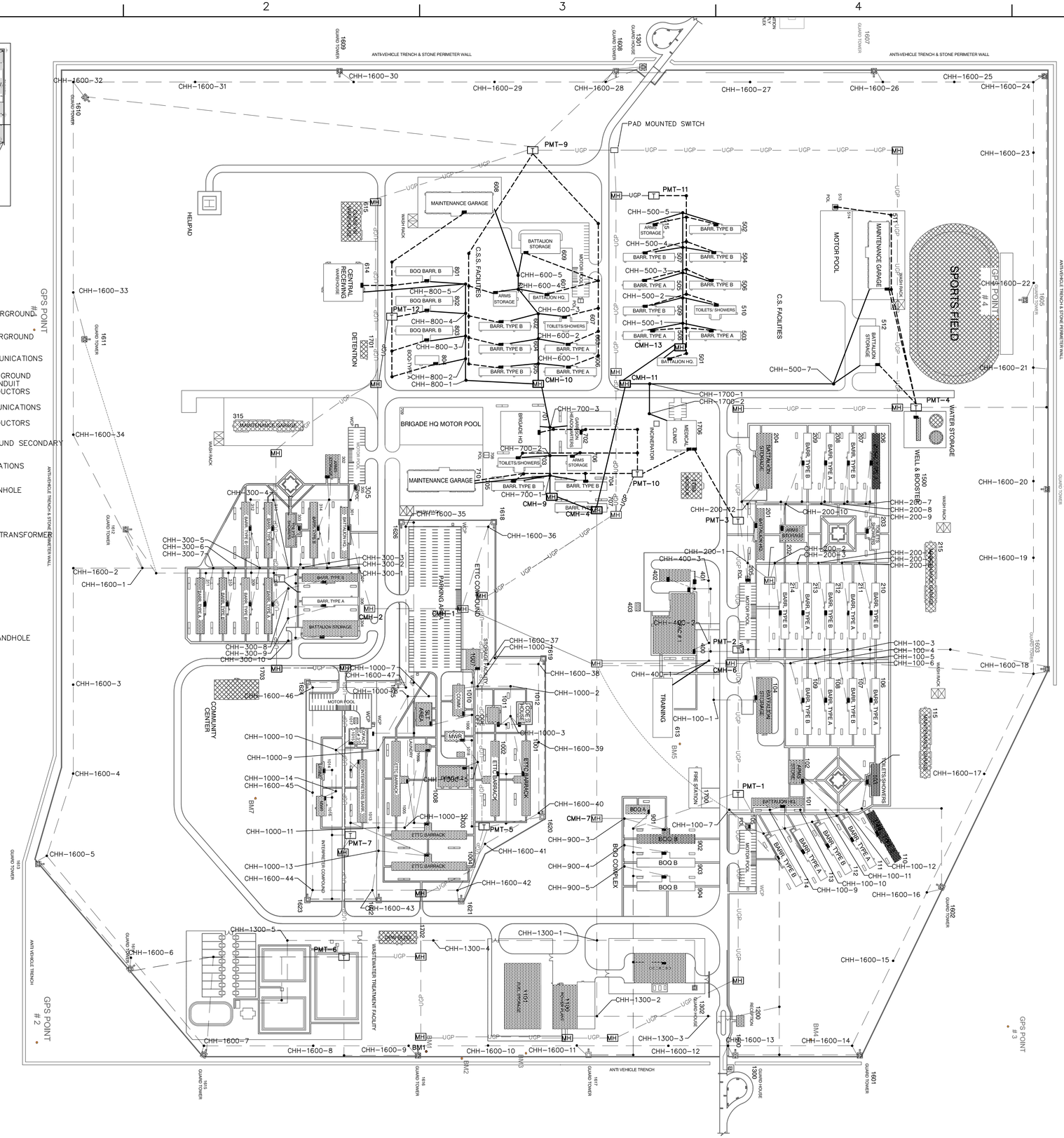


LEGEND

- EXISTING UNDERGROUND PRIMARY
- EXISTING UNDERGROUND SECONDARY
- EXISTING COMMUNICATIONS
- EXISTING UNDERGROUND SECONDARY CONDUIT WITH NEW CONDUCTORS
- EXISTING COMMUNICATIONS CONDUITS WITH NEW CONDUCTORS
- NEW UNDERGROUND SECONDARY
- NEW COMMUNICATIONS
- MH — ELECTRICAL MANHOLE
- HANDHOLE
- T — PAD MOUNTED TRANSFORMER
- PANEL BOARD

SPECIFIC NOTE:

1. SEE SHEET ANA-E-12 FOR HANDHOLE AND MANHOLE DETAILS



Phase I

BUILD CODE	Building	Usage	Area	QTY
100		INFANTRY BATTALION COMPLEX A		
101	101–A–01	BATTALION HQ	320.0 m²	1
102	102–A–02	ARMS STORAGE	352.5 m²	1
103	103–A–03	SHOWER & TOILETS	492.3 m²	1
104	104–A–04	BATTALION STORAGE	800.9 m²	1
105	105–A–05	POL STORAGE & UTILITY	18.2 m²	1
106,108,111,113	106–A–06	BARRACK TYPE A	436.6 m²	4
107,109,110,112,114	107–A–07	BARRACK TYPE B	436.6 m²	5
115		MAINTENANCE GARAGE	800.0 m²	1
200		INFANTRY BATTALION COMPLEX B		
201	201–A–01	BATTALION HQ	320.0 m²	1
202	202–A–02	ARMS STORAGE	352.5 m²	1
203	203–A–03	SHOWER & TOILETS	492.3 m²	1
204	204–A–04	BATTALION STORAGE	800.9 m²	1
205	205–A–05	POL STORAGE & UTILITY	18.2 m²	1
206,208,211,213	206–A–06	BARRACK TYPE A	436.6 m²	4
207,209,210,212,214	207–A–07	BARRACK TYPE B	436.6 m²	5
215		MAINTENANCE GARAGE	800.0 m²	1
300		INFANTRY BATTALION COMPLEX C		
301	301–A–01	BATTALION HQ	320.0 m²	1
302	302–A–02	ARMS STORAGE	352.5 m²	1
303	303–A–03	SHOWER & TOILETS	492.3 m²	1
304	304–A–04	BATTALION STORAGE	800.9 m²	1
305	305–A–05	POL STORAGE & UTILITY	18.2 m²	1
306,308,311,313	306–A–06	BARRACK TYPE A	436.6 m²	4
307,309,310,312,314	307–A–07	BARRACK TYPE B	436.6 m²	5
315		MAINTENANCE GARAGE	800.0 m²	1
		DINING FACILITY		
400	400–A–23	DFAC#01	2145.5m²	1
401	401–A–24	DFAC#01 ANNEX	348.0 m²	1
402	402–A–25	DFAC#01 STORAGE	35.0 m	1
403	403–A–26	DFAC#01 GAS STORAGE	40.0 m	1
		BOQ COMPLEX		
901	901–A–23	BOQ BARRACK TYPE A	101.4 m²	1
902–303–904	902–A–24	BOQ BARRACK TYPE B	565.5 m²	3
		EMBEDDED TRAINING TEAM FACILITY		
1001,1002,1003, 1004,1005	1001–A–25	ETTC BARRACK	742.0 m²	5
1006	1006–A–26	ETTC MWR	200.0 m²	1
1007	1007–A–27	DFAC # 2	100.0 m²	1
1008	1008–A–28	ETTC STORAGE	551.1 m²	1
1009	1009–A–29	LAUNDRY	112.5.0m²	1
1010	1010–A–30	COMMUNICATIONS	374.4 m²	1
1011–1012	1011–A–31	COE OFFICES	374.4 m²	2
1013	1013–A–33	INTERPRETERS' BARRACK	588.0 m²	1
1014	1014–A–33	INTERPRETERS' LATRINE	104.5 m²	1
1015	1015–A–34	INTERPRETERS' DFAC#3	245.0 m²	1
1016	1016–A–35	INTERPRETERS' MWR	200.0 m²	1
1016	1017–A–36	DFAC#02 GAS STORAGE	37.0 m²	1
1017	1018–A–37	DFAC#03 GAS.STORAGE	35.0 m²	1
		GENERAL BUILDINGS		
1100–1101	1100–A–37	POWER PLANT & FUEL ST.	982.5 m²	1
1200	1200–A–38	RECEPTION CENTER	88.0 m²	1
1300–1301–1302	1300–A–39	GUARD HOUSE	21.1 m²	2
1303–1304	1303–A–39	BLOWER HOUSE	28.1 m²	2
1401–1402	1400–A–40	WELL HOUSE	31.0 m²	1
1500	1500–A–41	BOOSTER	63.0 m²	1
1600–1626	1600–A–42	GUARD TOWER	9.0 m²	25

Phase II

BUILDING No.	Building	Area	QTY
	GENERAL BUILDINGS		
1700	FIRE STATION	520 m²	1
1701	DETENTION CENTER	130 m²	1
1702	DPW SHOP BLDG.	486 m²	1
1703	COMMUNITY CENTER	900 m²	1
1704	FUTURE MOSQUE	785 m²	1
1705	SOLID WASTE COLLECTION POINT	9 m²	1
1706	MEDICAL CLINIC	994 m²	1
1707	WATER STORAGE TANK		
1709	GARRISON HELIPAD	184.0 m²	1
1710	SPORTS FIELD	14614 m²	1
1627	ASP FACILITY COMPLEX	187.0 m²	1
	COMBAT SUPPORT BATTALION (CS)		
503, 505, 508	BARRACK TYPE A	436.6 m²	3
502, 504, 506, 507, 509	BARRACK TYPE B	436.6 m²	5
501	BATTALION HQ	320.0 m²	1
510	SHOWER/TOILETS/LAUNDRY	492.3 m²	1
511	CS MAINTENANCE Garage	1395.0m²	1
512	BATTALION STORAGE	800 m²	1
513	POL BUILDING	25.0 m²	1
514	MOTOR POOL	1000 m²	1
515	ARMS STORAGE BUILDINGS	1050 m²	1
516	Solid Waste Collection Point	3.3 m²	1
	COMBAT SUPPORT SERVICES BATTALION (CSS)		
603, 606	BARRACK TYPE A	436.6 m²	2
602, 604, 605	BARRACK TYPE B	436.6 m²	3
607	SHOWER/TOILETS/LAUNDRY	492.3 m²	1
601	BATTALION HQ	1030.0m²	1
608	CSS MAINTENANCE GARAGE	1395.0m²	1
609	BATTALION STORAGE	800 m²	1
610	POL BUILDING	25.0 m²	1
611	MOTOR POOL	2000.0m²	1
612	ARMS STORAGE BLDG.	352.0 m²	1
613	TRAINING BLDG.	1202.0m²	1
614	CENTRAL RECEIVING WAREHOUSE	1395.0m²	1
615	CLASS VIII WAREHOUSE	1520 m²	1
616	SOLID WASTE COLLECTION POINT	3.3 m²	1
	BRIGADE AND GARRISON BATTALION		
704, 705, 707	BARRACK TYPE B	436.6 m²	3
703	SHOWER/TOILETS/LAUNDRY	492.3 m²	1
701	BRIGADE HQ BLDG.	1030.0m²	1
702	GARRISON HQ BLDG.	990 m²	1
706	ARMS STORAGE BLDG.	352.0 m²	1
708	POL BUILDING	25.0 m²	1
709	MOTOR POOL	3000.0m²	1
710	MAINTENANCE GARAGE	1395.0m²	1
	BOQ FOR GARRISON, CS, CSS BATTALIONS		
801, 802, 803	BOQ BARRACK TYPE B	565.5 m²	3
804	BOQ BARRACK TYPE A	218.0 m²	1

U.S. Army Corps of Engineers
AFGHANISTAN ENGINEERING DISTRICT

Mark	Description	Date	Appr.
1	30% DESIGN SUBMITTAL	21NOV09	
0	AREA USE PLAN AND MOBILIZATION	02OCT09	

Proceed Notice: 21–08–08
File Name: ANA–E–01
Drawing Code: ANA–E–01
Plot Date: 21–11–08
Plot Scale: 1:1
Contract No.: W917PM–08–C–0076

Drawn By: JPL
Designed By: WRJ
Reviewed By: WRJ
Submitted By: ROBERT SCAGLIONE P.E.
Solicitation No.: W917PM–08–R–0059

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEERS DISTRICT
KABUL, AFGHANISTAN

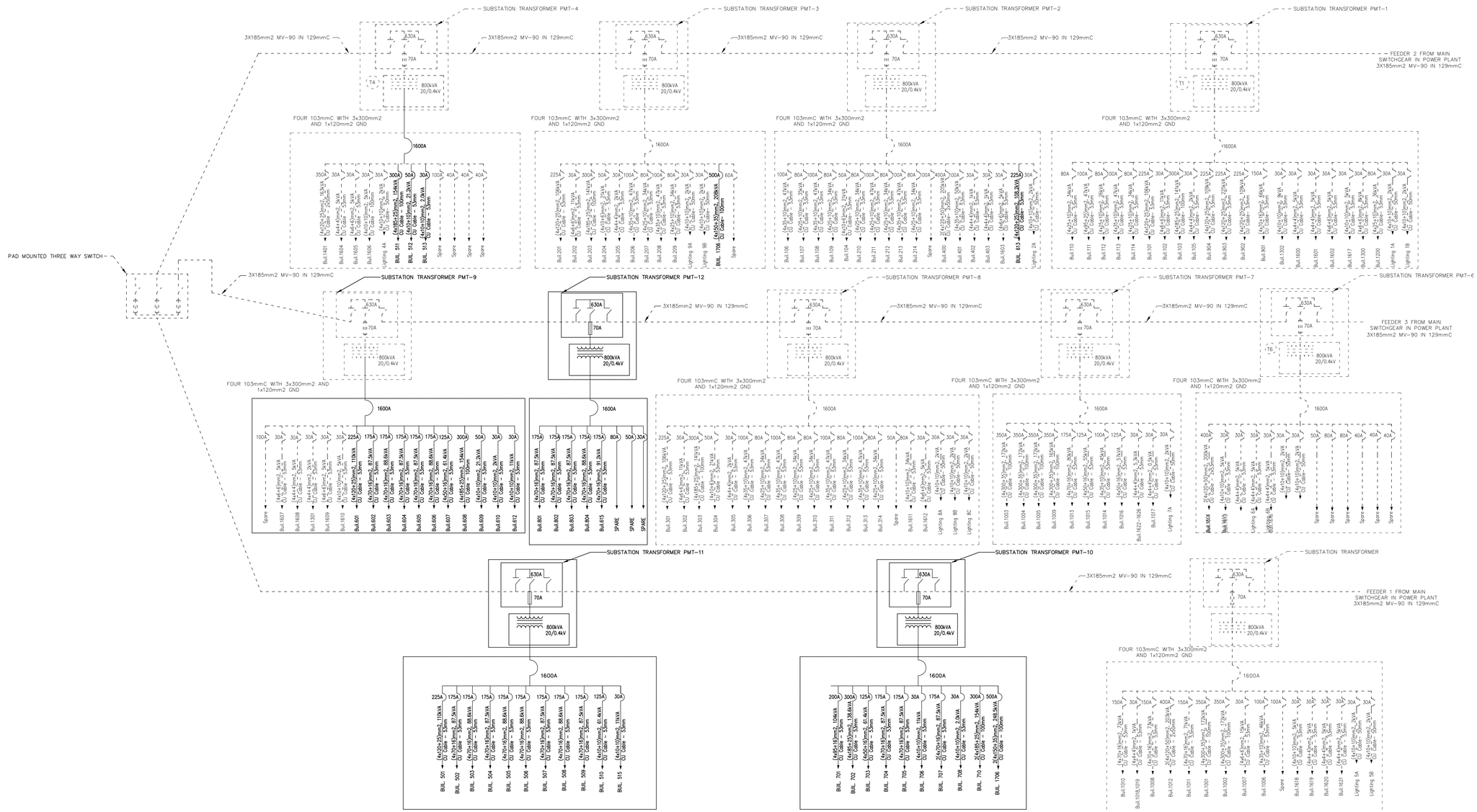
Contractor: DYNCORP INTERNATIONAL

Designer: ADVANCED PROCESS SOLUTIONS
COLONIAL HEIGHTS, VIRGINIA, U.S.A.
www.APSENGINEERS.COM
sales@apsengineers.com
PHONE: (1) 804-733-0000

AFGHAN NATIONAL ARMY (ANA)
ANA GARRISON, GAMBERI – PHASE TWO
JALALABAD, AFGHANISTAN

POWER PLANT ELECTRICAL SITE UNDERGROUND CONDUIT ROUTING PLAN

Sheet Reference Number:
ANA–E–01



01 SITE POWER SINGLE LINE DIAGRAM

REF. SCALE: NONE

U.S. Army Corps of Engineers
AFGHANISTAN ENGINEERING DISTRICT

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.
	AREA USE PLAN AND NOBILIZATION	02OCT09					
	30% DESIGN SUBMITTAL	21NOV09					

Proceed Notice: 21-08-08
Drawn By: JPL
Designed By: WRJ
Reviewed By: WRJ
Submitted By: ROBERT SCAGLIONE P.E.
Drawing Code: ANA-E-02
File Name: ANA-E-02
Plot Date: 21-11-08
Plot Scale: 1:1
Contract No.: W917PM-08-C-0076
Solicitation No.: W917PM-08-R-0059

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEERS DISTRICT
KABUL, AFGHANISTAN

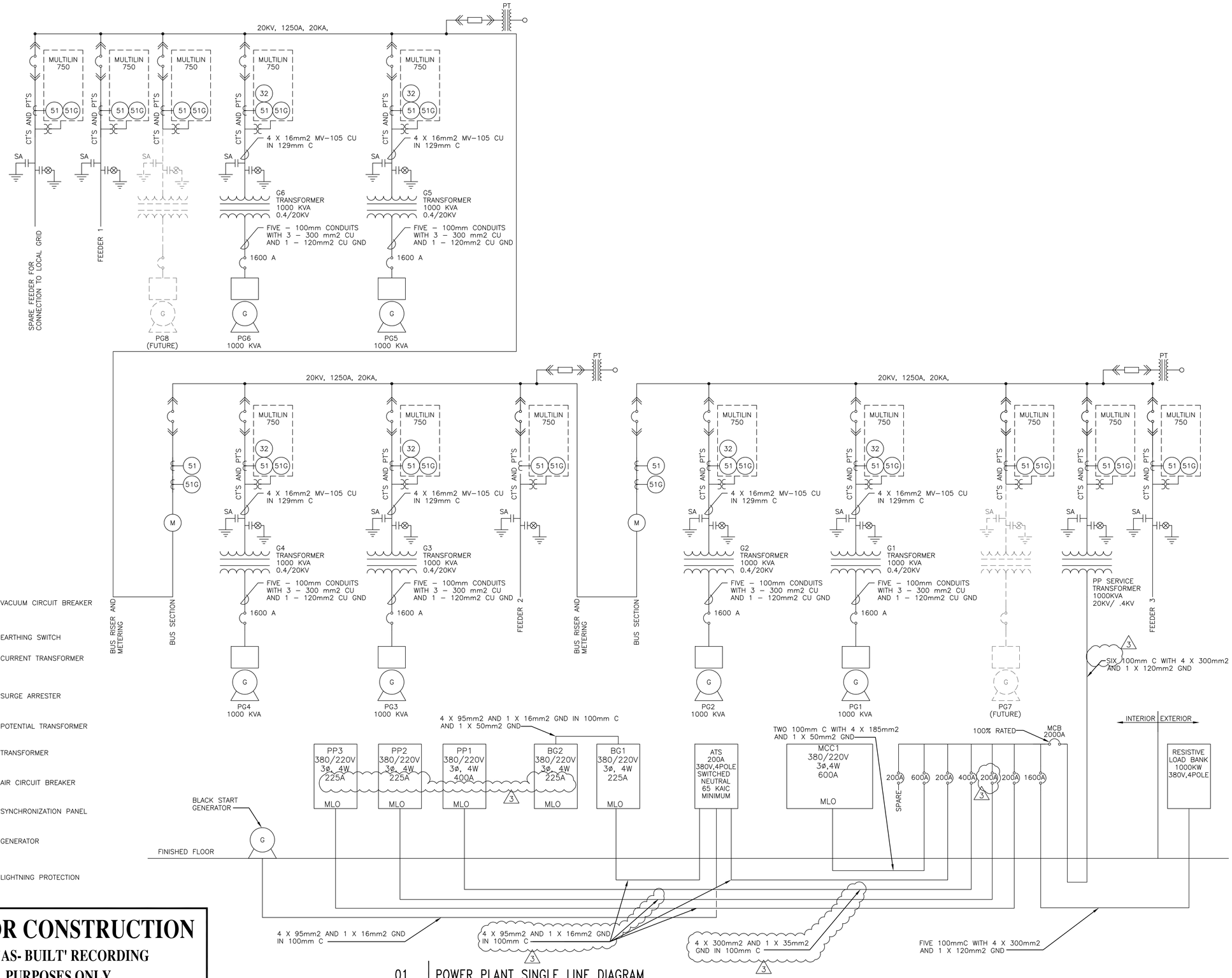
Contractor: DYNCORP INTERNATIONAL

Designer: ADVANCED PROCESS SOLUTIONS
COLUMBIA HEIGHTS, MINNESOTA, U.S.A.
www.APSENGINEERS.COM
(TOLL-FREE) 1-888-418-4000
aps@apsengineers.com

AFGHAN NATIONAL ARMY (ANA)
ANA GARRISON, GAMBERI – PHASE TWO
JALALABAD, AFGHANISTAN

POWER PLANT ELECTRICAL
SITE SINGLE LINE DIAGRAM

Sheet Reference Number:
ANA–E–02



NOT FOR CONSTRUCTION

FOR 'AS- BUILT' RECORDING PURPOSES ONLY

01 POWER PLANT SINGLE LINE DIAGRAM

REF. SCALE: NTS

U.S. Army Corps of Engineers
AFGHANISTAN ENGINEERING DISTRICT

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.
4	35% SUBMITTAL	09 JUN 08					
3	65% SUBMITTAL	30 JUN 08					
2	95% DESIGN SUBMITTAL	08AUG08					
1	FIELD ISSUE	13AUG08					

Contract Date: 25-11-07
File Name: 1100-E-07
Plot Date: 17-10-08
Plot Scale: 1:1
Contract No.: W917PM-08-C-0009
Solicitation No. W917PM-07-R-0102
Drawn By: JPL
Drew Code: 1100-E-07
Designed By: WRJ
Reviewed By: WRJ
Submitted By: ROBERT SCAGLIONE P.E.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEERS DISTRICT
KABUL, AFGHANISTAN

Contractor: DYNCORP INTERNATIONAL

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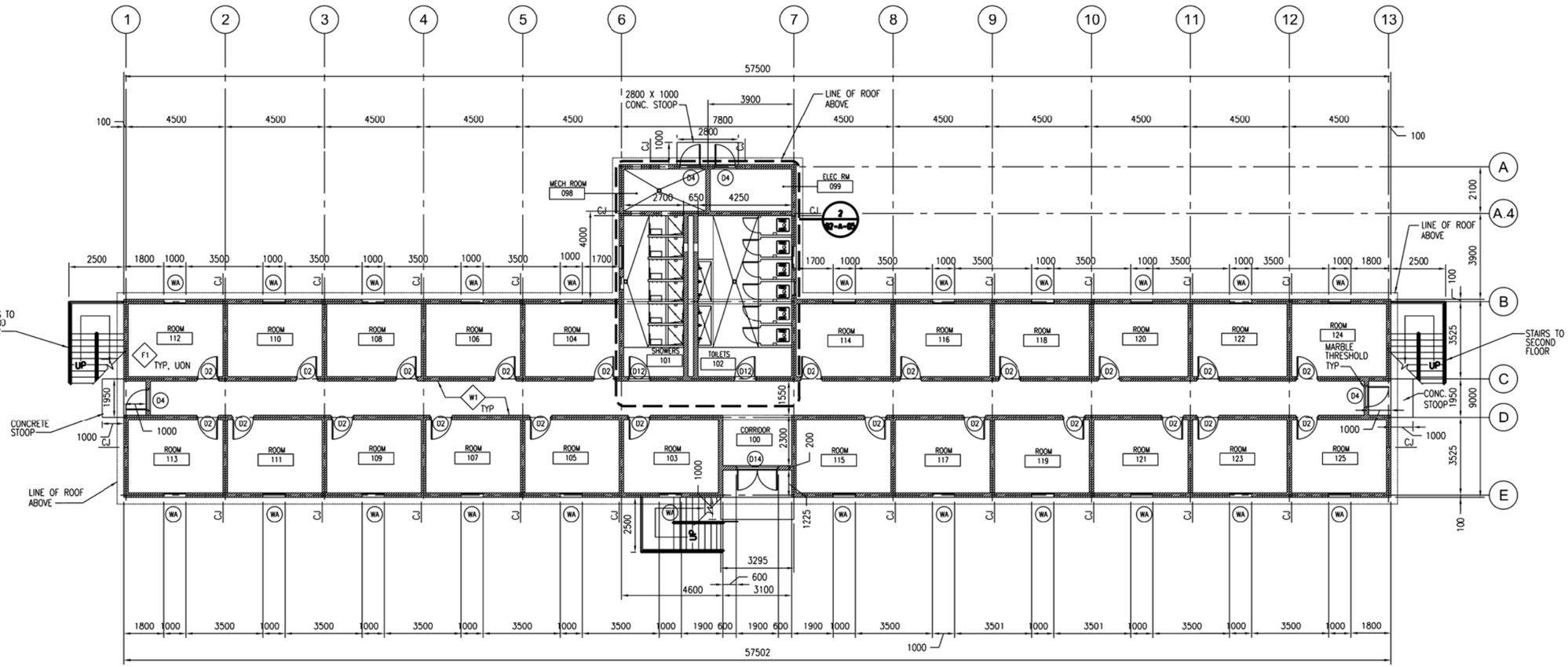
AFGHAN NATIONAL ARMY (ANA)
ANA GARRISON, GAMBERI
PDC: ANA JALALABAD, AFGHANISTAN
FY:07

POWER PLANT ELECTRICAL SINGLE LINE DIAGRAM

Sheet Reference Number:
1100-E-07



1 A-101 FIRST FLOOR PLAN
SCALE = 1:100

US ARMY CORPS
OF ENGINEERS
AFGHANISTAN
ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APPR.

SYMBOL	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DWN BY:
CKD BY:
REVIEWED BY:
SUBMITTED BY:
DATE: XX-XX-XX
DESIGN FILE NO.
DRAWING CODE:
FILE NAME:
PLOT SCALE:
PLOT DATE: XX-XX-XX
REV.

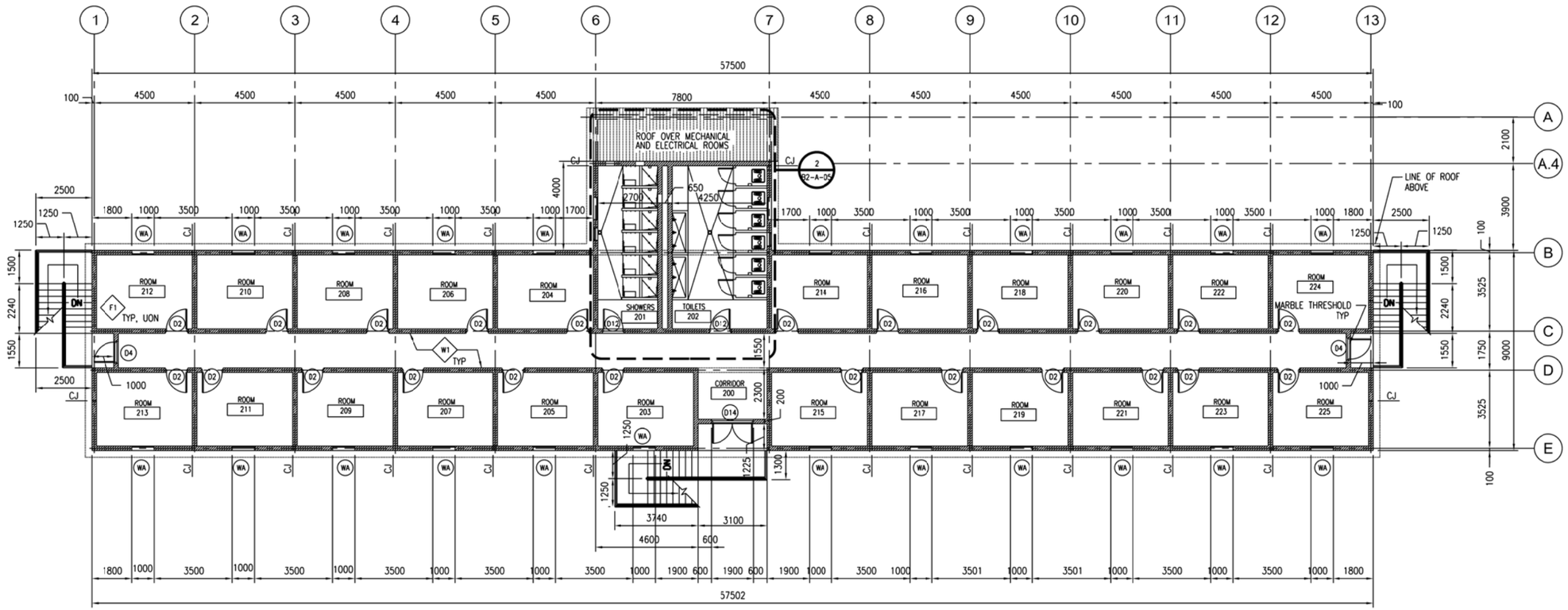
U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

ENGINEERING AND
CONSTRUCTION DIVISION

RMTC
SHINDAND, AFGHANISTAN
BOQ BARRACKS
FIRST FLOOR PLAN

SHEET
REFERENCE
NUMBER:
A-101
SHEET --- OF ---

A1 Size 594mm x 841mm



1 A-102 SECOND FLOOR PLAN
SCALE = 1:100

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APPR.

SYMBOL	DESCRIPTION	DATE	APPR.

REV: __
DATE: XX-XX-XX
DESIGN FILE NO.
DRAWING CODE
FILE NAME:
PLOT SCALE:
PLOT DATE: XX-XX-XX
DESIGNED BY:
DWN BY: CKD BY:
REVIEWED BY:
SUBMITTED BY:

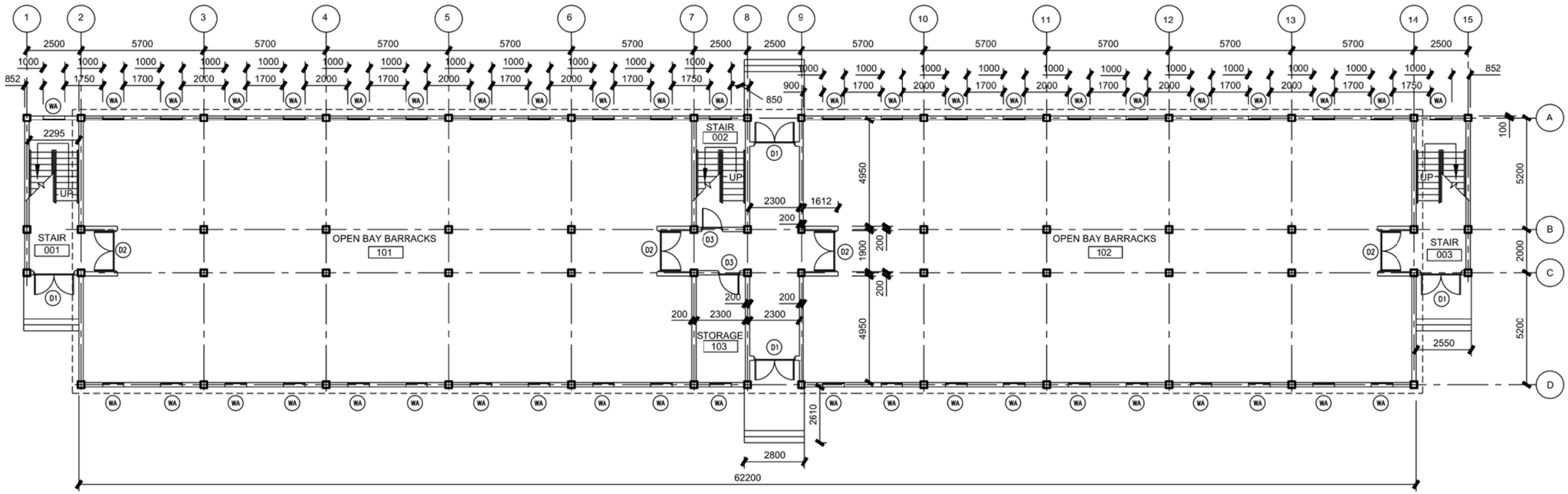
U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

ENGINEERING AND CONSTRUCTION DIVISION

RMTC
SHINDAND, AFGHANISTAN
BOQ BARRACKS
SECOND FLOOR PLAN

SHEET REFERENCE NUMBER:
A-102
SHEET --- OF ---

A1 Size 594mm x 841mm



1 A-103 FIRST FLOOR PLAN
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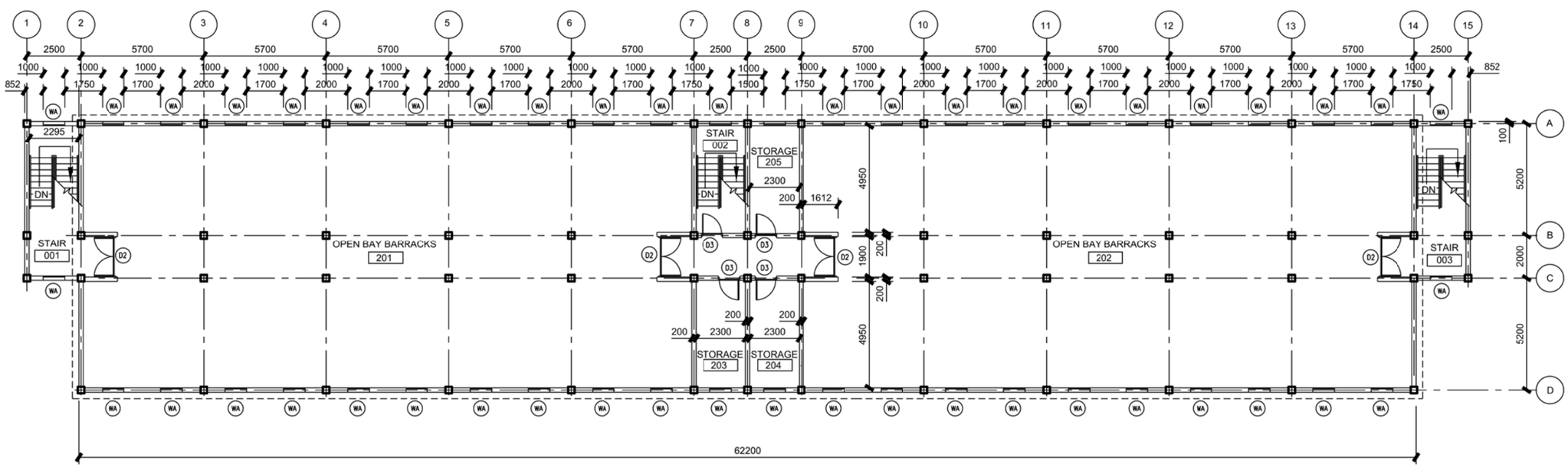


2 A-103 SECOND FLOOR PLAN
SCALE = 1:100

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APPR.

DESIGNED BY: DWN BY: CKD BY: REVIEWED BY: SUBMITTED BY:
DATE: XX-XX-XX DESIGN FILE NO.: DRAWING CODE: FILE NAME: PLOT SCALE: PLOT DATE: XX-XX-XX REV.

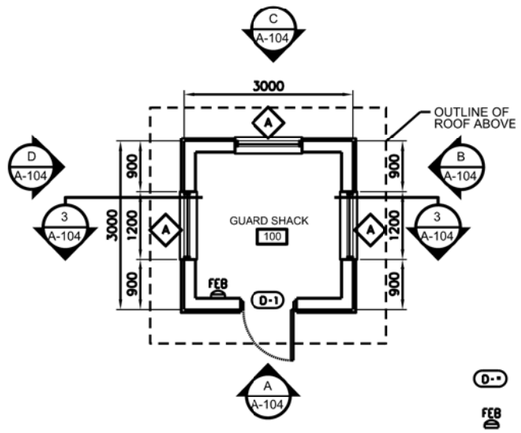
U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

ENGINEERING AND CONSTRUCTION DIVISION

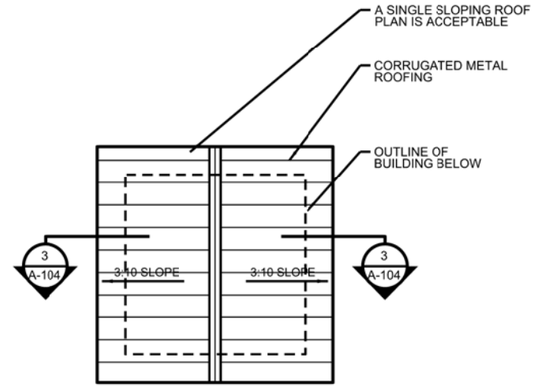
RMTC
SHINDAND, AFGHANISTAN
ENLISTED BARRACKS
FIRST FLOOR PLAN

SHEET REFERENCE NUMBER:
A-103
SHEET --- OF ---

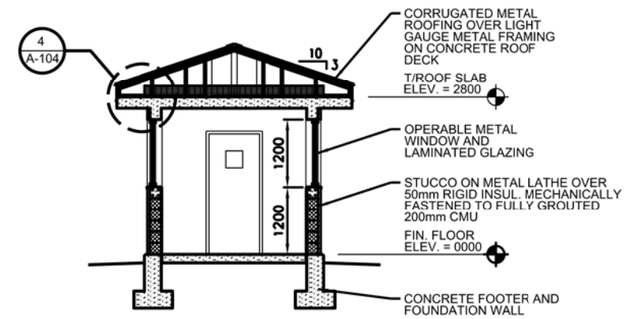
A1 Size 594mm x 841mm



1 A-104 FLOOR PLAN
SCALE: 1:50



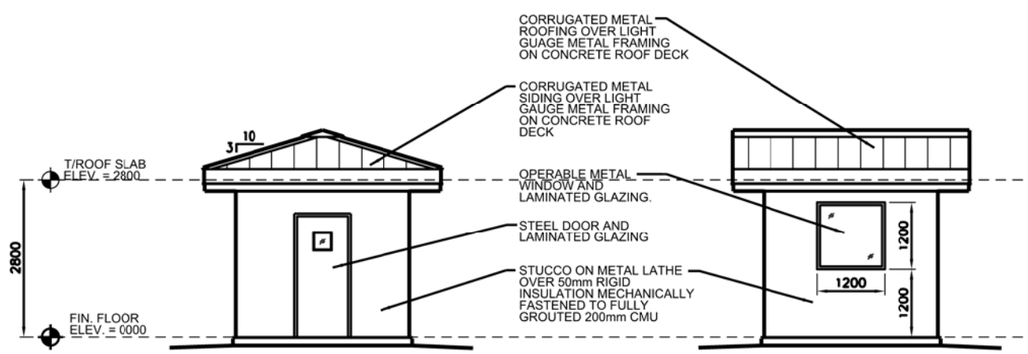
2 A-104 ROOF PLAN
SCALE: 1:50



3 A-104 BUILDING SECTION
SCALE: 1:50

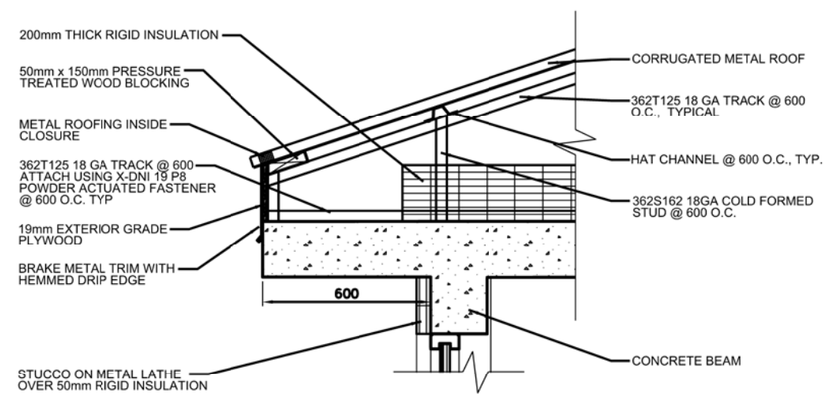
LEGEND:

- D-• DOOR TYPE (STEEL)
- FEB FIRE EXTINGUISHER AND WALL MOUNTED BRACKET
- A WINDOW TYPE (OPERABLE, ALUMINUM)

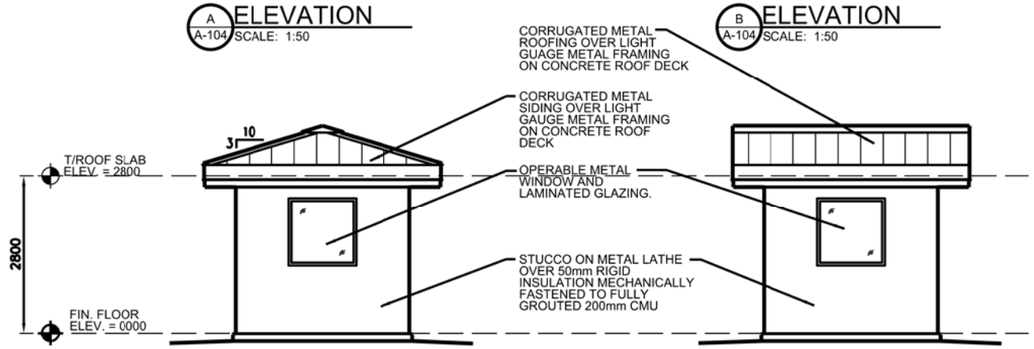


A A-104 ELEVATION
SCALE: 1:50

B A-104 ELEVATION
SCALE: 1:50



4 A-104 EAVE DETAIL
SCALE = 1:10



C A-104 ELEVATION
SCALE: 1:50

D A-104 ELEVATION
SCALE: 1:50

GENERAL NOTES:

1. CONCEPT DESIGN ONLY. DESIGNER IS RESPONSIBLE FOR DESIGN.
2. WALL FINISHES SHALL BE AS STUCCO FOR EXTERIOR AND PLASTER INTERIOR.
3. SURFACES TO BE PAINTED SHALL BE CLEAN AND FREE OF FOREIGN MATTER BEFORE APPLICATION OF PAINT. CLEANING SHALL BE SCHEDULED SO THAT DUST AND OTHER CONTAMINANTS WILL NOT FALL ON WET, NEWLY PAINTED SURFACES.
4. CONCRETE AND INTERIOR MASONRY SURFACES GROUTED SOLID SHALL BE ALLOWED TO DRY AT LEAST 30 DAYS BEFORE PAINTING.
5. PAINTS CONTAINING LEAD IN EXCESS OF 0.06 PERCENT BY WEIGHT OF THE TOTAL NONVOLATILE CONTENT SHALL NOT BE USED.
6. MERCURIAL FUNGICIDES SHALL NOT BE USED IN OIL-BASE PAINT.
7. REMOVE LOOSE DIRT AND CLEAN SURFACES BEFORE PAINTING. APPLY PAINT TO INTERIOR STRUCTURAL RIGID FRAMINGS AND CEILINGS AND TEST FOR ADHESION. PRIMER COAT FOR MASONRY. INITIAL FIRST COAT WITH AN ACRYLIC LATEX PAINT FOR EXTERIOR SURFACES AND A SECOND COAT WITH A WATER REPELLENT ACRYLIC LATEX PAINT.
8. DIMENSIONS ARE TO EDGE OF MASONRY OPENINGS.

GRAPHIC SCALE

GRAPHIC SCALE

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APPR.	SYMBOL	DESCRIPTION	DATE	APPR.

DESIGNED BY: DATE: REV.
DWN BY: CKD BY: XX-XX-XX DESIGN FILE NO. DRAWING CODE
REVIEWED BY: FILE NAME:
SUBMITTED BY: PLOT SCALE:
PLOT DATE: XX-XX-XX

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

ENGINEERING AND CONSTRUCTION DIVISION

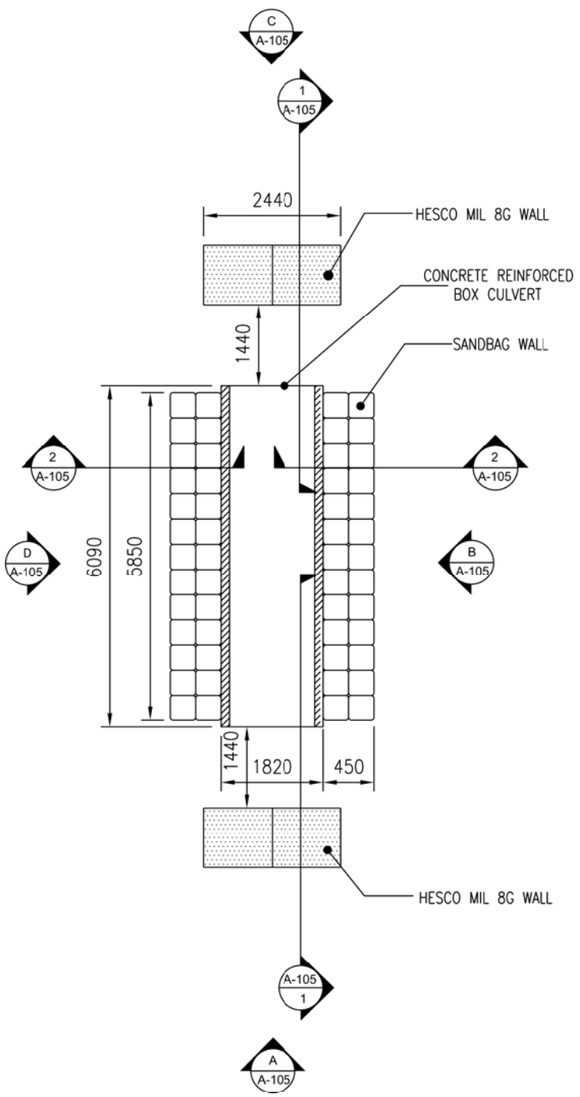
RMTC
SHINDAND, AFGHANISTAN

GUARD SHACK
PLANS, ELEVATIONS, BUILDING SECTION, AND EAVE DETAIL

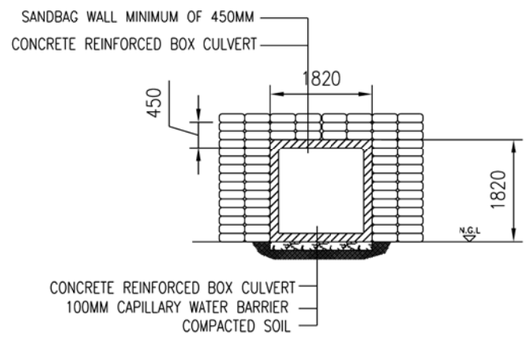
SHEET REFERENCE NUMBER:
A-104

SHEET --- OF ---

A1 Size 594mm x 841mm



1 A-105 FLOOR PLAN
SCALE= 1:50



2 A-105 SECTION 2
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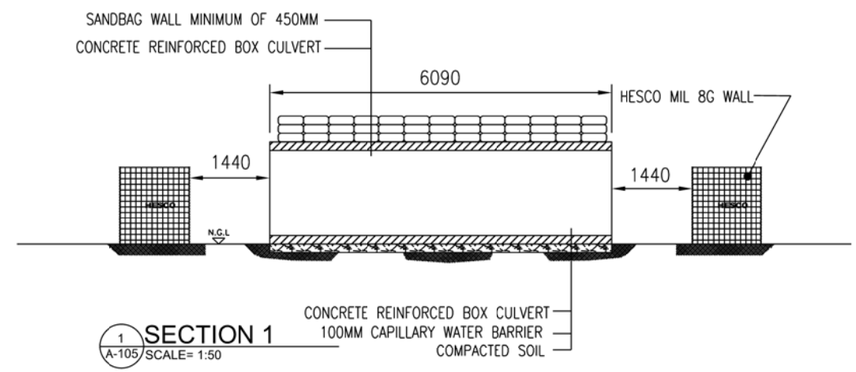

1 A-105 SECTION 1
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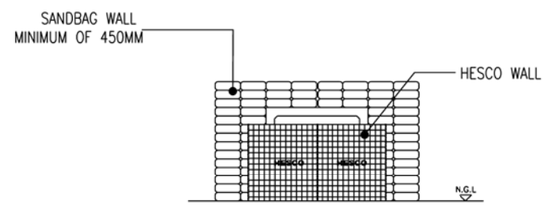
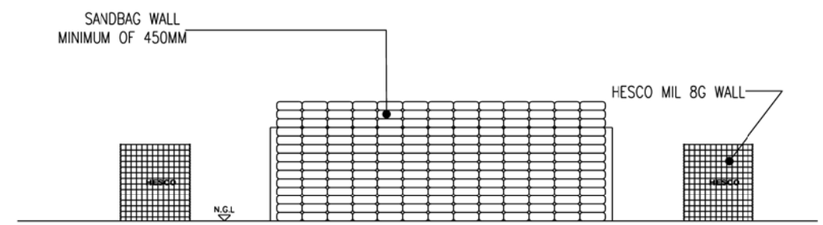


2 A-105 ELEVATION A
SCALE= 1:50



2 A-105 ELEVATION B
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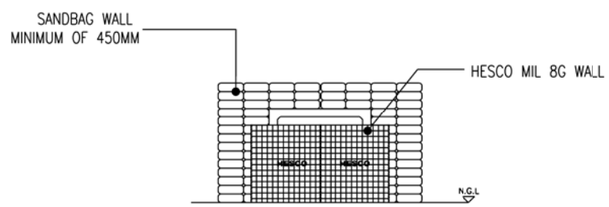

2 A-105 ELEVATION C
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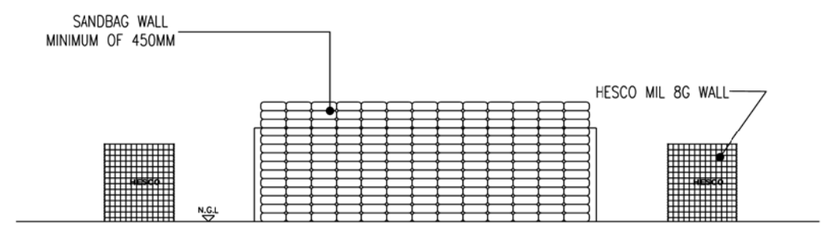


2 A-105 ELEVATION D
SCALE= 1:50

1 0 1 2 3 4 5 6 7 8 9
1:50

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APPR.	SYMBOL	DESCRIPTION	DATE	APPR.

DESIGNED BY: DWN BY: CKD BY: REVIEWED BY: SUBMITTED BY:
DATE: XX-XX-XX
DESIGN FILE NO.
DRAWING CODE
FILE NAME:
PLOT SCALE:
PLOT DATE: XX-XX-XX
REV. __

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN
CORPS OF ENGINEERS
APO AE 96338

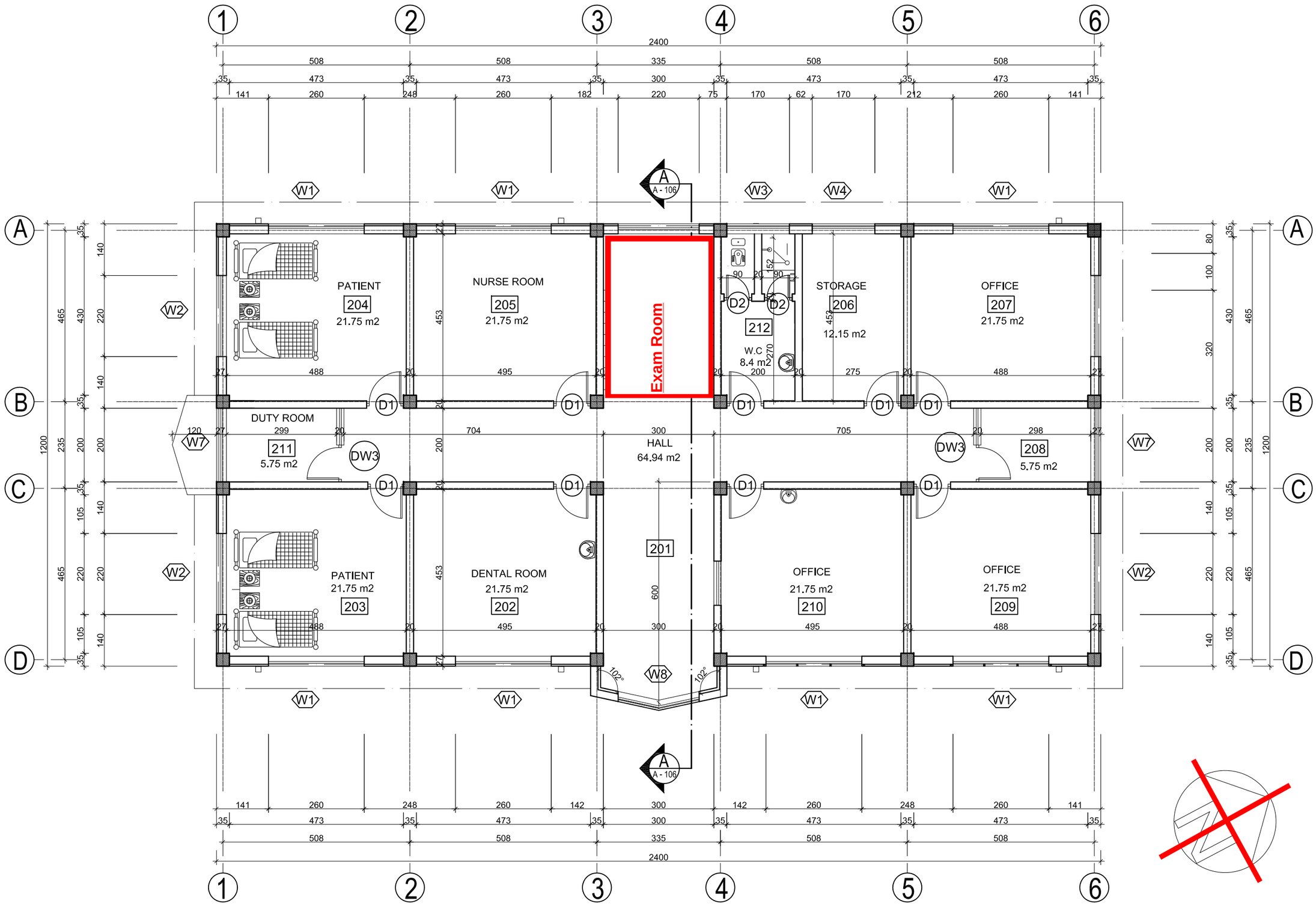
ENGINEERING AND CONSTRUCTION DIVISION

RMTC
SHINDAND, AFGHANISTAN

PERSONNEL BUNKER

SHEET REFERENCE NUMBER:
A-105
SHEET --- OF ---

A1 Size 594mm x 841mm



FIRST FLOOR PLAN CLINIC BLDG.

Scale - 1 : 100

0 0.5 1 2 3 4 5

SCALE - 1 : 100

100% DESIGN DRAWINGS

SYMBOL	DATE	APR

DESIGNED BY: Dep.Arch. A.Qayum Nizami
DWN BY: Dep.Arch. A.Qayum Nizami
CHK BY: Dep.ENG MURADI
DATE: 01/APR/2007
SUBMITTED BY:
FILE NO.:

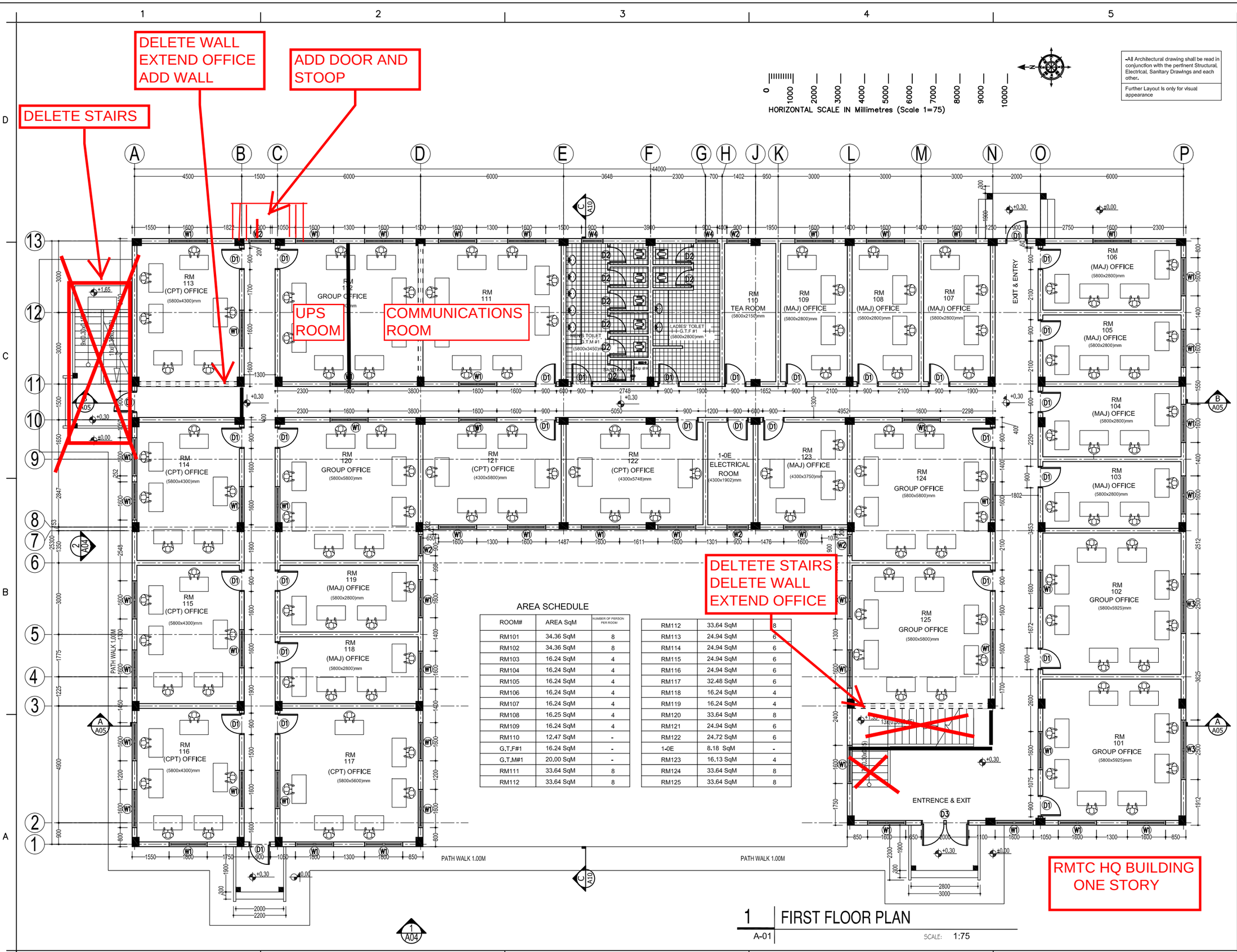
US Army Corps of Engineers
Afghanistan Engineer District

BaCEAG

MSCC
Civil Engineers/Architectures
Kabul, Afghanistan. Tel. 070279037

DESIGN BUILD
NATIONAL MILITARY ACADEMY OF AFGHANISTAN
CLINIC BUILDING
FIRST FLOOR PLAN
KABUL, AFGHANISTAN

SHEET REFERENCE NUMBER:
CLC–A–102



AREA SCHEDULE

ROOM#	AREA SqM	NUMBER OF PERSON PER ROOM
RM101	34.36 SqM	8
RM102	34.36 SqM	8
RM103	16.24 SqM	4
RM104	16.24 SqM	4
RM105	16.24 SqM	4
RM106	16.24 SqM	4
RM107	16.24 SqM	4
RM108	16.25 SqM	4
RM109	16.24 SqM	4
RM110	12.47 SqM	-
G.T.F#1	16.24 SqM	-
G.T.M#1	20.00 SqM	-
RM111	33.64 SqM	8
RM112	33.64 SqM	8

RM112	33.64 SqM	8
RM113	24.94 SqM	6
RM114	24.94 SqM	6
RM115	24.94 SqM	6
RM116	24.94 SqM	6
RM117	32.48 SqM	6
RM118	16.24 SqM	4
RM119	16.24 SqM	4
RM120	33.64 SqM	8
RM121	24.94 SqM	6
RM122	24.72 SqM	6
1-0E	8.18 SqM	-
RM123	16.13 SqM	4
RM124	33.64 SqM	8
RM125	33.64 SqM	8

-All Architectural drawing shall be read in conjunction with the pertinent Structural, Electrical, Sanitary Drawings and each other.

Further Layout is only for visual appearance

US Army Corps of Engineers
AED

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.

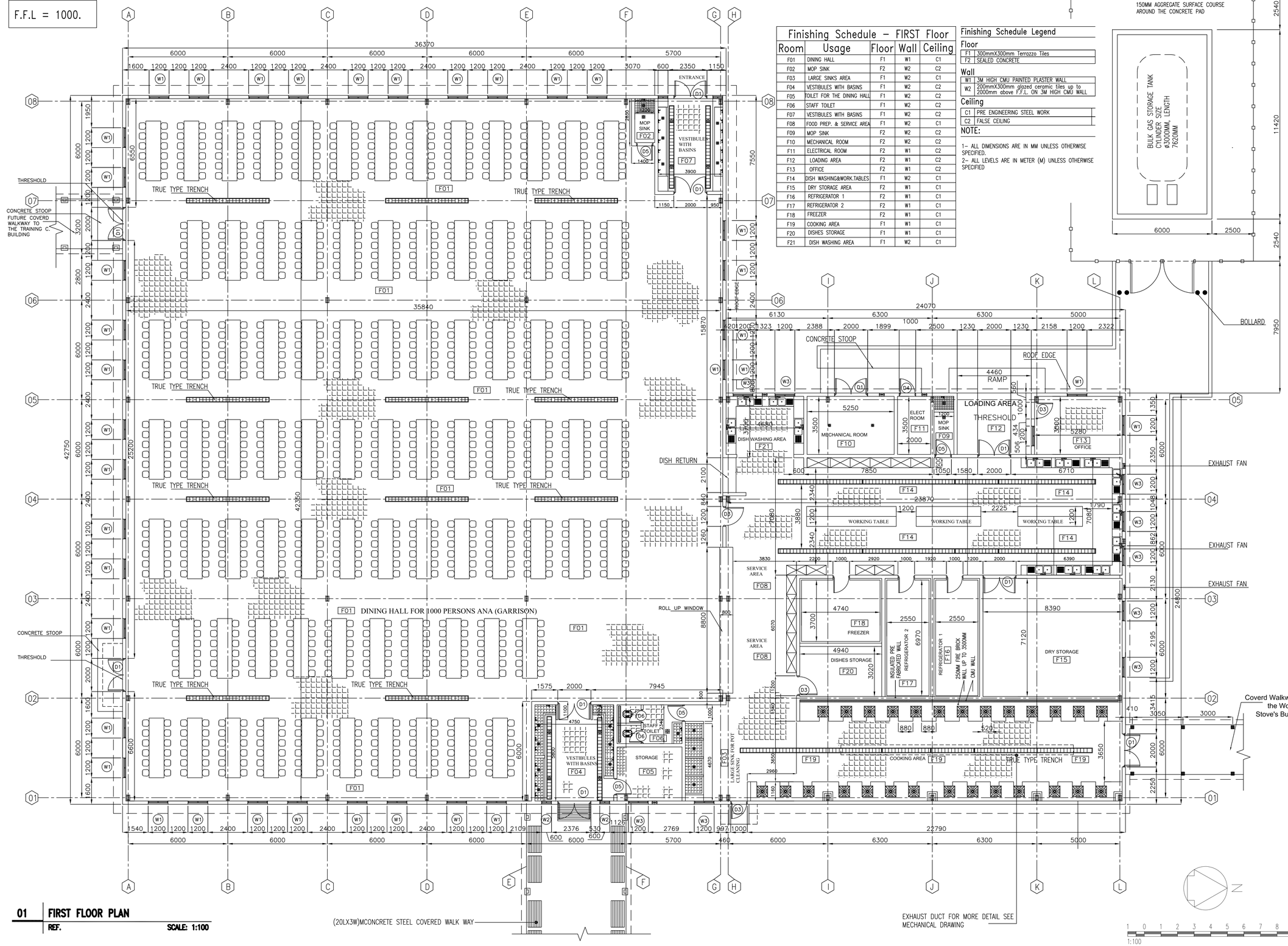
Date:04/16/07 Rev.:a
Designed by: Amgad Mladoy
Dwn by: ISHFAQ
Chd by: w.vit
Design file no.:
Reviewed by: MIKE
Submitted by:
Drawing code:
File name: W07-1021-29-402.rvt
Plot date: 04/May/07
Plot scale: 1:75

Venco-Imtiaz Construction Company
Street 15, Lane 2, House 52
Wazir Akbar Khan, Kabul Afghanistan
0799 218 272 / 0798 225 757
075 200 4960
info@vencocorp.com
www.vencocorp.com
WICC

W917PM-06-C-0029
DESIGN AND CONSTRUCTION OF
FACILITY ENGINEERING AGENCY, OFFICE AND DFAC
Kabul - Afghanistan
BLD #29
HEADQUARTERS BUILDING
FIRST FLOOR PLAN

Sheet reference number:
29-A02
Sheet 2 of 11

F.F.L = 1000.



Finishing Schedule – FIRST Floor

Room	Usage	Floor	Wall	Ceiling
F01	DINING HALL	F1	W1	C1
F02	MOP SINK	F2	W2	C2
F03	LARGE SINKS AREA	F1	W2	C1
F04	VESTIBULES WITH BASINS	F1	W2	C2
F05	TOILET FOR THE DINING HALL	F1	W2	C2
F06	STAFF TOILET	F1	W2	C2
F07	VESTIBULES WITH BASINS	F1	W2	C2
F08	FOOD PREP. & SERVICE AREA	F1	W2	C1
F09	MOP SINK	F2	W2	C2
F10	MECHANICAL ROOM	F2	W2	C2
F11	ELECTRICAL ROOM	F2	W1	C2
F12	LOADING AREA	F2	W1	C2
F13	OFFICE	F2	W1	C2
F14	DISH WASHING&WORK.TABLES	F1	W2	C1
F15	DRY STORAGE AREA	F2	W1	C1
F16	REFRIGERATOR 1	F2	W1	C1
F17	REFRIGERATOR 2	F2	W1	C1
F18	FREEZER	F2	W1	C1
F19	COOKING AREA	F1	W1	C1
F20	DISHES STORAGE	F1	W1	C1
F21	DISH WASHING AREA	F1	W2	C1

Finishing Schedule Legend

Floor

F1	300mmX300mm Terrazzo Tiles
F2	SEALED CONCRETE

Wall

W1	3M HIGH CMU PAINTED PLASTER WALL
W2	200mmX300mm glazed ceramic tiles up to 2000mm above F.F.L ON 3M HIGH CMU WALL

Ceiling

C1	PRE ENGINEERING STEEL WORK
C2	FALSE CEILING

NOTE:

1– ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2– ALL LEVELS ARE IN METER (M) UNLESS OTHERWISE SPECIFIED

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

Symbol	Description	Date	Appr.	Symbol	Description	DATE	Appr.

Contract Date:
FILE NAME:
Drawn BY:
Draw Code:
Plot Date:
Plot Scale: 1:100
Contract No:
Designed BY:
Reviewed by:
Submitted by:
Solicitation No: W917PM-

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEERS DISTRICT
KABUL, AFGHANISTAN

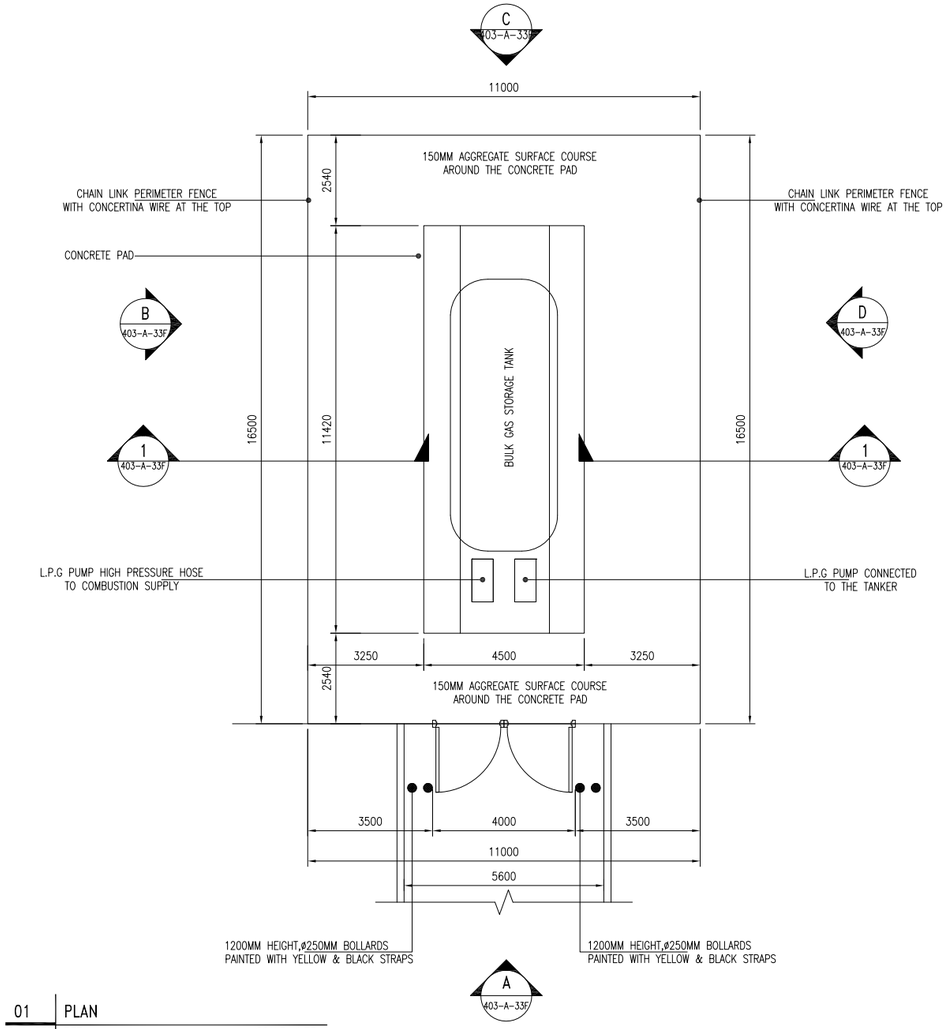
Contractor:
Designer

AFGHAN NATIONAL ARMY (ANA)
Jalalabad , Afghanistan
FY:
PDC:
ANA GARRISON, GAMBERI

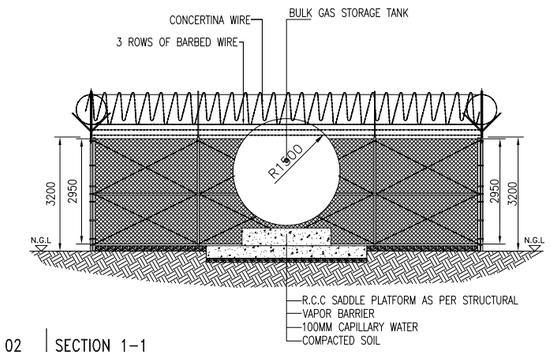
DFAC
FIRST FLOOR PLAN

Sheet Reference Number:

01 FIRST FLOOR PLAN
REF. SCALE: 1:100



01 PLAN
403-A-33F REF. SCALE: 1:75



02 SECTION 1-1
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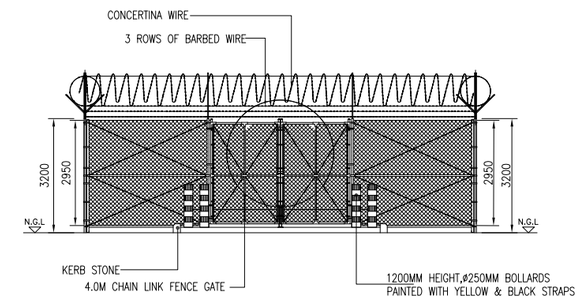
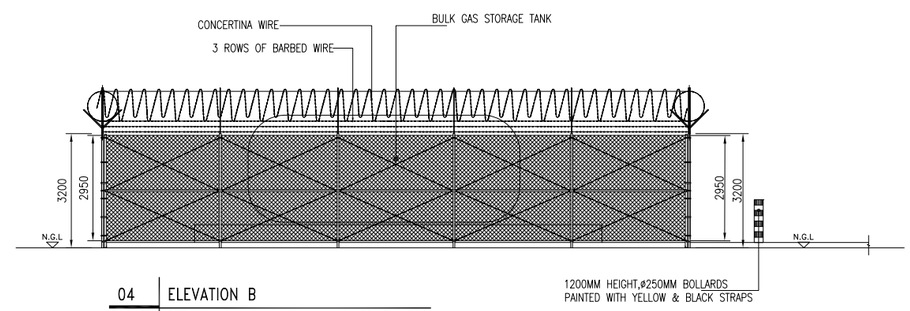


03 ELEVATION A
403-A-33F REF. SCALE: 1:75



04 ELEVATION B
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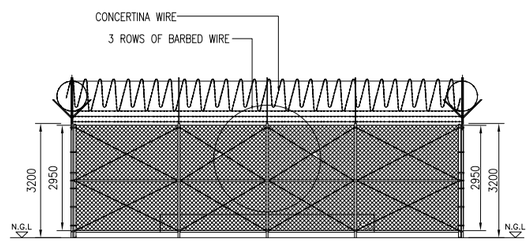

05 ELEVATION C
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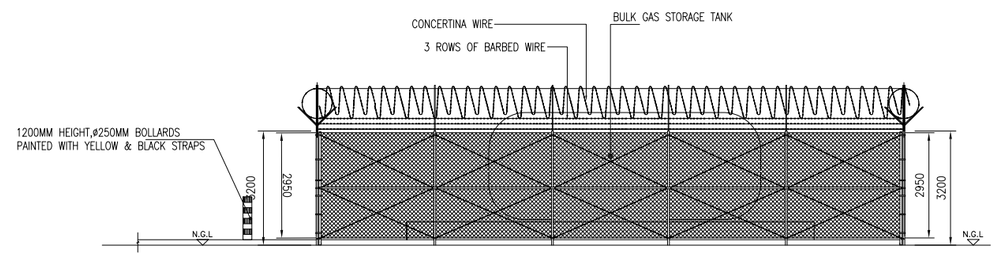


06 ELEVATION D
403-A-33F REF. SCALE: 1:75

10 0 10 20 30 40 50 60 70 80 90

U.S. Army Corps of Engineers
AFGHANISTAN ENGINEERING DISTRICT

Mark	Description	Date	Appr.

Mark	Description	Date	Appr.
3	90% DESIGN SUBMITTAL	20AUG8	
2	65% DESIGN SUBMITTAL	01-04-08	
1	35% DESIGN RESUBMITTAL # 02	25-02-08	
0	35% DESIGN RESUBMITTAL # 01	08-02-08	
	35% DESIGN SUBMITTAL	08-01-08	
	65% CSE PLAN INVESTIGATION	16-12-07	

Designed By: PJWB
Drawn By: REW
Contract Date: 25-11-07
Reviewed By: PJWB
Drawing Code: 403-A-112
File Name: 403-A-112
Submitted By: ROBERT SCAGLIONE P.E.
Plot Date: 20OCT2008
Plot Scale: 1:1
Solicitation No.: W917PM-07-R-0102
Contract No.: W917PM-08-C-0009

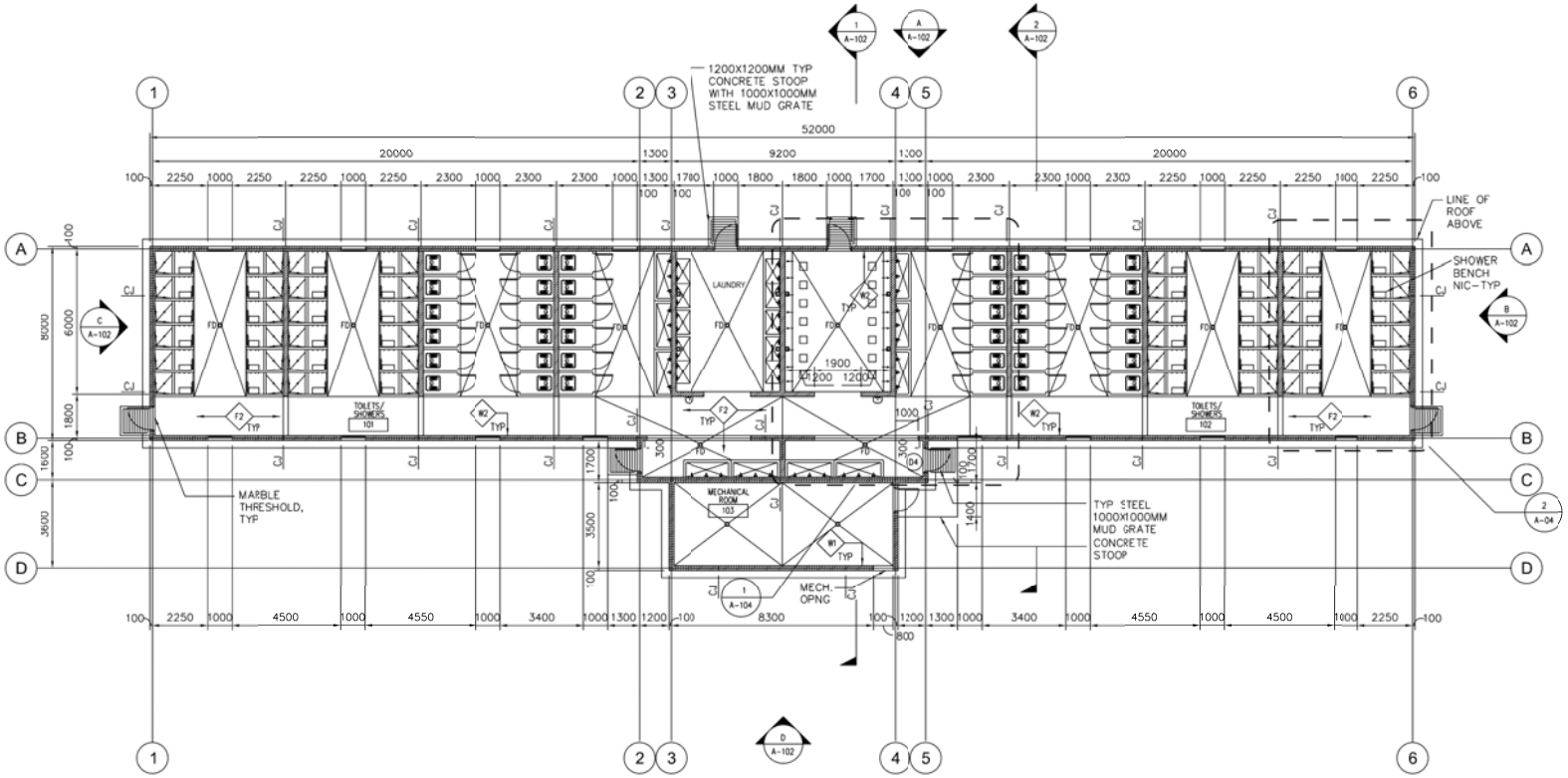
DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEERS DISTRICT
KABUL, AFGHANISTAN

Contractor: DYNCORP INTERNATIONAL
Designer: APS ADVANCED PROCESS SOLUTIONS
PHONE: 01-208-8-11-0000
EMAIL: APS@APSENGINEERS.COM
ENGINEERS & CONSULTANTS

AFGHAN NATIONAL ARMY (ANA)
ANA GARRISON, GAMBERI
PDC: ANA JALALABAD, AFGHANISTAN
FY:07

DFAC #1 GAS STORAGE
PLAN, SECTION & ELEVATIONS

Sheet Reference Number:
403-A-112
819 OF 849



1 A-101 FLOOR PLAN
SCALE = 1:100

F,1,6H,1* 6CHED8/E/E*E1D

F/225

F1	SEALED CONCRETE
F2	300MMX300MM TERRAZZO TILE
F3	CERAMIC TILE

:A//

W1	WHITE PAINTED PLASTER
W2	150MMX150MM GLAZED CERAMIC TILES UP TO 2000MM A.F.F.L.

CE,/,1*

C1	GYPSUM BOARD – PAINTED
C3	MOISTURE RESISTANT GYPSUM BOARD – PAINTED

F,1,6H,1* 6CHED8/E

5RRP 1R	8sDgH	FORIU	:DOD	CHLOOg
101	TOILETS/ SHOWERS	F3	W1\W2	C3
102	TOILETS/ SHOWERS	F3	W1\W2	C3
103	MECHANICAL ROOM	F1	W1	C1

:A// 6Y0B2/6:

	CMU WALL
	CMU LOW HEIGHT WALL +/- 2000 MM WITH CERAMIC TILE FINISH
CJ	CMU CONTROL JOINT

127E6:

1- ALL WALLS ARE 200MM CMU UNLESS NOTED OTHERWISE.

2- ALL INTERIOR WALLS TERMINATE AT CEILING UNLESS NOTED OTHERWISE REF. STRUCT. DWGS.

3- ALL DOOR JAMBS ARE 200MM UNLESS NOTED OTHERWISE.

4- ALL DIMENSIONS ARE TO FACE OF CMU UNLESS NOTED OTHERWISE.

5- ALL VERTICAL DIMENSIONS & LEVELS ARE FROM GROUND FLOOR FINISHED SLAB. THIS ELEVATION IS +0000.

6- TOTAL AREA OF BUILDING IS 470 M2.

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APP.

DESIGNED BY: ASED | CHKD BY: AED | DWN BY: AED | REVIEWED BY: | SUBMITTED BY: | DATE: | DESIGN FILE NO. | DRAWING CODE: | FILE NAME: | PLOT SCALE: AS SHOWN | CONTRACT NO. XX-XX-XX | REV: —

U.S. ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

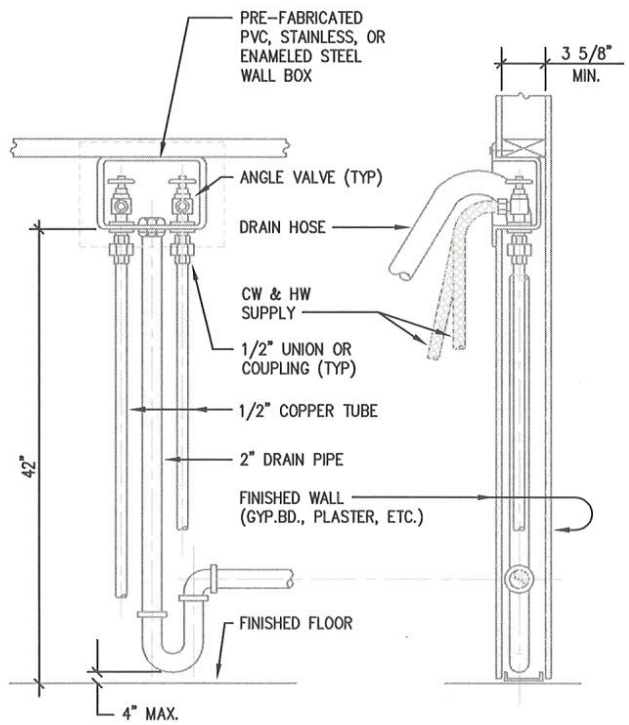
ANA KANDAK QALA-E-NAW AFGHANISTAN

TOILET/SHOWER/ABULUTION LAUNDRY BUILDING FLOOR PLAN

SHEET REFERENCE NUMBER: A-101

Toilet/Shower/Ablution/Laundry *1

LATRINES - LARGE

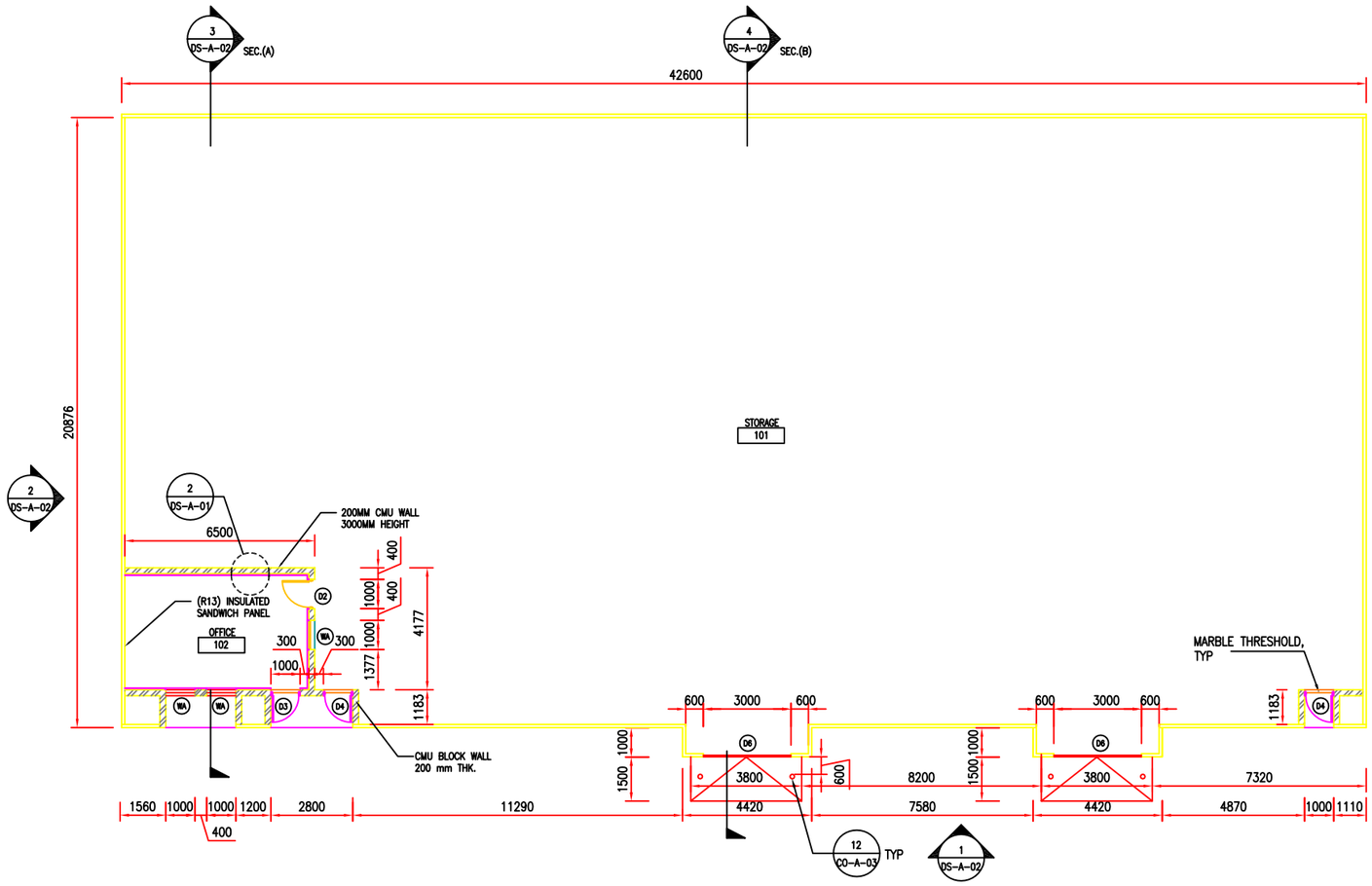


WASHING MACHINE WALL BOX

NTS

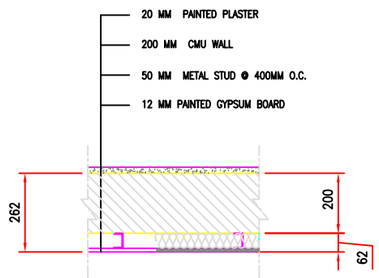
1/15/88

38



1 FLOOR PLAN

DS-A-01 SCALE: 1:100



2 CMU INSULATION DETAIL

DS-A-01 SCALE: 1:10

RMTC GENERAL STORAGE & BRIDMALS AND BWT STORAGE

FINISHING SCHEDULE LEGEND

FLOOR

F1	SEALED CONCRETE

WALL

W1	WHITE PAINTED PLASTER
W2	FACTORY FINISH K-SPAN

CEILING

C1	GYPSUM BOARD – PAINTED
C2	FACTORY FINISH K-SPAN

WALL SYMBOLS

CMU WALL

FINISHING SCHEDULE

Room No.	USAGE	FLOOR	WALL	CEILING
101	STORAGE	F1	W2	C2
102	OFFICE	F1	W1/W2	C1

NOTES:

1– ALL VERTICAL DIMENSIONS & LEVELS ARE FROM GROUND FLOOR FINISHED SLAB. THIS ELEVATION IS +0000.

2– SEE DRAWING CO-A-05 & CO-A-06 FOR OPENING SCHEDULES & TYPES.

3– SEE DRAWING CO-A-03 & CO-A-04 FOR STANDARD DETAILS.

4– SEE CIVIL DRAWINGS FOR BUILDING COORDINATES AND FINISH FLOOR ELEVATION.

5– FRAME CEILING OF ROOM 102 WITH 85MM METAL STUDS @ 400MM O.C. SEE 14/CO-A-02.

6– ALL DIMENSIONS OF K-SPAN SHALL BE VERIFIED WITH SUPPLIER SHOP DRAWINGS.

7– FOR K-SPAN DETAILS REFER TO SUPPLIER SHOP DRAWINGS.

8– FOR OFFICE 102 USE R13 INSULATION FOR WALLS, AND R19 INSULATION FOR CEILING.

9– ALL DOOR JAMBS ARE 200MM UNLESS OTHERWISE NOTED.

10– TOTAL AREA OF BUILDING IS 889 M2.

N

1 0 1 2 3 4 5 METER
Scale 1:100

DWG.NO.	DRAWING TITLE	REMARKS

REFERENCE DRAWINGS

REV.	Date	DESCRIPTION	Prep.	Dsn.	Chsk.	App.
3	JUL. 05, 2005	REISSUE 100% DESIGNSUBMITTAL	JM	JM	KT	MH
	MAY 27, 2005	CII UPDATES				
	MAY 27, 2005	COE COMMENTS				
2	MAY 27, 2005	100% DESIGN COMPLETION SUBMITTAL	NE	NE	KT	MH
1	MAR 03, 2005	90% DESIGN SUBMITTAL				
0	JAN 19, 2005	35% DESIGN SUBMITTAL				

REVISIONS

CLIENT :
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
KABUL, AFGHANISTAN

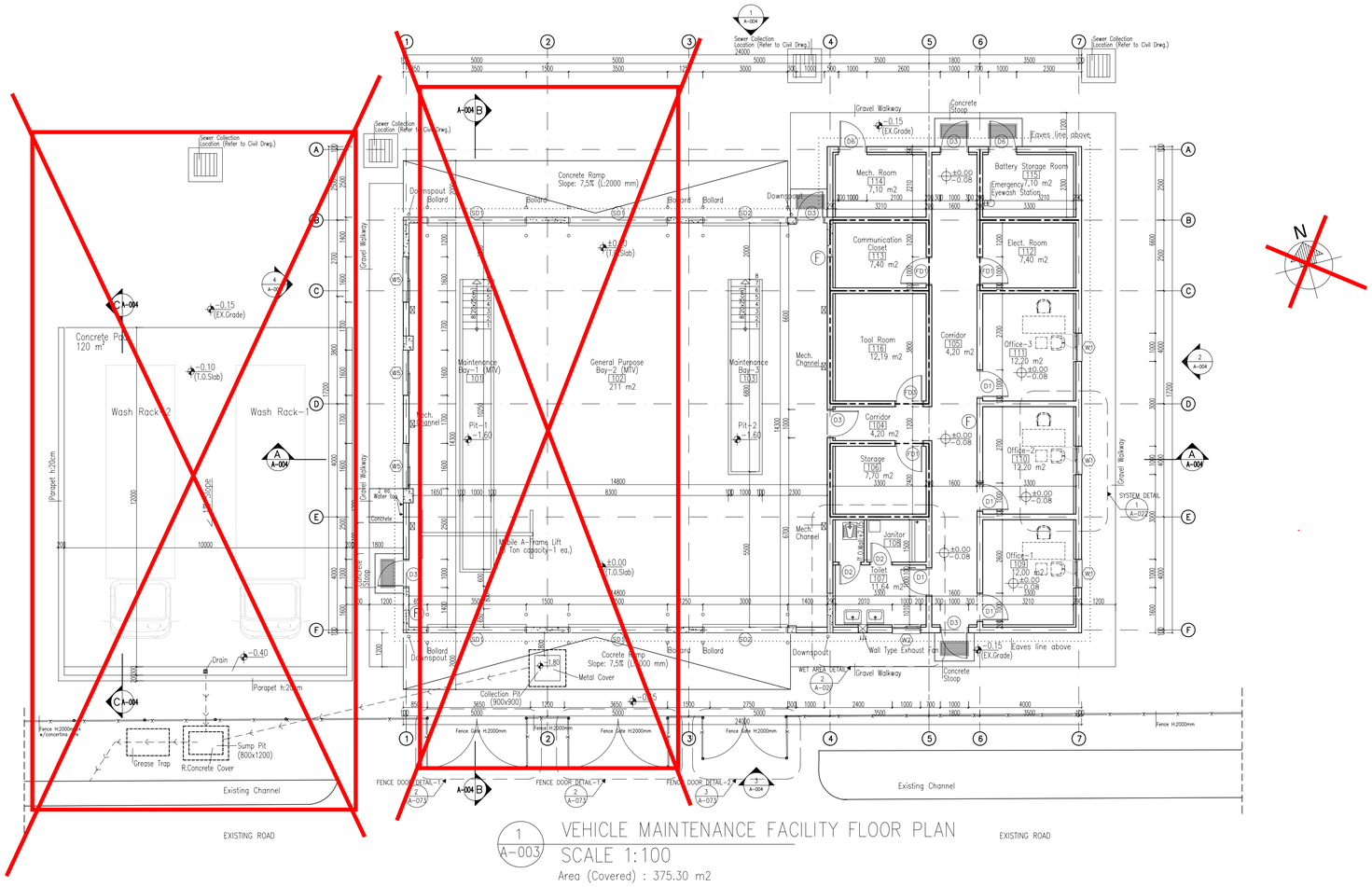
CONTRACTOR: CONTRACK ENGINEERING
DESIGNER JOB #: 04-700 CONTRACK
DESIGNER JOB #: 151709 DMJMH+N
DESIGNER:

PROJECT :
ANA
REGIONAL BRIGADE
QALAT, AFGHANISTAN

TITLE :
CLASS VII WAREHOUSE
FLOOR PLAN

ACTION	NAME	DATE	DOCUMENT NO.:	Task:	
Prepared By:	N. Eshah	JUN. 26,05	CAD FILE:	9	DS-A-01
Drawn By:	N. Eshah	JUN. 26,05			
Checked By:	K. Tawfik	JUN. 26,05	Scale 1 : 100	DIMS. IN MM	Sheet Of Sheets 1 OF 1
Approved By:	M. Hahnaby	JUN. 26,05			Rev. 3

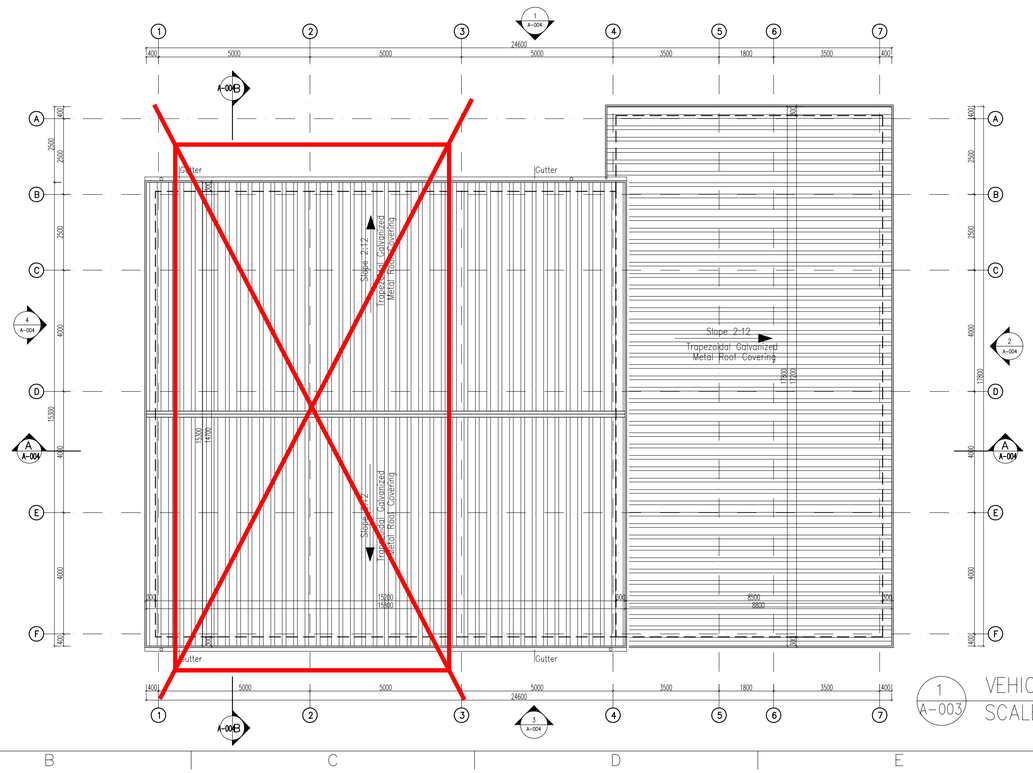
CONTRACK ENGINEERING A1 sheet/Cutting edges:841*594/DWG Actual Worksheet:796*566



1 A-003 VEHICLE MAINTENANCE FACILITY FLOOR PLAN

SCALE 1:100

Area (Covered) : 375.30 m2

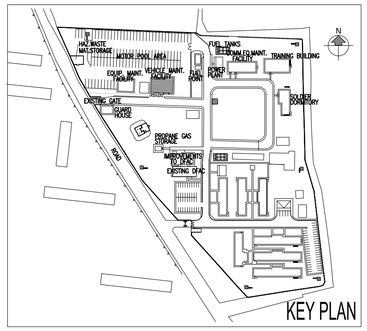


1 A-003 VEHICLE MAINTENANCE FACILITY ROOF PLAN

SCALE 1:100

AS BUILT

U.S. ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT



Symbol	Description	Date	Appr.
	ISSUED FOR AS-BUILT APPROVAL	05 AUG 08	
	99% DESIGN SUBMITTAL	18 APR 08	
	65% DESIGN RESUBMITTAL	14 MAR 08	
	65% DESIGN SUBMITTAL	29 JAN 08	
	35% DESIGN SUBMITTAL	26 DEC 07	

LEGEND	
SYMBOL	DESCRIPTION
(F)	FIRE EXTINGUISHER
— — — —	1 HOUR FIRE RATED WALLS

ABBREVIATIONS		
FLOOR	TT	: TERRAZZO
	EP	: EPOXY PAINT
	EC	: EPOXY COATING
BASEBOARD	WB	: PAINTED WOOD BASEBOARD (h:60mm)
	TB	: TERRAZZO BASEBOARD (h:100mm)
	PB	: PVC BASEBOARD
WALL	CT	: CERAMIC TILE
	PP	: INTERIOR PAINT
CEILING	PP	: INTERIOR PAINT
	PL	: INTERIOR PLASTER
	RG	: REGULAR TYPE GYPSUM BOARD
	WR	: WATER-RESISTANT TYPE GYPSUM BOARD
	FR	: FIRE-RESISTANT TYPE GYPSUM BOARD

ROOM FINISH SCHEDULE

ROOM NO	ROOM NAME	FLOOR FINISH	BASEBOARD	WALL FINISH	CEILING FINISH	NOTES
101	MAINTENANCE BAY-1	EC	PB	PP	WR+PP	
102	MAINTENANCE BAY-2	EC	PB	PP	WR+PP	
103	MAINTENANCE BAY-3	EC	PB	PP	WR+PP	
104	CORRIDOR	TT	TB	PP	RG+PP	
105	CORRIDOR	TT	TB	PP	RG+PP	
106	STORAGE	EP	PB	PP	FR+PP	
107	TOILET	TT	TB	CT+PP	WR+PP	WALL CERAMIC TILE UP TO DOOR HEIGHT
108	JANITOR ROOM	TT	TB	CT+PP	WR+PP	WALL CERAMIC TILE UP TO DOOR HEIGHT
109	OFFICE-1	TT	TB	PP	RG+PP	
110	OFFICE-2	TT	TB	PP	RG+PP	
111	OFFICE-3	TT	TB	PP	RG+PP	
112	ELECT. ROOM	EP	PB	PP	FR+PP	
113	COMM. CLOSET	EP	PB	PP	FR+PP	
114	MECH. ROOM	EP	PB	PP	RG+PP	
115	BATTERY STORAGE ROOM	EP	PB	PP	FR+PP	
116	TOOL ROOM	EP	PB	PP	FR+PP	

GENERAL NOTES:

NOTE 1: ALL DIMENSIONS ARE IN MILIMETERS AND TO THE MASONRY SURFACES, ALL ELEVATIONS ARE IN METERS.

NOTE 2: TOP OF SLAB ON GRADE (S.O.G) ON GROUND FLOOR IS (±0.00).

NOTE 3: ALL WALLS WILL BE FULL HEIGHT EXCEPT OTHERWISE NOTED ON PROJECT.

NOTE 4: FURNITURES AS SHOWN WITH DASHED LINES ARE NOT IN CONTRACT.

REFERENCES:

REF 1: FOR EXTERNAL LEVELS, FINISHES, DIMENSIONS AND ROAD LEVELS, RAMP SLOPES REFER TO CIVIL DESIGN DRAWINGS.

REF 2: FOR STRUCTURAL DETAILS REFER TO STRUCTURAL DRAWINGS.

REF 3: FOR HEATING, VENTILATION, PLUMBING AND PIPING REFER TO MECHANICAL DRAWINGS.

REF 4: FOR LIGHTING AND ELECTRICAL ROOMS DETAIL REFER TO ELECTRICAL DRAWINGS.

1m 2m 3m 4m 5m 6m 7m 8m 9m 10m 11m 12m

SCALE IN METERS = 1:100

Contract Date: 22 NOV 2007
File Name: A-003
Drawing Code: ARCH
Plot Date: 05 AUG 2008
Plot Scale : 1/100
Contract No: W912ER-08-C-0003
Drawn by: GAMZE AYMAZ
Designed by: CEM BALKAN
Reviewed by: A.BASEGMEZ
Submitted by: OZGE CETIN
Solicitation No: W912ER-07-R-0012

CONTRACTOR: zafer Construction

DESIGNER : Bymas architecture

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
KABUL, AFGHANISTAN

U.S. ARMY CORPS OF ENGINEERS

COMMUNICATIONS SUPPORT ELEMENT COMPOUND IMPROVEMENTS
KABUL, AFGHANISTAN

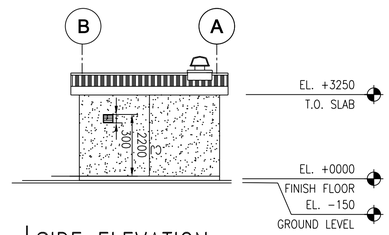
VEHICLE MAINTENANCE FACILITY, SINGLE BAY

FLOOR PLAN AND ROOF PLAN

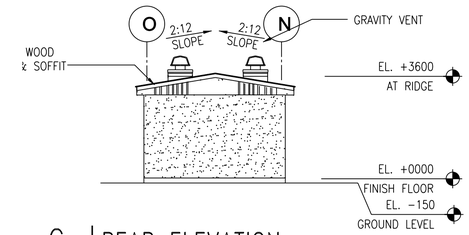
Sheet Reference Number

A-003

SHEET 04 OF 87



D SIDE ELEVATION
PS-A-01 SCALE: 1:100



C REAR ELEVATION
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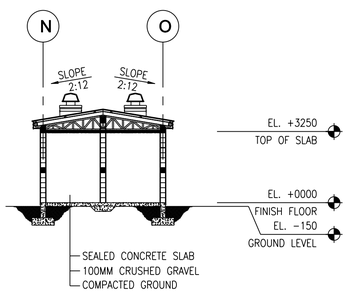

4 CROSS SECTION
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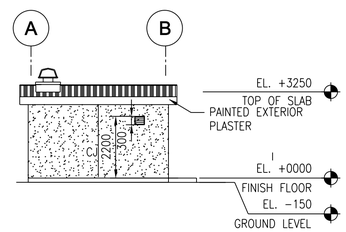

B SIDE ELEVATION
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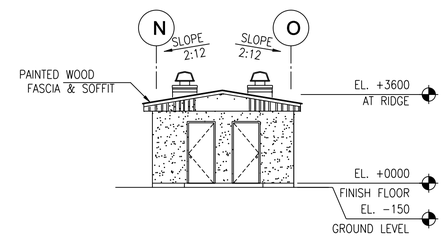

A FRONT ELEVATION
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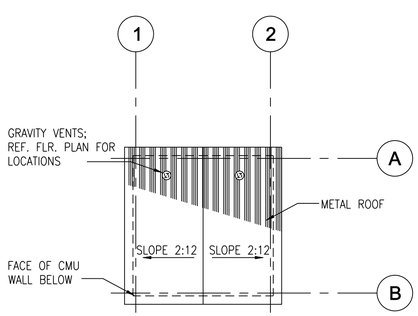
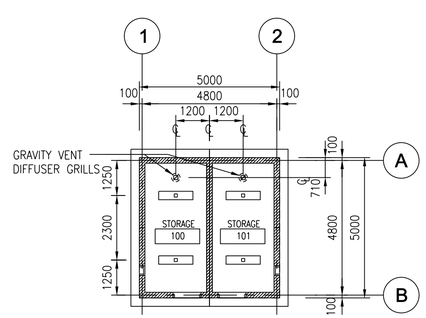
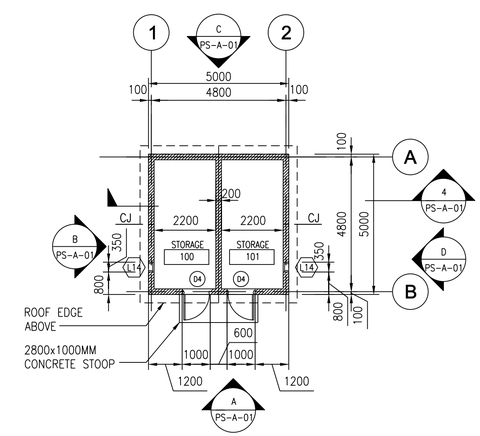


3 ROOF PLAN
PS-A-01 SCALE: 1:100



2 REFLECTED CEILING PLAN
PS-A-01 SCALE: 1:100



1 FLOOR PLAN
PS-A-01 SCALE: 1:100

FINISHING SCHEDULE GENERAL

FLOOR

F1	SEALED CONCRETE

WALL

W1	WHITE PAINTED PLASTER

CEILING

C2	EXPOSED STRUCTURE - PAINTED

FINISHING SCHEDULE

Room No.	Usage	Floor	Wall	Ceiling
100	STORAGE	F1	W1	C2
101	STORAGE	F1	W1	C2

WALL SYMBOLISM

CMU WALL

CJ — CMU CONTROL JOINT

NOTES

1- ALL WALLS ARE 200MM CMU UNLESS NOTED OTHERWISE
2- ALL INTERIOR WALLS TERMINATE AT CEILING UNLESS NOTED OTHERWISE REF. STRUCT. DWGS.
3- ALL DOOR JAMBS ARE 200MM UNLESS OTHERWISE NOTED .
4- ALL DIMENSIONS ARE TO FACE OF CMU UNLESS NOTED OTHERWISE.
5- ALL VERTICAL DIMENSIONS & LEVELS ARE FROM GROUND FLOOR FINISHED SLAB. THIS ELEVATION IS +0000.
6- SEE DRAWING CO-A-05 & CO-A-06 FOR OPENING SCHEDULE & TYPES.
7- SEE DRAWING CO-A-02, CO-A-03 & CO-A-04 FOR STANDARD DETAILS.
8- SEE STRUCTURAL DRAWINGS FOR LOCATION OF BUILDING CONTROL, EXPANSION AND SEISMIC JOINTS.
9- SEE SHEET CO-E-01 FOR LIGHTING LEGEND.
10-SEE SHEET CO-M-06 FOR HVAC LEGEND.
11-TOTAL AREA OF BUILDING IS 25.0 M2.

1 0 1 2 3 4 5 6 7 8 9
1:100

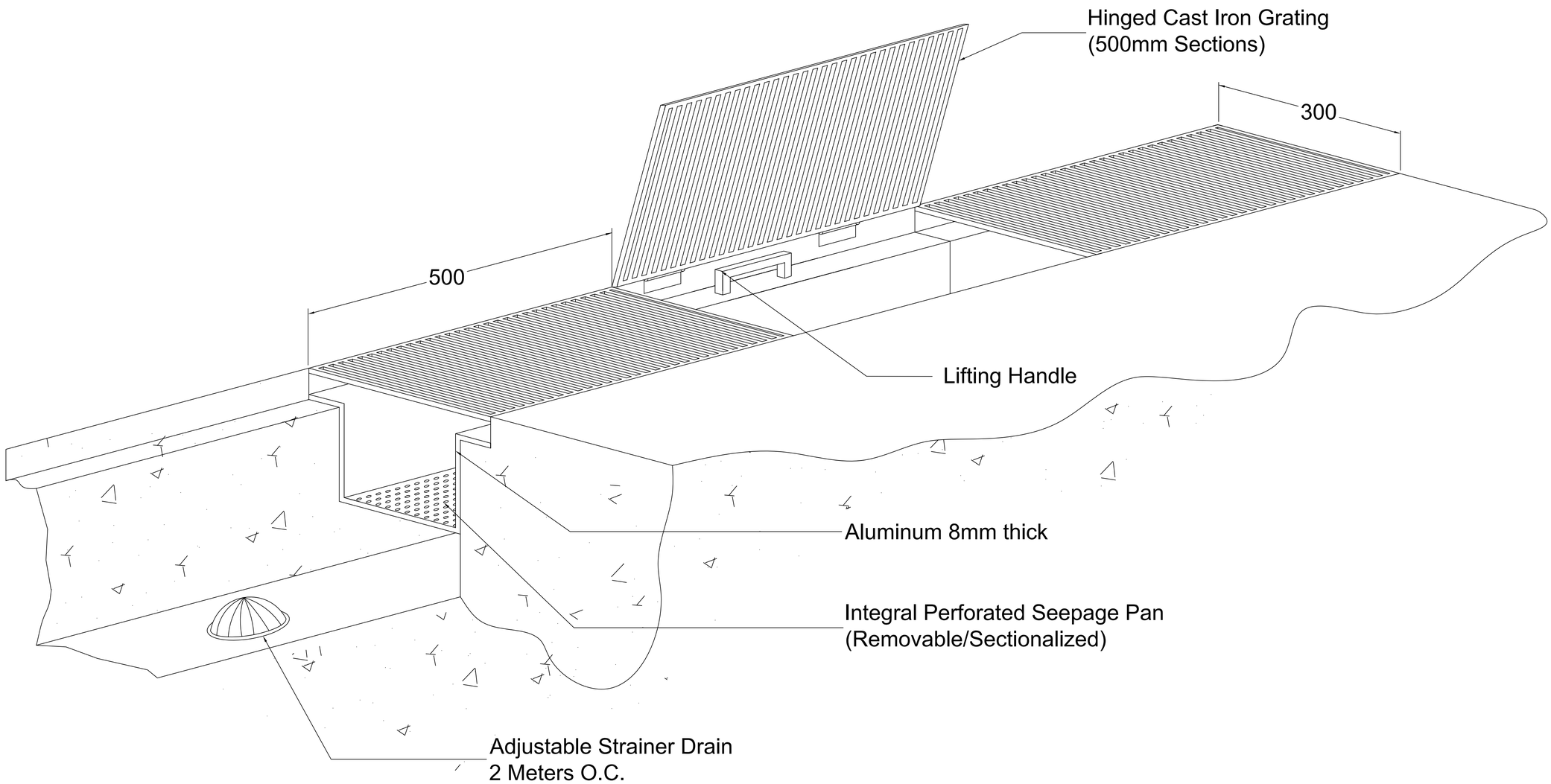
SYMBOL	DESCRIPTION	DATE	APR.

DESIGNED BY: DATE: 09-17-07
DWN BY: SUBMITTED BY: PHILLIP L. DINELLO CHIEF, POL FACILITIES DEV
CHK BY: FILE NO.: AF0719 I-A-01

US Army Corps of Engineers Transatlantic Programs Center

AFGHAN NATIONAL ARMY
POL BUILDING
POL STORAGE BUILDING
PLANS , SECTION AND ELEVATIONS

SHEET REFERENCE NUMBER:
A-01



FLOOR TRENCH DETAIL

MECH

Scale

Project number
Date: 30 JULY 2007

Checked by

US ARMY CORPS OF ENGINEERS
AFGHAN ENGR DISTRICT

TRENCH DRAIN DETAIL

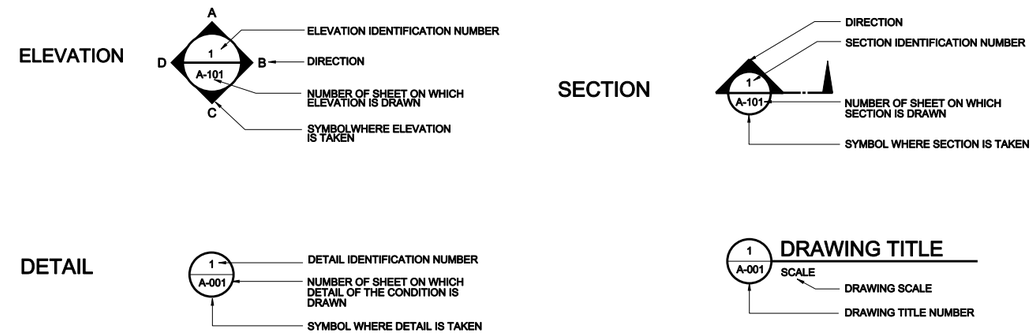
ENGINEERING AND CONSTRUCTION DIVISION
US ARMY ENGINEER DISTRICT, AFGHANISTAN
APO AE, 09356

CONTRACT NO.

AMMUNITION SUPPLY POINT

AFGHANISTAN

SECTION/DETAIL CROSS REFERENCING CONVENTIONS



SCHEDULE OF DRAWINGS

SHEET NO	DWG CODE	SHEET REFERENCE NO	DESCRIPTION	REV STATUS
			GENERAL	
		G-001	TITLE SHEET & SCHEDULE OF DRAWINGS	
			STRUCTURAL	
		S-001	STRUCTURAL GENERAL NOTES	
		S-002	STRUCTURAL BASIS OF DESIGN	
		S-101	FOUNDATION AND ROOF FRAMING PLANS	
		S-501	STRUCTURAL SECTIONS AND DETAILS	
		S-502	STRUCTURAL SECTIONS AND DETAILS	
		S-601	STRUCTURAL SCHEDULES	
			ARCHITECTURAL	
		A-101	FLOOR AND ROOF PLANS	
		A-201	ELEVATIONS AND BUILDING SECTIONS	
		A-601	DOOR AND FINISH SCHEDULES AND DETAILS	
			ELECTRICAL	
		E-001	ELECTRICAL SYMBOLS AND ABBREVIATIONS	
		E-101	LIGHTING, POWER, AND LIGHTNING PROTECTION PLANS	
		E-601	LIGHTING FIXTURE AND ELECTRICAL PANEL SCHEDULES	

PROJECT COORDINATION

U.S. ARMY ENGINEER DISTRICT, AFGHANISTAN

PROJECT MANAGER — DATE

CHIEF, DESIGN BRANCH — DATE

THIS PROJECT WAS DESIGNED BY AFGHANASTAN ENGINEER DISTRICT OF THE U.S ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152.

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APV

DESIGNED BY: M.AMIN
DWN BY: AED
CKD BY: AED
REVIEWED BY:
SUBMITTED BY:
DATE: 26MAR09
DESIGN FILE NO.
DRAWING CODE:
FILE NAME: G-TS.dgn
PLOT SCALE: AS SHOWN
CONTRACT NO. 300-00-00
REV. —

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

AMMUNITION SUPPLY POINT
TITLE SHEET & SCHEDULE OF DRAWINGS

SHEET REFERENCE NUMBER:
G-001

SHEET 1 OF –

GENERAL NOTES

1.0 THIS PROJECT HAS BEEN DESIGNED FOR THE WEIGHTS AND MATERIALS INDICATED ON THE DRAWINGS AND FOR THE LIVE LOADS INDICATED IN THE DESIGN DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING AND SHORING, ETC.

1.1 COORDINATE THESE DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL DRAWINGS. ALL DIMENSIONS SHOWN ON THE DRAWINGS ARE MILLIMETERS UNLESS NOTED OTHERWISE.

1.2 THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL FLOOR AND ROOF OPENING SIZES AND LOCATIONS, EQUIPMENT PAD SIZES AND LOCATIONS, ANCHOR BOLT LAYOUTS, ETC WITH EQUIPMENT SELECTED. THE CONTRACTOR SHALL MAKE ANY REQUIRED MODIFICATIONS AT NO ADDITIONAL COST.

1.3 THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR SLEEVES, CURBS, INSERTS OR OPENINGS, ETC. NOT HEREIN INDICATED.

1.4 NOT USED

1.5 SLAB OPENINGS SMALLER THAN 250mm DIA TO BE CORE DRILLED IN FIELD UNO. SEE MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR LOCATIONS OF THESE OPENINGS.

1.6 WORK NOT INCLUDED ON THE DRAWINGS BUT IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES ELSEWHERE ON THE DRAWINGS SHALL BE REPEATED.

1.7 IN CASE OF CONFLICT BETWEEN THE NOTES, DETAILS AND SPECIFICATIONS THE MOST RIGID REQUIREMENTS SHALL GOVERN.

1.8 SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF MASONRY AND DRYWALL NON-LOAD BEARING PARTITIONS. PROVIDE COMPRESSIBLE FIRESAFING AT TOP OF WALL AS REQUIRED BY ARCHITECTURAL DRAWINGS.

1.9 COORDINATE FINISHED FLOOR DATUM ELEVATION 0.0m WITH THE CIVIL DRAWINGS.

2.0 FOUNDATION NOTES

2.1 THE GEOTECHNICAL ANALYSIS FOR THIS PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AWARDED THE WORK. DESIGN VALUES USED IN THE STRUCTURAL ANALYSIS OF THE BUILDINGS HEREIN INDICATED HAVE BEEN ASSUMED AND SHALL BE CONFIRMED AND VERIFIED AS PART OF THE GEOTECHNICAL INVESTIGATION. VALUES WHICH DO NOT MEET THE REQUIREMENTS INDICATED ON THE BASIS OF DESIGN SHEET SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER-OF-RECORD FOR CONSIDERATION AND DETERMINATION ON THE NEXT APPROPRIATE COURSE OF ACTION.

2.2 SEE THE SPECIFICATION FOR ADDITIONAL REQUIREMENTS TO THOSE OUTLINED IN THE GEOTECHNICAL INVESTIGATION FOR EXCAVATION AND PREPARATION OF THE FOUNDATION AND THE SLAB ON GRADE SUBGRADE INCLUDING COMPACTION PROCEDURES.

2.3 EXCAVATIONS FOR FOOTINGS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 0.15mm POLYETHYLENE IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HRS OF THE EXCAVATION OF THE FOOTING.

2.4 FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION WHICH DIFFER FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE REPORTED TO THE GENERAL CONTRACTOR BEFORE FURTHER CONSTRUCTION IS ATTEMPTED. SEE PROJECT SPECIFICATIONS.

2.5 NO FOOTINGS OR SLABS SHALL BE POURED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST, ICE OR LOOSE MATERIAL. FROST DEPTH ASSUMED TO BE 950MM

2.6 ALL SLAB-ON-GRADE, TRENCH BOTTOMS AND OTHER ON-GRADE INTERIOR HORIZONTAL SURFACES SHALL BE PLACED OVER A 0.15mm VAPOR BARRIER OVER A 100mm #57 STONE WATER BARRIER PLACED ON SUBGRADE PROPERLY PREPARED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. (UNO)

2.7 SEE PLUMBING, ELECTRICAL & CIVIL DRAWINGS FOR REQUIRED UNDERSLAB UTILITIES.

2.8 SEE ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING DETAILS AND MATERIALS.

2.9 IF UNDERMINING OF FOOTINGS OCCURS, FILL VOIDS WITH 15MPa CONCRETE. DO NOT ATTEMPT TO REPLACE AND RECOMPACT SOIL.

3.0 CONCRETE

3.1 CONCRETE SHALL HAVE THE UNIT WEIGHT AND THE MINIMUM COMPRESSIVE STRENGTHS (f'c) AT 28 DAYS AS SHOWN IN THE CONCRETE MATERIALS SCHEDULE ON THE BASIS OF DESIGN SHEET. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION. ENTRAIN AIR TO PRODUCE TOTAL AIR CONTENT ACCORDING TO THE SPECIFICATIONS FOR CONCRETE EXPOSED TO FREEZING TEMPERATURES (EXTERIOR FOOTINGS, SLAB TURNDOWNS, EXTERIOR SLABS AND SLABS-ON-GRADE, EXTERIOR RETAINING WALLS, AND EXTERIOR GRADE BEAMS.)

3.2 GROUT FOR BASE PLATES SHALL BE NON-SHRINKABLE GROUT AND SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH AT 28 DAYS OF 35MPa, UNLESS NOTED OTHERWISE.

3.3 NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.

3.4 MIXING, TRANSPORTING AND PLACING OF CONCRETE SHALL CONFORM TO AC1-301-89

3.5 ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN CONCRETE INSTITUTE (ACI) 318M MANUAL (metric), "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", AND REQUIREMENTS OUTLINED IN THE CONTRACT SPECIFICATIONS. WHEN THERE IS A CONFLICT BETWEEN ACI AND THE SPECIFICATIONS, THE MORE STRINGENT SHALL GOVERN.

3.6 CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 20mm x45 DEGREE CHAMFER UNO.

3.7 CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615M-96a, GRADE 60, REINFORCING BARS SHALL NOT BE TACK WELDED, WELDED, HEATED OR CUT, UNLESS INDICATED ON THE CONTRACT DOCUMENTS. ALL LAP SPLICES SHALL BE CLASS "B" U.N.O.

3.8 HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90 DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED WITH A CLASS B TENSION SPLICE AT CORNERS AND INTERSECTIONS. TOP BAR CRITERIA SHALL APPLY IF 300mm OR MORE OF FRESH CONCRETE IS PLACED BELOW BAR.

3.9 SLABS-ON-GRADE SHALL HAVE CONSTRUCTION JOINTS OR CRACK CONTROL JOINTS AS SHOWN ON THE DRAWINGS. CONSTRUCTION JOINTS CAN BE USED AT CONTROL JOINT LOCATIONS AT CONTRACTORS OPTION. SEE SLAB PLANS & JOINT DETAILS FOR ADDITIONAL INFORMATION. FOR AREAS NOT SHOWN ON DWGS, THE MAXIMUM SPACING OF CONSTRUCTION / CRACK CONTROL JOINTS SHALL BE 4800 mm

3.10 SEE SPECIFICATIONS FOR ALL WATERPROOFING/DAMPPROOFING REQUIREMENT.

3.11 NOT USED.

3.12 ALL CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED, AND SPACED IN FORMS AND SECURED IN PLACE IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318, AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.

3.13 SHOP DRAWINGS SHOWING REINFORCING DETAILS, INCLUDING STEEL SIZES, SPACING AND PLACEMENT, SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION.

3.14 NOT USED.

3.15 ALL DOWELS SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING, UNLESS NOTED OTHERWISE ON DRAWINGS.

3.16 ADDITIONAL BARS SHALL BE PROVIDED AROUND ALL FLOOR AND WALL OPENINGS AS SHOWN ON THE DWGS.

3.17 SEE ARCHITECTURAL DRAWINGS FOR TYPE AND LOCATION OF ALL FLOOR FINISHES.

3.18 THE CONTRACTOR SHALL COORDINATE ADDITIONAL WALL/SLAB OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS. SEE MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DRAWINGS.

3.19 UNLESS NOTED OTHERWISE, ALL CURBS SHALL BE REINFORCED WITH AT LEAST (1) #13 CONTINUOUS AND #13 AT 300mm OC DOWELS TO STRUCTURE BELOW.

3.20 THE SUB-CONTRACTOR SHALL VERIFY ALL OPENINGS, PAD SIZES, AND ANCHOR BOLTS WITH EQUIPMENT SELECTED.

3.21 FOR ALL WALLS & PIERS, PROVIDE DOWELS INTO FOOTING AT EACH VERT REINF BAR, U.N.O. DOWEL SIZE SHALL BE SAME AS VERT REINF.

3.22 ALL DEFORMED BAR ANCHORS SHALL BE TRS NELSON DIVISION OR EQUAL 15mm DIA (UNO) CONFORMING TO ASTM A-496M WITH A MINIMUM TENSILE STRENGTH OF 550 MPa. ANCHOR DIMENSIONS SHALL BE IN ACCORDANCE WITH ASTM D-19. INSTALL ANCHORS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS BY AUTOMATIC ND WELDING AS INDICATED ON THE DRAWINGS. NO UNAUTHORIZED OR FIELD WELDING SHALL BE MADE WITHOUT AUTHORIZATION FROM THE MANUFACTURER.

3.23 ALL REINFORCING INDICATED TO BE WELDED SHALL BE IN ACCORDANCE WITH ASTM A706M. "LOW ALLOY STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT". ANY INSTALLATIONS USING MANUFACTURER'S EQUIPMENT SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

3.24 PROVIDE CONCRETE POUR STOPS OR FORMED AS REQUIRED FOR INSTALLATION OF ALL CONCRETE WORK.

3.25 PROVIDE ADDITIONAL 2-#13 x 600mm REINFORCING BARS IN SLAB-ON GRADE AT ALL RE-ENTRANT CORNERS. PLACE BARS AT MID-DEPTH OF SLAB WITH A CLEARANCE OF 50mm FROM CORNER UNO.

4.0 CONCRETE MASONRY

4.1 MASONRY CONSTRUCTION AND MATERIALS SHALL CONFORM TO ALL REQUIREMENTS OF THESE CONTRACT DOCUMENTS AND THE PROJECT SPECIFICATIONS.

4.2 THE SPECIFIED ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE MASONRY (f'm) ON THE NET AREA IS A MINIMUM OF 10.4 MPa.

4.3 PROVIDE TWO #16 BARS CONTINUOUS IN ALL CAST-IN-PLACE LINTELS (CIPL) UNO ON THE DRAWINGS. CIPL SHALL BE CONTINUOUS AND SPACED AT A MAXIMUM OF 1200mm oc VERTICALLY. ALL CIPL SHALL BE A MINIMUM OF 200mm IN DEPTH WITH REINFORCING BEING CONTINUOUS AND HAVING STANDARD ACI HOOKS AT EACH END. PROVIDE STANDARD BAR SPLICES AS SPECIFIED.

4.4 PROVIDE AS A MINIMUM 1-#16 BAR VERTICAL REINFORCEMENT IN ALL WALLS SPACED AT A MAXIMUM 1200mm OC. PROVIDE ADDITIONAL VERTICAL BARS AT EACH END OF ALL WALLS AND ON EACH SIDE OF OPENINGS IN ALL WALLS. PROVIDE STANDARD BAR SPLICES AS SPECIFIED. ALL VERTICAL REINFORCEMENT EXTENDS FULL HEIGHT OF WALL.

4.5 CMU CELLS THAT REQUIRE VERTICAL REINFORCING BARS AS INDICATED ON THE CONTRACT DRAWINGS AND/OR SPECS SHALL BE PLACED IN CENTERS OF CMU CELLS AND CONTINUOUSLY GROUTED UNO.

4.6 PROVIDE LADDER TYPE JOINT REINFORCEMENT AT (200 EXTERIOR & 400 INTERIOR) ON CENTER MAXIMUM UNO MINIMUM ROD SIZE USED SHALL BE 9 GA. DEFORMED WIRE AND CONFORM TO ASTM A82, UNO.

4.7 PROVIDE CONTROL JOINTS AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

4.8 GROUT FOR MASONRY SHALL BE NORMAL WEIGHT AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa AT 28 DAYS. GROUT SHALL CONFORM TO ASTM C476. GROUT LIFTS SHALL NOT EXCEED 1400mm.

4.9 USE MORTAR TYPE S CONFORMING TO ASTM C270, SEE SPECIFICATIONS.

4.10 CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT AND CONFORM TO ASTM C90.

4.11 ALL CMU CELLS, OPEN CAVITIES, AND AIR SPACES SHALL BE GROUTED. TO STOP FRAGMENTS FROM MORTOR BLAST

4.12 CAST-IN-PLACE LINTEL REINFORCING SHALL BE DISCONTINUOUS AT CONTROL JOINTS (UNO). MAXIMUM CONTROL JOINT SPACING SHALL BE AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

4.13 CONTRACTOR SHALL COORDINATE LOCATION OF ALL OPENINGS SEE ARCH., MECH., ELEC., AND PLUMBING DWGS. FOR SIZE AND LOCATION OF OPENINGS.

4.14 MASONRY WALLS SHALL NOT BE BACK FILLED PRIOR TO THE MORTAR AND 4.14 GROUT ATTAINING THEIR RESPECTIVE MAXIMUM DESIGN STRENGTHS PER SPECIFICATIONS.

5.0 STEEL DECK

5.1 STEEL DECK SHALL BE ASTM A446 HAVING A MINIMUM YIELD STRENGTH OF 414 MPa AS PER THE STEEL DECK INSTITUTE DESIGN MANUAL.

5.2 STEEL DECK SHALL BE ERECTED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND ERECTION LAYOUTS AND CONNECTED TO SUPPORTING MEMBERS AS INDICATED BELOW.

5.3 ROOF DECK

5.3.1 STEEL ROOF DECK SHALL BE 38mm RIB HEIGHT, 18 GAGE PRIME-PAINTED WIDE RIB (SDI TYPE B-18) UNO.

5.3.2 ROOF DECK SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

	18 GAGE
MOMENT OF INERTIA, Ip	$399mm^4/mm$ WIDTH
SECTION MODULUS (TOP OF DECK), Sn	$17.58mm^3/mm$ WIDTH
SECTION MODULUS (BOT. OF DECK) Sp	$17.10mm^3/mm$ WIDTH

IN ADDITION TO MEETING THE MINIMUM REQUIREMENTS ABOVE, THE DECK MANUFACTURER SHALL DESIGN THE ROOF DECK AND ATTACHMENTS TO STEEL FOR THE ROOF LOADS, INCLUDING DECK UPLIFT INDICATED ON THE BASIS OF DESIGN SHEET. ALL ROOF DECK SHALL HAVE A MINIMUM 2-SPAN CONDITION.

5.3.3 ROOF DECK SHALL BE FASTENED TO THE MAIN SUPPORTS WITH #12 SELF-TAPING TEK SCREWS IN THE BOTTOM OF THE FLUTES USING A SDI 36/7 PATTERN. DECK SIDELAPS SHALL BE ATTACHED USING #10 SELF-TAPING TEK SCREWS WITH A MINIMUM 8-SIDE LAPS CONNECTIONS PER SPAN. ALL ENDLAPS SHALL BE A MINIMUM OF 50mm UNO AND SHALL OCCUR OVER SUPPORTS.

5.3.4 SUSPENDED CEILINGS, LIGHT FIXTURES, DUCTS, CONDUITS, PIPING OR OTHER UTILITIES SHALL NOT BE SUPPORTED BY THE STEEL ROOF DECK.

5.4 FORM DECK

5.4.1 STEEL FORM DECK SHALL BE 38mm RIB HEIGHT, 24 GAGE GALVANIZED WIDE RIB (SDI TYPE C-24) UNO.

5.4.2 FORM DECK SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

	24 GAGE
MOMENT OF INERTIA, Ip	$186mm^4/mm$ WIDTH
SECTION MODULUS (TOP OF DECK), Sn	$6.45mm^3/mm$ WIDTH
SECTION MODULUS (BOT. OF DECK) Sp	$7.04mm^3/mm$ WIDTH

IN ADDITION TO MEETING THE MINIMUM REQUIREMENTS ABOVE, THE DECK MANUFACTURER SHALL DESIGN THE FORM DECK AND ATTACHMENTS TO STEEL FOR A MAXIMUM DEFLECTION DUE TO WET CONCRETE OF L/240. ALL FORM DECK SHALL HAVE A MINIMUM 2-SPAN CONDITION.

5.4.3 FORM DECK SHALL BE FASTENED TO THE MAIN SUPPORTS WITH #12 SELF-TAPING TEK SCREWS IN THE BOTTOM OF THE FLUTES USING A SDI 36/4 PATTERN. DECK SIDELAPS SHALL BE ATTACHED USING #10 SELF-TAPING TEK SCREWS WITH A MINIMUM 4-SIDE LAPS CONNECTIONS PER SPAN. ALL ENDLAPS SHALL BE A MINIMUM OF 50mm UNO AND SHALL OCCUR OVER SUPPORTS.

6.0 STRUCTURAL STEEL

6.1 STRUCTURAL STEEL ROLLED SHAPES AND PLATES SHALL CONFORM TO THE MATERIAL INFORMATION SCHEDULE. DIMENSIONS AND PROPERTIES SHALL BE IN ACCORDANCE TO ASTM A6.

6.2 ANCHOR BOLTS SHALL CONFORM TO ASTM A36, OR A307, UNLESS NOTED OTHERWISE.

6.3 CONNECTION BOLTS FOR STRUCTURAL STEEL MEMBERS SHALL BE 20 DIA A325-N, UNO, AND SHALL CONFORM TO ASTM A325; NUTS SHALL CONFORM TO ASTM A563; WASHERS SHALL CONFORM TO ASTM F436. CONNECTION BOLTS SHALL HAVE A HARDENED WASHER PLACED UNDER THE ELEMENT TO BE TIGHTENED.

6.4 DETAILING OF STRUCTURAL STEEL CONNECTIONS MUST BE CONSISTENT WITH RECOGNIZED, PUBLISHED METHODS SUCH AS IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9th EDITION; "ENGINEERING FOR STEEL CONSTRUCTION", OR "VOLUME II CONNECTIONS MANUAL OF STEEL CONSTRUCTION".

6.4.1 THE CODE OF STANDARD PRACTICE OF AISC 9TH EDITION ASD IS AMENDED SUCH THAT THE FABRICATOR/DETAILER IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF ALL CONNECTIONS.

6.5 STANDARD FRAMING CONNECTIONS SHALL BE DETAILED BY THE FABRICATOR IN ACCORDANCE WITH THE AISC "MANUAL OF STEEL CONSTRUCTION-ALLOWABLE STRESS DESIGN", NINTH EDITION. CONNECTIONS SHALL BE DESIGNED TO DEVELOP A MINIMUM END REACTION OF 12.0 KIPS (54kN).

6.5.1 UNLESS NOTED OTHERWISE AS THUS: (##kN), CONNECTIONS SHALL BE DESIGNED AND DETAILED FOR THE END REACTION DETERMINED FROM PART 2 - "ALLOWABLE UNIFORM LOAD TABLES" FROM THE AISC MANUAL OF STEEL CONSTRUCTION - ASD 9TH EDITION OR A MINIMUM OF 12 KIPS (54 kN) WHICH EVER IS GREATER.

6.6 ALL MEMBERS AND CONNECTIONS ON THE CONTRACT DRAWINGS AND CONNECTIONS FOR NON SIMPLE CONNECTIONS NOT SHOWN SHALL BE DESIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER, DETAILED AND SUBMITTED FOR APPROVAL AND SHOWN ON THE SHOP DRAWINGS.

6.7 ALTERNATIVE CONNECTION DETAILS MAY BE SUBMITTED ON SHOP DRAWINGS BY THE CONTRACTOR ONLY IF ACCOMPANIED BY COMPLETE STRUCTURAL CALCULATIONS PREPARED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER AND SUBMITTED FOR REVIEW.

6.8 CALCULATIONS FOR DETAILS MUST SHOW A RATIONAL ANALYSIS OF A COMPLETE LOAD PATH, INCLUDING LOCAL EFFECTS ON WEBS, FLANGES, ETC. OF THE CONNECTED MEMBERS AND THE DEVICES (PLATES, SEATS, BRACKETS, BOLTS, WEBS, ETC) AFFECTING ALL CONNECTIONS. FAILURE TO SUBMIT SUCH CALCULATIONS FOR REVIEW CONCURRENT WITH SHOP DRAWING ERECTION PLANS AND DETAILS WILL BE CAUSE FOR REJECTION OF THAT SUBMITTAL.

6.8.1 ALL SHEAR TAB CONNECTIONS SUBMITTED AS AN ALTERNATE FOR APPROVAL SHALL BE DESIGNED USING A FLEXIBLE SUPPORT CONDITION.

6.8.2 BEAM AND GIRDER CONNECTIONS SHALL BE DESIGNED SUCH THAT ALL ADDITIONAL STRESSES DUE TO CONNECTION ECCENTRICITY SHALL BE DEVELOPED BY THE CONNECTION AN NOT INDUCE ANY ADDITIONAL STRESSES INTO SUPPORTING MEMBERS.

6.0 STRUCTURAL STEEL (CON'T)

6.9 STRUCTURAL STEEL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO THE AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN" AND THE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" - LATEST EDITIONS.

6.10 WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE AWS D1.1. ELECTRODES FOR SHOP AND FIELD WELDS SHALL BE CLASS E70XX. ALL WELDING SHALL BE DONE BY QUALIFIED, CERTIFIED WELDERS PER THE ABOVE STANDARD.

6.11 SHOP AND FIELD TESTING OF WELDS AND BOLTS SHALL BE AS OUTLINED IN THE SPECIFICATIONS.

6.12 ALL FILLET WELDS SHALL BE A MINIMUM OF 5mm UNLESS NOTED OTHERWISE

6.13 THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.

6.14 FOR FLOOR AND ROOF OPENINGS, THE FABRICATOR SHALL VERIFY OPENING LOCATIONS WITH EQUIPMENT SELECTED AND MAKE ANY NECESSARY MODIFICATIONS AT NO ADDITIONAL COST. THE CONTRACTOR SHALL COORDINATE MECHANICAL UNITS AND OPENINGS & ARCHITECTURAL ITEMS REQUIRED FOR COMPLETE INSTALLATION OF WORK. IT IS THE RESPONSIBILITY OF FABRICATOR TO RECEIVE ALL NECESSARY INFORMATION PRIOR TO FABRICATION OF THE STEEL.

6.15 ALL STRUCTURAL STEEL SHALL BE PRIMED AS PER THE SPECIFICATIONS.

6.16 ALL PLATES NOT INDICATED SHALL BE 12mm MIN THICKNESS. ALL ANGLES NOT INDICATED SHALL BE 76x76x7.9 MIN. ALL WELDS NOT INDICATED SHALL BE 6mm MIN ALL AROUND UNO.

6.17 SEE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ADDITIONAL OPENINGS NOT SHOWN. ALL OPENINGS SHALL BE FRAMED 4 SIDES WITH C200x17'S UNO.

7.0 CFMF - COLD FORM METAL FRAMING SYSTEM

7.1 CFMF SHALL BE DESIGNED BY CFMF MANUFACTURER'S ENGINEER FOR ALL LOADING PER CODE AND AS INDICATED ON THE DRAWINGS.

7.2 FOR WIND LOADS, SEE BASIS OF DESIGN SHEET

7.3 SUBMIT VENDOR'S PUBLISHED LITERATURE, TEST DATA AND INSTALLATION INSTRUCTIONS FOR METAL STUD ASSEMBLY AND ACCESSORIES INCLUDING OTHER DATA AS MAY BE REQUIRED TO CERTIFY COMPLIANCE WITH PERFORMANCE REQUIREMENTS SPECIFIED HEREIN.

7.4 ALL EXTERIOR LIGHT GAGE STUD FRAMING SHALL BE A MINIMUM OF 18 GAGE MATERIAL UNO. EXTERIOR METAL STUDS SHALL BE 100 OR 150 STUDS AS INDICATED SPACED AT 400mm OC MAX.

7.5 SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE STAMPED AND APPROVED BY A LICENSED PROFESSIONAL ENGINEER.

7.6 DEPTH OF WALL SYSTEMS ARE AS SPECIFIED ON THE DRAWINGS. CONNECTIONS AND GAGE SIZES ARE MINIMUM AND SHALL BE INCREASED AS NECESSARY TO PROVIDE A STRUCTURALLY ADEQUATE SYSTEM. KICKERS MAY BE ADDED TO REDUCE THE STUD HEIGHTS WHERE ACCEPTABLE AND COORDINATED WITH THE ARCHITECTURAL DRAWINGS.

7.7 SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND LOCATION ON STUD WALLS.

7.8 ALL MISCELLANEOUS KICKERS, JAMBS, HEADERS, SUB-FRAMING, ETC. INDICATED ON THE ARCHITECTURAL DRAWINGS AND SHOWN OR NOT SHOWN ON STRUCTURAL DRAWINGS SHALL BE DESIGNED, DETAILED AND SUBMITTED ON SHOP DRAWINGS.

US ARMY CORPS OF ENGINEERS
AFGHANISTAN
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SYMBOL	DESCRIPTION	DATE	APP.

DESIGNED BY: | DATE: | REV. ___
DWN BY: AED | CKD BY: AED | DESIGN FILE NO. XX-XX-XX
REVIEWED BY: | DRAWING CODE: ___
SUBMITTED BY: | FILE NAME: ___ | PLOT SCALE: AS SHOWN | CONTRACT NO. XXX-XX-XX

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN
AMMUNITION SUPPLY POINT

STRUCTURAL GENERAL NOTES

SHEET REFERENCE NUMBER:
S-001
SHEET 2 OF 18

STRUCTURAL DESIGN CRITERIA

ALL DESIGNS SHALL CONFORM TO THE PROVISIONS OF THE IBC 2006 AND UFC 4-010-01 AS APPLICABLE

1.0 DESIGN LOADS

1.1 DEAD LOADS

1.1.1 ROOF DEAD LOADS - CONCRETE FRAMING

K - ASP BUILDING

	MAXIMUM GRAVITY LOAD
CONC FLAT SLAB	4.80 KPa
MECH / ELEC / PLUMBING	0.15 KPa
MISC	0.05 KPa
	5.00 KPa

1.2 LIVE LOADS (PER IBC 2006)

1.2.1 ROOF LIVE LOADS: ALL BUILDINGS

GREATER OF 1.0 KPa MINIMUM OR SNOW LOAD

1.2.2 SLAB-ON-GRADE LIVE LOADS

ALL BUILDINGS 4.80 KPa

1.3 SNOW LOADS (PER IBC 2006)

1.3.1 DESIGN PARAMETERS

GROUND SNOW LOAD (per UFC 3-310-01)	PER LOCAL CONDITION
SNOW IMPORTANCE FACTOR	1.0 KPa
SNOW EXPOSURE FACTOR	1.0 KPa

1.4 SEISMIC LOADS (PER IBC 2006 & TM 5-809-10)

1.5.3 SEISMIC PARAMETERS - CAST-IN-PLACE CONCRETE STRUCTURES

K - ASP

SEISMIC RESISTING SYSTEM	SPECIAL CONC. SHEAR WALL
RESPONSE MODIFICATION FACTOR (R)	5.0
SEISMIC ANALYTICAL PROCEDURE	EQUIV LATERAL FORCE

1.5 WIND LOADS (PER IBC 2006)

1.5.1 DESIGN PARAMETERS

BASIC WIND SPEED	145 Km/h
WIND IMPORTANCE FACTOR	1.0
WIND EXPOSURE CATEGORY	D
DIRECTIONALITY COEFFICIENT (Kd)	0.85
TOPOGRAPHIC FACTOR (Kzt)	1.0

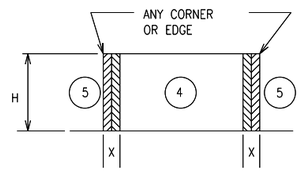
1.5.2 DESIGN WIND PRESSURE - MAIN WINDFORCE RESISTING SYSTEM

LOCATION	CORNER ZONE WIDTH "a"	WINDWARD (@ MEAN ROOF HEIGHT)	LEEWARD (@ MEAN ROOF HEIGHT)	ROOF
FIELD ZONE	N/A	964 N/m^2	-604 N/m^2	-1340 N/m^2
CORNER ZONE	1440mm	1127 N/m^2	-588 N/m^2	-1355 N/m^2

1.5 WIND LOADS (CON'T)

1.5.3 DESIGN WIND PRESSURE - WALL COMPONENTS AND CLADDING

EXTERIOR WALL SYSTEMS & THEIR ATTACHMENTS TO THE PRIMARY STRUCTURE SHALL BE DESIGNED FOR THE PRESSURES SHOWN IN THE DIAGRAM BELOW:

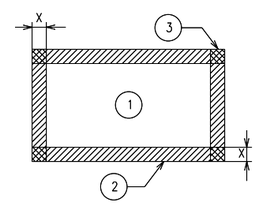


LOCATION	WINDWARD PRESSURE N/m^2 (inward)		LEEWARD PRESSURE N/m^2 (outward)		X
	4	5	4	5	
MAIN BUILDING					(mm)
AREA = 1 m^2	1513	1513	-1634	-2017	1440
AREA = 2 m^2	1438	1438	-1567	1859	1440
AREA = 5 m^2	1345	1345	-1469	-1691	1440
AREA = 10 m^2	1246	1246	-1370	-1444	1400

NOTES:
1. DESIGN WIND PRESSURES ABOVE REPRESENT THE NET PRESSURE (SUM OF INTERNAL AND EXTERNAL PRESSURE) APPLIED NORMAL TO ALL SURFACES.
2. LINEAR INTERPOLATION BETWEEN VALUES OF TRIBUTARY AREA IS PERMISSIBLE.
3. PLUS AND MINUS SIGNS SIGNIFY PRESSURE TOWARD AND AWAY FROM THE EXTERIOR SURFACE, RESPECTIVELY.

1.5.4 DESIGN WIND PRESSURE - ROOF COMPONENTS AND CLADDING

ROOF COMPONENTS & THEIR ATTACHMENTS SHALL BE DESIGNED FOR THE PRESSURES SHOWN IN THE ADJACENT DIAGRAM & TABLE BELOW:



ROOF MEAN HEIGHT

LOCATION	GROSS UPLIFT PRESSURE N/m^2 (upward)			X
	1	2	3	
MAIN BUILDING				(mm)
AREA = 1 m^2	-1513	-1790	-3342	-1440
AREA = 2 m^2	-1513	-1790	-3342	-1440
AREA = 5 m^2	-1513	-1790	-3342	-1440
AREA = 10 m^2	-1513	-1790	-3342	-1440

NOTES:
1. DESIGN WIND PRESSURES ABOVE REPRESENT THE NET PRESSURE (SUM OF INTERNAL AND EXTERNAL PRESSURE) APPLIED NORMAL TO ALL SURFACES.
2. LINEAR INTERPOLATION BETWEEN VALUES OF TRIBUTARY AREA IS PERMISSIBLE.
3. PLUS AND MINUS SIGNS SIGNIFY PRESSURE TOWARD AND AWAY FROM THE EXTERIOR SURFACE, RESPECTIVELY.

2.0 FOUNDATION DESIGN CRITERIA (TO BE CONFIRMED BY THE CONTRACTOR)

THE GEOTECHNICAL ANALYSIS FOR THIS PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AWARDED THE WORK . DESIGN VALUES USED IN THE STRUCTURAL ANALYSIS ON THE BUILDINGS HERIEN INDICATED HAVE BEEN ASSUMED AND SHALL BE CONFIRMED AND VERIFIED AS PART OF THE GEOTECHNICAL INVESTIGATION. VLAUES WHICH DO NOT MEET THE REQUIREMENTS INDICATED BELOW SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER-OF-RECORD FOR CONSIDERATION AND DETERMINATION ON THE NEXT APPROPRIATE COURSE OF ACTION.

2.1 SOIL DESIGN PARAMETERS

NET ALLOWABLE SOIL BEARING CAPACITY	96.0 Kpa
UNIT WEIGHT OF SOIL (moist)	1800 Kg/m?
COEFF ACTIVE EARTH PRESSURE (Kpa)	0.30
COEFF PASSIVE EARTH PRESSURE (Kpp)	3.33
COEFF AT-REST EARTH PRESSURE (Kpr)	.55
COEFF OF SOIL FRICTION	.35
SUBGRADE MODULUS	4120 g/m?
MINIMUM BEARING DEPTH BELOW GRADE	800mm
SEISMIC SITE CLASS (based on in-situ soil)	0

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

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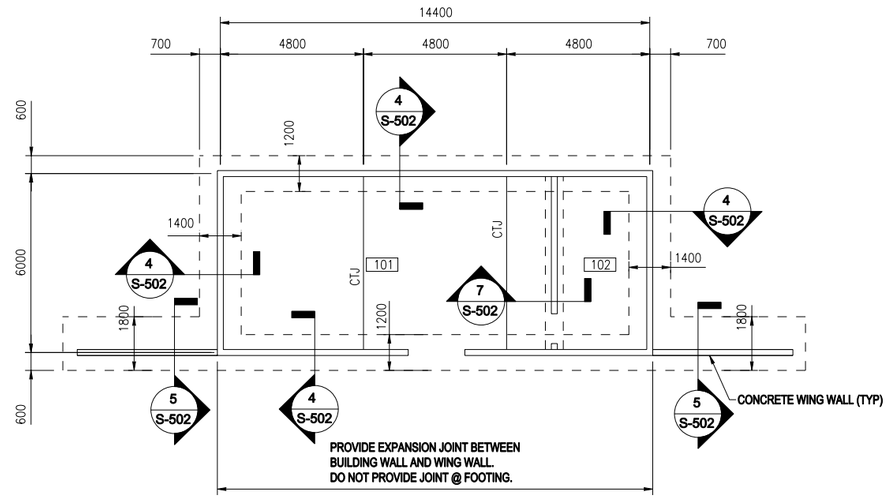
FILE NAME:
PLOT SCALE: AS SHOWN
CONTRACT NO. XXX-XX-XX

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

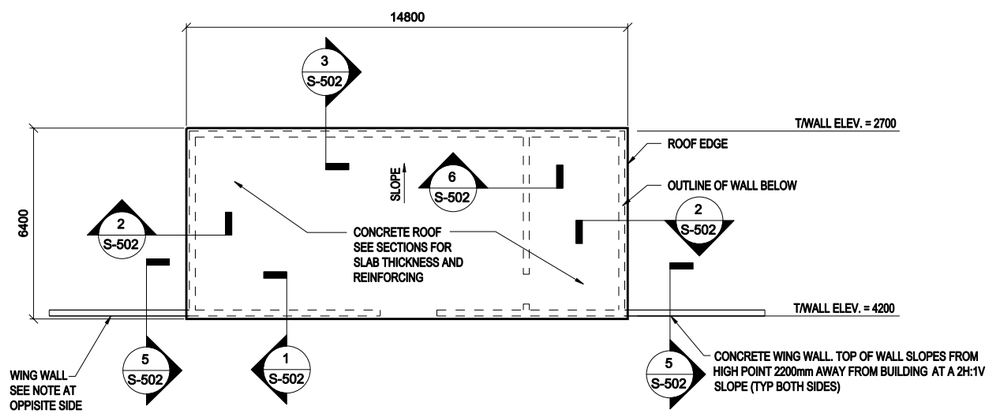
CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN
AMMUNITION SUPPLY POINT
STRUCTURAL BASIS OF DESIGN

SHEET REFERENCE NUMBER:
S-002
SHEET — OF —



1 S-101 FOUNDATION PLAN

SCALE = 1:100



2 S-101 ROOF FRAMING PLAN

SCALE = 1:100

NOTES :

1. FINISH FIRST FLOOR ELEVATION SHALL BE (DATUM 0.0). ALL PLUS OR MINUS DIMENSIONS INDICATED ON PLAN OR REFERRED TO IN NOTES RELATE TO FINISH FLOOR ELEVATION.
2. TOP OF EXTERIOR FOOTINGS SHALL BE -500 UNLESS OTHERWISE INDICATED.
3. UNLESS OTHERWISE INDICATED, FLOORS SHALL BE 150 THICK CONCRETE SLAB-ON-GRADE W/ 10 DIA REBAR @ 250 OC E.W. (38 CLR. TOP) OVER 100mm COMPACTED POROUS FILL (#57 STONE).
4. REFER TO DRAWINGS S-001 AND S-002 FOR STRUCTURAL NOTES, BASIS OF DESIGN, SYMBOLS AND ABBREVIATIONS.
5. CTJ AND CJ INDICATES SLAB CONTROL OR CONSTRUCTION JOINTS RESPECTIVELY REFER TO DRAWING S-501 FOR SECTIONS & DETAILS.
6. REFER TO S-501 FOR MASONRY REINFORCEMENT REQUIREMENTS.
7. CONCRETE ROOF STRUCTURE SHALL BE POURED-IN-PLACE IN ONE CONTINUOUS OPERATION AND SHORED AS REQUIRED UNTILL THE CONCRETE REACHES 75% OF ITS DESIGN STRENGTH AS A MINIMUM.
8. CONCRETE WALLS OF THE BUILDING SHALL NOT HAVE BACKFILL PLACED AGAINST THEM UNTILL THE SLAB-ON-GRADE AND CONCRETE ROOF STRUCTURES ARE IN PLACE AND ALL CONCRETE HAS ACHIEVED 75% OF ITS DESIGN STRENGTH AS A MINIMUM.

1 0 1 2 3 4 5 6 7 8 9
1:100

US ARMY CORPS
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AFGHANISTAN
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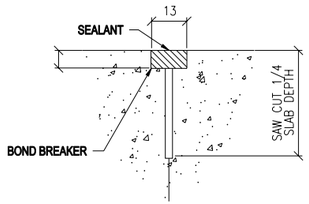
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND
CONSTRUCTION DIVISION

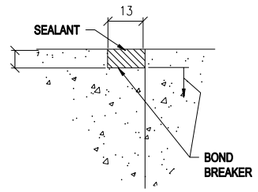
CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

AMMUNITION SUPPLY POINT
FOUNDATION AND ROOF
FRAMING PLANS

SHEET
REFERENCE
NUMBER:
S-101
SHEET — OF —



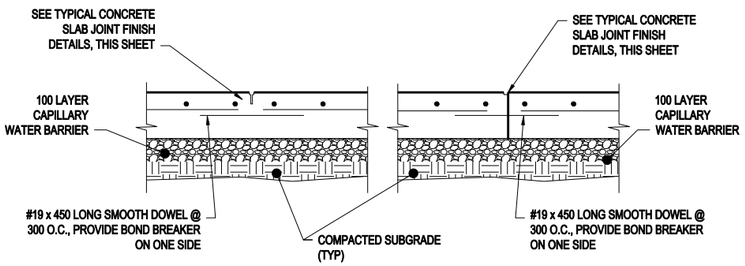
CONTROL JOINT DETAIL



CONSTRUCTION JOINT DETAIL

1/S-501 TYPICAL CONCRETE SLAB JOINT FINISH DETAIL

NTS

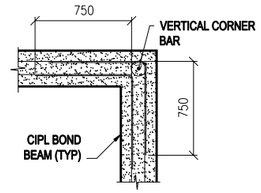


CONTROL JOINT DETAIL (CTJ)

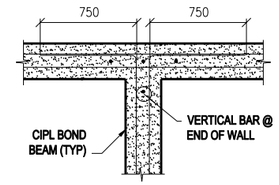
CONSTRUCTION JOINT DETAIL (CSJ)

2/S-501 TYPICAL SLAB ON GRADE JOINT DETAILS

NTS



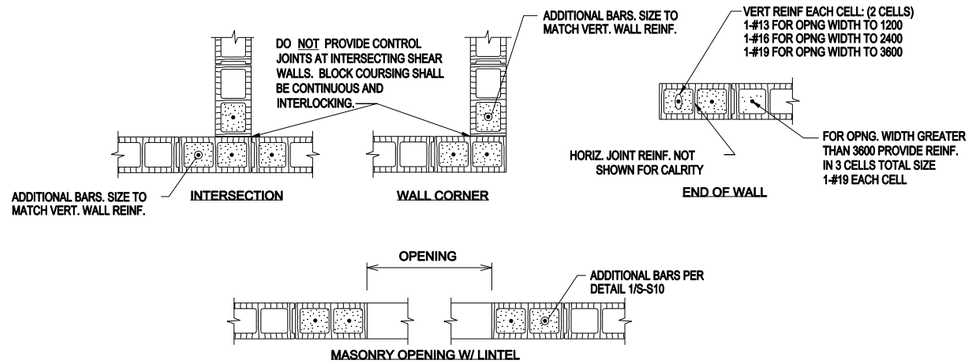
BOND BEAM CORNER



BOND BEAM INTERSECTION

3/S-501 CMU BOND DETAIL

NTS

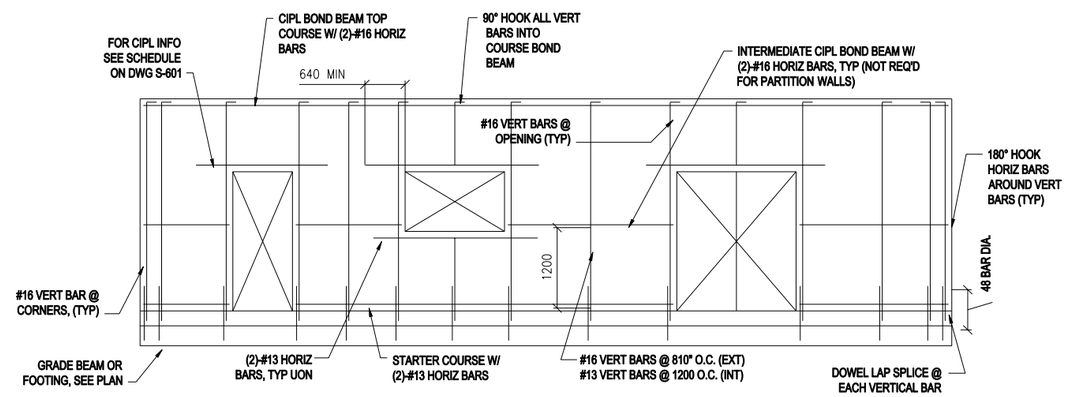


TYPICAL CONCRETE MASONRY UNIT DETAILS

NOTE:
OPNG WIDTH SHALL NOT EXCEED
3600 FOR THIS TYPE OF JAMB

4/S-501 TYPICAL CMU DETAILS

SCALE



5/S-501 MIN MASONRY WALL REINFORCING

NTS

LINTEL NOTES:
CMU LINTEL REINFORCEMENT AS PER SCHEDULE ON DWG S-601

GRAPHIC SCALE

NOTE: ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS INDICATED OTHERWISE NOTED.

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

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U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

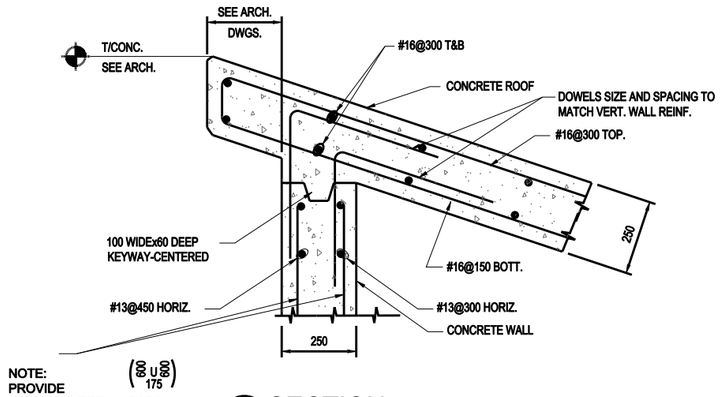
ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

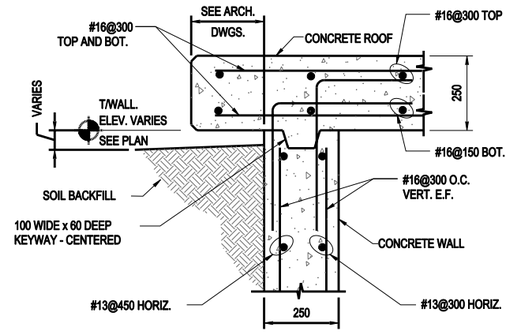
AMMUNITION SUPPLY POINT
STRUCTURAL SECTIONS AND DETAILS

SHEET REFERENCE NUMBER:
S-501

SHEET — OF —



1 S-502 SECTION
SCALE = 1:10



2 S-502 SECTION
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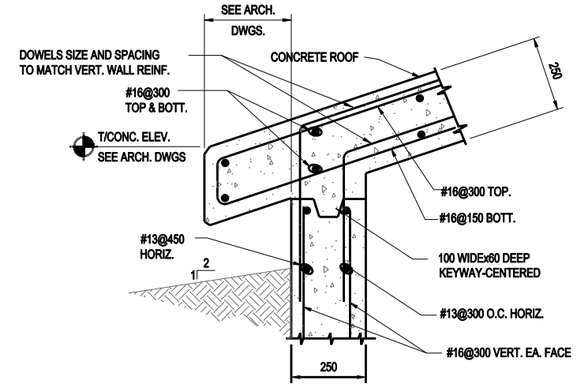

3 S-502 SECTION
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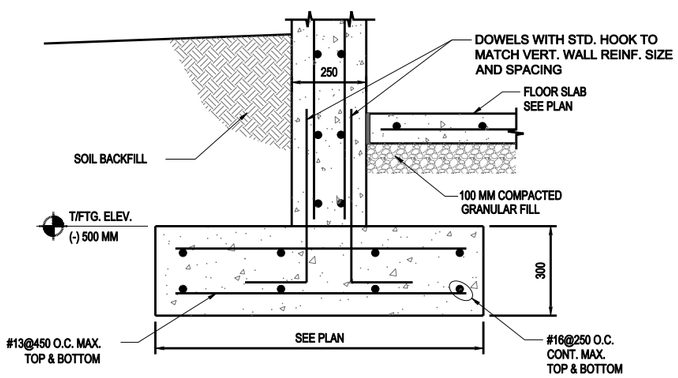

4 S-502 SECTION
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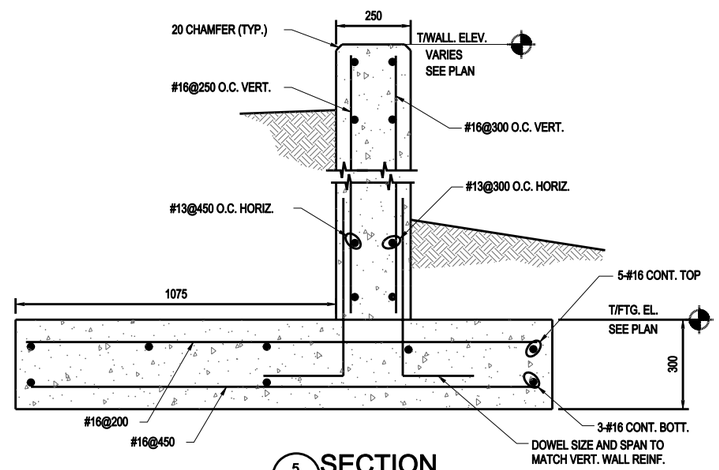
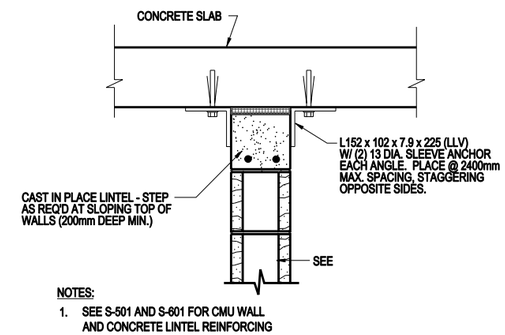


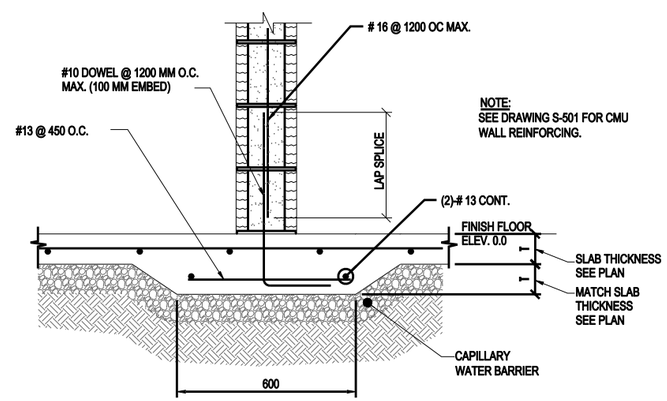
5 S-502 SECTION
SCALE = 1:10



NOTES:

1. SEE S-501 AND S-601 FOR CMU WALL AND CONCRETE LINTEL REINFORCING

6 S-502 SECTION
SCALE: 1:10



NOTE:
SEE DRAWING S-501 FOR CMU WALL REINFORCING.

7 S-502 SECTION
SCALE: 1:10

GRAPHIC SCALE

SCALE: 1 : 10

US ARMY CORPS OF ENGINEERS
AFGHANISTAN
ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APV

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U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

AMMUNITION SUPPLY POINT
STRUCTURAL SECTIONS AND DETAILS

SHEET REFERENCE NUMBER:
S-502

SHEET — OF —

CAST-IN-PLACE CONCRETE LINTEL SCHEDULE

OPENING TYPE OR SIZE, BEAM LOCATION OR TYPE	MAX SPAN (mm)	BEAM DEPTH (mm)	MAIN REINFORCING			SHEAR REINF STIRRUPS
			TOP	BOTTOM	OTHER	
EXT WALL OPENING, 1-STORY BLDG	1800	400	(2)-#13	(2)-#13		
INT WALL OPENING, NON-BEARING	900	200		(2)-#13		

1. STRUCTURAL DRAWINGS DO NOT INDICATE ALL OPENINGS IN MASONRY WALLS. VERIFY NUMBER, SIZE AND LOCATION OF ALL OPENINGS IN MASONRY WALLS FROM ARCHITECTURAL DRAWINGS AND APPROVED PLUMBING, MECHANICAL, AND ELECTRICAL SHOP DRAWINGS.
2. PROVIDE 200 BEARING EA. END FOR 200 DEEP CIB. PROVIDE 400 BEARING EA. END FOR 400 DEEP CIB.
3. FOR HEAD DETAILS REFER TO ARCHITECTURAL DRAWINGS.
4. REINFORCING SHALL BE ASTM A615M, GRADE 400. CONCRETE FOR CAST-IN-PLACE BEAMS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 21 MPa AT 28 DAYS.
5. CONTRACTOR SHALL SUBMIT FOR APPROVAL SHOP DRAWINGS AND SCHEDULES SHOWING SIZE, DETAILS, LOCATIONS, ETC. FOR ALL CAST-IN-PLACE BEAMS IN CMU WALLS.

MASONRY REINFORCING MINIMUM LAP SPLICES

BAR SIZE	BASIC LAP SPLICE Ld FOR CMU REINFORCING
#10	450
#13	600
#16	750
#19	900
#22	1050
#25	1200

TYPICAL CMU WALL REINFORCING SCHEDULE

WALL TYPE OR LOCATION	WALL THICKNESS	CONT. VERT. REINF. (CENTERED IN CMU, U.N.O.)	CONT. CAST IN PLACE LINTEL (CIPL)			REMARKS
			DEPTH	REINF. (BOT U.N.O.)	MAX. CIPL VERT. SPACING	
NON-LOAD BEARING INTERIOR WALLS WITH TOP AND BOTT. SUPPORTS	200	1-#13 @ 1200	200	2-#16	1200	—

NOTES:
1. REINFORCING SIZES AND SPACING GIVEN IN SECTIONS AND DETAILS SHALL SUPERSEDE THE ABOVE SCHEDULE REQUIREMENTS.
2. PROVIDE CONTINUOUS CAST IN PLACE CONCRETE LINTEL AT ALL WALL LATERAL SUPPORT LOCATIONS.
3. REINFORCING INDICATED SHALL BE CONTINUOUS FOR FULL EXTENT OF SPLICE FOLLOWING THE REQUIREMENTS OF THE LAP SPLICE TABLE SHOWN ON THIS SHEET.
4. WALLS HAVE BEEN DESIGNATED AS VERTICALLY SPANNING U.N.O. AND THEREFORE MUST BE TEMPORARILY SUPPORTED DURING CONSTRUCTION UNTIL THE SUPPORTING DIAPHRAGMS (FLOOR AND ROOF SYSTEMS) HAVE BEEN COMPLETELY INSTALLED. SHORING IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL CMU WALLS SHALL BE FULLY GROUTED IN LIFTS NOT EXCEDING THOSE BY CODE (UNO)
6. SEE TYPICAL CMU WALL DETAILS ON S-501.

f'c = 27.5MPa CONCRETE

BAR SIZE \ CENTER TO CENTER BAR SPACING	(–TOP BARS–) LESS THAN 4db	(–TOP BARS–) 4db OR MORE	(–OTHER BARS–) LESS THAN 4db	(–OTHER BARS–) 4db OR MORE	(–OTHER BARS–) 4db
#10	460	460	410	410	40
#13	660	610	510	480	50
#16	1020	760	790	580	60
#19	1450	910	1120	710	80
#22	1960	1090	1500	840	90
#25	2590	1450	1980	1120	100
#29	3280	1830	2510	1420	110
#32	4140	2340	3200	1780	130
#36	5080	2840	3910	2180	140

NOTES:
1. LAP SPLICES ABOVE ARE IN MILLIMETERS UNO.
2. YIELD STRENGTH OF REINFORCEMENT, fy, IS 400MPa (LAP SPLICE LENGTH IS IN MILLIMETERS).
3. CONCRETE IS NORMAL WEIGHT (2400Kg/m).
4. TOP BAR INDICATES HORIZONTAL REINFORCEMENT WHICH IS PLACED ABOVE 300mm OR MORE OF FRESH CONCRETE.
5. SEE COLUMN SCHEDULE FOR COLUMN AND SHEAR WALL VERTICAL LAP SPLICE.
6. STREIGHT DEVELOPMENT LENGTH OF AN UNLAPPED BAR IS EQUAL TO VALUE FROM TABLE DIVIDED BY 1.3.
7. CATEGORY FOR BARS SPACED LESS THAN 4d, OR ON CENTER CORRESPONDS TO CATEGORY 1 IN THE CRSI HANDBOOK WHEREAS FOR BARS SPACED 4d, OR MORE ON CENTER CORRESPOND TO CRSI CATEGORY 5.

STEEL MATERIALS SCHEDULE

STRUCTURAL ELEMENT	FY YIELD STRENGTH (MPa)	REMARKS
BEAMS & GIRDERS	250	ASTM A36M ASTM A6M
COLUMNS	240	ASTM A53-95 GRADE B ASTM A6M
MISC BRACING	250	ASTM A572M ASTM A6M
CONNECTIONS, PLATES, & ALL OTHERS	250	ASTM A36M ASTM A6M
ANCHOR BOLTS	-	ASTM A36M or A307M ASTM A6M
PIPES	240	ASTM A53-95 GRADE B ASTM A6M
TUBING	345	ASTM A500-93 GRADE C ASTM A6M
HIGH STRENGTH BOLTS	-	ASTM A325M-N
WELDING ELECTRODES	-	AWS D1.1-90 E70xx

CONCRETE COVER SCHEDULE

MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS: (SEE ACI 318-89M, SECTION 7.7 FOR CONDITIONS NOT NOTED). DIMENSIONS FOR BAR PLACEMENT GIVEN IN SECTIONS AND DETAILS SHALL SUPERCEDE MINIMUM COVER REQUIREMENTS GIVEN HERE. DIMENSIONS ARE IN mm.

FOOTINGS (EARTH FORMED)		70
COLUMNS / PIERS		40
GRADE BEAMS OR SLAB TURNED DOWN EDGES:		
TOP		40
BOTTOM (EARTH FORMED)		70
SIDES (EARTH FORMED)		70
SIDES (BOARD FORMED)	#16 BAR & SMALLER	40
	#19 THRU #36 BAR	50
		40
SLABS-ON-GRADE (NO EXPOSURE TO WEATHER) FROM TOP		20
SLABS-ON-GRADE (EXPOSURE TO WEATHER) FROM TOP		40
UTILITY TUNNEL WALLS, RETAINING WALLS AND SHEAR WALLS, (NO SURFACES SHALL BE EARTH FORMED) EARTH SIDE AND FRONT SIDE (EXPOSED TO WEATHER):		
#16 BAR AND SMALLER		40
#19 THRU #36 BAR		50

PROVIDE STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

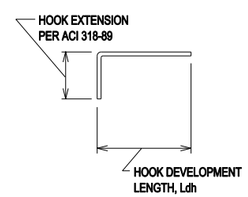
CONCRETE MATERIALS SCHEDULE

STRUCTURAL ELEMENT	f'c CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS (MPa)
SLAB-ON-GRADE/TURN-DOWN SLABS	27.5
ROOF SLABS	27.5
ALL FOOTINGS (U.N.O.)	20
MISC. CURBS, WALLS AND PADS UNO	27.5

NOTES:
1. ALL CONCRETE SHALL BE NORMAL WEIGHT CONCRETE. (2400 Kg/m UNO) 3

STANDARD HOOKS IN TENSION PER (ACI 318-89)

BAR SIZE	HOOK DEVELOPMENT LENGTH Ldh (mm) f'c 20 MPa	f'c 27.5 MPa
#10	230	180
#13	280	250
#16	360	300
#19	430	380
#22	480	430
#25	560	480
#29	640	560
#32	710	610
#36	790	690



NOTES:
1. CONCRETE IS NORMAL WEIGHT CONCRETE.
2. BAR YIELD STRENGTH, fy = 400 MPa
3. SIDE COVER REQUIREMENTS OF ACI SECT. 12.5.3.2 ARE ASSUMED TO NOT BE MET.
4. TIE OR STIRRUP REQUIREMENTS OF ACI SECT. 12.5.3.2 ARE ASSUMED TO NOT BE MET.
5. REDUCTION FOR EXCESS REINFORCEMENT IS NOT TAKEN.
6. HOOK DEVELOPMENT LENGTH IS VALID FOR 180^ HOOKS ALSO.
7. FOR 35 MPa CONCRETE, USE VALUES FOR 30 MPa

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

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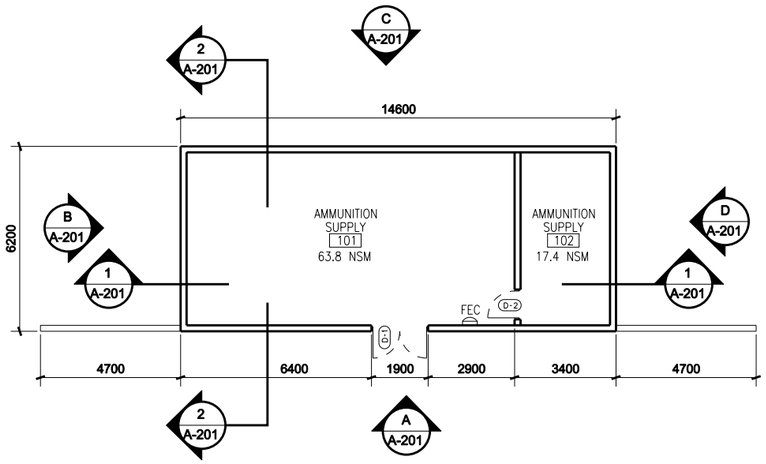
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

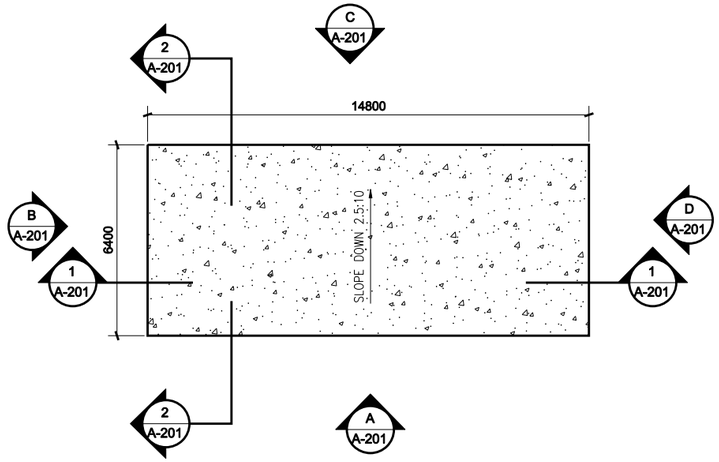
ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN
AMMUNITION SUPPLY POINT
STRUCTURAL SCHEDULES

SHEET REFERENCE NUMBER:
S-601
SHEET 9 OF 18



1 A-101 FLOOR PLAN
SCALE



2 A-101 ROOF PLAN
SCALE

LEGEND:

D-• DOOR TYPE, SEE SHEET A-601

FEB FIRE EXTINGUISHER AND WALL MOUNTED BRACKET

FLOOR PLAN NOTES:

1. ALL INTERIOR WALLS SHALL BE 200mm FULLY GROUTED, REINFORCED CMU.
2. ALL EXTERIOR WALLS SHALL BE REINFORCED CONCRETE - SEE STRUCTURAL.
3. OPENINGS FOR DOORS SHALL BE LOCATED 200 MM FROM THE ADJACENT WALL UNLESS NOTED OTHERWISE
4. SURFACES TO BE PAINTED SHALL BE CLEAN AND FREE OF FOREIGN MATTER BEFORE APPLICATION OF PAINT. CLEANING SHALL BE SCHEDULED SO THAT DUST AND OTHER CONTAMINANTS WILL NOT FALL ON WET, NEWLY PAINTED SURFACES.
5. CONCRETE AND INTERIOR MASONRY SURFACES GROUTED SOLID SHALL BE ALLOWED TO DRY AT LEAST 30 DAYS BEFORE PAINTING EXCEPT CONCRETE SLAB ON GRADE WHICH SHALL BE ALLOWED TO CURE 90 DAYS BEFORE PAINTING.
6. PAINTS CONTAINING LEAD IN EXCESS OF 0.06 PERCENT BY WEIGHT OF THE TOTAL NONVOLATILE CONTENT SHALL NOT BE USED.
7. MERCURIAL FUNGICIDES SHALL NOT BE USED IN OIL-BASE PAINT.
8. REMOVE LOOSE DIRT AND CLEAN SURFACES BEFORE PAINTING. APPLY PAINT TO INTERIOR STRUCTURAL RIGID FRAMINGS AND CEILINGS AND TEST FOR ADHESION. PRIMER COAT FOR MASONRY. INITIAL FIRST COAT WITH AN ACRYLIC LATEX PAINT FOR EXTERIOR SURFACES AND A SECOND COAT WITH A WATER REPELLENT ACRYLIC LATEX PAINT.
9. INTERIOR METAL DOORS AND FRAMES SHALL RECEIVE A PRIMER COAT PLUS TWO COATS OF PAINT.
10. DIMENSIONS ARE TO CENTERLINE OF WINDOW OPENINGS, AND TO HINGE SIDE OF DOOR OPENINGS.

1 0 1 2 3 4 5 6 7 8 9
1:100

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

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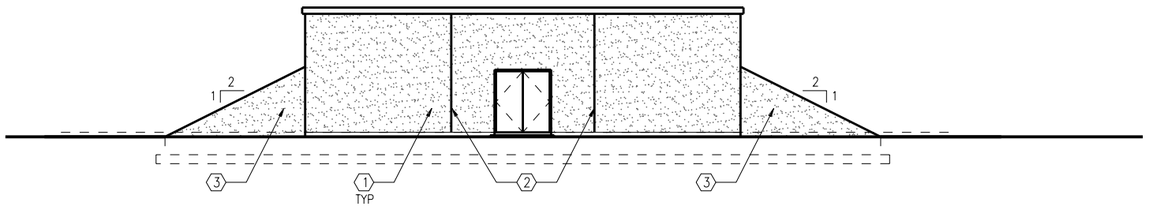
U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN
AMMUNITION SUPPLY POINT
FLOOR AND ROOF PLANS

SHEET REFERENCE NUMBER:
A-101
SHEET — OF —



A A-201 ELEVATION
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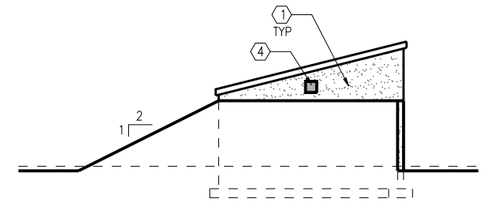
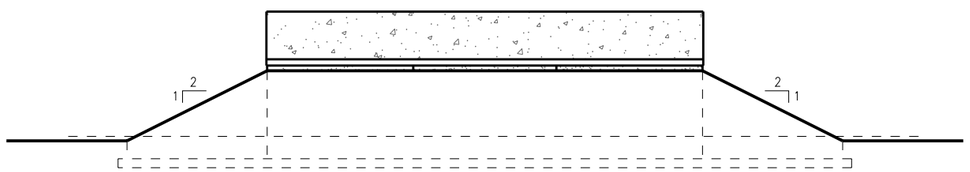


B A-201 ELEVATION
SCALE = 1:100

KEY NOTES:

1. PAINTED CONCRETE FINISH - PATCH ALL VOIDS PRIOR TO PAINTING
2. CONTROL JOINT
3. PAINTED CONCRETE WING WALL - PATCH ALL VOIDS PRIOR TO PAINTING
4. LOUVER - RE: MECH



C A-201 ELEVATION
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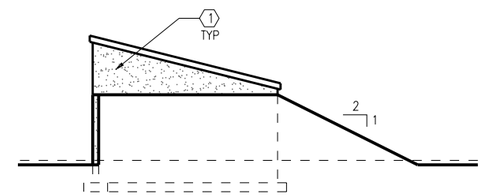
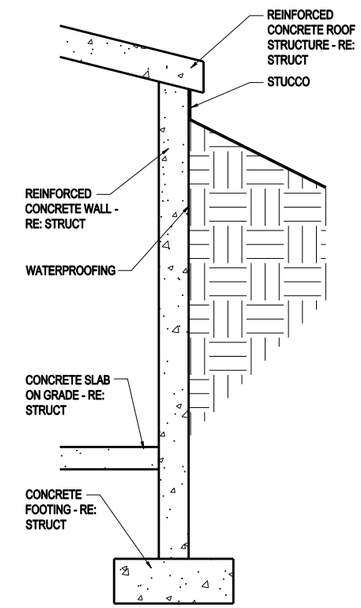
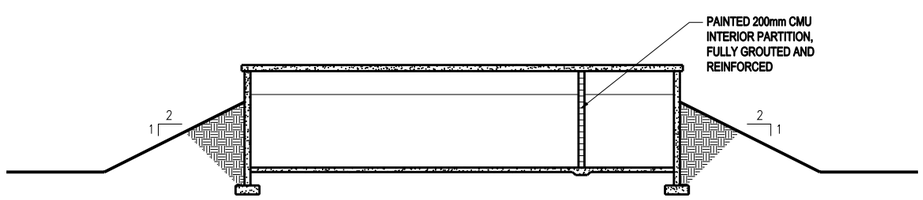


D A-201 ELEVATION
SCALE = 1:100



3 A-201 WALL SECTION
SCALE = 1:20



1 A-201 BUILDING SECTION
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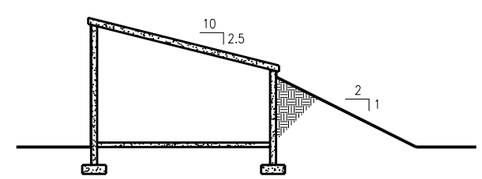

2 A-201 BUILDING SECTION
SCALE = 1:100

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

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U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

AMMUNITION SUPPLY POINT
ELEVATIONS AND BUILDING SECTIONS

SHEET REFERENCE NUMBER:
A-201
SHEET — OF —

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS		CEILING		REMARKS
		FINISH	FINISH	FINISH	COLOR	FINISH	COLOR	
101	AMMUNITION SUPPLY	SC	-	PC/PP	P1	-	-	1, 2, 3
102	AMMUNITION SUPPLY	SC	-	PC/PP	P1	-	-	1, 2, 3

FINISH SCHEDULE NOTES:

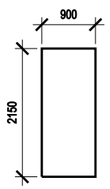
1. FINISH ABBREVIATIONS IN SCHEDULE ARE AS FOLLOWS: SC=SEALED CONCRETE, PP=PAINTED PLASTER, PC=PAINTED CONCRETE.
2. CONCRET AND CMU WALLS SHALL HAVE PAINTED FINISH. PATCH AND SMOOTH ALL HOLES AND UNEVEN SURFACES PRIOR TO PAINTING.
3. PAINTED WALLS SHALL HAVE ONE COAT OF PRIMER AND TWO COATS OF SEMI-GLOSS OFF-WHITE PAINT.

DOOR SCHEDULE

TAG	DOOR MAT'L	DOOR TYPE	DOOR WIDTH	DOOR HEIGHT	DOOR THICK	FRAME MAT'L	FRAME TYPE	FIRE LABEL	GLAZING	HRDWRE SET	NOTES
D-1	STEEL	B	1800	2150	45	STEEL	1	-		1	1,2,3,4,6,7,8,9
D-2	STEEL	A	900	2150	45	STEEL	1	-		2	1,2,3,4,5,6,7,8

DOOR TYPES NOTES:

1. INTERIOR AND EXTERIOR METAL DOORS AND FRAME COLORS SHALL MATCH ADJACENT WALL COLORS AS SELECTED BY THE CONTRACTING OFFICER.
2. HARDWARE SHALL BE HEAVY DUTY, COMMERCIAL GRADE, STAINLESS STEEL WITH A MATTE FINISH. THERE SHALL BE THREE HINGES AT EACH DOOR, AT LEAST 200/16/5 MM, WITH BALL BEARINGS, SECURED BY THREADED PINS.
3. FRAMES SHALL BE MOUNTED AND ADJUSTED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. FRAMES SHALL BE FASTENED WITH MINIMUM OF THREE FASTENING POINTS PER SIDE AT REGULAR INTERVALS.
4. AMMUNITION SUPPLY POINT DOORS SHALL BE HEAVY GAUGE STEEL SECURITY TYPE DOORS.
5. DOOR STOPS SHALL BE HEAVY-DUTY STAINLESS STEEL POST WITH SKID NOSE MADE OF WHITE NYLON. LENGTH OF STOPS SHALL BE SUFFICIENT TO PREVENT DOOR HANDLES FROM STRIKING WALL.
6. ALL DOOR FRAMES SHALL BE FITTED WITH DOOR SILENCERS.
7. DIMENSIONS SHOWN ON DOOR SCHEDULE ARE BASED UPON MODULAR MASONRY (OR ROUGH OPENING), HEIGHT OF 2200mm FOR STANDARD PERSONNEL DOORS. CONTRACTOR SHALL COORDINATE WITH DOOR SUPPLIER TO ENSURE THAT DIMENSIONS OF DOORS AND FRAMES PROVIDED ARE COMPATIBLE WITH DOOR OPENING DIMENSIONS.
8. ALL DOOR LOCKS SHALL BE MORTISED.
9. LOCK FUNCTION F04 - ENTRY LOCK- LATCH BOLT OPERATED BY LEVER FROM EITHER SIDE AT ALL TIMES EXCEPT WHEN OUTSIDE KNOB IS MADE INOPERABLE BY A STOP OR MECHANICAL MEANS OTHER THAN A KEY. WHEN OUTSIDE KNOB IS LACKED, LATCH BOLT MAY BE RETRACTED BY KEY FROM OUTSIDE OR ROTATING INSIDE LEVER.



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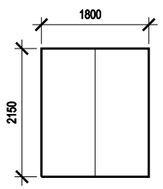

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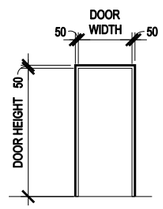
1 A-601 DOOR TYPES
SCALE = 1:50



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2 A-601 FRAME TYPE
SCALE = 1:50

HARDWARE TYPES:

HW-1
3 PR HINGES
1 EA LOCKSET F04, ENTRY LOCK, W/LEVERS, GRADE 1
1 EA DOOR CLOSER, C02061, LOW RESISTANCE
1 EA THRESHOLD, J32130
1 REMOVABLE ASTRAGAL
1 SET WEATHERSEALS

HW-2
1-1/2 PR HINGES
1 EA EXIT DEVICE, RIM TYPE, F01
1 EA DOOR STOP, L02101 OR L02161

GRAPHIC SCALE
2500 1000 500 0 2500 5000
SCALE: 1 : 50

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APV

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U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

AMMUNITION SUPPLY POINT
DOOR AND FINISH SCHEDULES AND DETAILS

SHEET REFERENCE NUMBER:
A-601
SHEET 18 OF 18

POWER

- DISTRIBUTION PANELBOARD
- NEW PANELBOARD - SURFACE
- NEW PANELBOARD - RECESSED
- EXISTING PANELBOARD
- GENERATOR
- TVSS — TRANSIENT VOLTAGE SURGE SURPRESSOR
- TRANSFORMER (DRAWN TO SIZE)
- PS — POWER SUPPLY
- CP — CONTROL PANEL
- TC — TIME CLOCK
- TIM — ASTRONOMICAL TIME CLOCK- "SEE SPEC."
- R — RELAY WITH RATING AND NUMBER OF POLES AS NOTED ON DRAWINGS- "SEE SPEC."
- J — JUNCTION BOX
- J — JUNCTION BOX - CEILING
- PB — PULL BOX
- BD — BUS DUCT HORIZONTAL
- BUS DUCT VERTICAL
- EMERGENCY POWER OFF PUSH BUTTON
- NON-FUSIBLE SAFETY SWITCH
- FUSIBLE SAFETY SWITCH
- M — MOTOR
- $M — MOTOR STARTING SWITCH - 20A RATED
- $K — KEY SWITCH - 20A RATED
- FC — FAN COIL - FURNISHED BY MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR SHALL INSTALL AND PROVIDE POWER CONNECTION
- UH — UNIT HEATER - FURNISHED BY MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR SHALL INSTALL AND PROVIDE POWER CONNECTION
- D — JUNCTION BOX FOR CONNECTION TO GARBAGE DISPOSAL
- CF — LIGHT/HEATER/FAN - FURNISHED BY MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR SHALL INSTALL AND PROVIDE POWER CONNECTION
- ELECTRIC WATER HEATER
- EPO — WEATHERPROOF / EXPLOSION PROOF EMERGENCY POWER OFF PUSH-BUTTON TO BE INTERCONNECTED WITH GENERATOR SHUT DOWN CONTROL
- CF — CEILING FAN - REFER TO SPECIFICATION SECTION 26 20 00

RECEPTACLES

- DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS
- GF — DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS - GROUND FAULT INTERRUPTER TYPE
- WR GF — DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS - GROUND FAULT INTERRUPTER TYPE WITH WEATHERPROOF COVER
- EXP — DUPLEX 20A BRITISH STANDARD UNSWITCHED SOCKETS - EXPLOSION PROOF
- * — INDICATES MOUNT DEVICE ABOVE COUNTER TOP

LIGHTNING PROTECTION

- AIR TERMINAL 1/2"O.D. X 12' SOLID COPPER, NICKEL PLATED ON ADHESIVE BASE.
- EQ — EQUIPMENT AIR TERMINAL
- TEST WELL WITH GROUND ROD(S)
- GROUND ROD
- G — GROUND PLATE
- MAIN GROUND CONDUCTER CONCEALED WITHIN CONSTRUCTION
- MAIN GROUND CONDUCTOR EXPOSED ON EXPOSED ON BUILDING EXTERIOR SURFACE
- GROUND CONDUCTOR CAD WELDED TO GROUND CABLE OR EQUIPMENT
- GROUND CONDUCTOR CAD WELDED TO BUILDING STEEL COLUMN
- GROUND ROD TRIPOD, SPACED 10 FEET APART.
- LEVEL TO LEVEL CABLE

LIGHTING

- LIGHTING FIXTURE - SEE FIXTURE SCHEDULE FOR MORE INFORMATION
- LIGHTING FIXTURE - SEE FIXTURE SCHEDULE FOR MORE INFORMATION
- DOWNLIGHT
- LIGHTING FIXTURE ON NORMAL/EMERGENCY
- WALL MOUNTED LIGHT FIXTURE
- E — EXIT SIGN - DIRECTIONAL ARROWS AS INDICATED ON DRAWINGS
- B — BATTERY PACK WITH HEADS AS INDICATED ON DRAWINGS
- REMOTE HEAD FOR BATTERY PACK
- $ — SINGLE POLE SWITCH - 20A RATED
- $3 — 3-WAY SWITCH - 20A RATED
- $4 — 4-WAY SWITCH - 20A RATED
- PC — PHOTOCELL VOLTAGE TO MATCH CIRCUITRY
- LC — LIGHTING CONTACTOR
- POLE MOUNTED SITE LIGHTING FIXTURE- NUMBER OF FIXTURES PER POLE AS INDICATED ON DRAWINGS
- EXTERIOR DIRECTIONAL LIGHTING FIXTURE
- a — SMALL CASE LETTERS REPRESENTS LAMP(S) / SWITCHES. WHEN USED WITH AN OCCUPANCY SENSOR THIS INDICATES SENSOR WITH MANUAL OVERRIDE SWITCH

TELECOMMUNICATIONS

- TELEPHONE OUTLET(S) @ 18" AFF. U.N.O. WITH 3/4" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO TELEPHONE TERMINAL BOARD IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION
- DATA OUTLET(S) @ 18" AFF. U.N.O. WITH 3/4" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO DATA EQUIPMENT RACK IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION

TELECOMMUNICATIONS (CONTINUED)

- COMBINATION TELEPHONE/DATA OUTLET(S) @ 18" AFF. U.N.O. WITH 1" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO TELE/DATA TERMINAL AREA IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION
- W — WALL MTD. TELEPHONE OUTLET WITH 3/4" RACEWAY TERMINATED ABOVE NEAREST ACCESSIBLE CEILING OR TO TELEPHONE TERMINAL BOARD IF NO ACCESSIBLE CEILING AVAILABLE. SEE TELE/DATA RISER DIAGRAM FOR OUTLET AND CABLE DESCRIPTION
- (x)T — INDICATES NUMBER OF TELEPHONE OUTLET(S) AND ASSOCIATED CABLING
- (x)D — INDICATES NUMBER OF DATA OUTLET(S) AND ASSOCIATED CABLING
- (x)TF — INDICATES NUMBER OF TELEPHONE OUTLETS AND ASSOCIATED CABLING WITH 1 OUTLET AND CABLE DEDICATED FOR FAX

SINGLE LINE SYMBOLS

- SWITCH
- BREAKER
- FUSE
- TRANSFORMER
- CAPACITOR
- GROUND
- CONTACT (NORMALLY OPEN)
- CONTACT (NORMALLY CLOSED)
- AUTOMATIC TRANSFER SWITCH
- MANUAL DOUBLE THROW SWITCH
- CURRENT TRANSFORMER
- INDICATES NEW ELECTRICAL EQUIPMENT
- C — INDICATES NEW CONTROL WIRING AND CONDUIT
- EQUIPMENT OUTLINE

MISCELLANEOUS

- BRANCH CIRCUIT WIRING CONCEALED ABOVE CEILINGS, SURFACE MOUNTED ON WALLS
- BRANCH CIRCUIT WIRING - #10 AWG
- BRANCH CIRCUIT WIRING - UNDER FLOOR
- HOME RUN BACK TO PANEL
- CONDUIT TURNED DOWN
- CONDUIT TURNED UP
- LV — LOW VOLTAGE WIRING AND CONDUIT
- CT-X — CABLE TRAY ("X" DENOTES WIDTH)
- INDICATES CONTINUATION OF LINE

FIRE ALARM

- FACP — FIRE ALARM CONTROL PANEL WITH BATTERY BACKUP
- F — FIRE ALARM PULL STATION
- F — FIRE ALARM STROBE - WALL MOUNTED
- F — FIRE ALARM AUDIBLE/STROBE - WM

FIRE ALARM (CONTINUED)

- F — FIRE ALARM HORN/STROBE - WM
- S — SMOKE DETECTOR
- H — HEAT DETECTOR CEILING MOUNTED
- D — DUCT DETECTOR - PROVIDED BY EC, INSTALLED BY MC AND CONNECTED BY EC

DENOTATIONS & ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
C	CEILING MOUNTED
E	EMERGENCY
EC	ELECTRICAL CONTRACTOR
EPO	EMERGENCY POWER OFF
EXP	EXPLOSION PROOF
F	FIRE ALARM
FF	FLUSH FLOOR MOUNTED
FL	FLUORESCENT
FO	FIBER OPTIC
FSS	FUSED SAFETY SWITCH
G	GROUND FAULT INTERRUPTER
GC	GENERAL CONTRACTOR
HOA	HAND-OFF AUTO
I	INFRARED
ICD	INCANDESCENT
IG	ISOLATED GROUND
K	KEY
LV	LOW VOLTAGE
M	MOTOR
MC	MECHANICAL CONTRACTOR
NE	NORMAL/EMERGENCY
NFSS	NON-FUSED SAFETY SWITCH
PA	PAGING SYSTEM
PLC	PLUMBING CONTRACTOR
REL	RELOCATE
RED	RELOCATED
SL	SINGLE LINE
SS	SURGE SUPPRESSION
T	TELEPHONE
TL	TWIST LOCK
TP	TAMPER PROOF
UE	UNDERGROUND ELECTRIC
UF	UNDERGROUND FIBER

DENOTATIONS & ABBREVIATIONS (CONT.)

UT	UNDERGROUND TELEPHONE
W	WALL MOUNTED
WG	WIRE GUARD
WP	WEATHERPROOF
WPG	WEATHERPROOF/GROUND FAULT INTERRUPTER
WT	WATER TIGHT

GENERAL PROJECT NOTES:

G1. UNLESS OTHERWISE NOTED, PROVIDE ALL EQUIPMENT SHOWN ON THE PLANS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL SYMBOLS SHOWN ON THE PLANS WITH THE SYMBOL LIST. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE INTENT OF ANY SYMBOL THAT IS SHOWN ON THE PLANS AND NOT INDICATED ON THE SYMBOL LIST WITH THE ENGINEER PRIOR TO BID.

G2. COORDINATE THE FINAL LOCATIONS OF ALL LIGHT FIXTURES WITH THE ARCHITECT'S REFLECTED CEILING PLANS. REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO INSTALLATION.

G3. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE CONSTRUCTION AREA THREE (3) WORKING DAYS NOTICE BEFORE COMMENCE DIGGING. NOTIFY THE LOCAL OR STATE AUTHORITY HAVING JURISDICTION AND WAIT THE REQUIRED TIME BEFORE COMMENCING TO DIG.

G4. THE CONTRACTOR SHALL COORDINATE CONDUIT RUNS, CABLE TRAY, LIGHTING FIXTURES AND OTHER EQUIPMENT LOCATIONS WITH THE OTHER TRADE CONTRACTORS TO AVOID CONFLICTS.

G5. WHERE VOLTAGES AND FREQUENCIES ON THE DRAWINGS AND IN THE SPECIFICATIONS DIFFER FROM THE LOCAL ONES, ALL WORK SHALL BE PERFORMED USING THE LOCAL VOLTAGES AND FREQUENCIES.

G6. THE MINIMUM WIRE SIZE ON THE PROJECT SHALL BE 4mm2. THE MINIMUM CONDUIT SIZE SHALL BE 20mm. THE MINIMUM BREAKER SIZE SHALL BE 20 AMPS.

G7. THE CONTRACTOR SHALL PUT A MAXIMUM OF 6 DUPLEX SOCKETS ON A 20A SINGLE POLE CIRCUIT.

G8. WHERE THE 1010 SCOPE REVIEW, 1015 TECHNICAL REVIEW, DRAWINGS, AND SPECIFICATIONS DIFFER FROM AMERICAN CODES OR STANDARDS THE 1010, 1015, DRAWINGS, AND SPECIFICATIONS SHALL RULE.

G9. WORK FOR THE AMMUNITION SUPPLY POINT SHALL BE DONE IN ACCORDANCE WITH DEPARTMENT OF DEFENSE STANDARD DOD 6055.9-STD.

G10. ALL CONDUIT AND DEVICES SHALL BE SURFACE MOUNTED UNLESS OTHERWISE INDICATED.

US ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APP.

DESIGNED BY: AED
DWN BY: AED
CKD BY: AED
REVIEWED BY:
SUBMITTED BY:
DATE: XX-XX-XX
DESIGN FILE NO.
DRAWING CODE:
FILE NAME:
PLOT SCALE: AS SHOWN
CONTRACT NO. XXX-XX-XX
REV. —

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

AMMUNITION SUPPLY POINT
ELECTRICAL
SYMBOLS AND ABBREVIATIONS

SHEET REFERENCE NUMBER:
E-001
SHEET — OF —

FAN SCHEDULE

NO.	TYPE	FAN CMS	DRIVE	HP	SP mmH20	ELECT. CHAR.	SWITCH
EF-1	INLINE	0.100	DIRECT	1/30	13	220/1/50	W/ STAT

NOTE:
1. FAN SHALL HAVE LOW LEAKAGE GRAVITY LOUVER AND SECURITY GRILLE.
2. FAN SHALL BE EXPLOSION PROOF.

ELECTRIC UNIT HEATER SCHEDULE

SYMBOL	CMS	KW	F.A.T. °C	ELECT. CHAR.	MOUNTING
EH-1	.200	3	33	370/1/50	CEILING HUNG
EH-2	.200	3	33	370/1/50	CEILING HUNG
EH-3	.200	3	33	370/1/50	CEILING HUNG

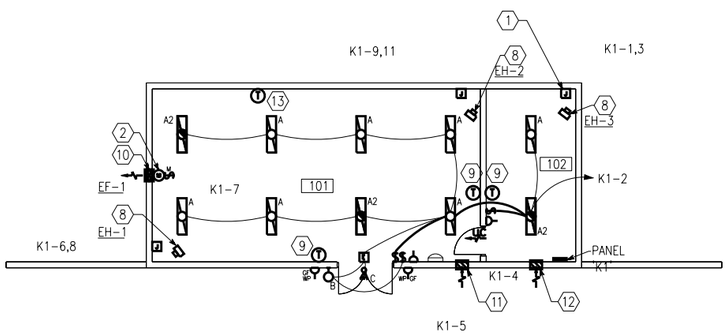
NOTE:
1. HEATER AND THERMOSTAT SHALL BE EXPLOSION PROOF.

GENERAL NOTE:

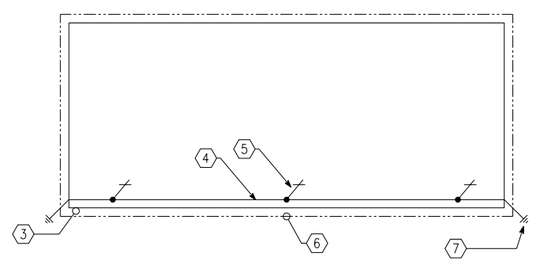
1. REFER TO DRAWING E-001 FOR ELECTRICAL SYMBOLS LIST.
2. EXIT SIGNS SHALL BE ON UNSWITCHED CIRCUITS.
3. REFER TO DRAWING E-601 FOR LIGHTING FIXTURE SCHEDULE.
4. REFER TO E-601 FOR PANEL SCHEDULES.
5. AIR TERMINALS FOR LIGHTNING PROTECTION SYSTEM SHALL BE LOCATED 6.5 METERS MAXIMUM APART.
6. COPPER COUNTERPOISE GROUND SHALL BE LOCATED 700mm MINIMUM FROM BUILDING FOOTPRINT.

NUMBERED NOTE:

1. ELECTRICAL CONNECTION TO ELECTRIC UNIT HEATER (TYPICAL).
2. EXHAUST FAN.
3. CADWELD TO BUILDING STRUCTURE AT 18 METERS O.C. AROUND ENTIRE PERIMETER OF BUILDING. (TYPICAL).
4. LIGHTNING PROTECTION CABLE.
5. AIR TERMINAL (TYPICAL).
6. 1 120.0mm2 BARE, TINNED COPPER COUNTERPOISE GROUND 700mm BELOW GRADE.
7. INSTALL DOWN CONDUCTOR IN 25mm CONDUIT TO 20mm DIAMETER x 3 METERS SOLID COPPER TINNED GROUND ROD. (TYPICAL).
8. EXPLOSION PROOF ELECTRIC UNIT HEATER SUSPENDED FROM STRUCTURE ABOVE. SUPPLIED AND INSTALLED BY EC.
9. THERMOSTAT ON INSULATED BACKING, MOUNTED AT 1.5M AFF. SUPPLIED AND INSTALLED BY EC.
10. WALL MOUNTED EXHAUST FAN. SUPPLIED AND INSTALLED BY EC.
11. 200x400 (8x16) GRAVITY LOW LEAKAGE EXTERIOR LOUVER. SUPPLIED AND INSTALLED BY EC.
12. 200x200 (8x8) GRAVITY LOW LEAKAGE EXTERIOR LOUVER. SUPPLIED AND INSTALLED BY EC.
13. REVERSE ACTING STAT ON INSULATED BACKING SERVING EF-1. SUPPLIED AND INSTALLED BY EC.



1 E-101 LIGHTING AND POWER PLAN
SCALE = 1:100



2 E-101 LIGHTNING PROTECTION PLAN
SCALE = 1:100

1 0 1 2 3 4 5 6 7 8 9
1:100

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APV

DESIGNED BY: AED | DATE: XX-XX-XX | REV. —
DRAWN BY: AED | CKD BY: AED | DESIGN FILE NO. —
REVIEWED BY: | DRAWING CODE:
SUBMITTED BY: | FILE NAME: | PLOT SCALE: AS SHOWN | CONTRACT NO. XXX-XX-XX

U.S. ARMY CORPS OF ENGINEERS
AFGHANISTAN ENGINEER DISTRICT
APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

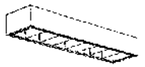
CNPA HEADQUARTERS COMPOUND
KABUL, AFGHANISTAN

AMMUNITION SUPPLY POINT

LIGHTING, POWER, AND LIGHTNING PROTECTION PLANS

SHEET REFERENCE NUMBER:
E-101
SHEET — OF —

FIXTURE MARK 'A'



PARABOLIC SURFACE/PENDANT MOUNTED 300MM x 1200MM FLUORESCET FIXTURE WITH ELECTRONIC BALLAST.

FIXTURE MARK 'A2':
SAME FIXTURE AS 'A' WITH EMERGENCY BALLAST.

FIXTURE MARK 'B'

INCANDESCENT ONE PIECE WITH APPROVED LENS, STABILIZED HIGH IMPACT POLY CARBONATE

FIXTURE MARK 'C'

REMOTE HEAD EXTERIOR LIGHT HEAD POWERED FROM EXIT SIGN BATTERY- 12V DOUBLE HEAD CORROSION RESISTANT WITH UL34 WEATHERPROOF CONSTRUCTION

FIXTURE MARK ' ' E

UNIVERSAL MOUNT ENGINEER GRADE THERMOPLASTIC HOUSING EXIT SIGN WITH LED LAMPS, RED LETTERS 6" IN HEIGHT WITH ARROWS AS INDICATED, WITH 12V CADMIUM BATTERY

LIGHTING FIXTURE SCHEDULE

FIXTURE MARK	STYLE NUMBER AND TYPE	NUMBER AND TYPE OF LAMPS	VOLTAGE	MOUNTING	NOTES
A	PARABOLIC SURFACE/PENDANT MOUNTED 300MM X 1200MM FLUORESCENT FIXTURE WITH ELECTRONIC BALLAST	(2) 32W 3500K	220V - 1Ø 50HZ	PENDANT MOUNTED FROM SLOPED CEILINGS	FURNISHED WITH ELECTRONIC BALLAST. PARABOLIC LOUVER SHALL BE SPECULAR LENS IRADESCENCE TYPE.
A2	SAME AS FIXTURE 'A' WITH EMERGENCY BALLAST	(2) 32W 3500K	220V - 1Ø 50HZ	PENDANT MOUNTED FROM SLOPED CEILINGS	FURNISHED WITH ELECTRONIC BALLAST. PARABOLIC LOUVER SHALL BE SPECULAR LENS IRADESCENCE TYPE. EMERGENCY BALLAST SELF TEST.
B	INCANDESCENT ONE PIECE W/ APPROVED LENS STABILIZED HIGH IMPACT POLY CARBONATE.	(1) A19 - 100W INCANDESCENT	220V - 1Ø 50HZ	WALL MOUNTED ABOVE EXTERIOR DOORS	
C	REMOTE HEAD EXTERIOR LIGHT HEAD POWERED FROM EXIT SIGN BATTERY- 12V DOUBLE HEAD CORROSION RESISTANT WITH UL34 WEATHERPROOF CONSTRUCTION	(2) 12W/12V HALOGEN LAMP	12V - 1Ø 50HZ	EXTERIOR WALL MOUNTED AT TOP OF DOOR HEIGHT	
E	UNIVERSAL MOUNT ENGINEER GRADE THERMOPLASTIC HOUSING EXIT SIGN WITH LED LAMPS, RED LETTERS 6" IN HEIGHT WITH ARROWS AS INDICATED, WITH 12V CADMIUM BATTERY WITH REMOTE HEAD CAPABILITY	LED LAMPS	220V - 1Ø 50HZ	UNIVERSAL MOUNTING	

PANEL LOCATION: AMMUNITION SUPPLY – BUILDING 'K'

PANELBOARD K1 SURFACE MOUNTED 22,000 ASYM. A.I.C. MIN. NEMA 1
AMP. MAIN LUGS (OR) 100 AMP. MAIN BREAKER W/ 100 AMP. TRIP
CIRCUIT BREAKER TYPE 380/220 VOLTS 1 PHASE 3 WIRE 50 HZ 100 AMP. BUS

CKT. NO.	TRIP AMPS	NO. POLES	WIRE MM2	GND MM2	CONDUIT MM	LOAD SERVED	LOAD-V.A. A0	LOAD-V.A. B0	LOAD-V.A. A0	LOAD-V.A. B0	LOAD SERVED	CONDUIT MM	GND MM2	WIRE MM2	NO. POLES	TRIP AMPS	CKT. NO.
1	20	2	4.0	4.0	20	Electric Unit Heater – 102	1.5		0.8		Lighting – 101, 102	20	4.0	4.0	1	20	2
3								1.5		0.4	Receptacles – 101, 102	20	4.0	4.0	1	20	4
5	20	1	4.0	4.0	20	Receptacles – Exterior	0.4		1.5		Electric Unit Heater – 101	20	4.0	4.0	2	20	6
7	20	1	4.0	4.0	20	Exhaust Fan – 101		0.5		1.5							8
9	20	2	4.0	4.0	20	Electric Unit Heater – 101	1.5		1.6		Guard Tower #2				1	20	10
11								1.5			Spare				1	20	12
13	20	1				Spare					Spare				1	20	14
15	20	1				Spare					Spare				1	20	16
17	20	1				Spare					Spare				1	20	18
19	20	1				Spare					Spare				1	20	20
21	20	1				Spare					Spare				1	20	22
23	20	1				Spare					Spare				1	20	24
25	20	1				Spare					Spare				1	20	26
27	20	1				Spare					Spare				1	20	28
29	20	1				Spare					Spare				1	20	30
31	20	1				Spare					Spare				1	20	32
33	20	1				Spare					Spare				1	20	34
35	20	1				Spare					Spare				1	20	36
37	20	1				Spare					Spare				1	20	38
39	20	1				Spare					Spare				1	20	40
41	20	1				Spare					Spare				1	20	42
							3.4	3.5	3.9	1.9							

TOTAL CONN. LOAD PER PHASE (KVA): A0 7.3 B0 5.4

TOTAL CONN. LOAD 12.7 KVA. 70 % DEMAND = ESTIMATED DEMAND LOAD 8.9 SUPPLIED FROM PANEL 'DP1'

* MAIN BREAKER SHALL BE EARTH GROUND TYPE

US ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT

SYMBOL	DESCRIPTION	DATE	APV

DESIGNED BY: DWN BY: CKD BY: REVIEWED BY: SUBMITTED BY:
DATE: XX-XX-XX REV. ___
DESIGN FILE NO. ___
DRAWING CODE: ___
FILE NAME: ___
PLOT SCALE: ___
CONTRACT NO. XXX-XX-XXX

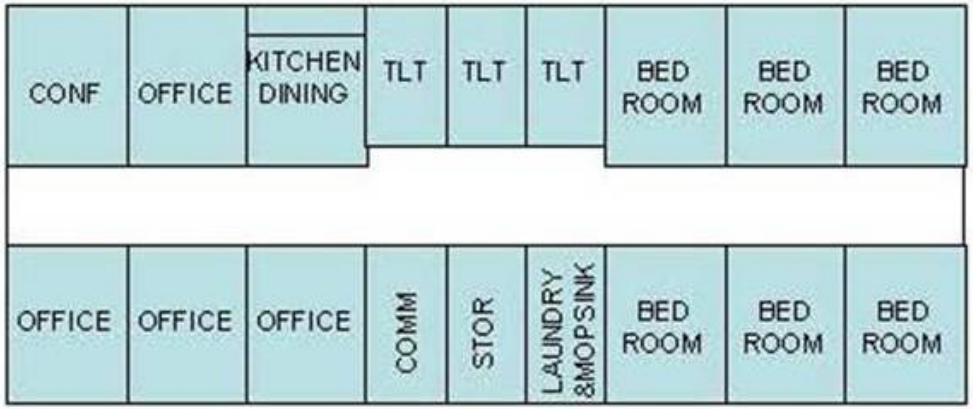
U.S. ARMY CORPS OF ENGINEERS AFGHANISTAN ENGINEER DISTRICT APO AE 09356

ENGINEERING AND CONSTRUCTION DIVISION

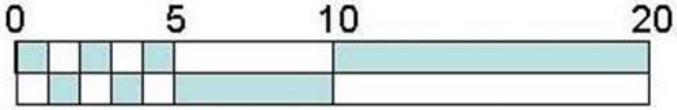
STANDARD DESIGN
TOILET SHOWER ABLUTION BLDG
INSTALLATION LOCATION, AFGHANISTAN

LIGHTING FIXTURE AND ELECTRICAL PANEL SCHEDULES

SHEET REFERENCE NUMBER:
E-601
SHEET — OF —



USACE OFFICES & QUARTERS



GRAPHIC SCALE IN METERS

EACH BLDG IS 240 SM – APPROXIMATELY 10M X 24M

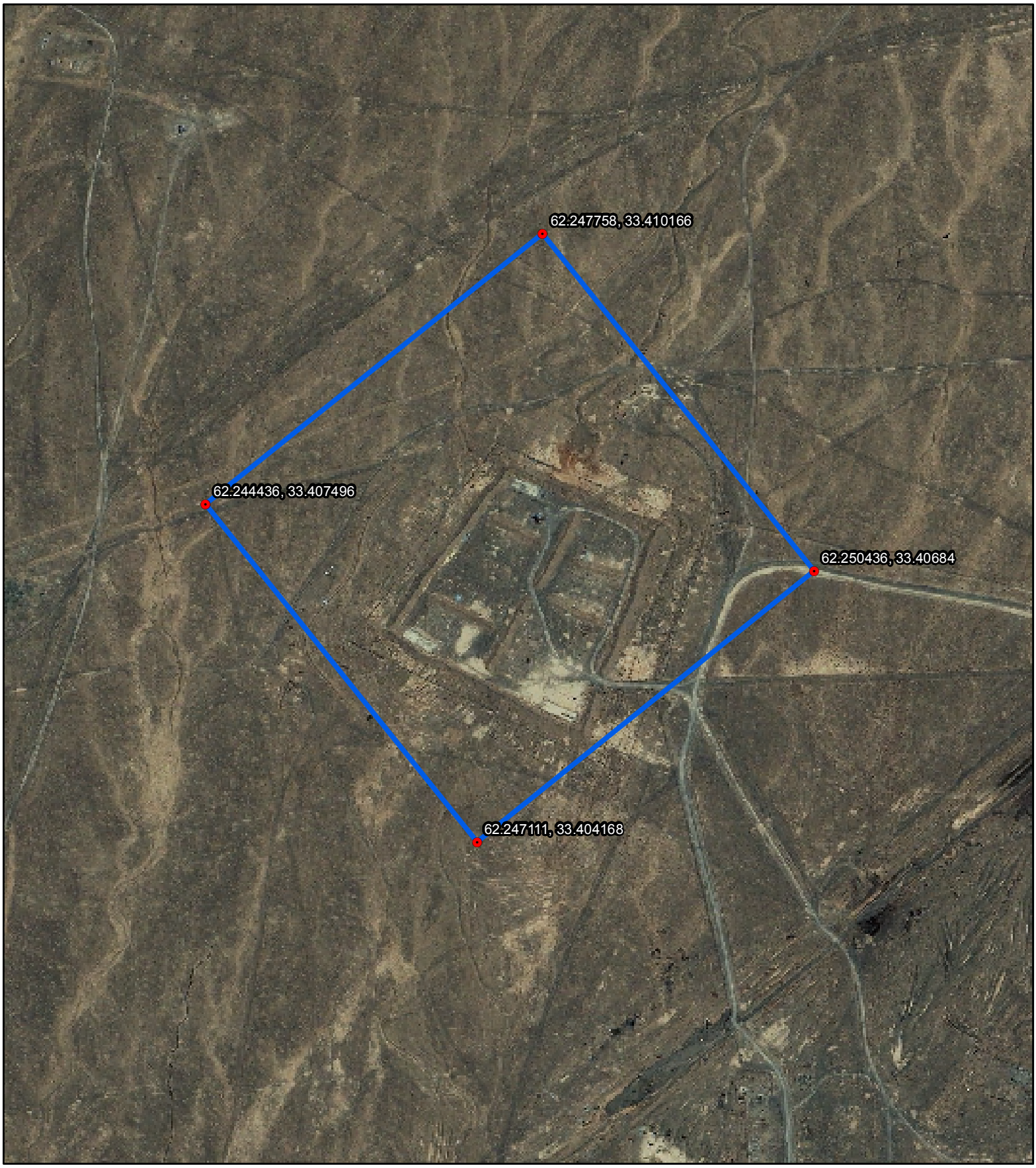
BLDG IS 240 SM – APPROXIMATELY 10M X 24M

SHINDAND AIR BASE

0 150 300 600 900 1,200 Meters

UNCLAS // FOUO

N W E S



SHINDAND AIR BASE

0 50 100 200 300 400 Meters

UNCLAS // FOUO

N W E S