

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES 1 31
2. AMENDMENT/MODIFICATION NO. 0006	3. EFFECTIVE DATE 05-Apr-2009	4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable)
6. ISSUED BY AFGHANISTAN ENGINEER DISTRICT US ARMY CORPS OF ENGINEERS KABUL APO AE 09356	CODE W917PM	7. ADMINISTERED BY (If other than item 6) See Item 6		
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		X	9A. AMENDMENT OF SOLICITATION NO. W917PM-09-R-0028	
		X	9B. DATED (SEE ITEM 11) 27-Dec-2008	
			10A. MOD. OF CONTRACT/ORDER NO.	
			10B. DATED (SEE ITEM 13)	
CODE	FACILITY CODE			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS				
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input checked="" type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. ACCOUNTING AND APPROPRIATION DATA (If required)				
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.				
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.				
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).				
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
D. OTHER (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.				
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) The purpose of this amendment for solicitation W917PM-09-R-0028 is to extend the due date, and incorporate a revised Scope of Work and a revised Bid Schedule. See Continuation Page				
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.				
15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
		TEL:	EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED 05-Apr-2009

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:

BLOCK 14 CONTINUATION PAGE

1. Section 00010 Proposal Schedule is revised as follows:

SubCLIN 0002AI is revised to read "0002AJ Guard Towers"

SubCLIN 0002AJ is revised to read "0002AK Access Road to the Camp (Paved Finish)"

SubCLIN 0002AK is revised to read "0002AL Camp Inside Roads, and Walkways (Paved Finish)"

SubCLIN 0002AL is revised to read "0002AM Trash Collections and "7 ea"

SubCLIN 0003AA is revised to read "3 ea"

SubCLIN 0003AB is revised to read "6 ea"

SubCLIN 0003AI is revised to read "0003AJ Communication Building"

SubCLIN 0003AJ is revised to read "0003AK POL Storage"

SubCLIN 0003AK is revised to read "0003AL General Warehouse Storage"

SubCLIN 0003AL is revised to read "0003AM Arms Storage Building"

SubCLIN 0003AM is revised to read "0003AN Vehicle Wash Rack"

SubCLIN 0003AN is revised to read "0003AP Non-Organic Vehicle Maint (9 Double Bay) and 2 ea"

SubCLIN 0003AP is revised to read "0003AQ Bunkers and 8 ea"

SubCLIN 0003AQ is revised to read "0003AR GSE Comm and Armament Maint"

SubCLIN 0003AR is revised to read "0003AS Temporary Life Support Facilities"

CLIN 0004 is revised to read "DBA Insurance"

CLIN 0005 is revised to read "MWR GYM and outside Volleyball"

CLIN 0006 is revised to read "Irrigation System for Camp Gamberi"

CLIN 0007 is added Non-organic Vehicle Maint (9 Double Bay) 1 LS

2. Section 01010 Scope of Work-Design Build is revised due to down scoping of the project and replaced with SOW dated 27 March 2009.

3. The proposal due date is extended to 30 April 2009, 5:00 PM, Kabul Time.

4. THIS AMENDMENT IS RESTRICTED TO CONTRACTORS THAT PREVIOUSLY SUBMITTED A PROPOSAL ON 5 FEBRUARY 2009. CONTRACTORS SHOULD REVIEW AMENDMENT 0006 AND SUBMIT TECHNICAL AND PRICE PROPOSALS TO THE ATTENTION OF MS. DEMETRIA CHUNN. PROPOSALS MAY BE LEFT AT THE QALAA HOUSE COMPOUND GUARD GATE. NO PROPOSALS WILL BE RECEIVED AFTER DUE DATE AND TIME OF 30 APRIL 2009, 5:00 PM KABUL TIME.

5. NO OTHER CONTRACTOR PROPOSALS WILL BE RECEIVED AND/OR EVALUATED.

6. CONTRACTORS MUST PROVIDE ACKNOWLEDGEMENT OF AMENDMENT 0006.

SECTION 00010 - SOLICITATION CONTRACT FORM

The following have been modified:

SECTION 00010

**SECTION 00010
PROPOSAL SCHEDULE**

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

<i>No.</i>	<i>Description</i>	<i>Qty</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Total Amount</i>
1. Base Proposal:					
0001 Design Program:					
0001AA	Site Survey / Master Planning A & E Design	1	LS	xxx	\$_____
0001AB	As-Built Drawings	1	LS	NTE (Not to Exceed)	<u>\$20,000</u>
Sub-Total Design Program:					\$_____
					(Including NTE Amount)
0002 Site Development / Improvements:					
0002AA	Mobilization, Demobilization, Field Office, and General Site Work	1	LS	xxx	\$_____
0002AB	Security Measures	1	LS	xxx	\$_____
0002AC	Wadi Diversion/ Mitigation	1	LS	xxx	\$_____
0002AD	Potable Water Supply System	1	LS	xxx	\$_____
0002AE	Sanitary Sewer and Treatment System	1	LS	xxx	\$_____
0002AF	Site Electrical Distribution System	1	EA	\$_____	\$_____
0002AG	Perimeter Wall/Fencing	1	LS	xxx	\$_____

0002AH	Primary ECP	1	EA	\$_____	\$_____
0002AJ	Guard Towers	8	EA	\$_____	\$_____
0002AK	Access Road to the Camp (Paved finish)	1	LS	xxx	\$_____
0002AL	Camp Inside Roads, and Walkways (Paved finish)	1	LS	xxx	\$_____
0002AM	Trash Collection Points	7	EA	\$_____	\$_____

Sub-Total Site Developments / Improvements: \$_____

0003 Buildings & Building Complexes:

<i>No.</i>	<i>Description</i>	<i>Qty</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Total Amount</i>
0003AA	BOQ Barracks	3	EA	\$_____	\$_____
0003AB	Enlisted Open Bay Barracks	6	EA	\$_____	\$_____
0003AC	Dining Facility with Storage Yard	1	EA	\$_____	\$_____
0003AD	Battalion HQs Buildings	1	EA	\$_____	\$_____
0003AE	ToiletShowerAblutionLaundry Facility	1	EA	\$_____	\$_____
0003AF	Vehicle Refueling Point	1	EA	\$_____	\$_____
0003AG	Motor Pool Gravel Parking	1	LS	xxx	\$_____
0003AH	CSB Vehicle Maint Bldg (9 Double Bay)	1	EA	\$_____	\$_____
0003AJ	Communication Building	1	EA	\$_____	\$_____
0003AK	POL Storage	1	EA	\$_____	\$_____
0003AL	General Warehouse Storage	1	EA	\$_____	\$_____
0003AM	Arms Storage Building	1	EA	\$_____	\$_____
0003AN	Vehicle Wash Rack	1	LS	xxx	\$_____
0003AP	Non-Organic Veh Maint. (9 Double Bay)	2	EA	\$_____	\$_____
0003AQ	Bunkers	8	EA	\$_____	\$_____
0003AR	GSE Comm. and Armament Maint.	1	LS	xxx	\$_____
0003AS	Temporary Life Support Facilities	1	LS	xxx	\$_____

Sub-Total Buildings & Building Complexes: \$ _____

0004 DBA Insurance 1 LS xxx \$ _____

TOTAL BASE BID ITEMS: \$ _____
(Including NTE Amount)

2. Optional Bid Items:

0005 MWR GYM and outside Volleyball 1 LS xxx \$ _____

0006 Irrigation System for Camp Gamberi 1 LS xxx \$ _____

0007 Non-Organic Veh Maint (9 Double Bay) 1 LS xxx \$ _____

TOTAL ALL OPTIONAL BID ITEMS: \$ _____

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

PROPOSAL SCHEDULE NOTES

1. Offeror shall submit prices on all items. Scope of work on each items are described in Section 01010.
2. Only one contract for the entire schedule will be awarded under this solicitation. This project will be awarded as a lump sum contract. This Proposal Schedule is an accounting tool for allocating funds to applicable budget.
3. Costs associated with this project shall include design and construction costs, site development, and utility installation.
4. DESIGN COSTS DEFINITION: Design costs shall consist of design analysis, drawings, and specifications of all facilities.
5. COST LIMITATION: The established design cost limitation for all Design Costs, as defined in paragraph 4, shall not exceed 6 percent of the total construction cost.
6. The government has the right to reduce the number of units in a bid item or choose to delete a base bit item entirely if necessary after the proposals are received.

7. 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 Proposals and Option Proposals. The Government is not obligated to exercise the options.

8. EXERCISE OF OPTIONAL BID ITEMS: Optional bid items (if any) 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 for Base Proposal.

9. ORDER of WORK: The following order of work shall apply before start of optional bid items:
All base bid contract line items have priority.

11. Period of performance is per Section 01010 Scope of Work – 5.0 Completion of Work, from receipt of notice to proceed; Liquidated damages are assessed at **\$3,291.90 per day** for every day of delay past the period of performance as stated per Section 01010 Scope of Work – 5.0 Completion of Work until contract completion for either the Base Items or the Optional Items whichever is applicable.

-END OF SECTION-

SECTION 00800 - SPECIAL CONTRACT REQUIREMENTS

The following have been modified:

SECTION 01010

SECTION 01010

REVISED SCOPE OF WORK – DESIGN BUILD 27 MARCH 2009

1.0 GENERAL

The project consists of the design and construction of a new Afghanistan National Army, Corps Support Battalion and related support facilities at Gamberi Garrison, Jalalabad Afghanistan. Contractor is required to take partial design provided in the Appendices and CD and complete the design to meet all the requirements and applicable criteria and codes. The project is defined as the design, material, labor, and equipment to construct buildings, parking, utilities and other infrastructure. 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:

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

Table 1.0 Population for Corps Support Battalion				
SENIOR	Officer	NCO	LOW	TOTAL
BN CDR	O2-O5	E7-E8	E1-E6	
1	41	58	600	700

*Contractor shall design and construct infrastructure for Electrical distribution, Water distribution, and Sanitary Sewer Treatment systems for effective end-state population of **1640** personnel.

1.1 ENGLISH LANGUAGE REQUIREMENT

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

1.2 SUBMITTALS

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

1.3 CQM TRAINING REQUIREMENT

Before project design and construction 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.

For enrollment and course information, contact **Chief, Quality Assurance Branch**, AED at the following:

Chief, Quality Assurance Branch
Quality Assurance Branch
Afghanistan Engineer District, USACE
Email: reed.b.freeman@usace.army.mil
Telephone: 079-760-4396

A copy of the course completion certificate shall be included in the Design Analysis submittal.

USACE Guide Specification 01451, entitled "Contractor Quality Control", 3.5.D. requires approval of the Contractor's CQC Plan. That approval is contingent upon the successful completion of this course by the Contractor's Quality Control Manager.

2.0 LOCATION

The site is located in next to Gamberi Garrison, Jalalabad, Afghanistan, as shown on attached drawings.

3.0 UNEXPLODED ORDNANCE (UXO)

3.1 UXO REMOVAL AND CLEARANCE

The contractor is not responsible for the clearance or removal of mines and unexploded ordnance (UXO) from the site prior to the commencement of construction.

It is the responsibility of the Contractor to be aware of the risk of encountering UXO or 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 or mine, unless they have appropriate accreditations from MAC.

If a UXO or mine is encountered during project construction, UXO or mine disposal shall be handled in accordance with Section 01015, Technical Requirements.

4.0 SUMMARY OF WORK

4.1 CONTRACTOR REQUIREMENTS

The contractor shall design and construct the facilities as a design-construct contract and shall be in accordance with the requirements stated in Section 01015: Technical Requirements. Refer to attachment following this section for more specifics for required spaces. Design and construction work shall include but not be limited to that shown within attached tables and described below.

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.

4.1.1 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, ventilation, and cooling for all facilities unless otherwise stated in sections 01010 or 01015. All toilets shall be eastern-style. All eastern-style toilets shall face North or South.

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

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.

Provide signage for each facility on the exterior of the buildings in Dari and Pashto. Contractor shall coordinate signage with COR.

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

In general, this project consists of design and construction of the following:

4.1.1.1 Base Bid

- Design Cost, Site Survey, and Master Plan
- As-Built Drawings
- Mobilization, Demobilization, and General Site Work
 - 4.4 Wadi Diversion and Mitigation
 - 4.6 Potable Water Supply System
 - 4.7 Sanitary Sewer Collection and Treatment System
 - 4.8 Site Electrical Distribution System
 - 4.12 Primary Entry Control Point
 - 4.12 Guard Towers (partial Design Available)
 - 4.13 Perimeter Walls and Fencing (partial Design Available)
 - 4.14 Road Network and Sidewalk
 - 4.15 Trash Collection Points
 - 4.16 Officer Barracks with *Toilet/Shower/Ablution* (partial Design Available)
 - 4.16 Enlisted Barracks (partial Design Available)
 - 4.17 Dining Facility (DFAC) and Dry Storage Yard (partial Design Available)
 - 4.18 Battalion Headquarters Building/ Admin (partial Design Available)
 - 4.19 Toilet/Shower/Ablution/Laundry Facility (partial Design Available)
 - 4.20 Vehicle Refueling Point
 - 4.21 Motor Pool Gravel Parking
 - 4.22 CSB Organic Wheeled Vehicle Maintenance Facility (9 Bay) (partial Design Available)
 - 4.23 Communication Building (partial Design Available)
 - 4.24 GSE Communication and Armament Maintenance Facility
 - 4.25 POL Storage Building (partial Design Available)
 - 4.26 General Warehouse Storage (partial Design Available)
 - 4.27 Arms Storage Building (partial Design Available)
 - 4.28 Vehicle Wash Rack
 - 4.33 Security Administration Building
 - 4.31 General Non-Organic Wheeled Vehicle Maintenance Facility two (9 Double Bays) (partial Design Available) (refer to 4.22 drawings)
 - 4.32 General Non-Organic Wheeled Vehicle Maintenance Facility (9 Double Bays) (partial Design Available) (refer to 4.22 drawings)
 - 4.34 **Temporary Life Support Facilities**
 - 4.35 Bunkers

4.1.1.2 Option Items

- 4.14 Pave Access Road to the Camp
- 4.14 Pave roads inside the Camp
- 4.26 Additional General Warehouse Storage (partial Design Available)
- 4.29 MWR GYM and outside volleyball courts
- 4.32 General Non-Organic Wheeled Vehicle Maintenance Facility (9 Double Bays) (partial Design Available) (refer to 4.22 drawings)

See Appendix A for facilities drawings.

* Facilities with listed with (partial Design Available) additional drawings will be available on CD at the Corps of Engineer Afghanistan District Headquarters, Qalaa House Compound in Kabul. Contractors should contact the Contract Specialist in advance for CD request and pick up CD at COE HQs. CADD files will be provided to the successful offeror after award.

4.1.2 SECURITY MEASURES

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. This may include but not limited to: Security guards, temporary fencing, material during delivery, and control access to the construction site.

4.2 SITE PLANNING

It is highly recommended that the Contractor visit the site before preparing and submitting their bid proposal.

The Contractor shall prepare a site boundary survey and site plan based on information contained in the Request for Proposal. The Concept Site layout provided in Appendix B is only a "Concept" and may not capture the total scope. The Contractor must incorporate all the requirements in the 01010 and 01015 and provide provisions for future expansion. The development of the master plan will include participation in design charrettes conducted at the Afghanistan Engineer District Headquarters Office in Kabul, Resident Office, or Area Engineer Office as determined by government Contracting Officer's representative (COR) or Project Manager (PM). Contractor shall verify all space requirements and code compliance in accordance with sections 01010 and 01015 of this contract.

The Project construction site is about 380 meter by 1000 meter at approximately 380,000 SM. Nearly a third of the project construction site is already part of the existing Gamberi Installation. Contractor is responsible to verify actual site condition before bidding.

The contractor shall arrange the facilities involved in vehicle maintenance on post so as to support a logical progression of work. First, vehicles freshly arrived from the field shall be washed prior to maintenance. The wash rack should be located at a higher elevation than other maintenance facilities to allow proper filtration and gravity drainage of wastewater, and shall be located as far from fuel dispensing or storage sites as possible to avoid any mixing of wastewater and fuel.

Second, vehicles shall be able arrive at maintenance bays in a reasonably clean condition - meaning place the wash rack a relatively short distance from maintenance bays.

Third, after maintenance is performed, vehicles shall be driven to the vehicle refueling point over such a route so as not to interfere with vehicles proceeding to either the wash rack or maintenance facilities. The vehicle refueling point shall be at a lower elevation than the drinking well, and contractor shall ensure the refueling point is a minimum distance of 30.5 meters from the drinking well. Similar safety distances between fuel lines and all water lines shall be maintained.

Fourth, once refueled, vehicles shall be driven to appropriate parking areas, again without crossing traffic undergoing other stages of maintenance.

Refer to UFC 3-230-07a, Table 5-2 for minimum distances from pollution sources to water wells. Building sewer = 50 feet, Septic Tank = 50 feet, disposal field = 100 feet. Dry Well = 50 feet, and Cesspool (Sewage Lagoon) = 150 feet.

Contractor shall Master plan for **1640** personnel to include future expansion space for additional **590** personnel (ESB) Engineer Support Battalion, **350** personnel (FSD), as well as the **700** personnel for CSB. Future ESB shall include Barracks, Battalion Admin Office Facility, and Vehicle Maintenance Facilities.

4.3 DEMOLITION, DRAINAGE, 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 and the section 1015 Technical Requirements of the contract.

Native crushed stone 100 mm thick shall be placed around all buildings, from the building wall or building landscaping out to a distance of 2m and all areas of anticipated foot or vehicle traffic in order to reduce erosion and to provide dust control. Concrete walkways minimum 100mm thick and 1.2m wide shall be installed between buildings and parking areas.

4.4 WADI DIVERSION and MITIGATION

Preliminary site investigation indicates there may be a need for major drainage structures due to existing wadi(s) at the site. Contractor shall divert or mitigate the impact of erosion and flooding due to existing wadi(s) in the Master Plan. Contractor shall clearly outline and show their design proposal for diversion or mitigation. The location of the facilities on the site plan may have to be adjusted in coordination with any diversion or mitigation of Wadi proposal. Wadi diversion and mitigation work shall be considered separate from the general site grading.

4.6 WATER SYSTEM

Contractor shall conduct preliminary water exploration to site and develop potable water supply wells for sufficient quantity and quality. The Contractor shall determine placement and well design for water supply points and shall preserve and protect the well(s) for future use. Placement of any well (test or production) will include collection and preservation of intact samples (split spoon or core samples) every five (5) meters. Intact samples and drill cuttings will provide for evaluation of a continuous well log and well construction design. Contractor shall draft a lithologic well log using an accepted standard classification system such as ASTM D2487-00, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

The Contractor shall perform pump test calculations and water quality analysis prior to beginning work on water distribution system. Water quality analysis should meet or exceed World Health Organization (WHO) Guidelines for drinking-water quality for water quality standards. If a well or borehole is identified for abandonment, the Contractor shall follow proper abandonment procedures and provide documentation.

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

Design and construct a Potable Water System (PWS), to include a well and submersible pump as a source of water, protected in an enclosed well house, a water chlorination and filtration system, a water storage tank or tanks, booster pumps, and pressure tank housed in a pump house to deliver water, and an underground pipe distribution network system. The Average Daily Demand (ADD) shall be calculated for an effective population of **1,640**, using a per capita consumption rate of 50 gallons (190 liters) per person per day. This effective population shall be multiplied by a capacity factor of 1.5 to provide a design population and account for future growth and peak demand, per UFC 3-230-07a, paragraph 1-3, and UFC 3-230-03a, paragraph 3-1.

The booster pumps shall be constructed to deliver a minimum 345-414 kPa (50-60 psi) at a flow rate equal to 2.5 the ADD, per UFC 3-230-03a Water Supply. Water tank or tanks shall provide storage capacity for a minimum of one day's ADD. The distribution system shall be designed to provide a minimum 276 kPa (40 psi) at ground level at all points in the delivery system. Minimum pressures of 207 kPa (30 psi), under peak domestic flow conditions, can be tolerated in isolated areas as long as all peak flow requirements in the entire system can be satisfied. Maximum water pressures in distribution mains and service lines shall not exceed 517 kPa (75 psi) at ground elevation. Maximum velocity of flow in the

system shall be 8 fps. Refer to IPC Commentary Section 604, and UFC 2-230-10a, Chapter 8 for designing for maximum flow. Water demand required for fire fighting and for irrigation and landscaping needs shall not be included in design demand calculations.

It is acknowledged that water may not be available at the site despite contractor good faith efforts to find it. The Contractor shall drill a minimum of two wells at the site to a minimum depth of 150 meters. If this is done without result, the Contractor will be considered to have fulfilled the terms of the contract and will be entitled to the full price of the contract CLIN for well drilling. However, the Contractor must still furnish all other parts of the water distribution system as described in the specifications.

The well house, tank, and pump house shall be surrounded by a chain link fence with lockable gate, topped by outriggers and barbed or concertina wire.

Any wells not used in the system must be de-commissioned in accordance with ASTM D 5299. The contractor must submit a written plan for de-commissioning wells.

4.4.1 PUMP HOUSE

Construct a permanent insulated pump house with a concrete slab floor at the new well site. Contractor shall furnish two booster pumps, each capable of delivering 2.5 the average daily demand. Contractor shall furnish a hydro-pneumatic tank to work in conjunction with the booster pumps. Installation shall be per manufacturer's requirements. The Contractor shall provide manufacturer's catalog information and shop drawings to the Contracting Officer for approval. The floor of the pump house shall slope away from the pumps at a 1% slope and shall have drains with screens at each corner. Elevation of floor of pump house shall be a minimum 150mm above grade. The pump house design should allow easy access to pumps for maintenance. The pump house walls and roof shall be insulated and a heating unit installed to protect valves and piping from freezing. Further protection shall be provided by insulating piping within the pump well house, as well as intake discharge piping underneath and outside the walls. The pump house shall be furnished with a heavy duty metal entry frame and insulated, lockable door.

4.6.2 WELL HOUSE

Construct a permanent insulated water well house with a concrete slab floor at a new well site. Contractor shall furnish a chlorination and filtration shelter per chlorine and filtration manufacturer's requirements. The Contractor shall provide manufacturer's catalog information and shop drawings to the Contracting Officer for approval. The floor of the well house shall slope away from the casing at approximately 3mm per 300mm and drain to the outside through pipes at each corner. Pipes shall be fitted with screens. Elevation of floor of the well house shall be a minimum 150mm above grade. The well casing will extend a minimum 50cm above the floor of the well house. The well house design should be such that the well pump, motor, and drop pipe can be accessed through a lockable, insulated roof hatch by mobile crane. The well house shall be insulated and a heating unit installed to protect valves and piping from freezing. Further freeze protection shall be provided by insulating piping within the well house, as well as discharge piping beyond the check valve. The well house shall be furnished with a entry frame and door that shall be lockable, insulated, and made of heavy-duty metal. Well house shall be surrounded with a security fence with lockable gate and outriggers equipped with barbed and concertina wire. Provide a chlorination system.

4.6.3 WATER TANK

Contractor shall provide circular steel or concrete ground storage reservoir tank(s) (GST) located on a slab set a minimum of 150mm above grade. Volume of the GST shall be a minimum storage volume of a full day's ADD. The storage facility shall be located above drainage areas and locations subject to

flooding as approved by the Contracting Officer. Overflow and air vents shall be screened so that birds, rodents, and debris cannot enter the reservoir. Water tank shall be lockable.

Total volume of the tank(s) shall be a minimum storage volume of a full day's water demand (24 hours). The contractor shall verify storage volume requirements based on final design population.

4.5 SANITARY SEWER & TREATMENT SYSTEM

Contractor shall investigate the existing Sanitary Sewer and Treatment System at the installation to determine existing capacity.

If the existing Sanitary Sewer and Treatment system will support the additional sanitary load of **1,640** personnel (as defined above and 1015 Technical Requirements), then the Contractor shall design and provide all necessary materials and labor to construct an extension of the sanitary sewer distribution system for the sanitary load, to include the future master planned facilities, and connect to the existing system. This may include installing a new force main directly to the WWTP, any collection or lift stations as applicable, and new distribution lines.

If the existing Sanitary Sewer and Treatment system will not support an additional personnel, (as defined above and 1015 Technical Requirements), then the Contractor shall design and construct a separate sanitary sewer distribution system served by a package waste water treatment plant. Installation package waste water treatment plant shall be modular, constructed steel units assembled onsite from pre-fabricated components. The system shall provide treatment for the sewage load based on 80% of Average Daily Demand. The system shall combine aeration, settling, and solids treatment in a single multi-compartment tank.

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

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.

The sanitary sewer collection system shall consist of gravity sewer pipe network and accessories such as manholes, cleanouts, and building service connections. The Contractor shall design a sanitary system layout following requirements of Section 01015 this contract. Pipe, fittings, and connections shall conform to the respective specifications and other requirements as listed in Contract Section 01015 and all of its referenced codes.

The gravity sewer collection system shall connect to the base Waste Water Treatment Plant. The Contractor shall design a package system all tank geometry, hydraulic loading, inlet and outlet configurations, number of compartments and related site preparation and earthwork. Design will be per specifications provided in Section 01015.

4.6 SITE ELECTRICAL DISTRIBUTION SYSTEM

Preliminary utility investigation found that the existing electrical distribution system would support the additional load for this project including future master planned 1640 person load. Current Power Plant is designed to support nine (9) 1 megawatt generators. (The Contractor should not assume to utilize any additional generators located within the existing ANA Gamberi Garrison Power Plant. The Contractor will have to plan, design, provide and install generator requirements, and switch-gear devices for the CSB project).

The Contractor shall perform its own investigation and determine if the existing installation electrical distribution system will support the electrical load of this project, including all future master planned additions, for an additional total future personnel.

If the existing electrical distribution system will support the additional load of this project, contractor shall design and construct connection to the existing system and **provide the additional generator(s) in the existing power plant facility and fuel storage tank(s) to support additional loads.**

If the existing electrical distribution system will not supply the addition of this project including the future planned **1640** person load, then the contractor shall design and construct the entire electrical distribution system to include but not limited to: generator power plant, electrical distribution, fuel storage tanks, and connection to all facilities.

The contractor shall design and install an electrical power system to supply and distribute power to all facilities included in the contract (including master planned future facilities) to include generation and fuel storage, and underground. All electrical design and installation shall meet NEC (NFPA 70) requirements. Conductors and circuits shall be sized for the specific loads. The site Primary power distribution shall be 20000/115550 V, 50 Hz manhole duct bank system. The secondary voltage shall be 380/220 VAC, 50 Hz. Secondary power distribution shall be pad mounted transformer substations (PTS). Each PTS shall be a standard manufactured substation with a secondary distribution switchboard. Each substation switchboard shall have a secondary distribution circuit breaker for each facility, to include all future Master Planned facilities. The Contractor shall provide secondary distribution manhole or hand hole duct bank distribution system to each facility to be constructed, to include all future Master Planned facilities, from the PTS switchboard. The Contractor shall provide a 100mm conduit stubbed out from the closest manhole or hand hole (**within the roadway right of way at the limits**) for each future facility. **The Contractor will not be responsible for the construction of service lines from Contractor installed distribution lines to future facilities.** Each 100mm conduit shall have a pull string, be capped off, and have a duct bank marker above the conduit. All electrical design and installation shall meet NEC (NFPA 70) requirements. Electrical receptacles shall be provided as indicated in section in 01015, Technical Requirements. Conductors and circuits shall be sized for the specific loads. All wiring shall be run and pulled through conduits.

4.8.1 POWER PLANT GENERATORS: Generator size shall be 1.2MW (1,200kW); 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. Contractor shall provide generators based on the N+2 concept for the entire future load of **1640 personnel**. Where 'N' would be the required number of generator(s) and '2' being a 'stand-by' unit. Generation shall supply 125% of the maximum calculated demand load plus the stand-by generator in reserve. There shall be a total of two spare generators at the power plant at the end of this contract.

4.7 GENERATOR BUILDING

Generator Fuel Storage. The work shall include the fabrication and installation of the entire fuel storage and distribution system. Tanks shall be skid mounted. Tanks of this type that have a capacity above 2640 L will be provided with either a dike or a spill containment system. The dike or spill containment system should have enough capacity for the entire contents of the tank, plus 10 percent. Provide a molded neoprene isolation pad to isolate an above-ground tank from the concrete pad underneath. Steel tank supports specifically are prone to encounter premature rusting due to constant exposure to moisture and their incompatibility with concrete. Tank shall be designed and manufactured for horizontal installation. Tank shall be mounted on the tank manufacturer's standard support skid. Skid shall span the entire length of the tank and shall separate the tank from the reinforced concrete slab by a minimum of 200 mm. Indicate on the drawings the number and size of each tank man way required. Tanks of

3,780 to 45,430 L to capacity will be provided with 760 mm diameter man ways. Tanks larger than 45,430 L will be provided with 915 mm diameter man ways. Tanks 3,780 L and larger will be provided with a minimum of 1 tank man way to allow for internal tank access. Piping will not penetrate through access man ways. Tank shall be provided with a combination cleanout and gauge connection. Vent pipe sizing shall be not less than 32 mm nominal inside diameter. Vent shall be the rupture disc type calibrated to burst at 13.8 kPa pressure, and operate at 80 percent of burst setting. Tank shall be provided with an overflow alarm system. Tank shall be provided with 2 stick gauges graduated in m and mm. Stick gauge shall be of wood and treated after graduating to prevent swelling or damage from the fuel being stored. Each storage tank shall be provided with an automatic analog reading gauge which is directly mounted to a tank's man way cover. Provide an in-line centrifugal pump as part of the day tank package for fuel transfer from the bulk storage tanks to the day tank. Day tanks shall provide sufficient fuel for twenty-four (24) hours of generator operation without refill. Provide cathode protection for metal components. Storage tanks shall be handled with extreme care to prevent damage during placement and shall be installed in accordance with the manufacturer's installation instructions. Piping shall be inspected, tested, and approved before buying, covering, or concealing. Piping shall be installed straight and true to bear evenly on supports. Piping shall be free of traps, shall not be embedded in concrete pavement, and shall drain toward the corresponding storage tank. Any pipe, fittings, or appurtenances found defective after installation shall be replaced. Below ground nonmetallic pipe shall be installed in accordance with pipe manufacturer's instructions. Belowground piping shall be laid with a minimum pitch of 25 mm per 6 m.

External Fuel Fill Point: for each specific site, the contractor shall coordinate with the Resident Engineer and provide a fuel unloading point outside of the perimeter wall to facilitate transfer of fuel from the commercial fuel tanker to the bulk fuel storage at the Power Plant. This transfer shall include interconnecting piping and valves between the fuel point and the two bulk fuel storage tanks.

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

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

- prison grade
- nickel reflectors (bullet resistant)
- 65 million candlepower (1000 watts)
- manual operation from below with one hand
- xenon lamp
- weatherproof design

4.11 GEOTECHNICAL

Existing geotechnical information is not available at the project site. Any site-specific geotechnical data required to develop foundations, materials, earthwork, and other geotechnical related design and construction activities for this project shall be the Contractor's responsibility. The Contractor shall develop all pertinent geotechnical design and construction parameters by appropriate field and laboratory investigations and analyses. The Contractor shall produce a detailed geotechnical report containing field exploration and testing results, laboratory testing results (particle sizes and distribution, liquid and plastic

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

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

4.12 FORCE PROTECTION

Facilities shall be sited with FP design in mind. As much as possible and practicable FP designs shall be accomplished by appropriate stand-off distances and setbacks away from potential threats. Force Protection design shall be in accordance with section 1015, Technical Requirements. Force Protection Design shall include the following components:

- A complete Perimeter Security Wall with vehicular and pedestrian Access Gates
- Primary Entry Control Points (ECP) as shown in provided site plan
- Provide opening into wall of existing ANA Gambeir Garrison force protection wall. This opening will be wide enough for an access road. Provide access road to adjoin the CSB with the existing ANA Garrison. The Contractor shall design and construct an access road that leads into the current ANA Garrison road network, and adjoin these two roads together. Provide and install lockable chain link fence, wide enough for a three axle, 7 ton vehicle. Provide and install an Entry Control Point (ECP) on North or East side of CSB, with force protection requirements below.

- Guard Houses
- Guard Shacks
- Active Vehicle Barrier
- Passive Vehicle Barrier
- Checkpoints
- Rejection Lanes
- Sliding Gates
- Cable Lift Gates
- Rolling Beam Barrier

- Guard Towers, **(8) total**, coordinate location with COR
- Compound Illumination System- Minimum lighting through out compound
- Security Communication System
- Loudspeakers and Alarm System

4.13 PERIMETER WALL, FENCING, AND BARRICADES

Perimeter Wall and Fencing shall consist of the types shown or described herein and provided in drawings in the Appendix A. Barricades shall consist of concrete Jersey Barrier 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. The estimated perimeter wall distance is **1.8 kilometers**. This is only an estimate; the Contractor is responsible to verify all actual distances and dimensions.

4.14 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 up to a 60 ton three-five axle vehicle at a minimum at least but not limited to: from main entry control point to all the vehicle maintenance facilities, wash rack, fuel point, and motor pool parking areas. A storm drainage system shall also be included. The road layout shall provide access to entry control points, parking lots, vehicle maintenance facilities, fuel points, generator yard, sewage septic treatment plant, and the trash collection point. Contractor shall connect new road system to the existing installation road system. Contractor shall connect new road system to main road system outside of the compound approximately **300 meters long** service road from Main Entry Control Point. Provide compacted gravel parking areas for vehicles as listed in 4.21 Motor Pool.

Provide a **convoy assembly area accommodating 2 sets of vehicles parallel parked** 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.

Road design shall be designed per Section 01015, Technical Requirements. Roadways and sidewalks are required as shown on attached drawings and shall be designed and constructed based upon recommendations from geotechnical analysis as required herein.

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

4.15 TRASH POINTS

The Contractor shall design and construct, in locations convenient for easy removal, **six (7)** trash collection points. It shall be located inside the compound walls. The trash points shall be a 1.8 m x 1.8 m concrete pad with a 1.8 meter tall chain link fence around the perimeter. One side shall have a 1.2 m wide gate entrance. Trash Points shall have a metal roof covering.

4.16 BARRACKS

Design and construct the barracks building(s) in accordance with the drawings contained in Appendix A. **provide three (3) BOQ Type "B", and provide six (6) Enlisted Open Bay Barracks.** 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. Provide split pack air conditioning for the BOQ Type "B" and Enlisted Barrack buildings. Specific berthing requirements are as follows: senior officers (12 PN each – single rooms), junior officers (28 PN each – two to a room), senior enlisted (17 PN each – single rooms), NCO (43 PN – two to a room), enlisted (600 PN – open bay)

The Contractor shall incorporate the following special features into the barracks:

- (a) Enlisted Type "A", Provide Ceiling fans shall be designed for summer ventilation electrical base heaters for winter.
- (b) Clotheslines shall be installed behind each barracks, approximately 5m in length with 4 lines across spaced 410mm 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)
- (e) At least one power outlets every 4 m. In the BOQ Type "B", provide at least one per wall in bedrooms.

- (f) Toilet/shower rooms shall be finished with ceramic tile from floor to ceiling, slope floor to drain.

Master Plan shall provide for future facilities at about the same ratio as CSB . Refer to 4.2 SITE PLANNING for population count of future expansion.

4.17 DFAC, Dining Facility and Storage Yard with Fence

Design and construct the **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. Include all the features listed in 4.17.1. This facility will provide for 500 seats with the capacity to provide up to 1000 seats.

This facility shall provide cafeteria-style feeding of 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. Include all the features listed in 4.17.1.

4.17.1 The Contractor shall incorporate the following special features into the DFAC:

- (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 **15 days** 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 be 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. The Contractor shall provide and install dining tables, chairs, stainless shelving for the walk-in refrigerator, walk-in freezer, kitchen dry storage area and dishwashing sink area.

- (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 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 (925mm by 925mm 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 (225mm) beyond the front edge of the stove and shall be installed a maximum of 4 feet (1200mm) 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 (450mm) 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 (450mm) 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 (900mm) from exterior openings. Ductwork shall be pitched to drain back to hood.
- All ductwork terminations shall be a minimum of 10 feet (3000mm) 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 (1000mm) 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 (3m) from exhaust outlets.
- Where make-up air inlets are located within 10 ft (3m) of an exhaust outlet, the make-up air inlet shall be located a minimum of 3 ft (0.92m) 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 installed in the kitchen cooking and dishwashing areas.

(t) Hand wash stations in the entry vestibule shall be provided. Trough type sinks shall be used.

(u) Install several large wash basins with a low rim height designed for washing very large pots.

(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 wall-in freezers** as shown in drawings.

- (x) Fire protection is to be provided by fire extinguishers throughout the facility at easily accessible locations.
 - (y) Install wall mounted forced air electric heaters to provide heat throughout the dining area.
 - (z) The Contractor shall design and construct a chain-link fenced storage yard for food and install facilities for the storage of both dry goods and refrigerated items.
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- (aa) Provide Latrines for facility workers
 - (bb) Provide Janitor room with Mop sink
 - (cc) Provide Office space for minimum two personnel
 - (dd) Provide dining areas for officers and enlisted
 - (ee) Provide Dish washing area
 - (ff) Provide Food preparation area
 - (gg) Provide Serving area
 - (hh) Provide fenced in Dry storage yard area adjacent to DFAC
 - (ii) Grease Separator shall be a hydro-mechanical model as defined in Standard PDI G101, revised 2007. Provide exterior grease trap.
 - (jj) Provide ducted package heat pump system for heating and cooling, and ceiling fans for air circulation.

4.18 BATTALION HQ ADMINISTRATION BUILDING

The Contractor shall design and construct one (1) Battalion HQ Administration facilities at **350SM** for the CSB in accordance with the drawings contained in Appendix A.

- (a) No office space is required for the Low ordinary ranking personnel.
- (b) Provide 100 meter x 100 meter Parade ground located near the Battalion HQ Administration Building. No grass or extra landscaping needed. Elevate and grade the grounds to ensure the site drainage does not erode the field.

The Master Plan shall provide space for two additional future HQ Administration Building (ESB and FSD).

4.19 TOILET/SHOWER/ABLUTION/LAUNDRY FACILITY

Design and construct a **466SM** toilet, shower, ablution, and laundry building 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.

The Contractor shall design and construct a toilet, shower, ablution, and laundry building. Plumbing fixtures shall be provided in accordance with the International Plumbing Code. Latrines for LN residents shall be eastern-style units and installed to face 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 occupant as he faces the stall 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. no less than 2 m x 1.5 m and shall have a solid door on the outside.
- (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 slab 200mm out to 600mm 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 line for drying outside the building.
- (g) Electric hot water heaters shall be installed to provide hot water to the showers and sinks.
- (h) Electric cabinet heaters or electric unit heaters suitable for wet areas shall be utilized 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 shall include but not limited to; toilet paper holders, soap dishes, curtains and curtain rods, robe hooks, mirrors, paper towel dispenser, metal shelf, and grab bars.

Master Plan shall provide for one additional future facility for ESB and FSD.

4.20 VEHICLE RE-FUELING POINT

The Contractor shall design and construct a low profile vehicle re-fueling point, as specified in Section 01015, capable of storing **20,000 liters (5283 gallons) of diesel** and **10,000 liters (2641 gallons) of MOGAS**. The Contractor shall provide a full supply of fuel to the tanks at the time of turnover to the Government. Vehicle Re-Fueling Point shall have a metal roof covering. Provide explosion proof lighting and control.

4.21 MOTOR POOL GRAVEL PARKING

The Contractor shall design and construct unit vehicle parking area to accommodate:

- Provide GOV parking adjacent to or near CSB Organic Large Vehicle Maintenance for 30.

- Provide GOV parking adjacent to or near CSB Organic Vehicle Maintenance for 30.
- Provide GOV parking adjacent to or near General Vehicle Maintenance for 150.
- Provide GOV parking at CSB Motor Pool for 382 Trucks and 248 Trailers.
- Provide GOV parking at ESB Motor Pool for 266 Trucks and 72 Trailers
- Provide POV parking adjacent to or near Battalion HQs Admin for 10.
- Provide POV parking adjacent to or near Barracks for 40.

GOV parking spaces shall be 4 x 8 meters, and POV parking spaces shall be 3 x 6 meters.

Security fencing shall be provided around the Vehicle Maintenance Facilities and GOV parking areas.

4.22 CSB ORGANIC VEHICLE MAINTENANCE FACILITY (9 Double Bays)

Design and construct approximately **1630 SM** vehicle maintenance facility in accordance with the drawings contained in Appendices. 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. Provide forced air electric space heaters for heating, and ceiling fans for air circulation.

The Contractor shall design and construct Vehicle Maintenance Facility incorporating **18** vehicle maintenance bays to support 630 CSB and 360 ESB logistic Support vehicles with maximum size of 42' long x 12' wide (7.7m long x 3.7m wide). The Vehicle Maintenance Facility shall have a concrete foundation and concrete floor to support a minimum loading of a 3-axle, **30,000 kg** vehicle without failing. Concrete will be floated for a smooth finish. Floor will be slightly sloped toward the front to the garage to facilitate drainage. There will be a concrete ramp from the outside into the garage area. The roof structure shall be a hip or gable minimum 2:12 slope roof consisting of steel columns, steel beams, metal hat channels and corrugated roof panels. The clear distance between the finished floor and the bottom of the roof structure shall be no less than 8m (26' – 3"). **Garage doors shall be minimum 6m high by 5m wide**, manual metal overhead coiling style, drums to interior side and designed to resist wind loads and installed with wind locks. *Overhead Bridge Cranes are not required and shall be removed from the provided design.*

Contractor shall provide concrete hardstand apron outside all garage doors at minimum **10 meters width**. Concrete handstand apron shall support a minimum loading of a 3-axle, 30,000 kg vehicle without failing. There shall be at least **18 meters clear distance** around the vehicle maintenance facility before any parking or between any other facilities.

Provide 1.5cm dia x 1.0m high concrete filled steel bollards to protect jams of roll-up doors. The service pit will be constructed into the floor with interior dimensions of 1.5m wide, 6.0m long and 1.5m deep. The pit will be centered on an imaginary line that runs from the center of the garage door opening to the rear-most corner, opposite of the doors. The pit will have a lip around its entire perimeter, such to prevent small items from falling in. Removable covers will be designed to cover the pit when not in use. Steel grating will be rated for HS 20 loading or covers designed for a minimum **point load of 5000 kg** without deforming. Removable covers will weight no more than 30-kg. a piece and have a handle designed into it to facilitate removal. The handle will lay flat when not in use.

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 emergency eye-wash stations every other two bays on both sides, alternate sides.

Electrical: Provide switched lighting that will illuminate the entire area. Lights will be capable of operating in the year-round temperature ranges expected to occur in this area. Electrical receptacles will be installed, equally spaced, with three receptacles on the all walls. Provide receptacles on the garage door 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.

Revise the battery room(s) to include eyewash station in each battery room.

Provide Tool rooms, Toilets, janitor rooms, office spaces, battery storage room with emergency eye wash station, tire room, and equipment storage.

Only provide floor trench drains in the Toilet rooms. Do not provide any floor drains in the vehicle maintenance bays.

4.23 COMMUNICATION SYSTEM BUILDING

Design and construct the **375 SM** Communication system building 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. Provide ductless split pack heat pumps for heating and cooling, and ceiling fans for air circulation.

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

Provide a 3m x 5m roof covered concrete pad outside the UPS room with a backup generator with an adjacent 2m x 3m concrete pad with a spill dike for a 500 gallon or larger fuel tank. Backup generator shall be sized to meet the ultimate demand load of the communications building, plus 20% spare capacity. A 15 cm diameter or larger conduit shall connect the generator pad to the UPS room and shall use long sweep elbows totaling no more than 180 degrees for any bends. Backup generator for Communications building shall be provided. When sizing the generator, ensure it is de-rated for altitude and temperature in accordance with the manufacturer's recommendations for the site conditions.

Design a Communications Building and installation wiring system. The facility will serve as the installation's center for telecommunications, switching, and automation networking (including internet service) and shall have year-round climate control for the sensitive electronic equipment. Split pack air conditioning, in addition to ceiling fans, shall be provided for the communications room. The A/C shall be sized to accommodate eight (8) personnel with eight (8) computers and twelve (12) radios. The communications room shall have raceways/duct banks going to each facility requiring communications. Communication duct will be run to future building locations on the site plan and duct will have a pull sting. All voice telephone wiring, data and emergency wiring, including any planned or future fiber optical runs, will originate and/or terminate in this communications room. All buildings shall have a communication closet (2 m² or larger) to house all telephone and computer network equipment and all distribution boxes shall be routed to the communications room. All admin buildings will include a minimum of 50-pair 24 AWG copper UTP cable each run from the building's communication room directly back to the barracks, DFAC, administration, Provide a UPS room only (14 m²) without equipment. 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.

4.24 GSE COMMUNICATION AND ARMAMENT MAINTENANCE FACILITY (Option Item)

Design and construct approximately **4475 SM GSE Communications and Armament Maintenance Facility** in accordance with the schematic 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, shower, and ablution rooms. The facility shall be completely enclosed by a 1.83 meter high chain-link fence topped with barbed wire outriggers that extend .46 meter above the height of the fence with a lockable, gated opening a minimum of 3.66 meters in width. The fence shall be a minimum of 10 meters from the facility. Provide an access road from the gate to the nearest road. Provide and install air conditioning in all offices for the facility and heat and ventilation for the remainder of the facility. Provide emergency eye-wash stations every other bay. Only provide floor trench drains in the Toilet rooms. Do not provide any floor drains in the vehicle maintenance bays.

4.24.1 Design and construct the approximately **740 SM Communications Maintenance Facility** within the GSE Facility. The interior of the facility shall be divided into distinct areas including, but not limited to, Office and Conference Space, COMSEC repair and Storage, VHF Repair, HF Repair, Automation/Power Management Repair, Storage areas, and restroom facilities. All rooms entrance shall have single doors, unless otherwise noted. Provide wood work benches in all repair rooms. Outlets at work benches must have emergency shut off switches installed. Provide split pack air conditioning units for heating and cooling, and ceiling fans for air circulation.

Communications Maintenance Area

The Communication functions shall consist of the following areas;

1. VHF Office: 74 SM
2. HF Office: 74 SM
3. ComSec Repair and Storage: 142 SM
4. COMSEC Storage: 46 SM
5. Janitor Closet 2.5 SM
6. Toilets 22 SM
7. CMDR Office: 18 SM
8. Admin Office: 28 SM
9. Conference Room: 28 SM

4.24.2 Design and construct the approximately **1200 SM Armament Maintenance Facility** within the GSE Facility. The interior of the facility shall be divided into distinct areas including, but not limited to, Office space, Tank Turret Repair/Reactive Weapons Space, Artillery Repair Space, Weapons Storage, Weapons Cleaning and Bluing Spaces, Small Arms Repair, and restroom facilities. All offices shall have a single door. All Storage shop, maintenance, and mechanical spaces shall have double doors (except for Weapons Storage which shall have a single door). Provide and install two (2) exterior roll-up doors with a minimum size of 6.1 meters high and 4.57 meters wide in the Tank Turret Repair/Reactive Weapons Space. Provide and install one (1) exterior roll-up door with a minimum size of 6.1 meters high and 4.57 meters wide in the Artillery space. Construct Loading Dock with a minimum width of 10 meters and a depth of 3 meters adjacent to the Supply/ Receiving area. Provide concrete handstand in front of the roll-up doors at least 8 meters width and the entire distance of the Armament Maintenance facility.

Armament Maintenance Area

The Armament Maintenance functions shall consist of the following areas;

1. Weapons Storage: 100 SM
2. Weapons Cleaning: 100 SM
3. NCOIC Office: 18 SM
4. Janitor Closet: 2 SM
5. Toilet: 25 SM
6. Turret Artillery Room with Loading Doct: 400 SM minimum
7. Small Arms Repair Room with Receiving: 400 SM minimum

4.24.3 Design and construct the approximately **1665 SM Services Division Facility** within the GSE Facility. The interior of the facility shall be divided into distinct areas including, but not limited to, office and Conference Spaces, Welding/Machine Shop, Metal/Body Shop, Paint Shop, Direct Exchange, and restroom facilities. Provide and install four (4) exterior roll-up doors with a minimum size of 4.57 meters high and 3.66 meters wide in the Welding/Machine Shop (Welding/Machine Shop shall include the Metal/Body Shop with two (2) exterior roll-up doors. Provide two (2) exterior roll-up doors with minimum size of 4.5 meters by 3.66 meters wide in the Direct Exchange area.

Provide fur (4) exterior roll-up doors in the Paint Shop. Minimum size of roll-up doors shall be 3 meter high and 2.4 meters wide. Provide one (1) 6.1 meter by 18.3 meter paint booth in the Paint Shop workspace. Provide for Class 1 Div. 1 explosion-proof lighting and receptacles, proper vapor containment and adequate ventilation.

Services Division Area

The **Services** functions shall consist of the following areas;

1. Paint Shop:400 SM minimum
2. Storage: 120 SM
3. Direct Exchange: 150 SM
4. Office 28 SM
5. Machine Storage: 100 SM
6. Office 25 SM
7. OIC Office 14 SM
8. NCOIC Office 21 SM
9. Office 28 SM
10. Toilet 25 SM
11. Break room: 40 SM
12. Welding/Machine Shop 800 SM minimum

4.24.4 Design and construct the approximately **870 SM Precision Measurement Equipment Laboratory (PMEL/TMDE)** within the GSE Facility. The interior of the facility shall be divided into distinct areas including, but not limited to, offices, Calibration and Repair Space, Technical Library, Cleaning room, shipping/Receiving, and restroom facility. Provide one (1) exterior roll-up door with a minimum size of 2.5 meters high and 3 meters wide. And canopied or covered vehicle access into the Shipping/Receiving space. Provide air lock entrance to the Calibration room.

The **PMEL/TMDE** functions shall consist of the following areas;

1. Shield Room: 20 SM
2. Equipment Storage: 20 SM
3. Mechanical Room: As required
4. Utility Room: As Required
5. Calibration room: 320 SM
6. Shipping & Receiving Area: 150 SM
7. Air Locks: As required
8. TMDE Chief Office: 15 SM
9. Asst TMDE Office 9 SM
10. TMDE Supervisor / Driver : 18 SM
11. TMDE Supervisor/NCO: 15 SM
12. PC Chief: 10 SM

13. Technical Library: 20 SQ
14. Janitor Room: 8 SM
15. Toilet Room: 20 SM
16. Cleaning Room: 14 SM
17. Conference/ Break room 25 SM

4.25 POL STORAGE BUILDING.

Design and construct a **25 SM** POL storage building in accordance with the drawings contained in Appendix A. Windows shall be extruded aluminum. Exterior doors shall be insulated hollow metal. Provide forced air electric space heaters for heating and ceiling fans for air circulation.

4.26 GENERAL WAREHOUSE STORAGE

Design and construct **800 SM** general warehouse building(s) 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. Provide forced air electric space heaters for heating and ceiling fans for air circulation.

4.27 ARMS STORAGE BUILDING

Design and construct the **350 SM** arms storage building in accordance with the drawings contained in Appendix A. 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 (200mm 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 all 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 colored floor paint, walls, and ceilings flat paint finish. **Location of the Arms Storage Building shall be adjacent to the Convoy assemble area and the Security Administration Building.**

4.28 VEHICLE WASH RACK

Design and construct **1292 SM** Vehicle Wash Rack in accordance with the drawings contained in Appendices, and UFC 4-214-03, Central Vehicle Wash Facilities.

Design and construct new pull thru concrete wash facility capable of servicing **10 vehicles** at one time. Each wash bay shall have an independent water hose connection that is of a freeze proof design connected to the nearest potable water source. The water source piping shall be sized to adequately support 10 bays in simultaneous operation. The Contractor shall design for adequate water pressure and flow rate as measured at the nozzle (75 psi and 25 gpm, per UFC 4-214-03, paragraph 4-8 (c)) to properly support wash facility operation. A pressure booster pump may be required and this shall be included in the contractor's proposal along with the proper pump enclosure to protect the pump from the elements. The facility shall be sized and capable of accommodating and to support a minimum loading of a 3-axle, **30,000 kg** vehicle without failing. Each wash facility will be separated by a CMU partition. Each wash bay shall be **minimum 7.6 meters wide** and 7.6 meters high to allow adequate personnel access during washing operations. The wash facility shall not be inclined but rather be built on an elevated pad above the surrounding grade to prevent flooding by surface water runoff.

Each bay will have a separate drain that connects to a common drain pipe that is sized adequately to carry the waste water without blockage. A gravity fed oil/water separator shall be installed in a way that would allow periodic draining and maintenance. Each floor drain shall have a cover or grate that will prevent drain blockage caused by debris getting into the drain pipes. Drain pipes shall be extended away from the facility an adequate distance to prevent water saturation of the soil around the facility. Drain pipes will terminate into natural watercourses or ditches/drains formed during the construction of the wash facility. All drains shall have an adequate number of clean outs placed to facilitate maintenance. Contractor shall design and construct recirculation system for wastewater re-use. Refer to the UFC 4-214-03 Central Vehicle Wash facilities for recirculation system to include but not limited to: Wash Facility, Sediment Basin, Equalization Basin, Dosing Tank, Intermittent Sand Filter, Water Quality Testing Value, Water Supply Basin attached to Makeup Water supply. Provide smooth concrete floor for the entire facility with broom finish.

All concrete shall be reinforced with rebar and shall be 5-7% air entrainment. Concrete surface finishes shall provide traction for pedestrians and vehicles. A concrete apron a minimum of **10 meters in width** extending the full length of the building shall be constructed on the entrance and exit of the wash facility. The wash facility apron on the entrance and exit shall be pitched to drain water away from the entrance and exit of the facility.

All exposed piping shall be pitched to drain any standing water to prevent freezing, be capable to self draining or be of the freeze proof yard hydrant design. The potable supply line to the wash rack shall have a shut off valve that is clearly marked and protected from damage, flooding by surface runoff water and freezing.

Site grading will be necessary to connect the proposed wash facility location to the nearest existing street or roadway. Design and construct 10 meter wide aggregate by-pass road to the nearest street or roadway.

Provide bay length trenches and secondary trenches across door openings. Provide adequate wash bay ventilation to avoid condensation damage to building materials. Adjacent to the facility provide a Vacuum/Trash Island with three (3) permanent, outdoor, wet/dry vacuums, two (2) trash receptacles, and concrete stanchions to prevent vehicular damage to the equipment on the island. The exterior of the building shall include an adjacent parking area designed to accommodate two (2) trucks with low-boy trailers, two (2) large wheeled vehicles, and six (6) standard wheeled vehicles. There shall be adequate spacing around the Vacuum/Trash Island to simultaneously provide parking for one (1) large wheeled vehicle, and three (3) standard wheeled vehicles. An access road shall connect from the nearest road to the exterior roll-up doors at each Washing Station and the Vacuum/Trash Island.

Provide ditches and culverts along the wash facility location and entrance road as required to provide proper drainage of wash water.

4.29 MWR GYM (OPTION ITEM)

Design and Construct a total **300 SM** multi-use athletic facility/ Gymnasium and meet the following requirements:

Provide 4 entries (including a double access door all with emergency push bars and kick plates (one entry in each corner of the facility).

Provide smooth concrete floor finish for the entire gym facility. Provide Rubber matting for Free Weight Area. Provide multiple purpose storage room. The interior of the building shall column free. Provide split unit heat pumps for heating, and cooling, and exhaust fans for air ventilation.

(2) Outside Volleyball Courts: Provide sand volleyball courts. Provide and install permanent pole sleeves, with removable tennis, and volleyball court poles and nets.

4.30 SECURITY ADMINISTRATION BUILDING

Design and construct a total **320 SM** Security Administration Building in accordance to the drawings contained in Appendix A. The building shall include: one (1) conference room, six (6) each private offices, two (2) open offices and one toilet facility to include one enclosed Western and one enclosed Eastern toilet each, two hand-wash sinks and two urinals.

Exterior doors shall be heavy duty steel security grade. The contractor shall provide power outlets in walls no more than 4 meters apart. Concrete stoops shall be provided at all exterior doors. Wall mounted split package electric forced air AC/Heat units shall be used to maintain a minimum temperature of 18 degree (C) during winter and maximum 30 degrees (C) during summer season. Finish flooring to be tiled and interior wall to be painted.

Location of the Security Administration Building shall be adjacent to the Convoy Assemble area and the Arms Storage Building.

4.31 GENERAL NON-ORGANIC VEHICLE MAINTENANCE FACILITY- two (9 double bays)

Design and construct two (2) **1630 SM** vehicle maintenance facility in accordance with the drawings contained in Appendices. The Contractor shall design and construct the Vehicle Maintenance Facility building incorporating **9** vehicle maintenance bays. Refer to 4.22 for other requirements and drawings.

4.32 GENERAL NON-ORGANIC VEHICLE MAINTENANCE FACILITY (9 double Bays)

Design and construct a **1630 SM** vehicle maintenance facility in accordance with the drawings contained in Appendices. The Contractor shall design and construct the Vehicle Maintenance Facility building incorporating **9** vehicle maintenance bays. Refer to 4.22 for other requirements and drawings.

4.34 TEMPORARY LIFE SUPPORT FACILITIES (Must be up and running by August 11, 2009)

Temporary construction: At the start of all work, the contractor shall provide temporary facilities (housing, latrine, showers, DFAC Kitchen and dining) with temporary utilities (Power, Water, and Waste Water) for 700 soldiers until the barracks, Toilet/Shower/Ablution/Laundry, and DFAC are complete and ready to turn over to the customer. Temporary facilities must provide protection from the weather and be enclosed. Provide temporary sit down dining facilities are required with total 150 seats. Provide latrines and showers at ratio of 1:40. The contractor will also be responsible for handling all wastewaters from all facilities if wastewater collection system is not in place to handle flows. Contractor must provide security perimeter for this site while in operation (via Hesco barriers or equivalent) to protect soldiers from attacks and to separate soldiers from ongoing construction site. Provide temporary parking areas within the temporary camp for about 30 vehicles. Provide a controlled entrance for vehicles and pedestrians in and out of the temporary camp. Once all the permanent facilities are turned over to the government, the contractor is no longer responsible for upkeep of the temporary facilities and temporary utilities.

4.35 BUNKERS

The contractor shall construct eight (8) 5ft x 5ft x 20 ft (1.52 m x 1.52 m x 6.09 m) x 6 inches (15 cm) thick in accordance to the Culvert Bunker drawings in the Appendix A. The actual size of the culvert will be dictated by local availability. The bunker shall be constructed from steel-reinforced culvert sections with overlapping sandbags and covered with heavy duty plastic covers.

5.0 COMPLETION OF WORK

The total design/construction period will be **300 calendar days and 420** calendar days respectively per phasing. The project is phased as outlined below. Items denoted as "PRIORITY" should take precedence in the design and construction period.

4.34 Temporary Life Support Facilities (**Must be up and running by August 11, 2009**)

Phase I (noted below)-Work Items to be completed no later than **300** calendar days after NTP:

- Design Cost, Site Survey, and Master Plan
 - Mobilization, Demobilization, and General Site Work
- 4.4-4.6 Potable Water Supply System (PRIORITY)
- 4.7 Sanitary Sewer and Treatment System
- 4.8 Site Electrical Distribution System
- 4.12 Primary Entry Control Point
- 4.12 Guard Towers
- 4.13 Perimeter Walls and Fencing
- 4.14 Road Network and Sidewalk
- 4.15 Trash Collection Points
- 4.16 Officer Barracks (PRIORITY)
- 4.16 Enlisted Barracks (PRIORITY)
- 4.17 Dining Facility (DFAC) and Dry Storage Yard (Priority)
- 4.19 Toilet/Shower/Ablution/Laundry Facility (Priority)
- 4.21 Motor Pool Gravel Parking

Phase II (noted below) - Work Items to be completed no later than **420** calendar days after exercise/award/NTP of items:

- As-Built Drawings
- 4.18 Battalion Headquarters Building/ Admin
- 4.20 Vehicle Refueling Point
- 4.22 CSB Organic Wheeled Vehicle Maintenance Facility (9 Double Bays)
- 4.23 Communications Building
- 4.24 GSE Communication and Armament Maintenance Facility
- 4.25 POL Storage Building
- 4.26 General Warehouse Storage
- 4.27 Arms Storage Building
- 4.28 Vehicle Wash Rack
- 4.30 MWR GYM with outside volleyball courts
- 4.31 Non-Organic Wheeled Vehicle Maintenance Facility (two - 9 double bays)
- 4.32 Non-Organic Wheeled Vehicle Maintenance Facility (9 double bays)
- 4.35 Bunkers
- 4.29 MWR Gym

6.0 SPARE PARTS

Refer to other sections herein for requirements.

7.0 REFERENCES

Refer to Section 01015 for required references.

-- End of Section --

(End of Summary of Changes)