Example Request for Proposal Language Annotated by the National Renewable Energy Laboratory (NREL)

Army Barracks, Fort Carson, Colorado

NREL/DOE's Energy-Performance-Based Acquisition Steps:

Step 1: Define a Performance-Based Acquisition Process
Step 2: Develop an Energy Performance Goal
Step 3: Require Energy Performance
Step 4: Manage the Performance-Based-Acquisition Process
Step 5: Verify Energy Performance

Energy-performance-based acquisition step	**Key action exemplified**	**Location of example text**
Step 1: Define a Performance-Based Acquisition Process	Decide that energy performance is a primary project goal.	Section 00 22 11 1.1, Page 3
Step 1: Define a Performance-Based Acquisition Process	Decide that energy performance is a primary project goal.	Section 01 10 00 6.12.3, Page 110-111
Step 1: Define a Performance-Based Acquisition Process	Select a project delivery method that will enable the project team to track and cost-effectively achieve aggressive energy performance.	Section 00 22 11 1.3 and 2.1, Page 3
Step 1: Define a Performance-Based Acquisition Process	Assemble an integrated project team where all members share some responsibility for the energy performance goal.	Section 01 33 16 1.1.4, Page 158
Step 2: Develop an Energy Performance Goal	Specify key project parameters and drivers of energy use in the building	Section 01 10 00 3.12, Page 25-26
Step 2: Develop an Energy Performance Goal	Set an energy performance goal specific to the building type and climate. (This example shows the use of a minimum performance requirement with an open statement left to the design team's discretion.)	Section 00 22 11 5.2.2, Page 6
Step 2: Develop an Energy Performance Goal	Set an energy performance goal specific to the building type and climate. (Evaluation criteria for the team-selected energy goal.)	Section 00 22 11 5.2.3, Page 7

Step 3: Require Energy Performance	Include system-specific requirements, such as data center efficiency, to direct the project-team focus toward large energy users.	Section 01 10 00 5.10.2-4, Page 59
Step 3: Require Energy Performance	Include system-specific requirements, such as data center efficiency, to direct the project-team focus toward large energy users.	Section 01 10 00 6.12.4, Page 111-113
Step 3: Require Energy Performance	Use a tiered structure to prioritize the energy goal among other project goals.	Section 00 22 11 4.1, Page 4
Step 4: Manage the Performance-Based-Acquisition Process	Require that the energy goals be substantiated through contract-defined calculation methods at each phase of design. (Example of contract-defined calculation method.)	Section 00 22 11 5.2.2.2.1, Page 7
Step 4: Manage the Performance-Based-Acquisition Process	Require that the energy goals be substantiated through contract-defined calculation methods at each phase of design. (Example of contract-defined calculation method.)	Section 01 10 00 6.18.5.5, Page 129
Step 4: Manage the Performance-Based-Acquisition Process	Require that the energy goals be substantiated through contract-defined calculation methods at each phase of design.	Section 01 33 16 3.5.5.2, Page 168
Step 5: Verify Energy Performance	Require submetering of each building system end use, such as lighting, plug loads, and heating, ventilation and air conditioning (HVAC).	Section 01 10 00 5.9.3, Page 55-58
Step 5: Verify Energy Performance	Compare end-use energy budgets to the submetered results.	Section 01 10 00 6.12.5-7, Page 116-117
Step 5: Verify Energy Performance	Conduct post-occupancy evaluations and collect feedback after the first year of operation.	Section 01 10 00 5.3, Page 44

DESIGN-BUILD
REQUEST FOR PROPOSAL
SOLICITATION NO. W9128F-12-R-0021

13th CAB, BARRACKS
PN 77264 & PN 77265

FORT CARSON, Colorado

PREPARED BY:
U.S. Army Corps of Engineers, Omaha District

JUNE 2012

BUILDING STRONG

SECTION 00 01 10
TABLE OF CONTENTS
REQUEST FOR PROPOSAL
13th CAB, BARRACKS
PN 77264 AND 77265
Fort Carson, Colorado

NOTE: WHERE CONFLICTS EXIST BETWEEN REQUIREMENTS IN THIS RFP, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.

PROPOSAL REQUIREMENTS, CONTRACT FORMS AND CONDITIONS

00 11 00	Standard Form SF1442 and CLIN Pricing Schedule
00 21 00	Instructions, Conditions and Notices to Offerors
00 22 11	PROPOSAL SUBMISSION REQUIREMENTS, EVALUATION CRITERIA, AND BASIS OF AWARD
00 45 00	REPRESENTATIONS, CERTIFICATIONS & OTHER STATEMENTS OF OFFERORS
00 72 00	CONTRACT CLAUSES
00 73 00	SPECIAL CONTRACT REQUIREMENTS
00 73 10	SUPPLEMENTAL CONTRACT REQUIREMENTS
FC420	UTILITY OUTAGE GUIDANCE: FC REG 420-19 AND REQUEST FORM: FC FORM 420-E
00 73 46	Wage Determination Schedules

DIVISION 01 - General Requirements

01 10 00	Task Order Statement of Work
01 32 01.00 10	Project Schedule
01 33 00	Submittal Procedures
01 33 16	Design After Award
01 45 01.10	Quality Control System (QCS)
01 45 04.00 10	Contractor Quality Control
01 50 02	Temporary Construction Facilities
01 57 20.00 10	Environmental Protection
01 62 35	Recycled/Recovered Material
01 78 02.00 10	Closeout Submittals

Appendices

Appendix A Geotechnical Information

Appendix B List of Drawings

Appendix C Utility Connections (Refer to Appendix J)

Appendix D Results of Fire Flow Tests

Appendix E Environmental Information

Appendix F Conceptual Aesthetic Considerations

Appendix G GIS Data - NOT USED

Appendix H Exterior Signage

Appendix I Acceptable Plants List

Appendix J Drawings

Appendix K Fuel Cost Information

Appendix L LEED Project Credit Guidance

Appendix M LEED Owner's Project Requirements

Appendix N LEED Requirements for Multiple Contractor Combined Projects (Not Used)

Appendix O LEED Strategy Table (Not Used)

Appendix P USGBC Registrations

Appendix Q Area Computations

Appendix R RMS Submittal Register Form

Appendix S Manufacturing Performance Requirements for Plumbing Fixtures

Appendix T Functional Area Lighting Control Strategy (FALCS)

Appendix AA Special Safety Requirements

Appendix BB LEED Documentation

Appendix CC Interior Lighting Design Criteria

Appendix DD Wildlife Deterrent Designs

End of Table of Contents

SECTION 00 22 11
REV 5.19 – 30 SEP 2011

PROPOSAL SUBMISSION REQUIREMENTS, EVALUATION CRITERIA AND BASIS OF AWARD

1.0 OVERVIEW

2.0 BASIS OF AWARD

3.0 GENERAL INSTRUCTIONS

4.0 PROPOSAL INFORMATION AND RELATED EVALUATION FACTORS, SUBFACTORS AND ELEMENTS

4.1. VOLUME 1 – DESIGN-TECHNICAL

4.2. VOLUME 2 – PERFORMANCE CAPABILITY/UTILIZATION OF SMALL BUSINESS

4.3. VOLUME 3 – PRICE AND PRO-FORMA INFORMATION

5.0 VOLUME 1 – FACTOR 1 - DESIGN-TECHNICAL

5.1. GENERAL

5.2. TAB A – SUBFACTOR 1 – ENERGY PERFORMANCE & RENEWABLE ENERGY

5.3. TAB B –SUBFACTOR 2 – BUILDING FUNCTIONAL, AESTHETICS AND SPACE

5.4. TAB C –SUBFACTOR 3 – QUALITY OF BUILDING SYSTEMS AND MATERIALS

5.5. TAB D – SUBFACTOR 4 – SITE DESIGN

5.6. TAB E – SUBFACTOR 5 – SUSTAINABILITY REQUIREMENTS

6.0 VOLUME 2 –FACTOR 2 - PERFORMANCE CAPABILITY & SMALL BUSINESS UTILIZATION

6.1. TAB A –SUBFACTOR 1 – SPECIALIZED EXPERIENCE

6.2. TAB B –SUBFACTOR 2 – PAST PERFORMANCE

6.3. TAB C –SUBFACTOR 3 – PROPOSED CONTRACT DURATION AND SUMMARY SCHEDULE

6.4. TAB D –SUBFACTOR 4 – ORGANIZATION/TECHNICAL APPROACH

6.5. TAB E –SUBFACTOR 5 – KEY PERSONNEL CAPABILITIES AND EXPERIENCE

6.6. TAB F –SUBFACTOR 6 – UTILIZATION OF SMALL BUSINESS CONCERNS

7.0 VOLUME 3 – PRICE AND PRO FORMA INFORMATION

7.1. GENERAL

7.2. TAB A – FACTOR 3 – PRICE (STANDARD FORM 1442, PROPOSAL DATA SHEET AND CONTRACT LINE ITEM SCHEDULE)

7.3. TAB B – EVIDENCE OF BONDABILITY

7.4. TAB C– REQUIRED PRE-AWARD INFORMATION

7.5. TAB D – SUBCONTRACTING PLAN

8.0 EVALUATION PROCEDURES

8.1. SOURCE SELECTION EVALUATION BOARD (SSEB)

8.2. EVALUATION

8.3. DEFINITIONS

8.4. EVALUATION RATING SYSTEM

8.5. PAST PERFORMANCE CONFIDENCE ASSESSMENT RATING SYSTEM

ATTACHMENTS

1 - FORMAT FOR TABLE OF FACILITIES

2 - FORMAT FOR TABLE OF SPACES

3 - COMPANY SPECIALIZED EXPERIENCE CONSTRUCTION OR PRIME CONTRACTOR

4 - COMPANY SPECIALIZED EXPERIENCE DESIGN FIRM OR IN-HOUSE DESIGN CAPABILITY

5 - COMPANY SPECIALIZED EXPERIENCE KEY SUBCONTRACTOR (OR PRIME IF WORK NOT TO BE SUBCONTRACTED)

6 - PAST PERFORMANCE EVALUATION TELEPHONE INTERVIEW QUESTIONNAIRE

7 - KEY PERSONNEL RESUME

8 - LETTER OF COMMITMENT FOR KEY PERSONNEL

9 - LETTER OF COMMITMENT FOR (DESIGN FIRM OR KEY SUBCONTRACTOR)

10 - PROPOSAL DATA SHEETS

1.0 OVERVIEW

1.1. The Department of Defense in its Annual Energy Management Report, May 2010, set a goal for Fort Carson to be a Net Zero installation by the year 2020. In accordance with this stated goal, it has been determined that the Butt's Plateau and 13th Combat Aviation Brigade (CAB) complex will be a Net Zero campus. In support for Fort Carson's Net Zero objective all new vertical construction is to be Net Zero Ready. Consequently, each individual building should be designed and constructed to minimize energy and water use and limit the amount of waste produced.

1.2. **The Government is looking for ways to streamline construction, manage labor and other resource constraints in an effort to reduce costs and achieve an aggressive schedule in executing projects to meet the Army's Transformation program goals of faster project execution at lower cost, while taking advantage of industry standards, means and methods.**

1.3. This is a One-Step, "Best Value" solicitation for the Design and Construction of the 13th CAB Barracks located at Fort Carson, Colorado. The Government will evaluate the proposals in accordance with the criteria described herein, and award a firm-fixed-price contract to the responsible offeror whose proposal conforms with all the terms and conditions of the solicitation and whose proposal is determined to represent the overall best value to the Government.

1.4 PROPOSAL FORMAT

The Packaging that contains the Proposals shall be sealed and marked:

"Proposals for Solicitation No. W9128F-12-R-0021, To be opened by Contracting Personnel Only"

Written materials: 8 ½" x 11" format in bound volumes using 10 point or larger font size and using 3-ring binders. For each volume, provide a title sheet on the cover, table of contents and labeled tabs matching this documents' Table of Contents. Provide a title sheet within each volume identifying the prime, consortium, or joint venture's name, address, telephone, fax and email address and point of contact. Include the signature, title and contact information of the official that can bind the firm.

Volume number and tab section submitted shall appear in the bottom right corner of each page (along with the revision number and revision date for the amended page, if necessary)

Drawing sheets: Submit 11" x 17" half-size drawings. If needed for clarity of proposal, 22" x 34" full size drawings may be submitted in addition to the half-size submitted drawings.

Number of copies: Submit one original and five (5) copies of Volume I and Volume II, as well as two CD's in read-only format, preferably using .PDF files. Submit Volume III in a sealed envelope (Include original and one copy).

See Paragraph 5.3.1.1.(e) for color board submittal requirements.

2.0 BASIS OF AWARD

2.1. The Contracting Officer will award a firm-fixed-price contract to that responsible Offeror whose proposal the Source Selection Authority has determined conforms to the solicitation, is fair and reasonable, and offers the best overall value to the Government, considering all non-price factors described herein, and price. **All evaluation factors, other than price, when combined, are considered significantly more important than the price; however, the Contract award shall not exceed the cost limitation described in Section 00 21 00 for this project.** The intent of this solicitation is to obtain the best proposal within the cost limitation. There is no obligation to approach or match the cost limitation in the offer. After the Government individually evaluates and rates each proposal, the Contracting Officer/Source Selection Authority will compare proposals to determine which proposal represents the best value. The Government reserves the right to accept other than the lowest priced offer or to reject all offers. The Government will not award a contract to an Offeror whose proposal contains a deficiency, as defined in FAR 15.001. If there is a lower priced, conforming offer(s), the Contracting Officer/Source Selection Official must determine that the added value of a more expensive proposal (within the cost limitation) would justify award to that offeror.

2.2. As part of the evaluation, the Government will evaluate betterments in proposals relative to the minimum standards in the RFP to determine if they offer additional value to the Government. In addition, innovations in proposals will be evaluated to determine if creative ideas of the Offeror are a better value to the Government compared to the minimum criteria.

3.0 GENERAL INSTRUCTIONS

3.1. Proposals should be submitted initially on the most favorable terms from a price and technical standpoint. Do not assume that offerors will be contacted or afforded an opportunity to clarify, discuss or revise their proposals.

3.2. Firms formally organized as design-build entities, design firms and construction contractors that have associated specifically for this project, consortia of firms or any other interested parties may submit proposals. Associations may be as joint ventures or as key team subcontractors. Any legally organized Offeror may submit a proposal, provided that the Offeror or Offeror's subcontractor has or will have professional architects and engineers, registered in the appropriate technical disciplines and provided that the requirements specified in Contract clause, "Requirements for Registration of Designers", are met. All designs must be under the direct supervision of appropriately licensed professionals for each discipline involved.

3.3. Submit proposals in tabbed, three-ring binders. Note that the Government will not evaluate any material that exceeds the page limits, where indicated below.

4.0 PROPOSAL INFORMATION AND RELATED EVALUATION FACTORS AND SUBFACTORS

4.1. VOLUME 1 – DESIGN-TECHNICAL

Factor/Sub Factor	**Location**	**Description**	**Relative Importance**
FACTOR 1		DESIGN-TECHNICAL	Most Important Factor
Subfactor 1	Vol. 1. TAB A	Energy Performance & Renewable Energy	Most Important Subfactor
Subfactor 2	Vol. 1 TAB B	Building Functional, Aesthetics and Space	2nd Most Important Subfactor
Subfactor 3	Vol. 1 TAB C	Quality of Building Systems and Materials	Equally Important with Subfactor 2
Subfactor 4	Vol. 1 TAB D	Site Design	4th Most Important Subfactor (slightly less important than Subfactors 2 and 3.)
Subfactor 5	Vol. 1 TAB E	Sustainability Requirements	5th Most Important Subfactor (slightly less important than Subfactor 4)

4.2. VOLUME 2 – PERFORMANCE CAPABILITY AND SMALL BUSINESS UTILIZATION

Factor/Sub Factor	**Location**	**Description**	**Relative Importance**
FACTOR 2		PERFORMANCE CAPABILITY	2nd Most Important Factor (slightly less important than Factor 1)
Subfactor 1	Vol. 2 TAB A	Specialized Experience	Most Important Subfactor
Subfactor 2	Vol. 2 TAB B	Past Performance	2nd Most Important Subfactor (slightly less important than Subfactor 1)
Subfactor 3	Vol. 2 TAB C	Proposed Contract Duration and Summary Schedule	3rd Most Important Subfactor (slightly less important than Subfactor 2. Equal to Subfactors 4 and 5).
Subfactor 4	Vol. 2 TAB D	Organization/Technical Approach	3rd Most Important Subfactor (slightly less important than Subfactor 2. Equal to Subfactors 3 and 5).
Subfactor 5	Vol. 2 TAB E	Key Personnel Capabilities and Experience	3rd Most Important Subfactor (slightly less important than Subfactor 2. Equal to Subfactors 3 and 4).
Subfactor 6	Vol. 2 TAB F	Utilization of Small Business Concerns	6th Most Important Subfactor (slightly less important than Subfactors 3,4 and 5)

4.3. VOLUME 3 – PRICE AND PRO FORMA INFORMATION

Factor/Sub Factor	**Location**	**Description**	**Relative Importance**
FACTOR 3	Vol. 3 TAB A	Price (Standard Form 1442, Proposal Data Sheet And Contract Line Item Schedule)	All evaluation factors, other than price, when combined, are considered significantly more important than price. Price is least important factor.
N/A	Vol. 3 TAB B	Evidence of Bondability	Not Rated
N/A	Vol. 3 TAB C	Required Pre-Award Information	Not Rated
N/A	Vol. 3 TAB D	Subcontracting Plan	Not Rated Note: Not required to be submitted with the offeror's proposal. It shall only be required from the otherwise successful offeror and only applies if the offeror is an "Other Than Small (Large) Business".

NOTE: 8(a) Joint Venture Offeror or Offeror submitting Proposal as HubZone Joint Venture shall submit evidence from Offerors SBA Servicing Agency that the Offeror has notified and discussed the proposed joint venture for this specific project with the appropriate SBA Representative or Business Opportunity Specialist.

5.0 VOLUME 1– FACTOR 1 – DESIGN-TECHNICAL

5.1. GENERAL: The Design-Technical Factor consists of conceptual level presentation drawings, technical approach narratives and information regarding material and system quality. It must clearly define the proposed scope and quality levels that the design-build team is offering to the Government in enough detail for the Government and the Offeror to mutually understand whether or not the proposal meets or exceeds the minimum Solicitation requirements. **The use of BIM to prepare or submit proposals is NOT required. Fully developed drawings, details, or specifications are not required or desired. Unless, specifically stated, herein, the Government will not be performing a detailed engineering analysis or design review at the proposal stage.** The intent during the proposal submission and review process is not to require detailed design effort or to perform a detailed design engineering review, but rather to focus on the proposed quality levels of materials and systems. If the Government evaluators have actual knowledge or strong suspicion that a proposed product or solution is inappropriately sized, being used in the wrong application or otherwise does not meet the contract requirements, the Government will inform the proposer in the event that discussions are conducted with the firm. The Government is not asking for design analyses in the proposal and is not obligated to perform an engineering design review at this stage. After award, in the event of conflict between the contractor's accepted proposal and the requirements in the final, amended RFP, the order of precedence is indicated in Special Contract Requirement 1.2, DESIGN/BUILD CONTRACT – ORDER OF PRECEDENCE. The Offeror shall identify what it considers to be Betterments in its proposal for Subfactors 1-5 (See Section 00 73 00, SCR "Proposed Betterments"). Note that the Government will not evaluate any material that exceeds the page limits, where indicated below. The final design must comply with the RFP requirements except that accepted betterments become the new contract minimum requirements.

5.2. VOLUME 1 – TAB A – SUBFACTOR 1 – ENERGY PERFORMANCE & RENEWABLE ENERGY

5.2.1. **General:**

This subfactor consists of technical approach narratives and information regarding the Offeror's approach to meeting the Government's energy goals. These goals are directly related to Fort Carson's designation by the Army as a Net Zero installation by 2020 with the immediate goal of making the Butt's Plateau and 13th Combat Aviation Brigade (CAB) complex a Net Zero Campus.

5.2.2. **Submission Requirements:**

The Government encourages the Offeror to propose design features which optimize and emphasize energy use reduction. Proposed systems must conform to the requirements stated in this RFP. All proposed energy related systems that are expected to exceed 1% of the CCL in cost, must be accompanied by a LCCA. A proposed system's LCCA should be included in the proposal and must show that that system is life cycle cost effective over a 40 year period.

In the CLIN Pricing Schedule, page 00 11 00 - 4, complete the *Building Energy Efficiency Statement* and the *Renewable Energy Statement* provided below. The proposed percentage for Building Energy Efficiency should be greater than or equal to 40%, excluding the use of renewable energy sources and/or systems as defined as: "Energy from sources that are not depleted by use. Examples include energy from the sun such as photovoltaic (PV), solar thermal (water heating), and bioenergy systems based on wood waste, agricultural crops or residue, animal and other organic waste, or landfill gas. Other examples include energy from wind and active solar thermal energy systems that employ collection panels and/or heat transfer mechanical components (such as pumps or fans) and defined heat storage systems (such as hot water tanks) and Thermal-siphon solar and storage tank batch heaters.". The proposed percentages must be supported by a life cycle cost analyses as defined below. Should the Offeror receive award, the proposed percentages shall become a contract requirement.

Building Energy Efficiency Statement: *EXCLUDING all proposed renewable energy sources, this project will achieve an energy consumption at least ____% less than the consumption of a baseline building meeting the minimum requirements of ASHRAE Standard 90.1-2007.*

Renewable Energy Statement: *This project will include renewable energy systems that produce an amount of energy that will offset _____% of the annual energy consumption of a baseline building meeting the minimum requirements of ASHRAE Standard 90.1-2007.*

5.2.2.1. **Presentation Drawings:**
(a) There are no specific drawings requirements for this subfactor. However, the Offeror has the option of providing concept level drawing information for specific systems that the Offeror feels are necessary to describe the proposed systems. If drawings are provided, a maximum of 5 pages of drawings are allowed for this tab.

5.2.2.2. **Technical Approach Narratives:**

Provide technical approach narratives, which qualitatively and quantitatively define the energy performance and renewable energy elements of this proposal. It is the responsibility of the proposer to ensure that all aspects identified in the evaluation criteria below are addressed. Include, as applicable, Life Cycle Cost Analyses. The maximum total length for narratives should be thirty (30) typewritten pages including any pages associated with life cycle cost analyses (include summaries only).

5.2.2.2.1 LIFE CYCLE COST ANALYSIS (LCCA)

The following LCCA shall be provided for all proposed energy related systems that are expected to exceed 1% of the CCL in cost, shall be provided for all major alternative systems and shall prove that the proposed system is the most life cycle cost effective.

(1) LCCA calculations and reports will be performed in accordance with Building Life Cycle Cost Program (BLCC). Computer calculations will be performed using the LCCA computer program, which conforms to Building Life Cycle Cost Program (BLCC) and 10 CFR 436. The energy to be considered will include all known thermal loads including process, ventilation and occupant loads. Operating hours will be those actually anticipated for operation. The design team will consider and evaluate all design alternatives that are feasible and appropriate for the particular design application under consideration required in other paragraphs of this Section. Special attention will be given to ensure that all feasible energy and water conservation alternatives are included in the analysis, as indicated. For each analysis, the alternative with the lowest life cycle cost will be incorporated into the design. All economic analyses will use the energy price calculation rates furnished under Energy Prices and Discount Factors for Life-Cycle Cost Analysis. During periods of rapid change in fuel prices the average local fuel price for the previous 12 month period should be used in the analysis in lieu of the current contract price. In lieu of performing project specific individual economic studies, the designer may select alternatives on the basis of previous economic analyses or generic studies provided these studies are applicable to the project under design. In all cases, the essential elements of the design selection process will be documented in the proposal including, as a minimum, the basis for which the list of feasible alternatives was developed and the basis upon which the various design decisions were reached. Future energy values shall be based on inflation and escalation over a 40 year period in accordance with the Building Life Cycle Cost Program (BLCC) and the Appendix K utility cost information.

(2) Additional Solar Domestic Water Preheating LCCA requirements: The economic feasibility of incorporating an active solar domestic water preheating system may be evaluated using the PolySun, RETscreen program or others. In lieu of a separate analysis, previous analyses for similar facilities, climatic regions and sized systems, updated to current generic solar study maintained by the Corps of Engineers Mechanical Systems, Technical Center of Expertise may be used to evaluate the economic feasibility of an active solar water preheating system, if the estimated construction and maintenance cost, usage requirements, and other relevant parameters are similar. If analysis or generic study indicates that the active solar preheating system is feasible, the system will be compared to the most life cycle cost effective design without consideration of the active solar water preheating system.

5.2.3. **Evaluation Criteria:**

It is the Government's goal to reduce energy consumption to the greatest extent possible without the use of renewable energy sources. Therefore increased preference will be given to proposals that exhibit significant energy reduction (well beyond 40%) through the use of passive design strategies, prior to the inclusion of renewable energy that incorporates efficient design strategies for the mechanical/electrical systems, building envelope, and fenestration. Higher proposed building energy efficiency and higher renewable energy percentages will be rated more favorably provided that they are included within the contract cost limitation (CCL) identified and conform to the requirements stated in paragraph 5.2.2. Higher proposed building energy efficiency is more preferred and will be rated more favorably than higher renewable energy percentages. More favorable ratings will be given for proposed energy systems that exhibit favorable qualities in terms of performance, quality, maintenance, and operability. Less favorable ratings will be given for LCCA's (if applicable) which are inadequate, which is based on unrealistic assumptions or which does not adhere to the requirements stated in paragraph 5.2.2.2.1.

5.3. VOLUME 1 - TAB B –SUBFACTOR 2 - BUILDING FUNCTIONAL, AESTHETICS AND SPACE

5.3.1. **Submission Requirements:**

5.3.1.1. **Presentation Drawings**:

(a) Exterior Elevation(s) of the primary elevation(s) of each facility clearly noting proposed materials and colors - maximum of four (4) sheets.

(b) At least one (1) Exterior Perspective Rendering – maximum of one (1) sheet - (may be CADD rendering) for each facility type included in the contract with enough detail to aid in the evaluation of the exterior building aesthetics, as described in paragraph 5.3.2.2 (a), below. Rendering should be at least 11" x 17" in order to show a detailed perspective view of the building. Rendering shall reflect the proposal materials and quality of the Base Offer, which is within the CCL.

(c) At least one building section demonstrating typical exterior wall sections, typical exterior construction materials, finished floor elevations and ceiling heights – maximum of one (1) sheet.

NOTE: The Government will use this information to evaluate functional and aesthetic considerations, such as floor-to-ceiling heights, and will use it to help evaluate exterior aesthetics and appearance. The Government may also use this information in conjunction with the submission information under the subfactor: QUALITY OF BUILDING SYSTEMS AND MATERIALS, below, to evaluate quality of wall finishes, as well as to gain insight into how the proposer has considered air barrier . **The Government is NOT evaluating the structural framing system or solution.**

(d) Schematic floor plans for each floor of each facility. Not necessary if the proposer proposes to use the Government provided floor plans, without change. In that event, the proposer must clearly acknowledge that it will provide the floor plan without change. If the proposer intends to change the Government provided floor plans, it must clearly identify any and all proposed changes to the floor plans, either on a floor plan or in a narrative.

(e) Color board binders including primary interior and exterior finish materials. The board binders shall consist of no more than eleven 8 ½" x 11" inserts located in no more than two binders. Provide one original with actual samples on color boards (printed images will not be accepted). In addition, provide five (5) colored copies of the color boards.

5.3.1.2. **Technical Approach Narratives**

Provide technical approach narratives, both qualitative and quantitative, defining the elements of the proposal. Preface the narratives with a design concepts narrative, providing the design rationale and basis of the proposal.

(a) Minimum Space and Facility Size. Describe the spaces provided for each facility, in accordance with Section 01 10 00, ***Statement of Work***. As a minimum, include a tabulation of the net square footage for rooms, zones or other areas, the total gross square footage for each floor of each facility, and the total gross square footage for each facility to clearly demonstrate compliance with the project requirements. See the sample spreadsheets at the end of this section (Attachments 1 and 2).

(b) Architectural Theme and Materials. This narrative shall be no longer than 3 typewritten pages. Describe the architectural themes of the various facilities and spaces which demonstrate how the proposal achieves the results desired by the ***Statement of Work.*** Narrative should address how the selection of materials and colors enhances the exterior and interior aesthetics of the facilities and improves the living and/or working conditions for the soldier populations who will utilize the facilities. This narrative is not intended to be a material listing, but to explain/reflect how the selections were made and how they address the requirements.

5.3.2. **Evaluation Criteria:**

The following three elements are equal in importance (not rated separately).

5.3.2.1. **Building Functional Arrangement**: This element considers the overall functional layout (Floor Plan) as well as the interaction of all spaces in the facilities. This element considers the planning and design of the spaces with respect to soldier working conditions and the operations of the facility.

The following criteria will be considered in the evaluation of the functional arrangement of the various facilities:

(a) How well the floor plan responds to the Functional Relationship requirements described in the ***Statement of Work.***

(b) How well the floor plan and space arrangement facilitate work flow and access necessary to successfully operate this facility in accordance with its mission.

(c) Do the facilities provide acceptable life safety and fire safety measures?

(d) Do the proposed plans demonstrate compliance with the mandatory requirements for circulation, furnishings equipment, and other specifically identified items in the ***Statement of Work***?

5.3.2.2. **Building Aesthetics:** This element considers the overall "appeal" of the facility and the desire that both the interior and exterior of the facilities present a professional, attractive appearance. The following two areas will be considered under this element and are equal in importance (not rated separately):

(a) Exterior Considerations:

To the extent possible within the government identified contract cost limitation (CCL), the proposal must comply with the look and feel of the Installation architectural theme identified in the Request for Proposals. The first priority in order of importance is how well the proposal provides comparable building mass, size, height, and configuration in comparison with the architectural theme expressed in the Solicitation. The second priority in order of importance is how well the proposal provides compatible exterior skin appearance based upon façade, architectural character (period or style), and exterior detailing matching the architectural theme expressed in the Solicitation.

- Proposals shall be evaluated on mass, size, height, and configuration in comparison with the architectural theme expressed in the Solicitation, design of facades, roof lines, delineation of entrances, proportions of fenestration in relation to elevations, shade and shadow effects, materials, textures, architectural character (period or style), and exterior color schemes.
- How compatible is the proposed design with the installation architectural theme expressed in the RFP? If not an exact "copy" of the theme, how well does it harmonize or blend with the expressed theme?
- How well does the proposal provide comparable building mass, size, height, and configuration in comparison with the architectural theme expressed in the Solicitation?
- How well does the proposal provide compatible exterior skin appearance based upon façade, architectural character (period or style), exterior detailing, matching the architectural theme expressed in the Solicitation?
- Is the building an attractive addition to the Installation?
- How well does the building harmonize with its environment, including surrounding facilities?
- Has the proposer addressed/coordinated the arrangement of stacks, louvers, vents, and roof mounted equipment, etc. to provide a visually attractive structure?

(b) Interior Considerations:

- Are the proposed colors and material finishes conducive to the working environment of the facility?
- For administrative areas, does the interior design provided establish a positive working environment?
- Has the proposal addressed/provided for natural and artificial light in the living and working spaces, and is the arrangement of fenestration and lighting fixtures in the spaces conducive to furniture placement and space usage?
- Do the proposed ceiling material, elevation and design enhance the environment?
- Does the proposal provide for acoustic control of noise from service/support spaces to administrative areas?

5.3.2.3. **Minimum Space and Facility Size**

The proposal must include all the mandatory spaces in response to the requirements set forth in Section 01 10 00, ***Statement of Work***. Proposals will be evaluated on compliance with these requirements. Proposals shall identify any individual areas which are less than the required areas and describe how such deviation would enhance the building function. Individual areas may slightly exceed the requirements, so long as building function is not compromised elsewhere and as long as the overall square footage is not greater than that as described in Section 01 10 00, as authorized by Congress.

5.4. VOLUME 1- TAB C – SUBFACTOR 3 - QUALITY OF BUILDING SYSTEMS AND MATERIALS

5.4.1. **General.** As part of this Subfactor, the Government has identified certain items as desirable features or preferable items. Desirable features are identified below in the evaluation criteria. Preferable items are listed in order of priority. These items, along with any Offeror-identified betterment(s), will be given additional consideration during the evaluation process, provided that they are included within the contract cost limitation (CCL) identified in the Solicitation.

(a) Structural systems utilized for the barrack should be designed to accommodate the potential for future expansion or reconfiguration of the barracks modules. Modular construction therefore is strongly discouraged.

(b) Exterior of Brick, tilt-up, or face brick, or a combination of the exterior wall being block or brick to coordinate with adjacent buildings.

(c) Windows of Bedroom Modules, minimum 4-foot high by 5-foot 4-inches wide, sliders or twin double hung units.

(d) Standing Seam Metal Roof with minimum 3 on 12 slope, coordinate color with adjacent buildings.

(e) For durability and maintainability Fort Carson desires building construction types that are above the minimum allowed by code for this occupancy, i.e. metal stud in lieu of wood stud construction.

5.4.2. **Submission Requirements:**

5.4.2.1. **Presentation Drawings**

(1) There are no specific drawings requirements for this Subfactor. However, the offeror has the option of providing concept level drawing information for specific materials and/or systems which the offeror feels are necessary to describe the proposed systems or materials. A maximum of 2 drawings are allowed for this tab.

5.4.2.2. **Technical Approach Narratives**:

Provide technical approach narratives, both qualitative and quantitative, defining the elements of the proposal. It is acceptable to include all the sub-items shown below into a single combined narrative for the entire facility. It is the responsibility of the proposer to ensure that all aspects identified in the evaluation criteria below are addressed. Whether individual narratives or a single combined narrative is provided, the maximum total length for narratives shall be twenty (20) typewritten pages.

(a) Architectural Finishes: Describe how the materials selected provide for a suitable environment for the expected population of the facility. Discuss how these selections provide value to the Government and how they address the minimum requirements of the solicitation. Narrative should focus on aesthetics, durability and maintenance of the finishes proposed.

(b) Furniture Systems: Not Used

(c) Mechanical Systems: Describe how the mechanical systems selected provide for a highly efficient environmental control system including information about provisions for indoor air quality maintenance. Discuss how these selections provide value to the Government and how they address the minimum requirements of the solicitation. Narrative should focus on maintenance considerations, limiting energy consumption and suitability of the proposed systems for the expected usage.

(d) Plumbing Systems: Describe how the plumbing systems selected provide for a highly efficient domestic hot water system and an efficient piping system. Discuss how these selections provide value to the Government and how they address the minimum requirements of the solicitation. Narrative should focus on maintenance considerations, energy consumption, and suitability of the proposed systems for the expected usage.

(e) Electrical Systems: Describe how the electrical power and lighting systems, telephone, data, and cable television systems selected provide for a highly efficient electrical system. Discuss how these selections provide value to the Government and how they address the minimum requirements of the solicitation. Narrative should focus on maintenance considerations, energy consumption, and suitability of the proposed systems for the expected usage.

(f) ATFP Considerations: Describe how the proposed materials, systems, and designs address the mandatory building ATFP requirements included in the Statement of Work.

(g) Site Utilities and Site Systems: Describe how the site utility systems selected provide for an efficient piping system. Discuss how these selections provide value to the Government and how they address the minimum requirements of the solicitation. Narrative should focus on maintenance considerations and suitability of the proposed systems for the expected usage. Include information regarding coordination with privatized utility providers where applicable.

(h) Interoperability: Describe how systems integrated into the new facilities which require connection and interface with existing Installation wide systems will be accommodated in the proposed project. Narrative should address the

following systems as minimum: Fire Alarm, Telephone, Cable Television, UMCS and privatized utility companies where applicable.

(i) Solar Hot Water Heating: Include provisions to provide at least 30% of the domestic hot water requirements through solar heating methodologies, unless the results of a Life Cycle Cost Analysis (LCCA), developed utilizing the Building Life Cycle Cost Program (BLCC) demonstrates to the Government's satisfaction that the solar hot water system is not life cycle cost effective in comparison with other hot water heating systems. Discuss and outline Offeror's strategy for this solar system including components, placement of collectors and controls. Include all applicable input data, assumptions, first cost, replacement cost and maintenance and repair cost that were utilized in the calculations. If using the LCCA to justify non-selection of solar hot water heating, make all life cycle cost comparisons to a baseline system to provide domestic hot water without solar components. Analyze at least two different solar hot water methodologies to compare against the baseline system. Use a study period of 25 years and use the utility cost information in Appendix K.

5.4.2.3. **Proposed Material Identifications:** In order to evaluate and rate the quality of the materials being proposed, including any material or equipment warranties exceeding the one year warranty in the contract clause "Warranty of Construction", the offeror shall include in the proposal material identification for major materials in each of the areas shown below. Provide this information in tabular form. Table should include manufacturer's name, model number (if known, or at least model series), length of warranty, size/capacity (where available), efficiency (where applicable) and any other notes or information selected by the offeror. The Government will evaluate and consider materials and equipment proposed by brand name and model series or number as a quality standard. Unless substitution of a manufacturer, brand name or model is otherwise specifically prohibited in the contract, if the successful offeror desires to substitute manufacturers, brand names or models after award, the substituted product must meet the contract requirements and be approved by the designer of record and the Government as equal in function, performance, quality and salient features to that initially proposed. Acceptance of the proposal is not a guaranty that the proposed products meet the contractual requirements. See below under Evaluation Criteria for more explanation.

(a) Architectural Finishes

- Interior Walls
- Floors
- Ceilings
- Exterior Walls
- Any Special Features
- Hardware systems (not individual hardware sets)
- Door systems/types (not individual doors)
- Window systems/types (not individual windows)
- Roofing Systems including a description of the roofing system warranty

(c) Furniture Systems: Not Used

(d) Mechanical Systems

- Central Heating/Cooling Equipment
- Pumps
- Air Handling Equipment
- HVAC System Control Equipment
- Energy Conservation Features

(e) Plumbing Systems

- Fixtures
- Domestic Hot Water Generator

(f) Electrical Systems

- Lighting Fixtures
- Main Switchgear and Panels
- Data, Telephone, Cable TV, Intercom, CCTV, or Other Special Systems as Identified in the SOW

5.4.2.4. Quality Betterments. Provide a list of “Quality Betterments” (quality improvements) that are above the minimum stated with the performance specifications. Develop the following table, or similar, to identify quality betterments. List Only Quality Betterments included with the Proposal that are included in your basic SF 1442 CLIN pricing and within the contract cost limitation (CCL).

	Improved Quality	Concise description of improved quality of Items within the CCL	
Arch. Finishes	N/A	N/A	
Etc.			

5.4.3. **Evaluation Criteria:**

5.4.3.1. **General:** It is the Army's objective that these buildings will have a 50 year useful life. The design and construction should provide an appropriate level of quality to ensure the continued use of the facility over that time period with the application of reasonable preventive maintenance and repairs that would be industry-acceptable to a major civilian sector project OWNER. The facility design should consider that the Army may repurpose the use of the facility over the 50 year life. The Army's intent is to install products and materials of good quality that meet industry standard average life that correspond with the period of performance expected before a major renovation or repurpose. The design should be flexible and adaptable to possible future uses different than the current to the extent practical while still meeting the operational and functional requirements defined within. The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles. Develop the project site for efficiency and to convey a sense of unity or connectivity with the adjacent buildings and with the Installation as a whole. Building useful life is defined by the length of service of the structural systems; concrete, masonry, steel and wood in any combination. These structural systems last a lifetime when properly constructed and maintained. The building systems: electrical, mechanical, interior finishes etc. vary in useful life based on quality of the products and materials. Generally speaking these systems will last an average of 20-30 years. Historically, the Army has often performed a major renovation or changed the use of the facility once in the first 25 years. Within that overriding theme, the Government will evaluate the offeror selected systems and components proposed in terms of extended warranties provided, maintenance considerations (frequency, estimated cost, access, equipment locations), operability (ease of use, placement of control features, simplicity), durability (withstand troop usage, ease of cleaning), sustainability and energy consumption (HVAC, lighting, power). The minimum acceptable level of quality for finishes and materials for these buildings are those materials suitable for the expected population and usage. Residential or similar grade finishes and materials are not acceptable for inclusion in these buildings, unless otherwise specifically allowed in Section 01 10 00. Acceptance of the proposal is not a guaranty that the proposed products meet the contractual requirements or that they are the appropriate size or application for the design which will be developed after award. The intent during the proposal submission and review process is not to require detailed design effort or to perform a detailed design engineering review but to focus on the proposed quality levels of materials and systems. If the Government evaluators have actual knowledge or strong suspicion that a proposed product or solution is inappropriately sized, being used in the wrong application or otherwise would not meet the contract requirements, the Government will inform the proposer in the event that discussions are conducted with the firm. The Government is not asking for design analyses in the proposal and is not obligated to perform an engineering design review at this stage. After award, in the event of conflict between the contractor’s accepted proposal and the requirements in the final amended RFP, the order of precedence indicated in Special Contract Requirement 1.2, DESIGN/BUILD CONTRACT – ORDER OF PRECEDENCE, shall govern.

5.4.3.2. The Government encourages the Offeror to place emphasis on those design features which optimize and emphasize functional/operational requirements; interior/exterior finishes and systems; and life cycle/ energy efficiency. The Offeror may choose the most economical (least costly) “Type of Construction” allowed by the Building Code for this occupancy/project and put the money into durable finishes and efficient systems. **The features that the Government has identified in the Statement of Work and example desirable features below will be rated more favorably. The items that the**

Government has identified in paragraph 5.4.1 as preferable will also be rated more favorably, provided that they are included within the contract cost limitation identified in the Solicitation. Offeror-identified betterments may be rated more favorably, provided that they are included within the contract cost limitation identified in the solicitation. **Desirable features, Government identified preferences, and Offeror identified betterments that are evaluated as true betterments and that are acceptable to the Government are all considered "betterments", if they are included within the contract cost limitation. The Government will identify those Offeror-identified betterments that are not desired or are otherwise objectionable or unacceptable, if discussions are conducted with that Offeror.** The order of importance for proposed betterments for rating purposes is as follows: desirable features, preferable items (identified in paragraph 5.4.1) and other Offeror-identified betterments. Unsubstantiated claims or narrative information will not be given evaluation credit during the evaluations. The following elements (not rated separately) will be considered in the evaluation of the building systems and materials:

(a) Architectural Finishes, Components and Systems:

Acceptable proposals include finishes which provide usable spaces for the intended purposes. Proposals will be rated more favorably that offer materials that have an upgraded appearance and include extended warranties, longer life expectancies, sustainability, durability (stand up to troop usage), have low maintenance requirements, and enhance the overall life cycle cost efficiency of the facility. Less favor will be given to projects that include plastic laminate counter tops/backsplashes/window stools and VCT (vinyl composition tile) flooring.

Specific examples of desirable features: solid wood cabinetry; solid surface counter tops; ceramic tile; high efficiency windows and doors.

Minimum roofing system warranty: Manufacturer's comprehensive non-pro-rated material and labor, no-dollar limit liability, edge to edge system coverage, including membrane, insulation and metal (trim), from single source manufacturer for a period of at least 25 years. Warranty is to cover puncture / hail / and wind up to the structural design wind speed as stated within this RFP.

(b) Furniture Systems: Not Used

(c) Mechanical Components and Systems:

Acceptable proposals include components and systems that provide the basic environmental control function necessary. Proposals will be rated more favorably that offer materials that include extended warranties, longer life expectancies, reduce energy consumption, sustainability, and maintainability (cyclical maintenance, access, equipment placement) and enhance the overall life cycle cost efficiency of the facility.

(d) Plumbing Components and Systems:

Acceptable proposals include components and systems that provide the basic function necessary. Proposals will receive additional consideration for components and systems offered that include extended warranties, longer life expectancies, sustainability, durability (stand up to troop usage), have low maintenance requirements and enhance the overall life cycle cost efficiency of the facility.

Specific examples of desirable features: lifetime domestic hot water storage tank warranty; high efficiency equipment; easy/local availability of replacement/repair parts; zoned/valved sub-systems to allow repair without building shutdown.

(e) Electrical Components and Systems:

Acceptable proposals include components and systems that provide the basic function necessary. Proposals will be rated more favorably that offer materials that include extended warranties, longer life expectancies, sustainability, durability (stand up to troop usage), have low maintenance requirements, and enhance the overall life cycle cost efficiency of the facility.

Specific examples of desirable features: all copper conductors; additional telephone/data/cable TV outlets.

(f) ATFP Considerations: This consideration verifies the inclusion/compliance with the building related (laminate windows, design for progressive collapse, etc.) ATFP minimum standard constraints included in the Statement of Work. All proposals must be compliant with the ATFP requirements of the Statement of Work to be considered for award. Acceptable proposals are compliant with all ATFP requirements. Acceptance of the successful proposal

does not constitute acceptance of a design that does not conform to ATFP requirements. Final designs must comply with the ATFP requirements.

(g) Site Utilities Components and Site Systems:

Acceptable proposals include components and systems that provide the basic function necessary. Proposals will receive additional consideration for components and systems offered that include extended warranties, longer life expectancies, sustainability considerations, have low maintenance requirements and enhance the overall life cycle cost efficiency of the facility.

Specific examples of desirable features: enhanced parking/roadway construction/surfaces; sidewalks above the minimum size and construction required; corrosion resistance; valves for isolation/repair of fluid systems; low impact development considerations that exceed the minimum contract requirements, utility placement to allow future replacement/maintenance without significant impact to other systems or access to facilities.

(h) Interoperability: Fire Alarm, Telephone, Cable Television, UMCS, and privatized utility systems (where applicable) must be integrated into the new facilities. The connection and interface of these systems with existing installation-wide systems must be accommodated in the proposed project.

(i) Solar Hot Water Heating: The Government will evaluate the systems and materials proposed for use in the solar domestic hot water system. Proposals that demonstrate solar hot water provisions above 30% will be rated more favorably, provided that it does not increase first cost beyond the contract cost limitation (CCL). No additional consideration will be given for proposals providing for more than 30% solar hot water if the proposed price exceeds the CCL. If the Offeror has provided life cycle cost analyses documenting the non-feasibility of the solar system provision, the Government will verify as reasonable and complete. Errors or inconsistencies in the calculations will be considered deficiencies during evaluations.

5.5. VOLUME 1 - TAB D – SUBFACTOR 4 - SITE DESIGN

5.5.1. **Submission Requirements:**

5.5.1.1. **Presentation Drawings:**

(a) Site Plans; Provide site plans that meet the applicable requirements for clearances and setbacks; meeting antiterrorism design.

(b) Utility Plans: Provide locations, sizes and types of utilities on the plan. Utilities include, but are not limited to, electrical power, communications, gas, water, sanitary sewer and storm sewer.

(c) Grading Plans: Provide grades and drainage features on the plan.

(d) Landscape Plans: Provide a landscape plan that meets applicable requirements. Include a general description of plant material proposed such as shade, flowering, and evergreen trees, ornamental grasses, shrubs, and turf.

5.5.1.2. **Technical Approach Narrative:**

Provide technical approach narrative, qualitatively and quantitatively, defining the elements of the proposal. The narrative may include simple sketches or drawings to help illustrate the Proposer's solutions to the Statement of Work Requirements. Begin the narrative with a preface concerning the design concepts, providing the design rationale and basis of the proposal. It is acceptable to include all of the sub-items shown below into a single combined narrative for the entire project. It is the responsibility of the proposer to ensure that all aspects identified in the evaluation criteria below are addressed. Whether individual narratives or a single combined narrative is provided, the narratives shall not exceed ten (10) typewritten pages.

(a) Site Features

Description of Site features provided, including Material Selections.

(b) Paving

Pavement Sections and Material Selection

(c) Landscape Development

Description of landscape development and site amenities including plant material selection, turfing concepts, site furnishings and hardscape development

(d) Anti-Terrorism/Force Protection

- Compliance with the Statement of Work Requirements.

5.5.2. **Evaluation Criteria:**

5.5.2.1. This Subfactor considers the overall layout of the site and the various specialties which define a workable, pleasing environment for the soldiers.

The proposed site development plan must incorporate all the specific requirements from the *Statement of Work,* as well as comply with all statutory and regulatory requirements outlined therein.

Elements one (1) and two (2) below are equal in importance and are not separately rated.

(1) Acceptable Proposals include the following drawings

Site Plans

Utility Plans

Grading Plans

Landscape Plans

These drawings show the required features and meet antiterrorism design requirements.

(2) Acceptable Proposals include materials and components that provide the basic function, according to the Statement of Work.

5.6. VOLUME 1 - TAB E – SUBFACTOR 5 – SUSTAINABILITY REQUIREMENTS

5.6.1. **Submission Requirements:**

The Offeror shall acknowledge that it understands the contract requirements for sustainable design and construction and that the final project will achieve a Silver level. The Offeror shall submit LEED-NC Version 3 Registered Project Checklist demonstrating how it will achieve the Silver level. A Project Checklist is required for each non-exempt facility demonstrating how it will achieve the Silver level. One checklist may be provided for multiple identical facilities. If the offeror proposes a higher LEED rating than silver, the proposal shall describe whether or not it involves additional costs and clearly indicate if such costs would detract from higher rated Subfactors herein, such as functionality, quality of materials and systems, site work, etc.

5.6.2. **Evaluation Criteria:**

All requirements identified as mandatory in Section 01 10 00 or elsewhere in the Solicitation must be included, and the proposal must meet the requirements of the LEED-NC Version 3 requirements for a Silver level. The Government will provide additional evaluation consideration for proposals which include LEED points identified as preferred. The Government does not desire to pay more to obtain a higher LEED rating, such as Gold, if the additional cost would detract from the higher rated Subfactors herein.

6.0 VOLUME 2 –FACTOR 2 – PERFORMANCE CAPABILITY & SMALL BUSINESS UTILIZATION

6.1. VOLUME 2 -TAB A – SUBFACTOR 1 - SPECIALIZED EXPERIENCE

6.1.1. **Submission Requirements:**

6.1.1.1. The Offeror shall select the construction and design entities and key construction subcontractors for electrical and mechanical (or prime contractor if design and/or electrical and mechanical work is to be self-performed). The Offeror should demonstrate recent, relevant design and construction experience on both similar building projects and large paving projects using, Construction – Specialized Experience Form (Attachment 3), Designer – Specialized Experience Form (Attachment 4), and Key Subcontractor – Specialized Experience Form (Attachment 5) at the end of the section. Offerors may identify state and local government and private contracts that are similar to the Government's requirements set forth in the RFP. If the Offeror is a joint venture, each firm shall provide information, demonstrating experience relevant to their role on this project. Submit projects that are currently well underway (designed and at least 50% construction progress completed) or completed and turned over no longer than five (5) years preceding the date of this Solicitation. If the Offeror has multiple functions or divisions, limit the project examples to those performed by the division or unit submitting the offer or by the team member. Offerors may list government, private or commercial customers. If projects were design-build, so identify them. Identify energy performance enhancing features which were implemented in the projects by the Offeror. The Offeror shall each submit no more than five (5) projects each performed by the design and construction entities (total of 10). Of the projects submitted, provide at least three (3) projects performed by each the design and construction entities (total of 6) that demonstrate experience on similar building projects. An additional two (2) projects may be submitted for each the electrical and the mechanical key construction sub-contractors (total of 4).

- Similar Commercial or Institutional type buildings: Barracks, Dorms, or Apartments

6.1.1.2. The offeror may provide a supplemental **narrative (not project lists),** not to exceed two pages, explaining how any corporate experience that is not directly related to the specific projects above is applicable to this project and how the Government will benefit.

6.1.1.3. The offeror should describe any previous teaming experience between current team members, if not described in the project list. Describe Team members' experience on LEED projects, if not included on the project list. Offeror may describe design-build experience on other type projects. The above information is limited to projects that are well underway or that have been completed and turned over no longer than the past five years preceding the date of this solicitation.

6.1.2. **Evaluation Criteria:**

6.1.2.1. The Government will evaluate the extent of recent, relevant experience of the construction and design entities and key subcontractors in design, construction or design-build, as relevant to their role on this project. Experience on the similar projects identified in the project lists will be rated more favorably than experience provided in the supplemental narrative. The Government may place greater importance on projects performed as a prime contractor than as a subcontractor, depending upon overall role and relevancy considerations. **Federal Government project experience will not be rated inherently more important than non-Federal Government project experience.** (Note: After award, the Section 00 73 00 Special Contract Requirement *Key Personnel, Subcontractors and Outside Consultants* will apply to the selection, which establishes the minimum quality standard. No substitution will be allowed without adequate justification and approval by the Contracting Officer.)

6.1.2.2. The Offeror must submit the requested information to demonstrate a record of recent, related experience in both design and construction, for the facility types (which may include similar state or local government or private counterparts) included in this contract. Recent experience includes projects well underway (see above criteria) or those completed and turned over within **five (5)** years of the proposal issue date for this RFP for design or construction experience. Projects that are not "well underway" as defined above in paragraph 6.1.1.1. will be considered less relevant and may be rated less favorably. Projects completed and turned over more than five (5) years before the proposal issue date will be considered less relevant and may be rated less favorably. Joint Venture partners should each demonstrate experience commensurate with their role on this project or explain in the supplemental narrative how their experience qualifies them for their role on this project.

6.1.2.3. The Government reserves the right to verify the experience record of cited projects or other recent projects by reviewing the Corps of Engineers Construction Contractor (or Architect-Engineer) Appraisal Support System (CCASS/ACASS) or other DOD or Government appraisal systems, or through interviewing owners or references. The Government may check any or all cited references to verify supplied information.

6.1.2.4. To receive credit for extent (amount) of experience, the Offeror and its proposed design firm(s) shall demonstrate a history of recent, relevant experience. A firm will not receive credit under this subfactor for the relevant experience of key personnel proposed for this project.

6.1.2.5. The Government will consider extent of recent experience, degree of relationship of such experience to this project, demonstrated familiarity with applicable codes and local conditions. Some examples of relevancy to this project may include, but not be limited to:

(1) Number, size, type work, complexity, location

(2) Energy performance enhancing features similar to those included in the Offeror's proposal

(3) Dates (well under way or completed no more than 5 years preceding date of Solicitation)

(4) Firm's role and extent of work self-performed (brokering out all work and simply "pouring the sidewalks" on a cited project are examples of less relevant experience)

6.1.2.6. Previous design-build experience is not necessary for an acceptable rating. The Government may consider previous D-B experience a strength, even if the experience is on different type projects than this project. Similarly, the Government may consider previous recent teaming experience among the team members as value added, even if on different type design and/or construction projects than this project. The more relevant the experience, the more favorably it may be rated.

6.1.2.7. The Offeror should demonstrate qualifications and experience in sustainable design and development and design, based on project experience on projects that have achieved US Green Building Council's LEED certification or project experience on completed Corps of Engineers design-build projects that were validated as having achieving LEED silver rating or were certifiable at LEED silver or better for an acceptable rating. A more favorable rating may be given if both the constructor and the design entities demonstrate qualifications and experience on LEED.

6.2. VOLUME 2 - TAB B –SUBFACTOR 2 - PAST PERFORMANCE

6.2.1. **Submission Requirements:**

Submit past performance ratings for each project the Offeror includes in its proposal for Volume 2 - Tab A Specialized Experience, except for any projects submitted for key subcontractors.

If available submit Construction Contract Administration Support System (CCASS) or Architect-Engineer Contract Administration Support System (ACASS) Performance Evaluations ratings. For projects which were designed and/or constructed for other government entities, submit the performance appraisal sheets used by that government entity if available. For projects cited in Volume 2 - Tab A Specialized Experience not covered in the CCASS / ACASS database or other Government Design Performance Rating System, submit a Past Performance Questionnaire (Attachment 6).

6.2.1.1 CCASS/ACASS Evaluations

Firms are requested to retrieve their CCASS/ACASS past performance information directly from the Past Performance Information Retrieval System (PPIRS) at http://www.ppirs.gov. PPIRS is an electronic repository of performance information collected by all the major federal performance reporting systems. Logging onto PPIRS will require the following: All firms must have purchased and installed a Public Key Infrastructure (PKI) certificate. If you do not have this certificate, you cannot access your information. Additional information about the PKI certificate is posted in red at the top, center portion, of the http://www.ppirs.gov web page. You will also need your DUNS number and Marketing Partner Identification Number (MPIN) to log onto PPIRS. The MPIN number was selected by whoever registered your firm in the Central Contractor Registry at http://www.ccr.gov . If you do not know your MPIN number, you will need to contact the CCR help desk by emailing them from the email link on the http://www.ccr.gov/help.asp

web page. Please be aware that they will only release the MPIN number to the person who originally registered your firm.

There are two other ways to obtain a copy of CCASS / ACASS evaluations as follows: (1) Contact your government point of contact for the project you mentioned, and ask them if they can send you a copy, or (2) Apply for "Contractor Corporate Senior Management Representative" access on the following CCASS / ACASS web page: http://www.cpars.csd.disa.mil/. This type of access is issued to only one person within the firm, typically a member of senior management. In addition to access to your completed CCASS / ACASS performance evaluations, you will also be able to view status of evaluations which have not yet been completed. Following receipt of your faxed application request, you will be emailed a logon and access instructions. This type of access will only let you see CCASS / ACASS information, so it is not as complete as PPIRS access which allows access to evaluations prepared by non-DOD federal agencies, as well as the DOD agencies which use CCASS / ACASS. Be aware that you will also need to have a PKI certificate to access the CCASS / ACASS system. This is a DOD requirement.

6.2.1.2 Past Performance Questionnaire (PPQ)

The Past Performance Questionnaire (Attachment 6) is provided for the offeror or its team members to submit to the client. The Past Performance Questionnaire should be completed by an owner or owner's representative not affiliated with your firm. Ensure correct phone numbers and email addresses are provided for the client point of contact.

Completed Past Performance Questionnaires should be submitted with your proposal. If the offeror is unable to obtain a completed PPQ from a client for a project(s) before proposal closing date, the offeror should complete and submit with the proposal the first page of the PPQ (Attachment 6), which will provide contract and client Information for the respective project(s). Offerors should follow-up with clients/references to ensure timely submittal of questionnaires. If the client requests, questionnaires may be submitted directly to the Government's point of contact, via email at Theresa.M.Afrank@usace.army.mil prior to proposal closing date. Offerors shall not incorporate by reference into their proposal PPQs previously submitted for other RFPs. However, this does not preclude the Government from utilizing previously submitted PPQ information in the past performance evaluation.

6.2.1.3 Government Utilization of Alternate Information Sources for Past Performance

The Government will assess the past performance on projects submitted under the Specialized Experience Subfactor and reserves the right to conduct telephone interviews with points of contact identified in the proposal or to review personal knowledge. In addition, the Government may review any other sources of information for evaluating past performance of the Offeror on the submitted projects and any other previous work. Other sources may include, but are not limited to, past performance information retrieved through the Past Performance Information Retrieval System (PPIRS), including Contractor Performance Assessment Reporting System (CPARS), using all CAGE/DUNS numbers of team members (partnership, joint venture, teaming arrangement, or parent company/subsidiary/affiliate) identified in the offeror's proposal, inquiries of owner representative(s), Federal Awardee Performance and Integrity Information System (FAPIIS), Electronic Subcontract Reporting System (eSRS), and any other known sources not provided by the offeror.

While the Government may elect to consider data from other sources, the burden of providing detailed, current, accurate and complete past performance information rests with the Offeror.

6.2.2. **Evaluation Criteria:**

6.2.2.1. The Government will perform a performance confidence assessment of the offeror's probability of successfully meeting the contract requirements, considering the degree of success of the D-B team's recent (well under way or turned over no longer than 5 years preceding the date of this solicitation), relevant experience. See explanation of "well underway" and relevancy under the Subfactor "Specialized Experience". The rating system used for the performance confidence assessment is described in paragraph 8.5.

6.2.2.2. **Relevancy:** The Government will first assess and rate the relevancy of recent projects accomplished by the offeror to the scope of this contract for overall application to the performance confidence assessment ratings described hereinafter. The projects will include those submitted under the Specialized Experience SubFactor as well as from other sources described above. This rating is not a separate proposal rating but is only used in developing an overall past performance confidence

assessment rating assigned to the Past Performance Subfactor. The past performance relevancy ratings are described below:

(a) Very Relevant: Present/past performance effort involved essentially the same scope and magnitude of effort and complexities this solicitation requires.

(b) Relevant: Present/past performance effort involved similar scope and magnitude of effort and complexities this solicitation requires.

(c) Somewhat Relevant: Present/past performance effort involved some of the scope and magnitude of effort and complexities this solicitation requires.

(d) Not Relevant: Present/past performance effort involved little or none of the scope and magnitude of effort and complexities this solicitation requires.

6.2.2.3. **Performance:** The Government will next consider how well the offeror performed on the contracts. The Government will consider the currency and relevance of the information, source of the information, context of the data, and general trends in contractor performance. Past performance on projects with more relevance will typically be a stronger predictor of future success and have more influence on the past performance confidence assessment rating than past performance on projects of lesser relevance. Owners/references may be asked to comment on items such as quality of design or construction, timeliness, management of the work subcontractor management, including timely payment to subs or suppliers, safety, relations between owner and designer or contractor, level of support for such things as as-built documentation, O&M manuals, training, correcting design or construction errors, warranty work, etc. (see the interview form at attachment 6). The Government will target areas covered in the requirements of this proposal including records of conforming to quality, schedule, cost control, customer satisfaction, level of support for such things as as-built documentation, O&M manuals, training, problem resolution for design or construction errors, warranty work, and safety. The Government will not release the Interview Forms to the Offeror at any time, in order for the Government to solicit candid, unbiased interview comments. The Government also places a higher value on projects, which document successful outcomes and are supported by outside source confirmation, for example, but not limited to telephone interviews with points of contact identified in the proposal, CCASS/ACASS or other agency performance databases, offeror furnished references, or personal knowledge. The Government also places a higher value on projects, which provided particularly difficult or unique challenges and the innovative methods the contractor used to resolve problems successfully.

6.2.2.4. Each entity (firm) will be rated on its own performance or that of its predecessor, if relevant. An entity may not establish past performance based on the past performance of its proposed key personnel, apart from that of the entity. If any firm has multiple functions or divisions, The Government will only evaluate past performance of the division or unit submitting the offer or by the team member. If the Government does not obtain past performance information for the projects identified by the offeror and cannot establish a past performance record for the offeror through other sources, past performance will be rated neither favorably nor unfavorably. The performance confidence assessment rating will be considered “Unknown Confidence”.

6.3. VOLUME 2 - TAB C –SUBFACTOR 3 - PROPOSED CONTRACT DURATION AND SUMMARY SCHEDULE

6.3.1. **Submission Requirements:**

6.3.1.1. **Proposed Contract Duration:** The offeror shall propose the contract duration in the appropriate Contract Line Item Number in the CLIN Schedule and should not exceed the benchmark performance duration specified in the CLIN.

6.3.1.2. **Summary Schedule:** Submit a summary level schedule for integrated design and construction. Schedules or diagrams may be provided separately in a size that is easily read, but shall be bound and clearly labeled as Tab C. This summary schedule will, after contract award, be replaced with a project schedule as required by Section 01 32 01.00 10: ***Project Schedule.*** The schedules shall be task oriented, indicating the number of calendar days, after notice to proceed, by which milestones are to be achieved. Offeror may use a critical path or other method of (h)is/er choice; however, schedules shall

be graphically represented. The proposed project schedule shall reflect the proposed contract duration. Give attention to the following features:

(a) Provide a narrative, describing the design packaging plan for separate design packages, based on the offeror's plan for fast tracking. Describe all design and construction to be "fast-tracked" (See section 01 33 16: ***Design After Award***). If long lead item equipment must be ordered prior to completion of a design phase, describe the requirement in the narrative and show the required ordering date in the schedule.

(b) Show the design phase, including events associated with coordinating the interim and final design submittals for each package and the proper handling of the review comments for each design package (See section 01 33 16).

(c) Show the overall construction phase for each facility, for the site work and for utilities. Show fast track starts for design packages, but it isn't necessary to show the detailed breakdown construction (e.g., by trades) of each facility, site work and utilities.

(d) Show turnover of each facility. Identify any proposed phased turnovers. The time to complete the facility and turnover to the Government must consider the requirement for the Contractor's CQC completion inspection and the subsequent joint Contractor-Government turnover inspection.

(e) Show as-built submissions (See section 01 78 02.00 10: ***Project Closeout***).

(f) Constraints**:** Offeror must demonstrate the capability and flexibility to plan and schedule the complete project to meet the proposed contract completion period. Clearly identify any constraints on the schedules presented (e.g., labor or material availability, permits, weather). Indicate the anticipated overall critical path on the schedule.

6.3.2. **Evaluation Criteria:**

6.3.2.1. **Proposed Contract Duration:** Unless changed during negotiations, this duration will become the contractually binding performance period. The Government will evaluate the performance period, as proposed by the Offeror in the Contract Line Item Schedule. In assessing the reasonableness of the proposed contract duration, the Government may take into account how well the proposed summary schedule supports the proposed duration. Evaluators will use their independent judgment concerning logic, constraints and typical construction durations. The Government will rate the proposed duration matching the benchmark duration as "acceptable". A proposed contract duration shorter than the defined benchmark duration (See CLIN Pricing Schedule for calendar days after NTP) that is not cost prohibitive and that is achievable will be rated more favorably. A proposed duration that is longer than the proposed benchmark duration will be viewed as less favorable than a duration that meets the benchmark. The Government will consider an unreasonably condensed contract duration, which places additional cost or schedule risk on the Government or which may create a risk of contract or performance failure, as a significant weakness or a deficiency, depending upon the evaluators' judgment. No advantage will be considered between proposals for differences less than 21 calendar days.

6.3.2.2. **Summary Schedule:** The Government will evaluate the summary schedule for integrated design and construction. The length of the schedule must match the proposed performance duration. A Schedule unreasonably shorter than the proposed contract duration may indicate the Offeror is placing additional risk on the Government for any delays between the scheduled completion date and the required performance completion period. Offerors shall include field overhead costs in the contract price for the full proposed performance duration. The Government will evaluate the schedule to assess the strength of understanding of the project scope, restrictions which must be considered in the schedule e.g., permitting (see Section 01 10 00), long lead items, etc. The Government will evaluate the strength of understanding of events associated with coordinating design submittals, reviews and incorporating review comments, the offeror's capability to schedule the complete project within the proposed performance duration and the realism of the schedule. The Government will evaluate the design packaging plan for logic, reasonableness, how it facilitates meeting the proposed contract duration and how it facilitates the Government's ability to timely perform its design reviews. The packaging plan should minimize risk to the Contractor and to the Government for tear-out and coordination for reviews. For example, is the footing and foundation plan based on adequate design for building loads; etc.? A schedule that offers advantage(s) to the Government over one that merely indicates an adequate understanding of the scope, restrictions, major milestones and general understanding of the various events that can affect start and completion of construction may be rated more favorably.

6.4. VOLUME 2 - TAB D – SUBFACTOR 4- ORGANIZATION/TECHNICAL APPROACH

6.4.1. **Submission Requirements:**

6.4.1.1. Provide information that describes the offeror's organization and intended technical approach to executing the design-build contract per the detailed requirements herein. Demonstrate an understanding of the risk management process associated with the design-build process. Limit the information to fifteen pages or less. Clearly but concisely describe the organizational and technical approach to project management and execution.

6.4.1.2. **Organization.** List the design and construction entities and describe their resources and how their resources will be utilized, their roles and responsibilities and any contractual arrangements that have been established. Clearly describe any teaming or joint venture arrangements, including a clear description of each entity's roles and responsibilities on the project. A copy of the teaming or joint venture agreement(s) may be appended to the plan (not included in the page limitation). Include a simple organizational chart, illustrating the organization, including the proposed quality control group(s). Present a matrix of responsibilities for each entity in executing the key work breakdown structure activities of the project, including design and construction activities for each major feature (i.e., site work, utilities and each building). Identify the design firm(s) chosen for the project, if not to be self-performed. Identify the specific entities chosen as key subcontractors for mechanical and electrical installation. The Offeror shall document unequivocal teaming arrangements with its design entity (ies) and key subcontractors (see attachment 9). Describe the proposed management structure for the team, describing the how the design and construction process will be managed and the authorities and the delegations of authority within the team. Include a key personnel organization chart that clearly depicts the key positions and the names of the personnel, their firm affiliations and their job locations and their job/position title within the organization. The key personnel organization chart shall be consistent with the corporate organization chart, with the matrix of responsibilities assigned to the D-B team entities, and with the list of key personnel to be provided under the Tab, "KEY PERSONNEL CAPABILITIES AND EXPERIENCE".

6.4.1.3. **Technical Approach for Design and Construction.** Describe the technical approach to design and construction of the facility. Include any considerations of fast-tracking design and construction, panelized construction, pre-engineered components or buildings, tilt-up, pre-cast parts, standard designs stick-built framing, etc. The Government is looking for ways to streamline construction and manage labor and other resource constraints in an effort to reduce costs and achieve an aggressive schedule. Factory built modules or similar assemblies shall not be utilized.

6.4.1.4. **Collaborative Approach for Design-build.** Describe interactions within the team and with the Corps of Engineers during the design. Discuss how the configuration management system will track and control design evolution and changes during design for quality control and to facilitate quicker Government reviews. Describe the role of the construction team members during design. Describe the type of Building Information Modeling (BIM) system to be used on the project (See section 01 33 16 and Attachment F of that Document for CADD/BIM requirements and for Contractor Electives for additional consideration, as described below in the evaluation criteria) and how the team intends to develop and use the model. Describe the role and interaction of the design team with the construction team during construction, addressing, as a minimum, maintaining configuration management of the design during construction, including control and approval of revisions to the accepted design; requests for information; shop drawing and submittal reviews and approvals; progress meetings; site visits, if any; contract completion, closeout, as-built and completion documentation.

6.4.1.5. **Planning and Scheduling**. Describe the time control capabilities and systems to be used to plan design and construction and how the schedule will be used to manage design and construction. Discuss internal procedures for handling delays to minimize time growth and "schedule creep".

6.4.1.6. **Self-Performed Work:** Generally describe the items the offeror will self-perform to comply with the requirements in Section 00 73 00 for self-performed work.

6.4.1.7. **Quality Control**. Describe the team's quality control approach, corporate systems and capabilities to maintain quality control of the design and construction. Describe the proposed quality control organization, including the proposed staffing plan. There is no need to submit a quality control plan as the successful offeror will provide that after award. The Government is interested in demonstrable

capabilities to assure and control quality and how the offeror can achieve or exceed the contract's minimum quality control system requirements. In addition to the required designer-of-record (DOR) roles specified within the RFP for maintaining integrity of the design, describe any other DOR involvement in the quality control process, if any.

6.4.2. **Evaluation Criteria**

6.4.2.1. The Government will evaluate the strengths, weaknesses and any deficiencies in the plan. The Government will evaluate the firm's understanding of D-B (and the requirements described in the Division 01 requirements of the Solicitation) and the capability to execute the project. Some additional specific evaluation considerations are listed below. This list is not all-inclusive.

6.4.2.2. **Organization.** The Government will evaluate the clarity and strength of the overall organization and how well it is organized, structured and staffed to execute the entire scope of work. This subfactor will be rated as unsatisfactory if the Offeror has not selected and committed to use its design entity (ies). Joint venture participants' contribution to the organization should be commensurate with their skills and background.

6.4.2.3. **Technical Approach for Design and Construction.** The Government places a higher value on an offer that provides proposed methods to streamline construction and manage labor and other resource constraints, in an effort to reduce costs and support an aggressive schedule, including such things as fast-tracking, panelization, pre-cast, tilt-up, standard designs, etc. The Government will also consider whether the approach reduces on-site craft labor and susceptibility to inclement weather delays.

6.4.2.4. **Collaborative Approach for Design-Build.** The use of 3-dimensional (3D) Building Information Model (BIM) technology in the design process is a requirement. The BIM requirements are described in Section 01 33 16, "Design After Award". The Government will evaluate the integration of the design and construction entities and the staff during design and construction. The constructor must be actively involved in the design process, not just leaving it up to the designer (see Special Contract Requirement (SCR: ***"Constructor's role during Design").*** The Offeror must have an effective configuration management system to control and track revisions to the design. The Government will evaluate the Offeror's understanding of the design process and the roles of the designers of record and the Government reviewers. The Government will evaluate the role of the designer in maintaining design integrity throughout the process, including its key roles during construction. The Government places greater value in collaborative development of the Building Information Model as early as possible during the design and construction process. A team that includes as many subcontractors as possible (e.g., the key subs for electrical and mechanical, the fire protection subcontractor, fabricators, etc.) during design development, prior to release of the applicable design packages for construction, so that systems and trade coordination can reduce interferences, increase constructability and speed up construction operations will be rated more favorably. A team that includes one or more BIM "Contractor Electives", as described in Appendix F of Section 01 33 16 will be rated more favorably.

6.4.2.5. **Planning and Scheduling.** The Government will evaluate the offeror's scheduling capabilities to manage an integrated fast track design-build schedule. Teams that provide 4-D Schedule modeling with demonstrated experience in BIM will be rated more favorably.

6.4.2.6. **Quality Control.** The Government will evaluate the offeror's capabilities and understanding of the contractually required quality control processes for both design and construction. The Government places value upon continued participation by the designers of record during the construction quality control process. The Government will evaluate the adequacy of the staffing plan to cover all required tasks and responsibilities.

6.5. VOLUME 2 - TAB E – SUBFACTOR 5 - KEY PERSONNEL CAPABILITIES AND EXPERIENCE

6.5.1. **Submission Requirements:**

Provide a consolidated list of key personnel with name, position title and description of project responsibility for each. Indicate whether each individual has had a significant role in any of the cited project examples. If re-assignment of personnel is considered possible, provide alternate professionals in each assignment. Include key designers, whether employed by the prime or by a design subcontractor. For each person provide a brief resume, using the Key Personnel Resume form at the end of this Section (Attachment 7). Include the prime contractor's project manager

responsible for design and construction, the design manager, the designers of record for architecture, interior design, structural, civil, geotechnical, fire protection, electrical, and mechanical/plumbing. Where projects are located in states that require a separate registration for design of structures, the structural designer of record must be registered in that state. The interior designer of record should be a certified, licensed, registered or NCIDQ certified interior designer. All other designers of record must be registered in accordance with contract clause: 52.236-25, Requirements for Registration of Designers. For construction, include the on-site manager and the general superintendent (in charge of self-performed work). Offeror shall provide unequivocal letters of commitment from all proposed key personnel not currently employed by the team members. Use the form letter (Attachment 8) at the end of this section.

6.5.2. **Evaluation Criteria:**

The Government will evaluate the required information to determine how well the offeror identifies and demonstrates that its key personnel meet or exceed minimum qualifications necessary, which includes previous satisfactory experience in similar type work, to manage, control and perform the design, and to perform construction. Performance of key personnel proposed for this project may be taken into account when it comes to the attention of the Government. Evaluate how well the Offeror demonstrates that it has the necessary structure and experienced, qualified personnel within its organization to effectively manage, control, administer and execute the integrated design and construction operations, quality control program and subcontracts. This shall be achievable with other projected on-going work. Previous design-build experience will be evaluated more favorably. Evaluate whether designers of record are registered (a requirement), experienced and qualified, and that the structural designer of record is properly registered in the state if the project is located in a state with separate structural engineering registration. The fire protection engineer of record shall be a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveys (NCEES), or a registered P.E. in a related engineering discipline with a minimum of 5 years experience, dedicated to fire protection engineering that can be verified with documentation. The minimum experience requirements for the Project Manager are at least 5 years construction and construction management experience. The minimum experience requirements for the Design manager are at least 5 years of design experience or at least 5 years of construction and construction management experience. The minimum experience requirements for the on-site manager are at least 3 years managing projects with multiple subcontractors and familiarity with scheduling. The minimum experience requirements for the superintendent are at least 5 years experience as superintendent, managing multiple trades and subcontractors. If alternates are proposed for key positions, the evaluation rating will consider the lesser qualified or experienced person, if there is a difference.

6.6. VOLUME 2 - TAB F –SUBFACTOR 6 – UTILIZATION OF SMALL BUSINESS CONCERNS

6.6.1. **Submission Requirements:**

6.6.1.1. All Offerors shall identify the extent to which Small Businesses (SBs), Veteran-Owned Small Businesses (VOSBs), Service-Disabled Veteran-Owned Small Businesses (SDVOSBs), HUBZone Small Businesses, Small Disadvantaged Businesses (SDBs) Woman-Owned Small Businesses (WOSBs), and Historically Black Colleges/Universities or Minority Institutions (HBCU/MIs) would be utilized in the performance of this proposed contract using the Subcontracting & Utilization of Small Business Concerns form at the end of this Section (Attachment 11). For small businesses, as defined by the North American Industry Classification System (NAICS) Code applicable to this solicitation, the offerors shall identify their own participation as a SB, VOSB, SDVOSB, HUBZONE SB, SDB, WOSB, or HBCU/MI, and it will be considered in evaluating the Utilization of Small Business Subfactor. See Section 00 21 00 ***Instructions to Offerors*** for the applicable requirements and goals for participation in this contract.

6.6.1.2. Address the following information in detail.

(1) Offerors should list intended utilization of Small Business Concerns in the proposed contract. In tabular format, include the following information for each Small Business Concern that the Offeror intends to utilize in the proposed contract: 1) the SB category SB, VOSB, SDVOSB, HUBZONE SB, SDB, WOSB, or HBCU/MIs, 2) the name(s) of the SBC members, 3) the specific components to be produced or services to be performed by them, and 4) the estimated % of the Total Contract Value of such work (DO NOT INCLUDE ANY DOLLAR FIGURES). NOTE: Small Business subcontracting for this contract will be finalized in the Subcontracting Plan as described in paragraph 7.5 below.

6.6.2. **Evaluation Criteria:**

6.6.2.1. All offerors (both large and small businesses) will be evaluated on the level of small business commitment that they demonstrate for the proposed acquisition. This evaluation will be based upon the small business subcontracting requirements and goals stated in Section 00 21 00 including the requirement to subcontract 20% of the Total Contract Value to the Small Business Community.

6.6.2.2. A small business offeror also receives credit for their small business participation as a Prime Contractor and can apply their dollar value and calculate percentages in all the applicable small business categories.

6.6.2.3. The following shall evidence small business participation:

(a) The extent to which such firms, as defined in FAR Part 19, are specifically identified in proposals;

(b) Not Used.

(c) The complexity and variety of the work small business firms are to perform;

(d) The realism of the proposal;

(e) The extent of participation of such firms in terms of the value of the total acquisition;

(f) The extent to which the offeror provides detailed explanations/documentation supporting the proposed participation percentages, or lack thereof.

7.0 VOLUME 3 –- PRICE AND PRO FORMA INFORMATION

7.1. GENERAL

Submit the Pro Forma information in a separate sealed envelope labeled: “Volume 3 – Price and Pro Forma Information.” Submit the original and one copy.

7.2. VOLUME 3 - TAB A - FACTOR 3 – PRICE (STANDARD FORM 1442, PROPOSAL DATA SHEET AND CONTRACT LINE ITEM SCHEDULE)

7.2.1. **Submission Requirements:**

7.2.1.1. Submit the properly filled out and executed SF 1442, along with the CLIN Schedule, containing proposed line item and total pricing, as well as the proposed performance duration, Building Energy Efficiency Statement and Renewable Energy Statement. All betterments included in the Offeror's technical proposal must be included in the proposed basic pricing on the SF 1442 CLIN Schedule. See instructions in Section 00 21 00, “Instructions to Offerors”. Submit the Proposal Data Sheet, Attachment 10. In addition, provide a separate cost breakout of all submitted betterments included in your technical proposal along with list of improved qualities compared to the most economical product(s) that meets the performance requirements stated in the RFP. The Government does not intend to evaluate betterments not included in your technical proposal at this time. All betterments included in your technical proposal will be given additional consideration during the evaluation process, provided that they are included in your basic SF 1442 CLIN pricing and within the contract cost limitation (CCL).

7.2.1.2. Supplemental Price Breakdown. If deemed necessary to evaluate the price proposals, the Government will request a price breakdown of the Contract Line Items in a sealed envelope marked “Price Breakdown Information”, in Excel format. The Government will provide details on where and how to send the breakdown. This information will not be needed sooner than three working days after the proposal submission due date. This information may be required for the initial proposal and, if requested, for any revised proposals. This information is not an opportunity for an offeror to revise its non-price or price proposal.

7.2.2. **Evaluation Criteria:**

Price will not be rated or scored, but will be evaluated for fairness and reasonableness through the use of a price analysis. The price evaluators will also check for appearance of unbalanced line item prices. **The Government is likely to not make award if the construction cost limitation set for this project**

is exceeded. Offerors are cautioned to distribute direct costs, such as material, labor, equipment, subcontracts, etc. and to evenly distribute indirect costs, such as job overhead, home office overhead, bond, etc., to the appropriate contract line items. If deemed necessary, the supplemental price breakdown information will be used to assist the Government in performing the price evaluations described above. **All evaluation factors, other than price, when combined, are considered significantly more important than price. Price is the least important factor.**

7.3. VOLUME 3 - TAB B – EVIDENCE OF BONDABILITY

7.3.1. **Submission Requirements:**

Submit information showing Offeror's bondability in the amount of the proposal. Include the name, address and telephone number of the prime contractor's bonding agent.

7.3.2. **Evaluation Requirements:**

This item is not rated. Bonding information will be reviewed to determine the Offeror's ability to obtain the required Performance and Payment Bonds. The prime contractor is required to be able to obtain the level of bonding required by the solicitation from an acceptable surety.

7.4. VOLUME 3 - TAB C – REQUIRED PRE-AWARD INFORMATION

7.4.1. **Submission Requirements:**

7.4.1.1. Submit this information for the Contracting Officer's determination of offeror responsibility, which includes, but is not limited to, the following:

(1) A list of present commitments, including the dollar value thereof, and name of the organization under which the work is being performed. Include names and telephone numbers of personnel within each organization who are familiar with the prospective contractor's performance.

(2) A certified statement listing; (1) each contract awarded within the preceding three month period exceeding $1,000,000.00 in value with a brief description of the contract; and (2) each contract awarded within the preceding three year period not already physically completed and exceeding $5,000,000.00 in value with a brief description of the contract.

(3) If the prospective contractor is a joint venture, each joint venture member will be required to submit the above defined certification.

7.4.1.2. One copy of the following information shall be provided:

(1) Proof of Financial Ability (Most recent financial statement covering assets and liabilities)

(2) Number of years the firm has been in business

(3) Name, address and telephone number of firm's bonding company

(4) Information showing offeror's bondability for this project. Include the bond rate.

(5) Name, address and telephone numbers of two credit/trade references.

7.4.2. **Evaluation Criteria:**

In addition to the other proposal information, the Contracting Officer shall use this information in making an affirmative responsibility determination for award to the Successful Offeror, in accordance with FAR Part 9.

7.5. VOLUME 3 - TAB D – SUBCONTRACTING PLAN

7.5.1. **A Subcontracting Plan is not required to be submitted with the offeror's proposal. It shall only be required from the otherwise successful offeror and only applies if that offeror is an "Other Than Small" (Large) Business. Do not submit a Subcontracting Plan unless requested to do so by the Contracting Officer.**

7.5.1.1. If the Offeror proposing on this solicitation is a large business concern, in accordance with the definition as identified in FAR Clause 52.219-1, “SMALL BUSINESS PROGRAM REPRESENTATION”, (upon notification that it is the apparent successful Offeror,) the firm must submit a small business subcontracting plan in accordance with FAR Clause 52.219-9 SMALL BUSINESS SUBCONTRACTING PLAN. The goals established for small business, small disadvantaged business, woman-owned business, HUBZone business, Service disabled veteran-owned small business participation are described in Section 00 21 00, ***Instructions, Conditions and Notices to Offerors.***

7.5.1.2. The Offeror should provide as much specific information on proposed subcontracted effort for the contract as possible. The Small Business Subcontracting Plan shall be thorough, complete, and in accordance with AFARS Appendix DD and FAR Clause 52.219-9, as it will be incorporated into the contract upon award of the contract to the Offeror, if acceptable and upon final approval of the Contracting Officer.

7.5.1.3. The Plan shall include a description of the types of services the firm proposes to subcontract with small business (SB), small disadvantaged business (SDB), woman-owned small business (WOSB), HUBZone business, and service-disabled veteran-owned small business (SDVOSB), along with the proposed percentages of their participation, to demonstrate a plan to meet the subcontracting goals that will apply to these contracts. If practical, the Offeror shall provide specific information on proposed subcontracted effort for this project.

7.5.1.4. Large Business concerns shall also submit their subcontracting compliance on previous projects completed or underway within the past three years of the date of this solicitation. This requirement may be supported by using copies of the U.S. Government Standard Form 295.

7.5.2. **Evaluation Criteria:**

7.5.2.1. The Government will evaluate the Plan in accordance with the rating scheme in Army FAR Supplement Appendix DD and with the requirements of FAR Clause 52.219-9. This factor is rated as GO/NO-GO. To be acceptable (“GO” rating), subcontracting plans submitted by Large Business Offerors must adequately address ther required statutory elements:

(1) Provide sufficient information to enable the Contracting Officer to answer affirmatively questions A through H of Appendix DD, Part 2, number 8, (Army FAR Supplement 19.705).

(2) A subcontracting plan that is rated 70 percent or less under the AFARS evaluation system will not be considered acceptable. The Government will review those areas where the plan is deficient with the Offeror with the goal of correcting deficiencies.

(3) As part of the evaluation, the Government will compare the small business subcontracting opportunities in the plan with the goals established in the solicitation with additional consideration given for a proposed subcontracting plan that exceeds the goals established in Section 00 21 00 of this solicitation. The Government will give additional credit for a plan which is more specific in nature as to the proposed subcontracting opportunities for Small Business Community (small business (SB), small disadvantaged business (SDB), woman-owned small business (WOSB), HubZone small business (HUBZone), and service-disabled veteran-owned small business (SDVOSB).

(4) As part of the subcontracting plan evaluation, the Government will also evaluate the Offeror’s past performance in establishing realistic, yet challenging, goals and achieving them.

(5) Total dollars subcontracted to small business concerns is a minimum of 20 percent of the contract award amount.

7.5.2.2. Due to requirements for review of the successful Offeror's subcontracting plan by other agencies, the Government reserves the right to negotiate the details of the final plan with the successful Offeror before award can be made. Minor weaknesses or minor deficiencies will not make the otherwise successful offeror ineligible, however award cannot occur until the Plan is deemed at least acceptable. This process is not considered to be discussions per FAR 15.306.

8.0 EVALUATION PROCEDURES

8.1. SOURCE SELECTION EVALUATION BOARD (SSEB)

8.1.1. The SSEB will be established to conduct the evaluation of proposals received in response to this solicitation. The evaluation will be based on the content of the proposal and any subsequent discussions required, as well as information obtained from other sources, e.g. past performance information. The SSEB will not consider any information incorporated by reference, except as expressly allowed by this solicitation.

8.2. EVALUATION

8.2.1. The SSEB will evaluate the proposals and assign a consensus rating for each evaluation factor and subfactor, except that performance risk ratings are assigned to past performance (see below).

8.2.2. The Government may award without discussions. Offerors are cautioned to put forth their best efforts and to furnish all information clearly to allow the Government to evaluate proposals. Offerors should not assume that they will have an opportunity to clarify or correct anything in their proposal after submitting it.

8.2.3. A “Competitive Range” is a subjective determination of the most highly rated proposals in the event that the Government decides that discussions with offerors are required or are considered to be in the Government’s best interests. In such an event, the Contracting Officer will establish a competitive range of all the most highly rated proposals.

8.2.4. If discussions are held, the Government may engage in a broad give-and-take with those offerors in the competitive range, in accordance with FAR 15.306 (d). The Government will provide the Offeror an advance agenda for the discussions. During discussions, the Government may ask the Offeror to further explain its proposal and to answer questions about it.

8.2.5. Upon conclusion of discussions, those offerors still considered the most highly rated will be afforded an opportunity to submit their proposal revisions for final evaluation and selection.

8.3. DEFINITIONS

8.3.1. **Deficiency**

A material failure of a proposal to meet a Government requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level.

8.3.2. **Weakness**

A flaw in the proposal that increases the risk of unsuccessful contract performance. A “significant weakness” in the proposal is a flaw that appreciably increases the risk of unsuccessful contract performance.

8.3.3. **Strength**

Any aspect of a proposal that, when judged against a stated evaluation criterion, enhances the merit of the proposal or increases the probability of successful performance of the contract.

8.3.4. **Deviation**

Proposal implies or specifically offers a deviation below the specified criteria. The offeror may or may not have called the deviation to the Government’s attention. **A deviation is a deficiency.** The proposal must conform to the solicitation requirements for award.

8.3.5. **Clarifications**

Clarifications are limited exchanges between the Government and offerors that may occur when award without discussions is contemplated. If award without discussions is anticipated, offerors may be given the opportunity to clarify certain aspects of their proposals or to resolve minor or clerical errors.

8.3.6. **Communications**

Communications are exchanges between the Government and offerors after receipt of proposals, leading to establishment of the competitive range.

8.3.7. **Discussions**

Discussions are negotiations conducted in a competitive acquisition and take place after establishment of the competitive range. Discussions are tailored to each offeror's proposal, and shall be conducted by the Contracting Officer with each offeror within the competitive range.

8.3.8. **Neutral/Unknown Risk**

No relevant performance record is identifiable upon which to base a meaningful performance risk prediction. A search was unable to identify any relevant past performance information for the entity being rated. This is neither a negative or positive assessment.

8.3.9. **Evaluation Notice (EN)**

Evaluation Notice (EN) is the PCO's written notification to the offeror for purposes of clarifications, communications, or in support of discussions.

8.4. EVALUATION RATING SYSTEM

8.4.1. **General:** The Government will review the proposals and rate the quality of each evaluation factor and subfactor (if any). The SSEB will rate each proposal against the specified evaluation criteria in the Solicitation requirements.

8.4.2. **Review Write-up:** The Government will support each rating with a narrative, separately listing all strengths, weaknesses, deficiencies, and required clarifications.

8.4.3. **Rating System:** The application of a scale of colors or words used in conjunction with the narrative to denote the degree to which the proposal has met the standard for a non-cost factor. After listing proposal strengths, weaknesses and deficiencies, the SSEB will assign an adjective rating of "Blue - Outstanding", "Purple - Good", "Green - Acceptable", "Yellow - Marginal", or "Red - Unacceptable" to each factor and subfactor (except those factors rated as GO/NO-GO and the Past Performance Subfactor), which reflect the Government's confidence in each offeror's ability, as demonstrated in its proposal, to perform the requirements stated in the RFP. The adjectival ratings shall be assigned, using the following criteria, which incorporate a proposal risk assessment:

8.4.3.1. **Blue - Outstanding**: Proposal meets requirements and indicates an exceptional approach and understanding of the requirements. Strengths far outweigh any weaknesses. Risk of unsuccessful performance is very low.

8.4.3.2. **Purple - Good**: Proposal meets requirements and indicates a thorough approach and understanding of the requirements. Proposal contains strengths which outweigh any weaknesses. Risk of unsuccessful performance is low.

8.4.3.3. **Green - Acceptable:** Proposal meets requirements and indicates an adequate approach and understanding of the requirements. Strengths and weaknesses are offsetting or will have little or no impact on contract performance. Risk of unsuccessful performance is no worse than moderate.

8.4.3.4. **Yellow - Marginal**: Proposal does not clearly meet requirements and has not demonstrated an adequate approach and understanding of the requirements. The proposal has one or more weaknesses which are not offset by strengths. Risk of unsuccessful performance is high.

8.4.3.5. **Red - Unacceptable.** Proposal does not meet requirements and contains one or more deficiencies. Proposal is unawardable.

8.5. PAST PERFORMANCE CONFIDENCE ASSESSMENT RATING SYSTEM

8.5.1. Past Performance Confidence Assessment Ratings assess the offeror’s likelihood of success in performing the requirements stated in the RFP based on the offeror's demonstrated performance on recent, relevant contracts.

8.5.2. Performance Confidence Assessment (Overall) Rating System:

8.5.2.1. **Substantial Confidence:** Based on the offeror’s recent/relevant performance record, the Government has a high expectation that the offeror will successfully perform the required effort.

8.5.2.2. **Satisfactory Confidence:** Based on the offeror’s recent/relevant performance record, the Government has a reasonable expectation that the offeror will successfully perform the required effort.

8.5.2.3. **Limited Confidence:** Based on the offeror’s recent/relevant performance record, the Government has a low expectation that the offeror will successfully perform the required effort.

8.5.2.4. **No Confidence:** Based on the offeror’s recent/relevant performance record, the Government has no expectation that the offeror will be able to successfully perform the required effort.

8.5.2.5. **Unknown Confidence (Neutral):** No recent/relevant performance record is available or the offeror’s performance record is so sparse that no meaningful confidence assessment rating can be reasonably assigned.

SECTION 00 22 11 - ATTACHMENT 1
FORMAT FOR TABLE OF FACILITIES

FACILITY (1)	SOLICITATION REQUIREMENTS (2)		PROPOSAL PROVIDED (3)		DIFFERENCE (+/-) (4)		NOTES/REMARKS (5)
	Net SF	Gross SF	Net SF	Gross SF	Net SF	Gross SF	

Notes:

(1) Facility column shall identify building, e.g. Dining Facility, TEMF, UEPH, etc. Where different designs are offered for the same overall building type, each different design shall be identified and tabulated separately.

(2) Complete these columns directly from information in the solicitation. If the solicitation is silent on net square feet for a particular facility, leave this blank.

(3) Complete these columns directly from the information in your proposal.

(4) This column represents the mathematical difference between the proposal and the solicitation requirements. + differences represent areas above the solicitation requirements and – differences represent areas below the solicitation requirements. Proposers are cautioned that exceeding the statutory limitations on building size will cause a proposal to be considered non-compliant.

(5) This column is provided to allow the proposers to place additional relevant information with respect to building area.

SECTION 00 22 11 - ATTACHMENT 2
FORMAT FOR TABLE OF SPACES

FACILITY: _____

SPACE DESIGNATION (1)	SOLICITATION REQUIREMENTS MIN REQUIRED (2) SF	PROPOSAL PROVIDED (3) SF	DIFFERENCE (+/-) (4) SF	NOTES/REMARKS (5)

Notes:

(1) The proposer shall list all spaces within the identified facility in this column.

(2) The proposer shall complete this column by taking the information directly from the solicitation ***Statement of Work***. Where a particular space does not have a specific solicitation requirement, this column may be left blank.

(3) The proposer shall complete this column directly from the information contained in the proposal.

(4) This column represents the mathematical difference between the proposal and the solicitation requirements. + differences represent areas above the solicitation requirements and – differences represent areas below the solicitation requirements.

(5) This column is provided to allow the proposers to place additional relevant information with respect to spaces provided.

(6) Where multiple facilities of the same type (e.g. Dining Facility, UEPH, etc) are included in a single contract, each facility shall be identified in a separate table.

SECTION 00 22 11 - ATTACHMENT 3
COMPANY SPECIALIZED EXPERIENCE - CONSTRUCTION OR PRIME CONTRACTOR

Provide the following information to show examples of projects your company constructed within the last **five** years indicating experience with projects of similar type and scope. Use one form per project.

(a) Type of Facility Represented_____

(b) Your Firm's Name _____

(c) Name of Project_____

(d) Location of Project_____

(e) Owner _____

(f) General Scope of Construction Project _____

_____

_____

(g) Your Role (Prime, Joint Venture, or Subcontractor, etc.) and Work Your Company Self-Performed :

_____

_____

(h) Construction Cost _____

(i) Extent and Type of Work You Subcontracted Out _____

_____

_____

(j) Dates Construction: Began_____ Completed_____

(k) Your Performance Evaluation by Owner, if known _____

_____

(l) Were You Terminated or Assessed Liquidated Damages? _____

(If either is "Yes", attach an Explanation)

(m) Owner's Point of Contact for Reference (Name and Company) _____

_____

(n) Current Telephone Number of Reference POC_____

SECTION 00 22 11 - ATTACHMENT 4
COMPANY SPECIALIZED EXPERIENCE - DESIGN FIRM OR IN-HOUSE DESIGN CAPABILITY

Provide the following information to show examples of projects your company constructed within the last **five** years indicating experience with projects of similar type and scope. Use one form per project.

(a) Type of Facility Represented _____

(b) Your Firm's Name _____

(c) Name of Project_____

(d) Location of Project_____

(e) Owner _____

(f) General Scope of Construction Project _____

_____

_____

(g) Summary of Your Role in Design of this Project, including implementing LEED _____

_____

_____

(h) Identify Estimated ("E") or Actual ("A") Construction Cost _____

(i) Extent and Type of Work You Subcontracted _____

_____

_____

(j) Dates Design: Began_____ Completed_____

(k) Dates Construction: Began_____ Completed_____

(l) Your Performance Evaluation, if known _____

(m) Were You Terminated or Assessed Liquidated Damages? _____

(If either is "Yes", attach an Explanation)

(n) Owner's Point of Contact for Reference (Name and Company) _____

_____

(o) Current Telephone Number of Reference POC_____

SECTION 00 22 11 - ATTACHMENT 5
COMPANY SPECIALIZED EXPERIENCE
KEY SUBCONTRACTOR (OR PRIME IF WORK NOT TO BE SUBCONTRACTED)

Provide the following information to show examples of projects your company constructed within the last **five** years indicating experience with projects of similar type and scope. Use one form per project.

(a) Type of Facility Represented _____

(b) Your Firm's Name _____

(c) Name of project _____

(d) Owner _____

(e) General Scope of Construction Project _____

_____

(f) Your Role (Prime, Joint Venture, or Subcontractor, etc.) and Work Your Company Self-Performed : _____

_____

_____

(g) Your Contract or Subcontract Amount _____

(h) Detailed Description of Your Self-Performed Work _____

_____

(i) Describe any Work You Subcontract to Others _____

_____

(j) Dates Your (sub) contract: Started_____ Completed_____

(k) Your Performance Evaluation by Owner, if any _____

By Prime: _____

(l) Were You Terminated or Assessed Liquidated Damages? _____

(If either is "Yes", attach an Explanation)

(m) Name and Company of Point of Contact (POC) for reference (If you were a subcontractor, also list the firm you were hired by):

_____

(n) Current Telephone Number of Reference POC _____

SECTION 00 22 11 - ATTACHMENT 6

NAVFAC/USACE PAST PERFORMANCE QUESTIONNAIRE (Form PPQ-0)

CONTRACT INFORMATION (Contractor to complete Blocks 1-4)

1. Contractor Information

Firm Name: CAGE Code:
Address: DUNs Number:
Phone Number:
Email Address:
Point of Contact: Contact Phone Number:

2. Work Performed as: ☐ Prime Contractor ☐ Sub Contractor ☐ Joint Venture ☐ Other (Explain)
Percent of project work performed:
If subcontractor, who was the prime (Name/Phone #):

3. Contract Information

Contract Number:
Delivery/Task Order Number (if applicable):
Contract Type: ☐ Firm Fixed Price ☐ Cost Reimbursement ☐ Other (Please specify):
Contract Title:
Contract Location:

Award Date (mm/dd/yy):
Contract Completion Date (mm/dd/yy):
Actual Completion Date (mm/dd/yy):
Explain Differences:

Original Contract Price (Award Amount):
Final Contract Price (*to include all modifications, if applicable*):
Explain Differences:

4. Project Description:

- Complexity of Work ☐ High ☐ Med ☐ Routine
- How is this project relevant to project of submission? (*Please provide details such as similar equipment, requirements, conditions, etc.*)
-
-
-
-

CLIENT INFORMATION (Client to complete Blocks 5-8)

5. Client Information

Name:
Title:
Phone Number:
Email Address:

6. Describe the client's role in the project:

7. Date Questionnaire was completed (mm/dd/yy)**:**

8. Client's Signature:

NOTE: NAVFAC/USACE REQUESTS THAT THE CLIENT COMPLETES THIS QUESTIONNAIRE AND SUBMITS DIRECTLY BACK TO THE OFFEROR. THE OFFEROR WILL SUBMIT THE COMPLETED QUESTIONNAIRE TO USACE WITH THEIR PROPOSAL, AND MAY DUPLICATE THIS QUESTIONNAIRE FOR FUTURE SUBMISSION ON USACE SOLICITATIONS.

CLIENTS ARE HIGHLY ENCOURAGED TO SUBMIT QUESTIONNAIRES DIRECTLY TO THE OFFEROR. HOWEVER, QUESTIONNAIRES MAY BE SUBMITTED DIRECTLY TO USACE. PLEASE CONTACT THE OFFEROR FOR USACE POC INFORMATION. THE GOVERNMENT RESERVES THE RIGHT TO VERIFY ANY AND ALL INFORMATION ON THIS FORM.

ADJECTIVE RATINGS AND DEFINITIONS TO BE USED TO BEST REFLECT YOUR EVALUATION OF THE CONTRACTOR'S PERFORMANCE

RATING	DEFINITION	NOTE
(E) Exceptional	Performance meets contractual requirements and exceeds many to the Government/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the contractor was highly effective.	An Exceptional rating is appropriate when the Contractor successfully performed multiple significant events that were of benefit to the Government/Owner. A singular benefit, however, could be of such magnitude that it alone constitutes an Exceptional rating. Also, there should have been NO significant weaknesses identified.
(VG) Very Good	Performance meets contractual requirements and exceeds some to the Government's/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the contractor were effective.	A Very Good rating is appropriate when the Contractor successfully performed a significant event that was a benefit to the Government/Owner. There should have been no significant weaknesses identified.
(S) Satisfactory	Performance meets minimum contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which corrective actions taken by the contractor appear or were satisfactory.	A Satisfactory rating is appropriate when there were only minor problems, or major problems that the contractor recovered from without impact to the contract. There should have been NO significant weaknesses identified. Per DOD policy, a fundamental principle of assigning ratings is that contractors will not be assessed a rating lower than Satisfactory solely for not performing beyond the requirements of the contract.
(M) Marginal	Performance does not meet some contractual requirements. The contractual performance of the element or sub-element being assessed reflects a serious problem for which the contractor has not yet identified corrective actions. The contractor's proposed actions appear only marginally effective or were not fully implemented.	A Marginal is appropriate when a significant event occurred that the contractor had trouble overcoming which impacted the Government/Owner.
(U) Unsatisfactory	Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element or sub-element contains serious problem(s) for which the contractor's corrective actions appear or were ineffective.	An Unsatisfactory rating is appropriate when multiple significant events occurred that the contractor had trouble overcoming and which impacted the Government/Owner. A singular problem, however, could be of such serious magnitude that it alone constitutes an unsatisfactory rating.
(N) Not Applicable	No information or did not apply to your contract	Rating will be neither positive nor negative.

TO BE COMPLETED BY CLIENT

PLEASE CIRCLE THE ADJECTIVE RATING WHICH BEST REFLECTS YOUR EVALUATION OF THE CONTRACTOR'S PERFORMANCE.

1. QUALITY:						
a) Quality of technical data/report preparation efforts	E	VG	S	M	U	N
b) Ability to meet quality standards specified for technical performance	E	VG	S	M	U	N
c) Timeliness/effectiveness of contract problem resolution without extensive customer guidance	E	VG	S	M	U	N
d) Adequacy/effectiveness of quality control program and adherence to contract quality assurance requirements (without adverse effect on performance)	E	VG	S	M	U	N
2. SCHEDULE/TIMELINESS OF PERFORMANCE:						
a) Compliance with contract delivery/completion schedules including any significant intermediate milestones. *(If liquidated damages were assessed or the schedule was not met, please address below)*	E	VG	S	M	U	N
b) Rate the contractor's use of available resources to accomplish tasks identified in the contract	E	VG	S	M	U	N
3. CUSTOMER SATISFACTION:						
a) To what extent were the end users satisfied with the project?	E	VG	S	M	U	N
b) Contractor was reasonable and cooperative in dealing with your staff (including the ability to successfully resolve disagreements/disputes; responsiveness to administrative reports, businesslike and communication)	E	VG	S	M	U	N
c) To what extent was the contractor cooperative, businesslike, and concerned with the interests of the customer?	E	VG	S	M	U	N
d) Overall customer satisfaction	E	VG	S	M	U	N
4. MANAGEMENT/ PERSONNEL/LABOR						
a) Effectiveness of on-site management, including management of subcontractors, suppliers, materials, and/or labor force?	E	VG	S	M	U	N
b) Ability to hire, apply, and retain a qualified workforce to this effort	E	VG	S	M	U	N
c) Government Property Control	E	VG	S	M	U	N
d) Knowledge/expertise demonstrated by contractor personnel	E	VG	S	M	U	N
e) Utilization of Small Business concerns	E	VG	S	M	U	N
f) Ability to simultaneously manage multiple projects with multiple disciplines	E	VG	S	M	U	N
g) Ability to assimilate and incorporate changes in requirements and/or priority, including planning, execution and response to Government changes	E	VG	S	M	U	N
h) Effectiveness of overall management (including ability to effectively lead, manage and control the program)	E	VG	S	M	U	N

5. COST/FINANCIAL MANAGEMENT						
a) Ability to meet the terms and conditions within the contractually agreed price(s)?	E	VG	S	M	U	N
b) Contractor proposed innovative alternative methods/processes that reduced cost, improved maintainability or other factors that benefited the client	E	VG	S	M	U	N
c) If this is/was a Government cost type contract, please rate the Contractor's timeliness and accuracy in submitting monthly invoices with appropriate back-up documentation, monthly status reports/budget variance reports, compliance with established budgets and avoidance of significant and/or unexplained variances (under runs or overruns)	E	VG	S	M	U	N
d) Is the Contractor's accounting system adequate for management and tracking of costs? *If no, please explain in Remarks section.*	Yes			No		
e) If this is/was a Government contract, has/was this contract been partially or completely terminated for default or convenience or are there any pending terminations? *Indicate if show cause or cure notices were issued, or any default action in comment section below.*	Yes			No		
f) Have there been any indications that the contractor has had any financial problems? *If yes, please explain below.*	Yes			No		
6. SAFETY/SECURITY						
a) To what extent was the contractor able to maintain an environment of safety, adhere to its approved safety plan, and respond to safety issues? (Includes: following the users rules, regulations, and requirements regarding housekeeping, safety, correction of noted deficiencies, etc.)	E	VG	S	M	U	N
b) Contractor complied with all security requirements for the project and personnel security requirements.	E	VG	S	M	U	N
7. GENERAL						
a) Ability to successfully respond to emergency and/or surge situations (including notifying COR, PM or Contracting Officer in a timely manner regarding urgent contractual issues).	E	VG	S	M	U	N
b) Compliance with contractual terms/provisions *(explain if specific issues)*	E	VG	S	M	U	N
c) Would you hire or work with this firm again? *(If no, please explain below)*	Yes			No		
d) In summary, provide an overall rating for the work performed by this contractor.	E	VG	S	M	U	N

Please provide responses to the questions above (*if applicable*) and/or additional remarks. Furthermore, please provide a brief narrative addressing specific strengths, weaknesses, deficiencies, or other comments which may assist our office in evaluating performance risk *(please attach additional pages if necessary)***:**

SECTION 00 22 11 - ATTACHMENT 7
KEY PERSONNEL RESUME

Provide information, listed below, on separate sheets showing qualifications of: prime contractor's project manager responsible for design and construction, the design manager, the designers of record for architecture, interior design, structural, civil, geotechnical, fire protection, electrical, and mechanical/plumbing. For construction, include the on-site manager and general superintendent (in charge of self-performed work). Use a continuation sheet, if needed. NOTE: Match the positions on this page to the list of key personnel in the narrative submission requirements and evaluation criteria.

(a) Your Name and Title_____

(b) Your Assignment on this Project_____

(c) Name of Your Firm_____

(d) No. of Years: With this Firm_____ With other Firms_____

(e) Education: Degree(s)/Year/Specialization_____

_____

(f) Active Registration, if any: No._____, State(s) _____,

First Year/ Current Year _____/_____

(g) Describe Your Specific Experience and Qualifications Relevant to this Project:

_____

_____

_____

_____

SECTION 00 22 11 - ATTACHMENT 8
LETTER OF COMMITMENT FOR KEY PERSONNEL

TO: Contracting Officer
SUBJECT: Letter of Commitment for Proposed Contract for _____

Dear Sir or Madam:

I hereby make the unequivocal commitment that, in the event of an award of a contract to (Fill in name of Proposer), that I will fulfill the duty of (Job Title).

Sincerely, (prospective employee signs)

Date: _____

SECTION 00 22 11 - ATTACHMENT 9
LETTER OF COMMITMENT OF (DESIGN FIRM OR KEY SUBCONTRACTOR)
(USE SUBCONTRATOR'S COMPANY LETTERHEAD)

TO: Contracting Officer
SUBJECT: Letter of Commitment for Proposed Contract for _____

Dear Sir or Madam:

I hereby make the unequivocal commitment that, in the event of an award of a contract to (Fill in name of Proposer), that (insert name of design firm) will fulfill the duties of (state role on a project)

Sincerely, (Authorized Official)

Date: _____

SECTION 00 22 11 - ATTACHMENT 10
PROPOSAL DATA SHEET

(1) Name of Solicitation:

Name of Firm:

Address:

Phone:

Fax:

E-mail:

DUNS # (used for accessing the Construction Contractor Appraisal Support System (CCASS) or A-E Contractor Administration Support System (ACASS) Database)

Also provide any other assigned number that identifies the member firm(s) in the ACASS or CCASS databases. If a separate DUNS has been created for a joint venture (J-V) it must also be submitted. Provide a DUNS number for each company identified in any proposed Contractor-subcontractor association of firms. If the firm is a joint venture or contractor-subcontractor association of firms, list the individual firms and briefly describe the nature of the association. Provide DUNS for each.

Firm 1:

Firm 2:

Firm 3:

Nature of Association:

(2) AUTHORIZED NEGOTIATORS. FAR 52.215-11

The Offeror represents that the following persons are authorized to negotiate on its behalf with the Government in connection with this Request for Proposals (RFP).

[List names, titles, and telephone number of the authorized negotiator.]
Name of Person Authorized to Negotiate:
Negotiator's Address:
Negotiator's Telephone:
Negotiator’s E-mail:

SECTION 00 22 11 - ATTACHMENT 11
SUBCONTRACTING & UTILIZATION OF SMALL BUSINESS CONCERNS

See Section 00 21 00, paragraph SUBCONTRACTING PLAN/ SUBCONTRACTING REQUIREMENTS AND GOALS REGARDING THE UTILIZATION OF SMALL BUSINESS CONCERNS, for the applicable requirements and goals for participation in this contract.

(1) Planned percent of the Total Contract Value to be subcontracted to Small Business Community: _____%

(2) Extent to which Small Business Concerns would be utilized in the performance of the proposed contract:

Small Business Categories	Percent of planned subcontracting dollars subcontracted to: (%)
i. All Small Business Concerns	
ii.*	
iii. WOSB	
iv. HUBZone	
v. VOSB	
vi. SDVOSB	

* Small business concerns owned and controlled by socially and economically disadvantaged individuals or Historically Black Colleges and Universities or Minority Institutions

NOTE: PERCENTAGES ARE REQUIRED. DO NOT INCLUDE ANY DOLLAR FIGURES.

End of Section 00 22 11

This page was intentionally left blank for duplex printing.

May 30, 2012

SECTION 00 45 00 (00600)
REPRESENTATIONS, CERTIFICATIONS & OTHER STATEMENTS OF OFFERORS

INDEX

1.0 REPRESENTATIONS, CERTIFICATIONS & OTHER STATEMENTS OF OFFERORS
1.1 FAR 52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (MAY 2012)
1.2 FAR 52.225-25 PROHIBITION ON CONTRACTING WITH ENTITIES ENGAGING IN SANCTIONED ACTIVITIES RELATING TO IRAN—REPRESENTATION AND CERTIFICATION (NOV 2011)
1.3 DFARS 252.203-7005 REPRESENTATION RELATING TO COMPENSATION OF FORMER DOD OFFICIALS (NOV 2011)
1.4 DFARS 252.204-7007 ALTERNATE A, ANNUAL REPRESENTATIONS AND CERTIFICATIONS (MAY 2012)
1.5 FAR 52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

IMPORTANT NOTE:

FAR 52.204-7 CENTRAL CONTRACTOR REGISTRATION is included in Section 00 72 00 CONTRACT CLAUSES of this solicitation. Online Representations and Certifications Application (ORCA) per FAR 52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS is required to be completed.

Failure of completing applicable requirements contained herein and online representations and certifications and/or provisions may result in delay of contract award.

1.0 REPRESENTATIONS, CERTIFICATIONS & OTHER STATEMENTS OF OFFERORS

FAR 52.204-7 CENTRAL CONTRACTOR REGISTRATION is included in Section 00 72 00 CONTRACT CLAUSES of this solicitation. The offeror will be required to complete Online Representations and Certifications Application (ORCA) per FAR 52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS.

Provide the following certifications and representations as a part of the proposal, check the appropriate boxes, fill in the appropriate information, and provide signatures on the attached pages, and submit with Standard Form 1442 (Section 00 11 00).

Online Representations and Certifications Application is available at: *http://orca.bpn.gov*.

Failure of completing applicable requirements contained herein and online representations and certifications and/or provisions may result in delay of contract award.

1.1 FAR 52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (MAY 2012)

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

(2) The small business size standard is a concern for which the average annual receipts of the preceding three (3) fiscal years did not exceed $33.5 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:

[ ] (i) Paragraph (d) applies.

[ ] (ii) 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 $150,000.

(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) 52.209-2, Prohibition on Contracting with Inverted Domestic Corporations—Representation. This provision applies to solicitations using funds appropriated in fiscal years 2008, 2009, 2010, or 2012.

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

(vii) 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.

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

(ix) 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.

(x) 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.

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

(xii) 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.

(xiii) 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.

(xiv) 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.

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

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

(xvii) 52.225-4, Buy American Act—Free Trade Agreements—Israeli Trade Act Certificate. (Basic, Alternate I, II and III) 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 $77,494, the provision with its Alternate II applies.

(D) If the acquisition value is $77,494 or more but is less than $100,000, the provision with its Alternate III applies.

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

(xix) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan—Certification. This provision applies to all solicitations.

(xx) 52.225-25, Prohibition on Contracting With Entities Engaging in Sanctioned Activities Relating to Iran-Representations and Certification. This provision applies to all solicitations.

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

__ (A) Basic.

__ (B) Alternate I.

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

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

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

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

__ (vi) 52.227-6, Royalty Information.

__ (A) Basic.

__(B) Alternate I.

__ (vii) 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 accessed through https://www.acquisition.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)

1.2 FAR 52.225-25 PROHIBITION ON CONTRACTING WITH ENTITIES ENGAGING IN SANCTIONED ACTIVITIES RELATING TO IRAN—REPRESENTATION AND CERTIFICATION (NOV 2011)

(a) Definitions.

"Person"—

(1) Means—

(i) A natural person;

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

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

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

"Sensitive technology"—

(1) Means hardware, software, telecommunications equipment, or any other technology that is to be used specifically—

(i) To restrict the free flow of unbiased information in Iran; or

(ii) To disrupt, monitor, or otherwise restrict speech of the people of Iran; and

(2) Does not include information or informational materials the export of which the President does not have the authority to regulate or prohibit pursuant to section 203(b)(3) of the International Emergency Economic Powers Act (50 U.S.C. 1702(b)(3)).

(b) The offeror shall e-mail questions concerning sensitive technology to the Department of State at CISADA106@state.gov.

(c) Except as provided in paragraph (d) of this provision or if a waiver has been granted in accordance with 25.703-4, by submission of its offer, the offeror—

(1) Represents, to the best of its knowledge and belief, that the offeror does not export any sensitive technology to the government of Iran or any entities or individuals owned or controlled by, or acting on behalf or at the direction of, the government of Iran; and

(2) Certifies that the offeror, or any person owned or controlled by the offeror, does not engage in any activities for which sanctions may be imposed under section 5 of the Iran Sanctions Act. These sanctioned activities are in the areas of development of the petroleum resources of Iran, production of refined petroleum products in Iran, sale and provision of refined petroleum products to Iran, and contributing to Iran's ability to acquire or develop certain weapons or technologies.

(d) Exception for trade agreements. The representation requirement of paragraph (c)(1) and the certification requirement of paragraph (c)(2) of this provision do not apply if—

(1) This solicitation includes a trade agreements notice or certification (e.g., 52.225-4, 52.225-6, 52.225-12, 52.225-24, or comparable agency provision); and

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

(End of provision)

1.3 DFARS 252.203-7005 REPRESENTATION RELATING TO COMPENSATION OF FORMER DOD OFFICIALS (NOV 2011)

(a) Definition. Covered DoD official is defined in the clause at 252.203-7000, Requirements Relating to Compensation of Former DoD Officials.

(b) By submission of this offer, the offeror represents, to the best of its knowledge and belief, that all covered DoD officials employed by or otherwise receiving compensation from the offeror, and who are expected to undertake activities on behalf of the offeror for any resulting contract, are presently in compliance with all post-employment restrictions covered by 18 U.S.C. 207, 41 U.S.C. 2101-2107, and 5 CFR parts 2637 and 2641, including Federal Acquisition Regulation 3.104-2.

(End of provision)

1.4 DFARS 252.204-7007 ALTERNATE A, ANNUAL REPRESENTATIONS AND CERTIFICATIONS (MAY 2012)

As prescribed in 204.1202, use the following paragraphs (d) and (e) for paragraph (d) for paragraph (d) of the provision at FAR 52.204-8:

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

(i) 252.209-7001, Disclosure of Ownership or Control by the Government of a Terrorist Country. Applies to all solicitations expected to result in contracts of $150,000 or more.

(ii) 252.209-7003, Reserve Officer Training Corps and Military Recruiting on Campus--Representation. Applies to all solicitations with institutions of higher education.

(iii) 252.216-7008, Economic Price Adjustment--Wage Rates or Material Prices Controlled by a Foreign Government. Applies to solicitations for fixed-price supply and service contracts when the contract is to be performed wholly or in part in a foreign country, and a foreign government controls wage rates or material prices and may during contract performance impose a mandatory change in wages or prices of materials.

(iv) 252.225-7042, Authorization to Perform. Applies to all solicitations when performance will be wholly or in part in a foreign country.

(v) 252.229-7012, Tax Exemptions (Italy)--Representation. Applies to solicitations when contract performance will be in Italy.

(vi) 252.229-7013, Tax Exemptions (Spain)--Representation. Applies to solicitations when contract performance will be in Spain.

(vii) 252.247-7022, Representation of Extent of Transportation by Sea. Applies to all solicitations except those for direct purchase of ocean transportation services or those with an anticipated value at or below the simplified acquisition threshold.

(2) The following representations or certifications in ORCA are required if applicable to this solicitation.

----(i) 252.209-7002, Disclosure of Ownership or Control by a Foreign Government.

----(ii) 252.225-7000, Buy American Act--Balance of Payments Program Certificate.

----(iii) 252.225-7020, Trade Agreements Certificate.

----Use with Alternate I.

----(iv) 252.225-7022, Trade Agreements Certificate--Inclusion of Iraqi End Products.

----(v) 252.225-7031, Secondary Arab Boycott of Israel.

----(vi) 252.225-7035, Buy American Act--Free Trade Agreements—Balance of Payments Program Certificate.

----Use with Alternate I.

----Use with Alternate II.

----Use with Alternate III.

----Use with Alternate IV.

----Use with Alternate V.

(e) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) Web site at https://www.acquisition.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 FAR 52.204-8(c) and paragraph (d) 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 provision 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/DFARS clause No	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)

1.5 FAR 52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) *Definitions*.

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

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

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

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

(d) *Taxpayer Identification Number (TIN)*.

[ ] TIN: _____.

[ ] TIN has been applied for.

[ ] TIN is not required because:

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

[ ] Offeror is an agency or instrumentality of a foreign government;

[ ] Offeror is an agency or instrumentality of the Federal Government.

(e) *Type of organization*.

[ ] Sole proprietorship;

[ ] Partnership;

[ ] Corporate entity (not tax-exempt);

[ ] Corporate entity (tax-exempt);

[ ] Government entity (Federal, State, or local);

[ ] Foreign government;

[ ] International organization per 26 CFR 1.6049-4;

[ ] Other _____.

(f) *Common parent*.

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

[ ] Name and TIN of common parent:

Name _____

TIN _____

(End of provision)

SECTION 00 72 00
CONTRACT CLAUSES

Section 00 72 00 - Contract Clauses

May 30, 2012

NOTE: FAR 52.203-13 Applicable if contract exceeds $5,000,000 and performance period is 120 days or more

CLAUSES INCORPORATED BY REFERENCE

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):

https://acquisition.gov/far/index.html
http://farsite.hill.af.mil
http://www.acq.osd.mil/dpap/dars/dfars/index.htm

(End of Provision)

FAR 52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

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

http://acquisition.gov/comp/far/index.html
http://farsite.hill.af.mil
http://www.acq.osd.mil/dpap/
(End of clause)

52.202-1	Definitions	JAN 2012
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-7	Anti-Kickback Procedures	OCT 2010
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	OCT 2010
52.203-13	Contractor Code of Business Ethics and Conduct [Applicable if contract exceeds $5,000,000 and performance period is 120 days or more]	APR 2010
52.204-4	Printed or Copied Double-Sided on Postconsumer Fiber Content Paper	MAY 2011
52.204-7	Central Contractor Registration	FEB 2012
52.204-9	Personal Identity Verification of Contractor Personnel	JAN 2011
52.204-10	Reporting Executive Compensation and First-Tier Subcontract Awards	FEB 2012

52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	DEC 2010
52.209-9	Updates Of Publicly Available Information Regarding Responsibility Matters (For Contracts exceeding $500,000) or FAR 52.209-7 (b) [has] is checked]	FEB 2012
52.209-10	Prohibition On Contracting With Inverted Domestic Corporations	MAY 2012
52.210-1	Market Research [Applicable if contract exceeds $5,000,000]	APR 2011
52.211-15	Defense Priority And Allocation Requirements	APR 2008
52.211-18	Variation in Estimated Quantity	APR 1984
52.215-2	Audit and Records--Negotiation	OCT 2010
52.215-11	Price Reduction For Defective Certified Cost Or Pricing Data—Modifications	AUG 2011
52.215-13	Subcontractor Certified Cost Or Pricing Data—Modifications	OCT 2010
52.215-15	Pension Adjustments and Asset Reversions	OCT 2010
52.215-17	Waiver of Facilities Capital Cost of Money	OCT 1997
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions	JUL 2005
52.215-21	Requirements for Certified Cost or Pricing Data or Information Other Than Cost or Pricing Data--Modifications	OCT 2010
52.219-4	Notice of Price Evaluation Preference for HUBZone Small Business Concerns	JAN 2011 and Alternate I (JAN 2011)
52.219-8	Utilization of Small Business Concerns	JAN 2011
52.219-9	Small Business Subcontracting Plan	JAN 2011
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.219-25	Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting	DEC 2010
52.222-3	Convict Labor	JUN 2003
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation	JUL 2005
52.222-6	Davis Bacon Act	JUL 2005
52.222-7	Withholding of Funds	FEB 1988
52.222-8	Payrolls and Basic Records	JUNE 2010
52.222-9	Apprentices and Trainees	JUL 2005
52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	JUL 2005
52.222-12	Contract Termination-Debarment	FEB 1988
52.222-13	Compliance with Davis-Bacon and Related Act Regulations.	FEB 1988
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	FEB 1988
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
52.222-35	Equal Opportunity For Veterans	SEPT 2010
52.222-36	Affirmative Action For Workers With Disabilities	OCT 2010
52.222-37	Employment Reports On Veterans	SEP 2010
52.222-38	Compliance With Veterans' Employment Reporting Requirements	SEP 2010
52.222-40	Notification Of Employee Rights Under The National Labor Relations Act	DEC 2010
52.222-50	Combating Trafficking in Persons	FEB 2009
52.222-54	**Employment Eligibility Verification**	**JAN 2009**
52.223-5	Pollution Prevention and Right-to-Know Information	MAY 2011
52.223-6	Drug-Free Workplace	MAY 2001
52.223-18	Encouraging Contractor Policies To Ban Text Messaging While Driving	AUG 2011
52.225-13	Restrictions on Certain Foreign Purchases	JUNE 2008

52.227-1	Authorization and Consent	DEC 2007
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	DEC 2007
52.227-4	Patent Indemnity-Construction Contracts	DEC 2007
52.228-2	Additional Bond Security	OCT 1997
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.228-11	Pledges Of Assets	JAN 2012
52.228-12	Prospective Subcontractor Requests for Bonds	OCT 1995
52.228-14	Irrevocable Letter of Credit	DEC 1999
52.228-15	Performance and Payment Bonds--Construction	OCT 2010
52.229-3	Federal, State And Local Taxes	APR 2003
52.232-5	Payments under Fixed-Price Construction Contracts	SEP 2002
52.232-17	Interest	OCT 2010
52.232-23	Assignment Of Claims	JAN 1986
52.232-27	Prompt Payment for Construction Contracts	OCT 2008
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52.236-2	Differing Site Conditions	APR 1984
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13	Accident Prevention	NOV 1991
52.236-14	Availability and Use of Utility Services	APR 1984
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-17	Layout of Work	APR 1984
52.236-21	Specifications and Drawings for Construction	FEB 1997
52.236-25	Requirements for Registration of Designers	JUN 2003
52.236-26	Preconstruction Conference	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-4	Changes	JUNE 2007
52.244-2	Subcontracts	OCT 2010
52.244-6	Subcontracts for Commercial Items	DEC 2010
52.245-1	Government Property with Alternate I	APR 2012; ALT I APR 2012
52.245-9	Use and Charges	APR 2012
52.246-12	Inspection of Construction	AUG 1996
52.246-21	Warranty of Construction	MAR 1994
52.248-3	Value Engineering-Construction	OCT 2010
52.249-2	Termination For Convenience Of The Government (Fixed-Price)	APR 2012
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.252-4	Alternations in Contract	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991

252.203-7000	Requirements Relating to Compensation of Former DoD Officials	SEP 2011
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2008
252.203-7002	Requirement to Inform Employees of Whistleblower Rights	JAN 2009
252.203-7003	Agency Office of the Inspector General [Applicable when FAR 52.203-13 is included]	APR 2012
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7000	Disclosure of Information	DEC 1991
252.204-7004	Alternate A, Central Contractor Registration (52.204-7) Alternate A	SEP 2007
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.215-7000	Pricing Adjustments	DEC 1991
252.219-7003	Small Business Subcontracting Plan (DOD Contracts)	OCT 2010
252.222-7006	Restrictions on the Use of Mandatory Arbitration Agreements [For Subcontracts valued in excess of $1 Million)	DEC 2010
252.223-7004	Drug-Free Work Force	SEP 1988
252.223-7006	Prohibition On Storage And Disposal Of Toxic And Hazardous Materials	APR 2012
252.223-7008	Prohibition of Hexavalent Chromium	MAY 2011
252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns	SEP 2004
252.227-7022	Government Rights (Unlimited)	MAR 1979
252.227-7023	Drawings And Other Data To Become Property Of Government	MAR 1979
252.227-7033	Rights in Shop Drawings	APR 1966
252.231-7000	Supplemental Cost Principles	DEC 1991
252.232-7010	Levies on Contract Payments	DEC 2006
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.242-7005	Contractor Business Systems [Required when DFARS 252.245-7003 Contractor Property Management System Administration is included]	FEB 2012
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.245-7001	Tagging, Labeling, And Marking Of Government-Furnished Property [Required when FAR 52.245-1 Government Property is included]	APR 2012
252.245-7002	Reporting Loss Of Government Property [Required when FAR 52.245-1 Government Property is included]	APR 2012

252.245-7003	Contractor Property Management System Administration [Required when FAR 52.245-1 Government Property is included]	APR 2012
252.245-7004	Reporting, Reutilization, And Disposal [Required when FAR 52.245-1 Government Property is included]	APR 2012
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

CLAUSES INCORPORATED BY FULL TEXT

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

The Contractor shall be required to (a) commence work under this contract within ten 10) calendar days after the date of receipt by him of Notice to Proceed, (b) prosecute said work diligently, and (c) complete the entire work ready for use not later than the number of calendar days (which includes design, design reviews and all construction activities) indicated by the Contractor on the CLIN Pricing Schedule **[(Phase 2)]** for this contract. The time stated for completion of the project shall include final cleanup of the premises.

FAR 52.211-12 LIQUIDATED DAMAGES-CONSTRUCTION (SEPT 2000)

(a) If the Contractor fails to complete interim work items affecting other projects and to complete the work within the time indicated by the Contractor, the Contractor shall pay liquidated damages to the Government in the amount of **$3,500.00** 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.

FAR 52.211-14 NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE, EMERGENCY PREPAREDNESS, AND ENERGY PROGRAM USE (APR 2008)

Any contract awarded as a result of this solicitation will be **DO rated order** certified for national defense, emergency preparedness, and energy program use under the Defense Priorities and Allocations System (DPAS) (15 CFR 700), and the Contractor will be required to follow all of the requirements of this regulation.
(End of provision)

FAR 52.215-19 NOTIFICATION OF OWNERSHIP CHANGES (OCT 1997)

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

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

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

(b) The Contractor shall—

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

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

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

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

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

FAR 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
10.9	6.9

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 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 Colorado Springs SMSA-1720, of which El Paso, Colorado is a part.

***FAR 52.225-11 BUY AMERICAN ACT—CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (MAY 2012)**

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

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

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

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

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

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

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

"Component" means an article, material, or supply incorporated directly into a construction material.

"Construction material" means an article, material, or supply brought to the construction site by the Contractor or 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 construction material (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 end product.

"Designated country" means any of the following countries:

(1) A World Trade Organization Government Procurement Agreement country (Armenia, Aruba, Austria, Belgium, Bulgaria, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, or United Kingdom);

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

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

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

"Designated country construction material" means a construction material that is a WTO GPA country construction material, an FTA country construction material, a least developed country construction material, or a Caribbean Basin country construction material.

"Domestic construction material" means—

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

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

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

(ii) The construction material is a COTS item.

"Foreign construction material" means a construction material other than a domestic construction material.

"Free Trade Agreement country construction material" means a construction material that—

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

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

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

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

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

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

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

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

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

(b) *Construction materials*.

(1) This clause implements the Buy American Act (41 U.S.C. 83) by providing a preference for domestic construction material. In accordance with 41 U.S.C. 1907, the component test of the Buy American Act is waived for construction material that is a COTS item (See FAR 12.505(a)(2)). In addition, the Contracting Officer has determined that the WTO GPA and Free Trade Agreements (FTAs) apply to this acquisition. Therefore, the Buy American Act restrictions are waived for designated country construction materials.

(2) The Contractor shall use only domestic or designated country construction material in performing this contract, except as provided in paragraphs (b)(3) and (b)(4) of this clause.

(3) The requirement in paragraph (b)(2) of this clause does not apply to information technology that is a commercial item or to the construction materials or components listed by the Government as follows:

Carbon Monoxide Detectors
Fluorescent Lamps
Composting Toilet
Type A (woven mat) Bank Stabilization Fabric
Ceiling Fans with Light Kits
Backup ring (HDPE flange adaptor consisting of a thermoplastic stub end, and ductile iron flange)
Chrome/Zinc Residential Grade Bathroom Accessories
GFCI Receptacles
Swivel Hangers for Mechanical Piping
Sprinkler Escutcheons
Dry Wall Steel Stud Screws, Track Fasteners/Pan heads and Concrete Pins
Wall-mounted Split-System AC units (5 tons or less)
Athletic Flooring
Door Chimes & Transformers
Variable Refrigerant Volume Condensing Unit & Fan Coil System (VAV)

[*Contracting Officer to list applicable excepted materials or indicate "none"*]

(4) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(3) of this clause if the Government determines that—

(i) The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the restrictions of the Buy American Act is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;

(ii) The application of the restriction of the Buy American Act to a particular construction material would be impracticable or inconsistent with the public interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) *Request for determination of inapplicability of the Buy American Act*. (1)(i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(4) of this clause shall include adequate information for Government evaluation of the request, including—

(A) A description of the foreign and domestic construction materials;
(B) Unit of measure;
(C) Quantity;
(D) Price;
(E) Time of delivery or availability;
(F) Location of the construction project;
(G) Name and address of the proposed supplier; and
(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American Act applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(4)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American Act applies, use of foreign construction material is noncompliant with the Buy American Act.

(d) *Data*. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

FOREIGN AND DOMESTIC CONSTRUCTION MATERIALS PRICE COMPARISON			
Construction Material Description	Unit of Measure	Quantity	Price (Dollars)*
Item 1:			
Foreign construction material	_____	_____	_____
Domestic construction material	_____	_____	_____
Item 2:			
Foreign construction material	_____	_____	_____
Domestic construction material	_____	_____	_____

[List *name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.]*
[Include other applicable supporting information.]

[Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).]*

(End of clause)

***FAR 52.225-12 NOTICE OF BUY AMERICAN ACT REQUIREMENT—CONSTRUCTION MATERIALS UNDER TRADE AGREEMENTS (FEB 2009) [Applicable with FAR 52.225-11]**

(a) *Definitions*. "Commercially available off-the-shelf (COTS) item," "construction material," "designated country construction material," "domestic construction material," and "foreign construction material," as used in this provision, are defined in the clause of this solicitation entitled "Buy American Act–Construction Materials Under Trade Agreements" (Federal Acquisition Regulation (FAR) clause 52.225-11).

(b) *Requests for determination of inapplicability*. An offeror requesting a determination regarding the inapplicability of the Buy American Act should submit the request to the Contracting Officer in time to allow a determination before submission of offers. The offeror shall include the information and applicable supporting data required by paragraphs (c) and (d) of FAR clause 52.225-11 in the request. If an offeror has not requested a determination regarding the inapplicability of the Buy American Act before submitting its offer, or has not received a response to a previous request, the offeror shall include the information and supporting data in the offer.

(c) *Evaluation of offers*. (1) The Government will evaluate an offer requesting exception to the requirements of the Buy American Act, based on claimed unreasonable cost of domestic construction materials, by adding to the offered price the appropriate percentage of the cost of such foreign construction material, as specified in paragraph (b)(4)(i) of FAR clause 52.225-11.

(2) If evaluation results in a tie between an offeror that requested the substitution of foreign construction material based on unreasonable cost and an offeror that did not request an exception, the Contracting Officer will award to the offeror that did not request an exception based on unreasonable cost.

(d) *Alternate offers*.

(1) When an offer includes foreign construction material, other than designated country construction material, that is not listed by the Government in this solicitation in paragraph (b)(3) of FAR clause 52.225-11, the offeror also may submit an alternate offer based on use of equivalent domestic or designated country construction material.

(2) If an alternate offer is submitted, the offeror shall submit a separate Standard Form 1442 for the alternate offer, and a separate price comparison table prepared in accordance with paragraphs (c) and (d) of FAR clause 52.225-11 for the offer that is based on the use of any foreign construction material for which the Government has not yet determined an exception applies.

(3) If the Government determines that a particular exception requested in accordance with paragraph (c) of FAR clause 52.225-11 does not apply, the Government will evaluate only those offers based on use of the equivalent domestic or designated country construction material, and the offeror shall be required to furnish such domestic or designated country construction material. An offer based on use of the foreign construction material for which an exception was requested—

(i) Will be rejected as nonresponsive if this acquisition is conducted by sealed bidding; or

(ii) May be accepted if revised during negotiations.

(End of provision)

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

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

FAR 52.236-4 PHYSICAL DATA (APR 1984)

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

(a). The indications of physical conditions on the drawings and in the specifications are the result of site investigations by surveys and soil borings. The data shown graphically and by symbol for each respective boring represents the actual geologic features observed and logged at the location given on the drawings. While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local minor variations characteristic of the subsurface materials of this region could occur.

(b). Weather conditions shall have been investigated by the Contractor to satisfy himself as to the hazards likely to arise therefrom. Complete weather records and reports may be obtained from the local U.S. Weather Bureau.

(c) Transportation facilities shall have been investigated by the Contractor to satisfy himself as to the existence of access highways and railroad facilities.

FAR 52.251-1 GOVERNMENT SUPPLY SOURCES (APR 2012)

The Contracting Officer may issue the Contractor an authorization to use Government supply sources in the performance of this contract. Title to all property acquired by the Contractor under such an authorization shall vest in the Government unless otherwise specified in the contract. The provisions of the clause at FAR 52.245-1, “Government Property,” apply to all property acquired under such authorization.
(End of clause)

EFARS 52.231-5000 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)

a. This clause does not apply to terminations. See EFARS 52.249-5000, Basis for settlement of proposals and FAR Part 49.

b. Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a Contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the Contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series of equipment from the Contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region **V.** Copies of each regional schedule may be obtained through the following Internet site: http://www.usace.army.mil/inet/usace-docs/eng-pamphlets/ep.htm. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be developed using the formula provided in the schedule. For forward pricing, the Schedule in effect at the time of negotiations shall apply. For retrospective pricing, the Schedule in effect at the time the work was performed shall apply.

c. Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

d. When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost

or pricing data, or partial/limited data as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

EFARS 52.249-5000 BASIS FOR SETTLEMENT OF PROPOSALS

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

(1) Actual costs for each piece of equipment, or groups of similar serial or series equipment, need not be available in the contractor's accounting records to determine total actual equipment costs.
(2) If equipment costs have been allocated to a contract using predetermined rates, those charges will be adjusted to actual costs.
(3) Recorded job costs adjusted for unallowable and unallocable expenses will be used to determine equipment operating expenses.
(4) Ownership costs (depreciation) will be determined using the contractor's depreciation schedule (subject to the provisions of FAR 31.205-11).
(5) License, taxes, storage and insurance costs are normally recovered as an indirect expense and unless the contractor charges these costs directly to contracts, they will be recovered through the indirect expense rate.

DFARS 252.203-7004 DISPLAY OF FRAUD HOTLINE POSTER(S) (SEP 2011) [For Contracts exceeding $5,000,000]

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

(b) Display of fraud hotline poster(s).

(1) The Contractor shall display prominently in common work areas within business segments performing work in the United States under Department of Defense (DoD) contracts DoD fraud hotline posters prepared by the DoD Office of the Inspector General. DoD fraud hotline posters may be obtained from the DoD Inspector General, ATTN: Defense Hotline, 400 Army Navy Drive, Washington, DC 22202-2884.

(2) If the contract is funded, in whole or in part, by Department of Homeland Security (DHS) disaster relief funds, the DHS fraud hotline poster shall be displayed in addition to the DoD fraud hotline poster. If a display of a DHS fraud hotline poster is required, the Contractor may obtain such poster from:
_____.
http://www.oig.dhs.gov/

Click on link for "HOTLINE Report Corruption, Fraud, Waste or Abuse"
Click on link for "DHS OIG Hotline Poster"

(3) Additionally, if the Contractor maintains a company website as a method of providing information to employees, the Contractor shall display an electronic version of the poster(s) at the website.

(c) Subcontracts. The Contractor shall include the substance of this clause, including this paragraph (c), in all subcontracts that exceed $5 million except when the subcontract—

(1) Is for the acquisition of a commercial item; or

(2) Is performed entirely outside the United States.

(End of clause)

This page was intentionally left blank for duplex printing.

SECTION 00 73 00
REV 2.9 - 30 APR 2012

SPECIAL CONTRACT REQUIREMENTS

1.0 GENERAL

1.1. REFERENCES – NOT USED

1.2. DESIGN/BUILD CONTRACT – ORDER OF PRECEDENCE (AUG 97)

1.3. PROPOSED BETTERMENTS (APR 12)

1.4. SELF-PERFORMANCE OF WORK BY THE PRIME CONTRACTOR (MAR 06/UPDATED MAR 10)

1.5. PARTNERING (AUG 97)

1.6. KEY PERSONNEL, SUBCONTRACTORS AND OUTSIDE ASSOCIATES OR CONSULTANTS (MAY 06)

1.7. RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN (MAY 02)

1.8. WARRANTY OF DESIGN (FIRM-FIXED PRICE DESIGN-BUILD CONTRACT) (MAY 02)

1.9. CONSTRUCTOR'S ROLE DURING DESIGN (JUN 98)

1.10. VALUE ENGINEERING AFTER AWARD (JUN 99)

1.11. DEVIATING FROM THE ACCEPTED DESIGN (JUN 02)

1.12. GOVERNMENT-FURNISHED RFP DRAWINGS, SURVEYS AND SPECIFICATIONS (JUL 02)

1.13. GOVERNMENT-FURNISHED SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (JAN 11)

1.14. GOVERNMENT RE-USE OF DESIGN (SEP 05)

1.15. NOT USED

1.16. US ARMY CORPS OF ENGINEERS SAFETY AND HEALTH REQUIREMENTS MANUAL (JUL 11)

1.17. SUPPLEMENTAL PRICE BREAKDOWN INFORMATION

1.18. SITE SAFETY AND HEALTH OFFICER REQUIREMENTS AND QUALIFICATIONS (JUL 11)

1.19. CONTRACTOR PERFORMANCE EVALUATION

1.20. CONTRACTOR SUPPLY AND USE OF ELECTRONIC SOFTWARE FOR PROCESSING DAVIS-BACON ACT CERTIFIED LABOR PAYROLLS (JULY 2011)

2.0 PRODUCTS NOT USED

3.0 EXECUTION NOT USED

1.0 GENERAL

1.1. REFERENCES - NOT USED

1.2. DESIGN/BUILD CONTRACT - ORDER OF PRECEDENCE (AUG 97)

(a) The contract includes the standard contract clauses and schedules current at the time of contract award. It entails (1) the solicitation in its entirety, including all drawings, cuts, and illustrations, and any amendments, and (2) the successful offeror's accepted proposal. The contract constitutes and defines the entire agreement between the Contractor and the Government. No documentation shall be omitted which in any way bears upon the terms of that agreement.

(b) In the event of conflict or inconsistency between any of the provisions of this contract, precedence shall be given in the following order:

(1) Betterments: Any portions of the accepted proposal which both conform to and exceed the provisions of the solicitation.

(2) The provisions of the solicitations. (See also contract Clause: 52.236- 21, ***SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION***.)

(3) All other provisions of the accepted proposal.

(4) Any design products including, but not limited to, plans, specifications, engineering studies and analyses, shop drawings, equipment installation drawings, etc. These are “deliverables” under the contract and are not part of the contract itself. Design products must conform to all provisions of the contract, in the order of precedence herein.

1.3. PROPOSED BETTERMENTS (APR 12)

(a) The minimum requirements of the contract are identified in the Request for Proposal. All betterments offered in the accepted proposal become a requirement of the awarded contract.

(b) “Betterment” is defined as any component or system in the accepted proposal which exceeds the minimum requirements stated in the Request for Proposal.

(c) This includes all betterments identified in the accepted proposal. It also includes all Government identified betterments in the accepted proposal, whether or not the Government specifically identifies such betterments in a “List of Accepted Project Betterments”, made part of the contract award by alteration. It also includes any other betterments in the accepted Proposal that might be identified after award.

1.4. SELF-PERFORMANCE OF WORK BY THE PRIME CONTRACTOR (MAR 06/UPDATED MAR 10)

(a) The following describes the applicable clause or requirement for self-performance of work by the Contractor, depending upon the type of solicitation (e.g., unrestricted or full or partial set-aside).

(b) Contract clause 52.236-1, ***PERFORMANCE OF WORK BY THE CONTRACTOR***, is applicable to unrestricted procurement contract awards to any business.

1.5. PARTNERING (AUG 97)

In order to most effectively accomplish this contract, the Government proposes to form a partnership with the Contractor to develop a cohesive building team. It is anticipated that this partnership would involve the Corps of Engineers, the Contractor, primary subcontractors and the designers. This partnership would strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership would be bilateral in membership and participation will be totally voluntary. All costs, excluding labor and travel expenses, shall be shared equally between the Government and the Contractor. The Contractor and Government shall be responsible for their own labor and travel costs.

1.6. KEY PERSONNEL, SUBCONTRACTORS AND OUTSIDE ASSOCIATES OR CONSULTANTS (MAY 2006)

In connection with this contract, any in-house personnel, subcontractors, and outside associates or consultants will be limited to individuals or firms that were specifically identified in the Contractor’s accepted proposal. The Contractor shall obtain the Contracting Officer's written consent before making any substitution for these

designated in-house personnel, subcontractors, associates, or consultants. If the Contractor proposes a substitution, it shall submit the same type of information that was submitted in the accepted proposal to the Contracting Officer for evaluation and approval. The level of qualifications and experience submitted in the accepted proposal or that required by the Solicitation, whichever is greater, is the minimum standard for any substitution.

1.7. RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN (MAY 02)

(a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other non-construction services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiency in its designs, drawings, specifications, and other non-construction services and perform any necessary rework or modifications, including any damage to real or personal property, resulting from the design error or omission.

(b) The standard of care for all design services performed under this agreement shall be the care and skill ordinarily used by members of the architectural or engineering professions practicing under similar conditions at the same time and locality. Notwithstanding the above, in the event that the contract specifies that portions of the Work be performed in accordance with a performance standard, the design services shall be performed so as to achieve such standards.

(c) Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contact shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract. The Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of these services furnished under this contract.

(d) The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

(e) If the Contractor is comprised of more than one legal entity, each entity shall be jointly and severally liable hereunder.

1.8. WARRANTY OF DESIGN (FIRM-FIXED PRICE DESIGN-BUILD CONTRACT) (MAY 02)

(a) The Contractor warrants that the design shall be performed in accordance with the Contract requirements. Design and design related construction not conforming to the Contract requirements shall be corrected at no additional cost to the Government. The standard of care for design is defined in paragraph (b) of Special Contract Requirement ***RESPONSIBILITY OF THE CONTRACTOR FOR DESIGN***.

(b) The period of this warranty shall commence upon final completion and the Government's acceptance of the work, or in the case of the Government's beneficial occupancy of all or part of the work for its convenience, prior to final completion and acceptance, at the time of such occupancy.

(c) This design warranty shall be effective from the above event through the Statute of Limitations and Statute of Repose, as applicable to the state that the project is located in.

(d) The rights and remedies of the Government provided for under this clause are in addition to any other rights and remedies provided in this contract or by law.

1.9. CONSTRUCTOR'S ROLE DURING DESIGN (JUN 98)

The Contractor's construction management key personnel shall be actively involved during the design process to effectively integrate the design and construction requirements of this contract. In addition to the typical required construction activities, the constructor's involvement includes, but is not limited to actions such as: integrating the design schedule into the Master Schedule to maximize the effectiveness of fast-tracking design and construction (within the limits allowed in the contract), ensuring constructability and economy of the design, integrating the shop drawing and installation drawing process into the design, executing the material and equipment acquisition programs to meet critical schedules, effectively interfacing the construction QC program with the design QC program, and maintaining and providing the design team with accurate, up-to-date redline and as-built documentation. The Contractor shall require and manage the active involvement of key trade subcontractors in the above activities.

1.10. VALUE ENGINEERING AFTER AWARD (JUNE 99)

(a) 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 Solicitation documents which were addressed in the Contractor's accepted contract proposal and which were evaluated in competition with other offerors for award of this contract.

(b) 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.

(c) For purposes of this clause, the term “performance oriented” refers to those aspects of the design criteria or other contract requirements which allow the Offeror or 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.

(d) In contrast, 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 Offerors little or no freedom in the choice of design approach, materials, fabrication techniques, methods of installation or other approach to fulfill the contract requirements.

1.11. DEVIATING FROM THE ACCEPTED DESIGN (JUN 02)

(a) The Contractor shall obtain the approval of the Designer of Record and the Government's concurrence for any Contractor proposed revision to the professionally stamped and sealed and Government reviewed and concurred design, before proceeding with the revision.

(b) The Government reserves the right to non-concur with any revision to the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.

(c) Any revision to the design, which deviates from the contract requirements (i.e., the Request for Proposals and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision.

(d) Unless the Government initiates a change to the contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the contract requirements, which results in additional cost, shall strictly be at the Contractor's expense.

(e) The Contractor shall track all approved revisions to the reviewed and accepted design and shall incorporate them into the as-built design documentation, in accordance with agreed procedures. The Designer of Record shall document its professional concurrence on the as-builts for any revisions in the stamped and sealed drawings and specifications.

1.12. GOVERNMENT-FURNISHED RFP DRAWINGS, SURVEYS AND SPECIFICATIONS (JUL 02)

This is to clarify that contract clause 252.236-7001, ***CONTRACT DRAWINGS AND SPECIFICATIONS***, refers to any Government-furnished design or design criteria included in the Request for Proposal (RFP).

1.13. GOVERNMENT-FURNISHED SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (JAN 2011)

This is to clarify that contract clause 52.236-21, ***SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION***, refers to any specifications and drawings furnished in the Request for Proposal (RFP). The term “specifications” refers to the design criteria or scope of work, in addition to any attached specifications.

1.14. GOVERNMENT RE-USE OF DESIGN (MAY 06)

In conjunction with the Clause 252.227-7022, ***GOVERNMENT RIGHTS UNLIMITED***, the Government will not ask for additional originals or copies of the design works after the Contractor provides all required design documentation and as-built documentation under the instant contract. Further, if the Government uses the design for other projects without additional compensation to the Contractor for re-use, the Government releases the

Contractor from liability in the design on the other projects, due to defects in the design that are not the result of fraud, gross mistake as amounts to fraud, gross negligence or intentional misrepresentation.

1.15. NOT USED

1.16. US ARMY CORPS OF ENGINEERS SAFETY AND HEALTH REQUIREMENTS MANUAL (JUL 11)

In accordance with Contract Clause 52.236-13, ***ACCIDENT PREVENTION***, the Contractor shall comply with the latest version of Engineer Manual 385-1-1, including any interim revisions, in effect at the time of the solicitation. EM 385-1-1 and its changes are available through www.usace.army.mil/CESO/Pages/**EM385-1-1**.aspx

1.17. SUPPLEMENTAL PRICE BREAKDOWN INFORMATION:

After contract award, the Government will require the Contractor to provide a cost breakdown of each facility by square foot, including major building systems to the five-foot line, for programming validation purposes. There will be no separate payment for this information and the Contractor shall include it in the contract price. The Government will provide a format with the directive.

1.18. SITE SAFETY AND HEALTH OFFICER REQUIREMENTS AND QUALIFICATIONS (JUL 11)

(a) The Contractor shall employ a competent person at each project to function as the Site Safety and Health Officer (SSHO) in accordance with EM 385-1-1, Section 01.A.17. The SSHO shall report to the senior project official or to a senior corporate official. The SSHO shall be certified as a Construction Health and Safety Technician (CHST) by the Board of Certified Safety Professionals (BCSP) and shall have completed the Construction Industry OSHA 30-hour class. Submit the qualifications of the proposed SSHO for Government Approval.

(b) The SSHO duties will be the employee's sole, full-time responsibility.

1.19. CONTRACTOR PERFORMANCE EVALUATION

In accordance with the provisions of Subpart 36.201 (Evaluation of Contractor Performance) of the Federal Acquisition Regulation (FAR), construction contractor's performance shall be evaluated throughout the performance of the contract. The United States Army Corps of Engineers (USACE) follows the procedures outlined in Engineering Regulation 415-1-17 to fulfill this FAR requirement. For construction contracts awarded at or above $100,000.00, the USACE will evaluate contractor's performance and prepare a performance report using the Construction Contractor Appraisal Support System (CCASS), which is now a web-based system. After an evaluation (interim or final) is written up by the USACE, the contractor will have the ability to access, review and comment on the evaluation for a period of 30 days. Accessing and using CCASS requires specific software, called PKI certification, which is installed on the user's computer. The certification is a Department of Defense requirement and was implemented to provide security in electronic transactions. The certification software could cost approximately $110 - $125 per certificate per year and is purchased from an External Certificate Authorities (ECA) vendor. Current information about the PKI certification process and for contacting vendors can be found on the web site: http://www.cpars.csd.disa.mil/. If the Contractor wishes to participate in the performance evaluation process, access to CCASS and PKI certification is the sole responsibility of the Contractor.

1.20 CONTRACTOR SUPPLY AND USE OF ELECTRONIC SOFTWARE FOR PROCESSING DAVIS-BACON ACT CERTIFIED LABOR PAYROLLS (JULY 2011)

(a) The Contractor is encouraged to use a commercially-available electronic system to process and submit certified payrolls electronically to the Government. The Davis-Bacon Act (DBA) establishes requirements for preparing, processing and providing certified payrolls, as stated in FAR 52.222-8, PAYROLLS AND BASIC RECORDS and FAR 52.222-13, COMPLIANCE WITH DAVIS-BACON AND RELATED REGULATIONS.

(b) If the Contractor elects to use an electronic DBA payroll processing system, obtain and provide all access, licenses, and other services required to provide for receipt, processing, certifying, electronically transmitting to the Government, and storing all payrolls and other data required to comply with DBA and related Act regulations. An electronic DBA payroll system shall use the electronic payroll service to prepare, process, and maintain the relevant payrolls and basic records during all work under the contract. The electronic payroll service shall be capable of preserving these payrolls and related records for the required three years after contract completion. Obtain and provide electronic system access to the Government, as required to comply with the DBA and related Act

regulations over the duration of the contract. Access shall include electronic review access by the Government contract administration office to the Contractor's electronic processing system.

(c) The provision and use of an electronic payroll system shall meet the following functional criteria: commercially available; compliant with appropriate DBA payroll provisions in the FAR; able to accommodate the required number of employees and subcontractors planned to be employed under the contract; capable of producing an Excel spreadsheet-compatible electronic output of weekly payroll records (format at http://www.mssupport.com/guides.aspx) for export in an excel spreadsheet to be imported into the Contractor's Quality Control System (QCS) version of Resident Management System (RMS), that in turn shall export payroll data to the Government's Resident Management System (RMS); demonstrated security of data and data entry rights; ability to produce Contractor-certified electronic versions of weekly payroll data; ability to identify erroneous data entries and track the data/time of all versions of the certified DBA payrolls submitted to the Government over the life of the contract; capable of generating a durable record copy, that is, a CD or DVD and PDF file record of data from the system database at end of the contract closeout. Provide the durable record copy to the Government during contract closeout.

(d) Include all Contractor-incurred costs related to the provision and use of an electronic payroll processing service in the contract price for the overall work under the contract. There will be no separate line item for or payment of costs for DBA compliance or the use of electronic payroll processing services.

2.0 PRODUCTS NOT USED

3.0 EXECUTION NOT USED

End of Section 00 73 00

SECTION 00 73 10
SUPPLEMENTAL CONTRACT REQUIREMENTS

1.0 GENERAL 2
1.1 (FAR 52.211-10) COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) 2
1.2 (FAR 52.211-12) LIQUIDATED DAMAGES-CONSTRUCTION (SEPT 2000) 2
1.3 (FAR 52.222-8) PAYROLLS AND BASIC RECORDS (JUNE 2010) 2
1.4 (FAR 52.222-99) NOTIFICATION OF EMPLOYEE RIGHTS UNDER THE NATIONAL LABOR RELATIONS ACT (DEVIATION 2010-00013) (JUN 2010) 3
1.5 (EFARS 52.231-5000) EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995) 4
1.6 (FAR 52.236-4) PHYSICAL DATA (APR 1984) 5
1.7 SPECIAL SAFETY REQUIREMENTS 5
1.8 PAYMENT 5
1.9 UTILITY SERVICE INTERRUPTIONS AND ROAD CLOSURES 6
1.10 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER 7
1.11 INSURANCE REQUIRED 7
1.12 SECURITY REQUIREMENTS 8
1.12.1 Contractor's Employee Identification 8
1.12.2 Foreign Nationals (FN) 8
1.12.3 Entry Requirements 8
1.12.4 Vehicle Registration Requirements and Documentation 8
1.13 NONDOMESTIC CONSTRUCTION MATERIALS 10
1.14 DAILY WORK SCHEDULES AND WEEKLY COORDINATION MEETINGS 10
1.15 WAGE RATE APPLICATION 11
1.15.1 Building Schedule 11
1.15.2 Highway Schedule 11
1.15.3 Heavy Schedule 11
1.16 FEDERAL HOLIDAYS 11
1.17 BASE HOURS 11
1.18 OMISSIONS 11
1.19 Contractor Quality Control (CQC) Personnel 11
1.20 ELECTRONIC DRAWING FILES 12
1.21 PROFIT 12
1.22 APPLICATION OF "VALUE ENGINEERING" CLAUSE 13
2.0 PRODUCTS NOT USED 13
3.0 EXECUTION NOT USED 13

Utility Outage Guidance: FC Reg 420-19 and Request Form: FC FORM 420-E
General Wage Decision Nos.: CO120006, CO120012, and CO120018 - (See Section 00 73 46 Wage Determination Schedule)

1.0 GENERAL

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

The Contractor shall be required to (a) commence work under this contract within ten (10) calendar days after the date of receipt by him of Notice to Proceed, (b) prosecute said work diligently, and (c) complete the entire work ready for use not later than the number of calendar days specified in Section 00 11 00 – Page 4 after receipt of Notice to Proceed. The time stated for completion of the project shall include final cleanup of the premises.

1.2 (FAR 52.211-12) LIQUIDATED DAMAGES-CONSTRUCTION (SEPT 2000)

(a) If the Contractor fails to complete interim work items affecting other projects and to complete the work within the time indicated by the Contractor, the Contractor shall pay liquidated damages to the Government in the amount of $3,500.00 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.

1.3 (FAR 52.222-8) PAYROLLS AND BASIC RECORDS (JUNE 2010)

(a) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of 3 years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under paragraph (d) of the clause entitled Davis-Bacon Act, that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(b)(1) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph (a) of this clause, except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be obtained from the U.S. Department of Labor Wage and Hour Division website at http://www.dol.gov/whd/forms/wh347.pdf. The Prime Contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Contracting Officer, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an

investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a Prime Contractor to require a subcontractor to provide addresses and social security numbers to the Prime Contractor for its own records, without weekly submission to the Contracting Officer.

(2) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify—

(i) That the payroll for the payroll period contains the information required to be maintained under paragraph (a) of this clause and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR Part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph (b)(2) of this clause.

(4) The falsification of any of the certifications in this clause may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(c) The Contractor or subcontractor shall make the records required under paragraph (a) of this clause available for inspection, copying, or transcription by the Contracting Officer or authorized representatives of the Contracting Officer or the Department of Labor. The Contractor or subcontractor shall permit the Contracting Officer or representatives of the Contracting Officer or the Department of Labor to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit required records or to make them available, the Contracting Officer may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

1.4 (FAR 52.222-99) NOTIFICATION OF EMPLOYEE RIGHTS UNDER THE NATIONAL LABOR RELATIONS ACT (DEVIATION 2010-00013) (JUN 2010)

(a) During the term of this contract, the Contractor shall post a notice, of such size and in such form, and containing such content as prescribed by the Secretary of Labor, in conspicuous places in and about its plants and offices where employees covered by the National Labor Relations Act engage in activities relating to the performance of the contract, including all places where notices to employees are customarily posted both physically and electronically, in the languages employees speak, in accordance with 29 CFR 471.2 (d) and (f).

(1) Physical posting of the employee notice shall be in conspicuous places in and about the Contractor's plants and offices so that the notice is prominent and readily seen by employees who are covered by the National Labor Relation Act and engage in activities related to the performance of the contract.

(2) If the Contractor customarily posts notices to employees electronically, then the Contractor shall also post the required notice electronically by displaying prominently, on any website that is maintained by the Contractor and is customarily used for notices to employees about terms and conditions of -employment, a link to the Department of Labor's website that contains the full text of the poster. The link to the Department's website, as referenced in (b) (3) of this section, must read, "Important Notice about Employee Rights to Organize and Bargain Collectively with Their Employers."

(b) This required notice, printed by the Department of Labor, may be-

(1) Obtained from the Division of Interpretations and Standards, Office of Labor-Management Standards, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-5609, Washington, DC 20210, (202) 693-0123, or from any field office of the Office of Labor-Management Standards or Office of Federal Contract Compliance Programs;

(2) Provided by the Federal contracting agency, if requested];

(3) Downloaded from the Office of Labor-Management Standards web site at www.dol.gov/olms/regs/compliance/E013496; or

(4) Reproduced and used [as] exact duplicate copies of the Department of Labor's official poster.

(c) The required text of the Employee Notification referred to in this clause is located at Appendix A, Subpart A, 29 CFR part 471.

(d) The Contractor shall comply with all provisions of the Employee Notice and related rules, regulations, and orders of the Secretary of Labor.

(e) In the event that the Contractor does not comply with the requirements set forth in paragraphs (a) through (d) of this clause, this contract may be terminated or suspended in whole or in part, and the Contractor may be suspended or debarred in accordance with 29 CFR 471.14 and FAR Subpart 9.4. Such other sanctions or remedies may be imposed as are provided by 29 CFR Part 471, which implements E.O. 13496 or as otherwise provided by law.

(f) Subcontracts. (1) The Contractor shall include the substance of this clause, including this paragraph (f), in every subcontract that exceeds $10,000 and will be performed wholly or partially in the United States, unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 3 of Executive Order 13496 of January 30, 2009, so that such provisions will be binding upon each subcontractor.

(2) The Contractor shall not procure supplies or services in a way designed to avoid the applicability of Executive Order 13496 or this clause.

(3) The Contractor shall take such action with respect to any such subcontract as may be directed by the Secretary of Labor as a means of enforcing such provisions, including the imposition of sanctions for non compliance.

(4) However, if the Contractor becomes involved in litigation with a subcontractor, or is threatened with such involvement, as a result of such direction, the Contractor may request the United States, through the Secretary of Labor, to enter into such litigation to protect the interests of the United States.

(End of Clause)

1.5 (EFARS 52.231-5000) EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)

(a) This clause does not apply to terminations. See 52.249-5000, Basis for settlement of proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a Contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the Contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series of equipment from the Contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region V. Copies of each regional schedule may be obtained through the following Internet site: http://140.194.76.129/publications/eng-pamphlets/. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be developed using the formula provided in the schedule. For forward pricing, the Schedule in effect at the time of negotiations shall apply. For retrospective pricing, the Schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

1.6 (FAR 52.236-4) PHYSICAL DATA (APR 1984)

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

(a) The indications of physical conditions on the drawings and in the specifications are the result of site investigations by surveys and soil borings.

(b) Weather conditions shall have been investigated by the Contractor to satisfy himself as to the hazards likely to arise therefrom. Complete weather records and reports may be obtained from the local U.S. Weather Bureau.

(c). Transportation facilities shall have been investigated by the Contractor to satisfy himself as to the existence of access highways and railroad facilities.

1.7 SPECIAL SAFETY REQUIREMENTS

In addition to the following requirements of the latest Corps of Engineers Safety Manual, EM 385-1-1 in place at the time of award (See FAR 52.236-13), the Contractor shall provide special safety requirements in accordance with Appendix AA.

1.8 PAYMENT

(a) PROMPT PAYMENT ACT

Pay requests authorized in CONTRACT CLAUSES clause: "Payments Under Fixed-Price Construction Contracts", will be paid pursuant to the clause, "Prompt Payment for Construction Contracts". Pay requests will be submitted on ENG Form 93 and 93a, "Payment Estimate-Contract Performance" and "Continuation". All information and substantiation required by the identified contract clauses will be submitted with the ENG Form 93, and the required certification will be included on the last page of the ENG Form 93a, signed by an authorized contractor official and dated when signed. The designated billing office is the Office of the Area Engineer.

(b) PAYMENTS FOR MODIFICATIONS

Payments may be made for cost bearing change orders within the scope of the contract only to the extent funds are authorized in the order on a two-part modification. Contractor pricing proposed must be submitted at the earliest possible time after the change order is issued, or at a specific time as directed by the Contracting Officer. At the discretion of the Contracting Officer, any and all payments may be withheld on the modification until the Contractor has submitted a qualifying price proposal, in as much detail as required by the Contracting Officer, and the final price has been agreed.

(c) (EFAR 52.232-5000) PAYMENT FOR MATERIALS DELIVERED OFFSITE (MAR 1995)

(1) Pursuant to FAR clause 52.232-5, Payments Under Fixed Priced Construction Contracts, materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to:

(1) Materials required by the technical provisions; or (2) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

(2) Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item. Payment for materials delivered off-site includes petroleum products. (List additional items for which payments will be made for off-site delivery.) (EFAR 52.232-5000)

(d) CONTRACTOR PAYROLL RECORD

The Contractor shall be required to log payrolls for all their own employees and subcontractors utilizing ENG Form 3180. Each subcontractor requires a separate ENG 3180 for their payrolls. The Contractor shall maintain the ENG 3180, along with the payrolls, on site and available for review by the Contracting Officer's Representative. The ENG 3180's shall be updated weekly as payrolls are submitted. After making copies for their files, the Contractor is required to submit the originals of each week's payrolls to the Resident Office. Before final payment, the Contractor shall provide the completed ENG 3180's to the Contracting Officer's Representatives.

1.9 UTILITY SERVICE INTERRUPTIONS AND ROAD CLOSURES

(a) Advance Notice

To request and notify for planned utility outages, the Contractor shall submit written notification on FC FORM 420-E (attached) within the advance notice time stated on the request form. No single outage will exceed 4 hours unless approved in writing. The time and duration of all outages will be coordinated and approved with the Using Agency by the Contracting Officer. Contractor shall allow 14 calendar days from date of written application to receive permission for utility outages, and to dig and to close roads. A traffic plan shall be provided for any road closures.

(b) Overtime Work by Base Operating and Maintenance (O&M) Personnel

The normal working hours for Government O&M personnel whose services may be required for utility outages or similar services are from 7:00 a.m. to 3:30 p.m. Overtime work by Government O&M personnel due to Contractor delays in scheduled outages, interruptions of known utility services, or other negligent acts, shall be the responsibility of the Contractor. The Contractor shall pay the Government for such additional overtime costs at the existing overtime wage rates established for the Government personnel involved.

(c) Buried Utilities

The Contractor shall coordinate all excavation work including excavation for sign posts, fence posts, and utility poles with the Using Service Facilities Engineer and the Network Enterprise Center Plans Section prior to beginning work. The Contractor shall coordinate and apply for dig permits for all excavations and shall be renewed every 30 days. Excavation will not be permitted without a digging permit. Digging permits typically only provide indications on where existing utilities are. The Contractor shall be responsible for locating all existing buried utilities affected by construction activities.

1.10 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

(a) This clause specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the contract clause entitled "Default: (Fixed-Price Construction)." In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

(b) The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

	Weighted Total
Jan	7
Feb	5
Mar	4
Apr	4
May	6
Jun	5
Jul	7
Aug	7
Sep	4
Oct	3
Nov	4
Dec	7

(c) Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b. above, the contracting officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Default (Fixed Price Construction)". (ER 415-1-15)

1.11 INSURANCE REQUIRED

In accordance with CONTRACT CLAUSES clause: "Insurance Work on a Government Installation," the Contractor shall procure the following minimum insurance:

Type	Amount
Workmen's Compensation and Employer's Liability Insurance	$100,000

General Liability Insurance	$500,000 per occurrence
Automobile Liability Insurance	
Bodily injury	$200,000 per person and $500,000 per occurrence
Property damage	$ 20,000 per occurrence
(Coverages per FAR 28.307-2)	

1.12 SECURITY REQUIREMENTS

1.12.1 Contractor's Employee Identification

The Contractor shall be responsible for furnishing to each employee and for requiring each employee engaged on the work to display such identification as may be approved and directed by the Contracting Officer. All prescribed identification shall immediately be delivered to the Contracting Officer, for cancellation upon release of any employees. When the contract involves work in restricted security areas, only employees who are U.S. citizens will be permitted to enter. Proof of U.S. citizenship is required prior to entry. When required by the Contracting Officer, the Contractor shall obtain and submit fingerprints of all persons employed or to be employed on the project. (Based on FAR 52.204-2)

1.12.2 Foreign Nationals (FN)

Foreign Nationals (FN) are persons that are not U.S. citizens, INS Naturalized Immigrants, or do not possess a valid DOD Identification Card. The Contractor shall be responsible for any FN worker or visitor and shall ensure that that each FN worker or visitor possesses a valid Passport or valid INS Visa/paperwork on their person. No other identification will be accepted. FN workers or visitors shall be under escort by DOD Identification Card bearing Adult or Contractor at all times. The Government will not be responsible for providing escort services. FN workers and visitors shall be processed through base security upon each entry to Fort Carson. The Government reserves the right to deny access to any FN worker or visitor that fails to comply with access procedures or does not have proper paperwork.

1.12.3 Entry Requirements

Passengers must show a State or Federal Government-issued picture ID to enter Fort Carson.

Access restrictions to the base are listed in paragraphs: Authorized Access Points below.

See paragraph: Registration Requirements below for proof of employment letter requirements. Each employee will be required to have a copy of this proof of employment with them at all times. If workers are Foreign Nationals, see paragraph Foreign Nationals (FN) above for additional requirements.

1.12.4 Vehicle Registration Requirements and Documentation

1.12.4.1 General Requirements

Entry of motor vehicles onto the Fort Carson is a privilege permitted by the Installation Commander. This privilege may be revoked if the driver fails to comply with applicable Fort Carson regulations and requirements contained herein. NO ONE has the "right" to drive on a military installation, regardless of if military or civilian. In any cases not covered by Fort Carson regulations, the traffic laws of the State of Colorado will apply. The Contractor shall insure that all incoming personnel (prime and subcontract) operating motor vehicles on Fort Carson are familiar with Colorado Motor Vehicle Revised Statute 42-4-310. (Requirements for the state emissions test).

1.12.4.2 Authorized Access Points (Cantonment Area)

Contractor employees (Prime and Subcontractor) may enter through any of the following access points. Access is restricted to Gate #1 if vehicles do not have a valid DOD ID Card, Extended pass (FC Form 1606-E) or RapidGate pass. Gate restrictions are listed below:

(1) Gate #1 - Nelson Boulevard - 24-hour access (two-way gate). This is the main gate located Highway #115. This gate cannot handle oversize vehicles.
(2) Gate #2 - O'Connell Boulevard - when open (two-way gate).
(3) Gate #3 - Chiles Avenue - 24-hour access (for commercial vehicles)
(4) Gate #4 - Barkeley Avenue - 24-hour access (two-way gate)
(5) Gate #5 - Titus Boulevard (Golf Course) – when open (two-way gate)
(6) Gate #6 - Wilderness Road - when open (two-way gate)
(7) Gate #20 - Specker Avenue - 24-hour access (two-way gate).

1.12.4.3 Not Used

1.12.4.4 Types of Vehicles

a. Privately owned or leased motor vehicles (POVs) include automobiles, motorcycles, motor scooters, motorized bicycles with an engine displacement of 50cc or higher, recreational vehicles and watercraft that are owned by Contractor personnel (prime or subcontract). See paragraph: Registration Requirements below for vehicle registration restrictions.

b. Commercial Vehicles are Construction Equipment vehicles, any vehicle which passenger capacity exceeds 15 passengers, any truck that has a cargo capacity greater than 1 ton, any vehicle towing a trailer, any vehicle with more than two axles, and any vehicle owned by a Contractor or business. Commercial vehicles without Rapid Gate cards are required to use Gate #3 for access. Commercial vehicles are required to use Gate #3 for access.

c. Commercial Vehicles permitted to use other than Gate # 3 for access include:
(1) Normally intended for passenger use (such as a courtesy car)
(2) Vans that do not exceed 15-passenger capacity.
(3) Pick-up trucks that do not exceed 1-ton cargo capacity (such as the Ford F-350 Super-duty or Dodge Ram 3500). Vehicles of this type that are transporting personnel only meet this criterion. Vehicles of this type transporting equipment and supplies **must use** Gate #3.
(4) Taxicabs if transporting a passenger in possession of a valid DOD issued ID card.
(5) As approved by the Contacting Officer, and the Security and Access Control Division.
(6) Gates 2, 4, 5 and 20 cannot be used for Commercial Vehicle access unless the driver has a RapidGate pass or Extended Pass (FC Form 1606-E).

d. Commercial construction vehicles are defined as oversized commercial vehicles with the primary job of transporting large quantities of construction materials (e.g. concrete trucks, asphalt trucks, flatbed tractor-trailer trucks transporting pre-fabricated building materials).

1.12.4.5 Fort Carson Entry Requirements

Fort Carson will no longer register POVs for contractors. Entry to Fort Carson can be gained via the points listed in paragraph 1.13.4.2 Authorized Access Points (Cantonment Area) above, and will require drivers to consent to pre-entry vehicle search and presentation of proper documentation as described in the paragraph below. Contractors who currently possess FC Form 1606-E (Extended Pass) for their vehicles will be allowed entry (without searches) until the pass expires. Persons serving in the military, retirees, or dependent family members who currently possess a valid DOD ID card will still be allowed entry and will not have to submit to daily searches. All personnel entering Fort Carson are subject to random vehicle searches in

accordance with the Fort Carson Random Antiterrorism Measures Program (RAMP). Motorcycle riders must comply with all Fort Carson requirements for use of appropriate safety equipment.

1.12.4.6 Access Documentation

All individuals that wish to operate a vehicle on Fort Carson must have the proper documentation physically in their possession. Expired documents will not be accepted; no exceptions to this policy are authorized.
All individuals operating a motor vehicle must have, at a minimum documentation:

(1) A valid driver's license issued in the United States or a US Territory.
(2) A valid vehicle registration issued in the US or a US Territory.
(3) Proof of valid insurance coverage on the vehicle (must show policy number and expiration date to be considered valid.)
(4) For Motorcycles only, a motor safety card endorsed by the Motor Safety Foundation (MSF), and motorcycle endorsement on driver's license.

1.12.4.7 NOT USED

1.12.4.8 Alternative Registration (RapidGate System)

Contractors may voluntarily register their vehicle with the new RapidGate System at Fort Carson. The RapidGate system will enable the driver to proceed through the gate entrances without having to submit to daily searches and documentation presentation. Rapid Gate card holders driving commercial vehicles will also be allowed to enter the cantonment area through any of the manned gates (except Gate #1). The cost of the system is approximately $160 per vehicle. For more information and details on the policies please contact the RapidGate program at 877-727-4342, or stop by Building 6012 Vehicle Registration adjacent gate 1.

1.13 NONDOMESTIC CONSTRUCTION MATERIALS

The List of non-domestic construction materials or their components included in the list set forth in paragraph 25.104 of the Federal Acquisition Regulation does not apply to the requirements of the contract clause entitled "Buy American Act Construction Materials".

1.14 DAILY WORK SCHEDULES AND WEEKLY COORDINATION MEETINGS

In order to closely coordinate work under this contract, the Contractor shall prepare a written agenda/meeting minutes and attend a weekly coordination meeting with the Contracting Officer and Using Service at which time the Contractor shall submit for coordination and approval, his proposed daily work schedule for the next three week period. The Contractor shall provide a copy of modifications (MODs), Serial Letters, Requests for Information (RFIs) and any other information that is needed in the minutes of the meeting. Required temporary utility services, time and duration of interruptions, and protection of adjoining areas shall be included with the Contractor's proposed 3-week work schedule. At this meeting, the Contractor shall also submit his schedule of proposed dates and times of all preparatory inspections to be performed during the next 3 weeks. The items of work listed on the proposed 3-week schedule are to be keyed to the NAS by activity number and description for each activity anticipated to be performed during the next 3-week period. Coordination action by the Contracting Officer relative to these schedules will be accomplished during these weekly meetings. Daily reports shall be completed and given to the Contracting Officer or Representative within 24 hours of work. The Contractor will chair this meeting. All official correspondence such as serial letters and RFIs, with attachments are to be provided in one hardcopy original with original signatures and one electronic (Adobe pdf format) copy by email. The Government will consider the correspondence to be received when the hardcopy is received by the designated office.

1.15 WAGE RATE APPLICATION

1.15.1 Building Schedule

Applicable to all work required within 5 feet outside the building lines.

1.15.2 Highway Schedule

Applicable to the construction, alteration or repair of roads, streets, highways, alleys, trails, paths, and parking areas beyond 5 feet outside of the building.

1.15.3 Heavy Schedule

Applicable to all construction outside the 5 feet building lines, excluding work applicable to the Highway Schedule.

1.16 FEDERAL HOLIDAYS

The following Federal legal holidays are observed by this installation:

New Year's Day 1 January
Martin Luther King's Birthday Third Monday in January
President's Day Third Monday in February
Memorial Day Last Monday in May
Independence Day 4 July
Labor Day First Monday in September
Columbus Day Second Monday in October
Veterans Day 11 November
Thanksgiving Day Fourth Thursday in November
Christmas Day 25 December

If a wage determination applies, the number of holidays specified on it has priority over this clause.

1.17 BASE HOURS

Base operation hours are 6:00 a.m. to 6:00 p.m. daily (Monday through Friday), excluding federal holidays. Access to the base during other times must be requested in writing from the Contracting Officer and will be granted only for extenuating circumstances. Federal Holidays and weekends are considered as scheduled non-workdays.

1.18 OMISSIONS

Omissions from the RFP drawings and documents or the misdescription of details of work which are manifestly necessary to carry out the intent of the RFP drawings and documents, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work but they shall be performed as if fully and correctly set forth and described in the RFP drawings and documents.

1.19 Contractor Quality Control (CQC) Personnel

The Contractor shall employ a Contractor Quality Control staff in accordance with the requirements included in Section 01 45 04.00 10 of this Request for Proposal (RFP).
In addition to the requirements included in Section 01 45 04.00 10 of this RFP, the sufficient number of additional qualified personnel for the CQC staff for this project shall be understood to

mean three (3) individuals in addition to the CQC System Manager for a total of four (4) individuals as members of the CQC staff.

1.20 ELECTRONIC DRAWING FILES

Title block shall be as indicated in the USACE A/E/C CADD Standards. The title block for each design drawing shall include the Project Drawing Number 133-10-01. Any new drawing file added shall have a file name that begins with the following project code: FCP6.

In addition to the requirements of Section 01 33 16 DESIGN AFTER AWARD, provide electronic drawing files (in editable CAD format and Adobe PDF version 7.0 or higher) at every design submission stage for master planning purposes which include the applicable requirements for:

Site Plan and Grade Level Floor plan of Buildings
Parking Lots with Curb and Gutter
Sidewalks
Roadways
Other Site Planning information as available

1.21 PROFIT

a. Weighted guidelines method of determining profit shall be used on any equitable adjustment change order or modification issued under this contract. The profit factors shall be as follows:

Factor	Rate	Weight	Value
Degree of Risk	20	See Item	
Relative difficulty of work	15	b. below	
Size of Job	15		
Period of performance	15		
Contractor's investment	5		
Assistance by Government	5		
Subcontracting	25		
	100		

b. Based on the circumstances of each procurement action, each of the above factors shall be weighted from .03 to .12 as indicated below. The value shall be obtained by multiplying the rate by the weight. The value column when totaled indicates the fair and reasonable profit percentage under the circumstances of the particular procurement.

(1) Degree of Risk. Where the work involves no risk or the degree of risk is very small, the weighting should be .03; as the degree of risk increases, the weighting should be increased up to a maximum of .12. Lump sum items will have, generally, a higher weighted value than the unit price items for which quantities are provided. Other things to consider: the portion of the work to be done by subcontractors, nature of work, where work is to be performed, reasonableness of negotiated costs, amount of labor included in costs, and whether the negotiation is before or after performance of work.

(2) Relative Difficulty of Work. If the work is most difficult and complex, the weighting should be .12 and should be proportionately reduced to .03 on the simplest of jobs. This factor is tied in to some extent with the degree of risk. Some things to consider: the nature of the work, by whom it is to be done, where, and what is the time schedule.

(3) Size of Job. All work not in excess of $100,000 shall be weighted at .12. Work estimated between $100,000 and $5,000,000 shall be proportionately weighted from .12 to .05.

(4) Periods of Performance. Jobs in excess of 24 months are to be weighted at .12. Jobs of lesser duration are to be proportionately weighted to a minimum of .03 for jobs not to exceed 30 days. No weight where additional time not required.

(5) Contractor's Investment. To be weighted from .03 to .12 on the basis of below average, average, and above average. Things to consider: amount of subcontracting, mobilization payment item, Government furnished property, equipment and facilities, and expediting assistance.

(6) Assistance by Government. To be weighted from .12 to .03 on the basis of average to above average. Things to consider: use of Government-owned property, equipment and facilities, and expediting assistance.

(7) Subcontracting. To be weighted inversely proportional to the amount of subcontracting. Where 80 percent or more of the work is to be subcontracted, the weighting is to be .03 and such weighting proportionately increased to .12 where all the work is performed by the Contractor's own forces.

1.22 APPLICATION OF "VALUE ENGINEERING" CLAUSE
Contract Clauses clause "Value Engineering" is only applicable to changes to prescriptive RFP criteria requirements approved by the Contracting Officer, where there are cost savings to the Government. Any other changes, resulting in cost savings, which meet or exceed the requirements of the RFP, are not applicable to the Value Engineering clause.

2.0 PRODUCTS NOT USED

3.0 EXECUTION NOT USED

SECTION 01 10 00
STATEMENT OF WORK

1.0 PROJECT OBJECTIVES

1.1. SECTION ORGANIZATION

2.0 SCOPE

2.1. UNACCOMPANIED ENLISTED PERSONNEL HOUSING

2.2. SITE

2.3. GOVERNMENT-FURNISHED GOVERNMENT INSTALL EQUIPMENT (GFGI)

2.4. FURNITURE REQUIREMENTS

3.0 UNACCOMPANIED ENLISTED PERSONNEL HOUSING

3.1. GENERAL REQUIREMENTS

3.1.1. FACILITY DESCRIPTION

3.1.2. FACILITY RELATIONSHIPS: (NOT USED)

3.1.3. ACCESSIBILITY REQUIREMENTS

3.1.4. BUILDING AREAS

3.1.5. ADAPT BUILD MODEL: (NOT USED)

3.2. FUNCTIONAL AND AREA REQUIREMENTS

3.2.1. FUNCTIONAL SPACES

3.3. SITE FUNCTIONAL REQUIREMENTS

3.4. SITE AND LANDSCAPE REQUIREMENTS

3.5. ARCHITECTURAL REQUIREMENTS

3.5.1. FINISHES AND INTERIOR SPECIALITIES

3.6. STRUCTURAL REQUIREMENTS

3.7. SEE PARAGRAPH 6.7 THERMAL PERFORMANCE – NOT USED

3.8. PLUMBING REQUIREMENTS

3.9. COMMUNICATIONS AND SECURITY SYSTEMS

3.10. ELECTRICAL REQUIREMENTS

3.11. HEATING VENTILATING AND AIR CONDITIONING (HVAC) REQUIREMENTS

3.12. ENERGY CONSERVATION REQUIREMENTS

3.13. FIRE PROTECTION REQUIREMENTS

3.14. SEE PARAGRAPH 6.14 SUSTAINABLE DESIGN – NOT USED

3.15. SEE PARAGRAPH 6.15 ENVIRONMENTAL – NOT USED

3.16. SEE PARAGRAPH 6.16 PERMITS – NOT USED

3.17. SEE PARAGRAPH 6.17 DEMOLITION – NOT USED

3.18. SEE PARAGRAPH 6.18 ADDITIONAL FACILITIES – NOT USED

3.19. EQUIPMENT AND FURNITURE REQUIREMENTS

3.19.1. FURNISHINGS

3.19.2. EQUIPMENT

3.20. FACILITY SPECIFIC REFERENCES: (NOT USED)

4.0 APPLICABLE CRITERIA

4.1. INDUSTRY CRITERIA

4.2. MILITARY CRITERIA

5.0 GENERAL TECHNICAL REQUIREMENTS

5.1. SITE PLANNING AND DESIGN

5.2. SITE ENGINEERING

5.3. ARCHITECTURE AND INTERIOR DESIGN

5.4. STRUCTURAL DESIGN

5.5. THERMAL PERFORMANCE

5.6. PLUMBING

5.7. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

5.8. HEATING, VENTILATING AND AIR CONDITIONING

5.9. ENERGY CONSERVATION

5.10. FIRE PROTECTION

5.11. SUSTAINABLE DESIGN

5.12. CONSTRUCTION AND DEMOLITION (C&D) WASTE MANAGEMENT

5.13. SECURITY (ANTI-TERRORISM STANDARDS)

6.0 PROJECT SPECIFIC REQUIREMENTS

6.1. GENERAL

6.2. APPROVED DEVIATIONS

6.3. SITE PLANNING AND DESIGN

6.4. SITE ENGINEERING

6.5. ARCHITECTURE

6.6. STRUCTURAL DESIGN

6.7. THERMAL PERFORMANCE

6.8. PLUMBING

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.11. HEATING, VENTILATING AND AIR CONDITIONING

6.12. ENERGY CONSERVATION

6.13. FIRE PROTECTION

6.14. SUSTAINABLE DESIGN

6.15. ENVIRONMENTAL

6.16. PERMITS

6.17. DEMOLITION

6.18. ADDITIONAL FACILITIES

1.0 PROJECT OBJECTIVES

1.0.1 The project objective is to design and construct facilities for the military that are consistent with the design and construction practices used for civilian sector projects that perform similar functions to the military projects. For example, a Company Operations Facility has the similar function as an office/warehouse in the civilian sector; therefore the design and construction practices for a company operations facility should be consistent with the design and construction of an office/warehouse building.

Comparison of Military Facilities to Civilian Facilities

Military Facility	Civilian Facility
Unaccompanied Enlisted Personnel Housing (UEPH)	Apartment

1.0.2 It is the Army's objective that these buildings will have a 50 year useful life. The design and construction should provide an appropriate level of quality to ensure the continued use of the facility over that time period with the application of reasonable preventive maintenance and repairs that would be industry-acceptable to a major civilian sector project OWNER. The facility design should consider that the Army may repurpose the use of the facility over the 50 year life. The Army's intent is to install products and materials of good quality that meet industry standard average life that corresponds with the period of performance expected before a major renovation or repurpose. The design should be flexible and adaptable to possible future uses different than the current to the extent practical while still meeting the operational and functional requirements defined within. Flexibility is achieved through design of more flexible structural load-bearing wall and column system arrangements. The site infrastructure will have at least a 50-year life expectancy with industry-accepted maintenance and repair cycles. Develop the project site for efficiency and to convey a sense of unity or connectivity with the adjacent buildings and with the Installation as a whole.

1.0.3 Requirements stated in this contract are minimums. Innovative, creative, and life cycle cost effective solutions, which meet or exceed these requirements are encouraged. Further, the OFFEROR is encouraged to seek solutions that will expedite construction (panelization, pre-engineered, etc.) and shorten the schedule. **The intent of the Government is to emphasize the placement of funds into functional/operational requirements. Materials and methods should reflect this by choosing the most economical Type of Construction allowed by code for this occupancy/project allowing the funding to be reflected in the quality of interior/exterior finishes and systems selected.**

1.1. SECTION ORGANIZATION

This Section is organized under 6 major “paragraphs”.

(1) Paragraph 1 is intended to define the project objectives and to provide a comparison between the military facility(ies) and comparable “civilian” type buildings.

(2) Paragraph 2 describes the scope of the project.

(3) Paragraph 3 provides the functional, operational and facility specific design criteria for the specific facility type(s) included in this contract or task order.

(4) Paragraph 4 lists applicable industry and government design criteria, generally applicable to all facility types, unless otherwise indicated in the Section. It is not intended to be all-inclusive. Other industry and government standards may also be used, where necessary to produce professional designs, unless they conflict with those listed.

(5) Paragraph 5 contains Army Standard Design Criteria, generally applicable to all facility types, unless otherwise indicated in the Section.

(6) Paragraph 6 contains installation and project specific criteria supplementing the other 5 paragraphs.

2.0 SCOPE

2.1 UNACCOMPANIED ENLISTED PERSONNEL HOUSING (UEPH)

Provide Unaccompanied Enlisted Personnel Housing (UEPH) facilities. This project type is to house single soldiers and is intended to be similar both functionally and technically to similar housing in the private sector community surrounding the Installation.

Number of single personnel to be housed is 994.

Maximum gross area is 370,156 square feet.

2.1.1. Square Footage and Modules Requirements for Barracks Building(s)

The target gross area for the Barracks facilities is **370,156 SF**

For a target 2 person module total of **497 Modules** with a maximum occupancy of **994 PN**

2.1.2 Consolidated Boiler/Chiller Facility

Provide Consolidated Boiler/Chiller Facility. This project is to provide a consolidated facility for the chiller and boilers that will support all of the 13th CAB facilities. The facility is intended to be similar to a central boiler / chiller plant facility for an office park or small college campus in the private sector community.

The project will include the Consolidated Boiler / Chiller facility and a Chiller yard. Specific sizing parameters for the facility are as follows (For additional Consolidated Boiler / Chiller Facility requirements see paragraph 6.18):

2.1.2.1. Consolidated Boiler/Chiller Facility (CB/CF)

Consolidated Boiler / Chiller Facility: The target gross area for this facility is 1,672 SF

2.2. SITE:

Provide all site improvements necessary to support the new building facilities. Refer to Paragraph 6.

Approximate area available 21.50 acres

2.3. GOVERNMENT-FURNISHED GOVERNMENT-INSTALLED EQUIPMENT (GFGI)

Coordinate with Government on GFGI item requirements and provide suitable structural support, brackets for projectors/VCRs/TVs, all utility connections and space with required clearances for all GFGI items. Fire extinguishers are GF/GI personal property, while fire extinguisher brackets and cabinets are Contractor furnished and installed CF/CI. All Computers and related hardware, copiers, faxes, printers, video projectors, VCRs and TVs are GFGI.

The following are also GFGI items: Refrigerators, ice cube machine dispenser and vending machines. See paragraphs 3.2.2.2 and 3.2.3.5 for additional information.

2.4. FURNITURE REQUIREMENTS

A Furniture, Fixtures & Equip design and package is NOT required for this project. However, Structural Interior Design (SID) is required for all facility types regardless of the requirements for the FF&E design and package. The basic space planning for the anticipated FF&E requirements in conjunction with the functional layout of the building and design issues such as life safety, privacy, acoustics, lighting, ventilation, and accessibility is still required as part of the SID submittal.

2.5. NOT USED

3.0 UNACCOMPANIED ENLISTED PERSONNEL HOUSING (UEPH)

3.1. GENERAL REQUIREMENTS:

3.1.1. FACILITY DESCRIPTION: The Army requires an apartment complex of two-bedroom, one-bath dwelling units with kitchen (1+1E module) similar in features, standards and layout to apartment complexes in the surrounding community. Maximize the space inside the individual dwelling units versus providing additional spaces not listed in the functional requirements in this section. Building circulation is required to be through the use of interior corridors/breezeways or garden style apartments, where circulation is minimized. Exterior egress balconies are prohibited; this does not preclude apartments designed with exterior entry landings. Choice of breezeways and exterior entry landings shall be predicated upon the weather criteria of the specific geographic area. Breezeways and exterior entry landings shall be designed to preclude snow and ice infiltration/accumulation. Building spaces and areas are as indicated in the text below. Coordinate the site design with the building described in this Section. Specific site requirements that affect the design and construction of the site appear in 01 10 00-6.0.

3.1.2. FACILITY RELATIONSHIPS: (NOT USED)

3.1.3. ACCESSIBILITY REQUIREMENTS:

A. GENERAL: Able-bodied soldiers occupy and manage UEPH facilities. The Architectural Barriers Act (ABA) requirements does not apply to UEPH facilities, except as follows:

B. Site Plan Design and Construction

1) Provide ABA compliant access from the parking lot to the building.

2) Provide two (2) ABA compliant vehicle parking stalls for each barracks building for visitor parking.

3) Provide handicapped vehicle parking signage and pavement markings.

C. Facility Design and Construction

1) The main building entrance on the ground level and at least one emergency egress, designed per applicable code, shall be handicapped accessible. Electronic exterior door openers with push button control are required for handicapped accessibility.

2) Provide ABA clearances and door accesses in the building main entry/vestibule being used by visitors.

3) If a lobby is required by the RFP:

a) Provide a handicapped accessible drinking fountain in the lobby.

b) Provide handicapped accessible public toilet(s), which may be unisex, in the lobby area.

3.1.4. BUILDING AREAS:

A. GENERAL: The overall building gross area is based on allocating each occupant 366 gross square feet for buildings up to three stories or 388 gross square feet for buildings over three stories. For Installations in Alaska the overall building gross area is based on allocating each occupant 388 gross square feet for all barracks building, irrespective of building height. The gross square feet per occupant includes the total area of all functional areas required in the building, including all dwelling units, common areas, canopies, and support areas, e.g. stairways, elevators, foyers, corridors, public toilets, janitor's closets, utility room spaces.

B. GROSS AREA:

1) Definition: Gross building area is measured to the outside face of exterior enclosure walls. Gross area includes floor areas, penthouses, mezzanines, and other spaces as follows:

2) Limitations: Maximum authorized gross building areas for each facility is included in this paragraph. Proposals that exceed authorized gross area limitations may be considered non-conforming.

C. HALF SPACE: Areas calculated as half space. Gross building area shall be calculated in accordance with Appendix Q, with the following exceptions in accordance with TI 800-01 Design Criteria – Appendix B, UEPH:

1) All stairs and elevator shafts count as half space for each floor they serve.

D. EXCLUDED SPACE: The following spaces are excluded from gross area calculations: Attic areas where average clear height does not exceed 7 feet, normal roof overhangs and soffits for weather protection, mechanical equipment platforms and catwalks.

E. NET AREA :

1) **Definition:** Net area is measured to the inside face of the room or finish walls.

2) **Net Area Requirements:** Net area requirements for programmed spaces are included in this chapter. If net area requirements are not specified, the space shall be sized to accommodate the required function and to comply with code requirements, overall gross area limitations, and any other requirement of this RFP (for example, area requirements for corridors, stairs, and mechanical rooms will typically be left to the discretion of the offeror).

3.1.5. ADAPT BUILD MODEL: (NOT USED)

3.2. **FUNCTIONAL AND OPERATIONAL REQUIREMENTS:**

3.2.1. FUNCTIONAL SPACES

A. Primary Spaces

1) Dwelling Units

c) **Bedrooms:** Each dwelling unit shall have two bedrooms, each with a minimum net area of 140 square feet and a maximum net area of 183 square feet. Bedrooms shall be equal in size and similar in configuration. Bedroom shall be able to accommodate one bed, entertainment center, chest of drawers, nightstand, desk and chair with adequate circulation for one occupant: See Section 3.19.1 Furniture List/Charts for more details. Each bedroom shall have a walk-in closet directly adjacent.

(1) **Walk-in-Closets:** Each walk-in closet shall have a net area of 32 square feet, and shall be furnished with hanger rods and shelves see paragraph 3.5.1 Storage Shelving for more details. Each closet door shall be furnished with a robe hook and full length mirror.

d) **Kitchen:** Each dwelling unit shall have a full kitchen with adequate space and circulation to accommodate a full size refrigerator 28 inches wide, a built-in electric cooktop with a built-in combination vent hood and convection/microwave oven, wall cabinet system and countertops for food storage and preparation. Provide utility connections and casework to accommodate future installation of a dishwasher and appliances listed in 3.19.2 Residential Appliances. Provide area for recyclables receptacle and kitchen waste receptacle. Provided a minimum of twelve (12) linear feet of standard height base, wall cabinet systems, and countertops for food storage and preparation, linear feet includes required sink. In addition to the twelve (12) linear feet of standard height counter, kitchen layout shall accommodate counter style seating and dining for two people, or provide space for a dining area outside of the kitchen.

e) **Bathroom:** Each dwelling unit shall have one full bath. Including a Tub/shower enclosure and separate vanity with storage below. The tub/shower enclosure shall include a water closet and tub/shower combo. See 3.8 Plumbing Fixtures for details and 3.5.1 Interior Specialties for required toilet accessories.

f) **Dwelling Laundry:** Not Used

B. Common Areas

1) **Lobby:** Lobby shall meet the accessibility requirements stated in 3.1.3 above.

a) CQ Station: Not Used

2) **Toilet(s):** Public toilets, which may be a single, unisex toilet, shall be located adjacent to the Lobby area and shall comply with the ABA accessibility requirements. If either a CQ station or a lobby is provided, a public toilet shall be included.

4) **Vestibule:** Provide an enclosed transition space between the exterior and the lobby or building interior. Provide a minimum of 7 feet clearance between interior and exterior doors.

5) **Corridors:** Corridors shall have a minimum with no less than 5'-0".

6) **Janitor's Closet:** Provide a minimum of one Janitor's Closet per floor. Each Janitor's Closet shall have a minimum area of 30 square feet. Each Janitor closet shall have a mop sink, mop rack, and space for buckets, vacuum and storage for janitorial supplies. See 3.5.1 Interior Specialties for shelving details.

7) **Mechanical, Electrical, and Telecommunications Rooms:** Mechanical rooms shall accommodate space for equipment maintenance/repair access without having to remove other equipment. Mechanical, electrical and telecommunications rooms shall be keyed separately for access by Installation maintenance personnel. Filter changes and preventative maintenance shall be performed without requiring access to the dwelling units. First floor exterior access is required for centralized mechanical and electrical rooms. Telecommunications rooms shall comply with the requirements of ANSI/TIA/EIA-569-B. Refer to Mechanical and Electrical Sections for additional information.

8) **Mail Access Area:** A mail access area shall be designed and constructed as a part of this project. Mail access area shall include one USPS-approved combination lock type mailbox per resident, and a minimum of one USPS-approved two-key parcel locker parcel locker per 40 residents. The numbering sequence shall be coordinated with the user.

9) **Vending Area**: Provide a minimum of one vending area centrally located on the ground floor of each barracks building. For barracks buildings higher than three stories, provide a minimum of one vending area centrally located on the ground floor of each barracks building, and a minimum of one vending area centrally located on every other floor above the ground floor of each barracks building. Each Vending Area shall be sized to accommodate one ice cube machine-dispenser designed for hotel type ice bucket filling and one full-size vending machine per 80 – 100 residents, or space for a minimum of three full-size vending machines, whichever is greater. Locate vending area in a central location that is easily monitored.

10) **Recyclables Storage:** Provide one recyclables storage per building. Locate the recyclables storage on the first floor with access to the complex trash/recyclables dumpster area. Recyclables Storage shall be fully enclosed and ventilated. Recyclables Storage shall be sized to accommodate a minimum of six (6) fifty-gallon barrel sized recyclable containers, with adequate circulation space to allow access to move each container in and out of the Recyclable Storage with a dolly, without having to move the other containers.

11) **Mudroom/Bootwash:** Provide an enclosed centralized location close to main building entry, with direct exterior access for soldiers to rinse mud off field gear, boots and clothing before laundering. Provide one rinsing station per 30 persons. Each rinsing station shall be furnished with a utility sink and a hosed hot and cold running water faucet.

12) **Centralized Laundry:** Locate a minimum of one laundry room in a centralized location, on each floor of each barracks building. Interior of laundry rooms shall be visible from the corridor through glazed picture windows. Laundry room entry shall provide a clear opening 36 inches wide minimum. Size self-serve laundry facilities to accommodate a combined total of no fewer than one washer per 12 residents on each floor and one dryer per 8 residents on each floor. Fixed heavy gauge stainless steel clothes folding/hanging tables, stainless steel utility sinks and laundry supplies vending area are required features

of centralized laundry facilities. Provide one fixed heavy gauge stainless steel clothes folding/hanging table per 48 residents on each floor.

13) **Activity Room:** Not Used

3.3. SITE FUNCTIONAL REQUIREMENTS

A. PARKING

1) **Privately Owned Vehicle (POV) Parking:** The Contractor shall design and construct the POV parking, within the designated construction area. Base the location and design of the POV parking area(s) on the Installation's site constraints. The Contractor shall ensure that the location of parking complies with UFC 4-010-01. See paragraph 5.2.3, “VEHICLE PAVEMENTS”, for additional information. Provide POV parking spaces for 70 percent of the personnel.

B. ACCESS DRIVES AND LANES

1) **Services Drives:** The Contractor shall provide service drives to each building. Locate the drives in accordance with UFC 4-010-01. Restrict access to the drives, where applicable, as required by UFC 4-010-01. Design the pavements as required by paragraph 5.2.3, “VEHICLE PAVEMENTS”. The minimum access drive width shall be 10 feet. The Contractor shall design and construct drives with curb and gutter when necessary for drainage purposes.

2) **Emergency Vehicle/Fire Access Lanes:** The Contractor shall provide fire access lanes. Drives designed to support emergency vehicle traffic shall be a minimum of 20 feet wide per NFPA requirements. Access must be provided to three sides, minimum and must be within 33 feet of a building’s entrance. Design the fire access lanes in accordance with NFPA 1, UFC-3-600-01, and the installation’s requirements.

3.4. SITE AND LANDSCAPE REQUIREMENTS

A. SITE STRUCTURES

1) **Dumpster Area**: The Contractor shall locate, design, and construct the dumpster enclosure area(s) and screening. Dumpster screening shall be aesthetically and architecturally compatible with the building it serves and shall be designed in accordance with the Installation’s guidelines. Locate the dumpster areas in accordance with UFC 4-010-01 “DoD Minimum Antiterrorism Standards for Buildings”. Position the GFGI dumpsters outside of restricted areas to allow for servicing activities.

B. LANDSCAPING/HARDSCAPTING

1) Non-Vehicular Walks: Construct pedestrian walks within the designated construction area and connect to existing sidewalks, where applicable. Construct walks paralleling buildings beyond the eave drip line and at least 5 feet from the foundation.

a) Pedestrian Sidewalks: Sidewalks shall be a minimum of 6 feet wide. Restrict vehicular access to the sidewalks, as required by UFC 4-010-01. Construct non-vehicular pedestrian sidewalks of Portland cement concrete having a minimum nominal thickness of 4 inches. Design joint patterns uniformly, symmetrical, and in accordance with the American Association of State Highway and Transportation Officials (AASHTO) standards. For joints, do not exceed the length to width ratio of 1.25 for non-reinforced pavements.

2) Shared Troop and Vehicular Walks: Sidewalks designed to support emergency and service vehicle traffic will be considered roadway pavements and shall be designed to meet the AASHTO standards. Construct vehicular supported walks of Portland cement concrete having a minimum nominal thickness of 7 inches. Design joints uniformly, symmetrical, and in accordance with AASHTO standards. Do not exceed the length to width ratio of 1.25 for non-reinforced pavements. Sidewalks designed to support emergency and service vehicle traffic shall have minimum widths as stated in 3.3 Access Drives and Lanes.

3.5. ARCHITECTURAL REQUIREMENTS

A. GENERAL: Provide durable and easily maintainable materials. Do not use exterior materials that require periodic repainting or similar refinishing processes. Material exposed to weather shall be factory pre-finished, integrally colored or provided with intrinsic weathering finish.

B. WALLS:

1) **Exterior Walls**: Where Exterior Insulation and Finish Systems (EIFS), or any other material except CMU or other Masonry material is used as exterior finish material, it shall be in conjunction with a Masonry wainscot. EIFS shall be “high-impact” type and shall be “drainable” type. Masonry units shall be tested for efflorescence. Efflorescence testing shall conform to the provisions of ASTM C 67. CMU construction shall comply with the provisions of ASTM C 1400.

2) **Mold and Mildew:** The Designer of Record shall provide details in the design analysis and design showing steps taken to mitigate the potential growth of mold and mildew in the facility.

C. ROOF SYSTEMS: Minimum roof slope for membrane roof systems shall be 1/4 inch per foot. Minimum roof slope for pitched roof systems shall be 3 inches per foot. Membrane roof systems shall be fully adhered. Structural standing seam metal roofs shall comply with the requirements of ASTM E 1592. Roof system shall be Underwriters Laboratory (UL 580 Class 90) rated or Factory Mutual Global (FM) I-90 rated. Roof system shall comply with applicable criteria for fire rating.

1) **Roof Mounted Equipment**: For roof mounted equipment, provide permanent access walkways and platforms to protect roof. Roof mounted equipment on pitched roof systems is unacceptable. Roof mounted equipment on membrane roof systems shall be completely screened by the roof parapet.

2) **Roof Access:** Roof access from building exterior is prohibited.

3) **Trim and Flashing:** Gutters, downspouts, and fascia shall be factory pre-finished metal and shall comply with SMACNA Architectural Sheet Metal Manual.

D. OPENINGS:

1) **Storefronts/Curtain Walls & Entrances**:

a) **Storefronts (Main Entrance Doors):** Provide aluminum storefront doors and frames with Architectural Class 1 anodized finish, fully glazed, with medium or wide stile for entry into lobbies or corridors. Provide doors complete with frames, framing members, subframes, transoms, sidelights, trim, applied muntins, and accessories. Framing systems shall have thermal-break design. Storefront systems shall be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and shall comply with applicable codes and criteria.

b) **Curtain Wall Systems:** Curtain wall systems shall be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and shall comply with applicable codes and criteria.

2) **Windows**: Material and installation shall comply with applicable codes and criteria.

a) **Exterior Windows:** Provide insulated, high efficiency window systems, with thermally broken frames complying with applicable codes and criteria. Each bedroom shall have at least one exterior window. Window shall meet egress requirements of NFPA 101 and International Building Code. Window sills shall be designed to discourage bird nesting. All bedroom windows shall be operable windows. Operable windows shall be furnished with locks, and fiberglass or aluminum insect screens removable from the inside.

b) Interior Windows:

(1) **Laminated Glass:**

(a) **Centralized Laundry:** Picture window glazing shall be laminated glass. Design-Build Contractor may propose an alternate solution that will provide visual monitoring of the laundry room in-lieu of using a picture window.

2) **Doors and Frames**: Fire-rated and Smoke Control Doors and Frames: Comply with applicable codes, criteria and requirements of labeling authority. STC ratings shall be of the sound classification required and shall include the entire door and frame assembly.

a) **Exterior Insulated Hollow Metal Doors & Frames**: Provide insulated hollow metal exterior doors for entry to all spaces other than corridors, lobbies, or reception/waiting rooms. Doors and frames shall comply with applicable codes and criteria. Doors shall be minimum Level 3, physical performance Level A, Model 2. Frames shall be minimum 12-gauge, with continuously welded mitered corners and seamless face joints. Doors and frames shall be A60 galvannealed, shall comply with ASTM A653 and shall be factory primed. Fire-rated openings shall comply with applicable codes, and the requirements of the labeling authority. Door and frame installation shall comply with applicable codes and criteria.

b) **Interior Insulated Metal Doors:** Shall comply with applicable codes and criteria. Doors shall be minimum Level 3, physical performance Level A, Model 2; factory primed.

(1) Provide insulated metal doors at utility rooms, janitor closets, and stairwell doors.

(2) Not Used

c) **Solid Core Wood Doors:** Provide flush solid core wood doors with Grade A hardwood face veneer for transparent finish. Stile edges shall be non-finger jointed hardwood compatible with face veneer.

(1) Provide flush solid core wood doors at doors within dwelling unit.

(2) Provide flush solid core wood doors at dwelling unit entry.

d) **Interior Hollow Metal Frames:** Comply with ANSI A250.8/SDI 100. Frames shall be minimum Level 3, 16 gauge, with continuously welded mitered corners and seamless face joints; factory primed.

(1) **Contractor's Option:** Contractors have the option to furnish knockdown frames for closet and bathroom doors in the dwelling units. Continuously welded frames with mitered corners and seamless face joints at closets and bathroom doors in the dwelling units shall be considered betterments.

4) **Hardware:**

a) **Door Hardware:** All hardware shall be consistent and shall conform to ANSI/BMHA standards for Grade 1. Provide closers for all exterior doors, all doors opening to corridors and as required by codes. Exit devices shall be installed on all building egress doors.

(1) **Finish Hardware (Master Keying System/Cores):** All requirements for hardware keying shall be coordinated with the Contracting Officer. Extension of the existing Installation keying system shall be provided, the Installation keying system is Best. Cores shall have not less than seven pins; cylinders shall have key-removable type cores. Disassembly of knob or lockset shall not be required to remove core from lockset. Locksets for mechanical, electrical and communications rooms only shall be keyed to the existing Installation Master Keying System. HVAC terminal units that are accessed from a central corridor shall have a deadbolt to minimize protrusion into corridor. Plastic cores are unacceptable.

(2) **Fire and Exit Door Labeling:** Hardware for fire doors shall be installed in accordance with the requirements of applicable codes. Exit devices installed on fire doors shall have a visible label bearing the marking "Fire Exit Hardware". Other hardware installed on fire doors, such as locksets, closers, and hinges shall have a visible label or stamp indicating that the hardware items have been approved by an approved testing agency for installation on fire-rated doors. Hardware for smoke-control door assemblies shall be installed in accordance with applicable codes.

(3) **Auxiliary Hardware:** Provide other hardware as necessary for a complete installation

(a) **Door Stops:** Provide wall or floor stops for all exterior doors that do not have overhead holder/stops

(b) **Peep Holes:** Each dwelling unit entry door shall be furnished with a brass peephole door viewer with a viewing angle of 200 degrees minimum.

(c) **Door Latches:** Each closet door shall have a Function (F75), Grade 1 closet latch, and be equipped with padlock eyes so the occupant can provide his/her own padlock. One padlock eye shall be mortised into and screw attached flush with door edge on the latch side of the door and the second padlock eye shall be mortised and welded flush into the inside face of the door frame jamb. Padlock eye shall be fabricated to accommodate padlock shackle up to 1/4" diameter. Padlock eye color shall match door frame color. Locate padlock eye at between 4'-6"' and 5'-6" AFF. Location of padlock eyes shall be at the same height in all modules.

(d) **Robe Hooks:**

1. Closet Doors: Each closet door shall have a Type 304 satin finished, stainless steel, robe hook mounted on the closet side of the door.

2. Dwelling Bathroom Doors: Each bathroom door shall have a Type 304 satin finished, stainless steel double robe hook mounted on inside face of bathroom door.

b) **Electronic Key Card Access System:** A Programmable Electronic Key Card Access System shall be provided on all exterior entry/egress doors, dwelling unit doors, bedroom doors and centralized laundry doors (if centralized laundries are required by RFP). Extension of the existing Installation key card access system shall be provided, the existing Installation key card access system is Onity HT 28. The minimum operability requirement is a key card access system that provides a single key card for the individual soldier, programmable to open all exterior entry/egress doors, the laundry room (if a centralized laundry is provided), the soldier's dwelling unit door, and the soldier's bedroom door. A Programmable Electronic Key Card Access System Manufacturer's Representative shall install all hardware and software necessary for the operation of the Electronic Key Card Access System and program all locksets. Provide six (6) blank key cards for each personnel each building is designed to accommodate. All blank key cards shall be serially numbered and each key card shall have its number permanently inscribed on it. The Design-Build Contractor shall furnish in three-ring binders, one full set of the system manufacturer's system training manual, system maintenance manual, and one training video (in format provided by the system manufacturer), with each system installed. The Programmable Electronic Key Card Access System Manufacturer's Representative shall provide two (2) separate 4-hour classes of training for the user on software use, programming locks, encoding cards and printing reports. Each building shall be furnished with a complete stand-alone key card system package. System shall be capable of being compartmentalized so that each building has only the capability to produce key cards for that building. Provide a two (2) year warranty on the system and all components and locksets. All special tools, software, connecting cables and proprietary equipment necessary for the maintenance, testing, and reprogramming of the system shall be furnished to the Contracting Officer Representative.

(1) Key Card Access System Accessories: Provide remote unlocking capability. The lock shall be provided with the High-CO keyless Cards. The contractor shall coordinate with the Contracting Office for specific system requirements.

c) **Non-Destructive Emergency Access System (KNOX Box):** Non-Destructive Emergency Access System Provide a Knox –Box at the main entrance to each UEPH. Knox-Box shall be series 3200, as manufactured by Knox Company, Phoenix, Arizona

5) **Glass and Glazing**: Material and installation shall comply with applicable codes and criteria.

a) **Mirrors:**

(1) **Walk-in Closets:** Each closet door shall have a 16 inches wide by 70 inches high by ¼ inch thick, select float glass, full length mirror, in a one piece ½ inch by ½ inch by ½ inch Type 304 satin finished, stainless steel frame, with mitered corners, mounted on the bedroom side of the door. Bottom of mirror shall be located at 6 inches above finish floor.

6) Louvers and Vents:

b) **Exterior:** Exterior louvers shall have bird screens and shall be designed to exclude wind-driven rain. Exterior louvers shall be made to withstand wind loads in accordance with the applicable codes.

Wall louvers shall bear the Air Movement & Control Association (AMCA) International certified ratings program seal for air performance and water penetration in accordance with AMCA 500-D and AMCA 511. Louver finish shall be factory applied.

C. EXTERIOR SPECIALITIES:

1) **Bird Habitat Mitigation:** The Contractor shall provide details in the design necessary to eliminate the congregating and nesting of birds at, on, and in the facility.

D. ELEVATORS/CONVEYING SYSTEMS:

1) **Elevators:** Elevators: Provide elevators for buildings that exceed three stories. Provide elevator system that complies with the most current editions of ASME A17.1 and ASME A17.2 in their entirety, and additional requirements specified herein. The first elevator shall be centrally located and shall have a minimum rated load capacity of 3500 lb (1588 kg), with center opening doors and interior dimensions sized to accommodate a fully extended Emergency Medical Services (EMS) gurney and four average size adults. Gurney size shall be based on the “STRYKER Power-PRO XT" gurney. An additional elevator as specified above shall be provided for every additional one hundred (100) persons or fraction thereof, over the first two hundred (200) persons the building is designed to accommodate, unless a traffic analysis determines otherwise. Such traffic analysis shall be included in the Design Analysis.

a) **Elevator Inspector:** The Elevator Inspector shall be certified in accordance with the requirements of the most current editions of ASME A17.1 and ASME QEI-1 and licensed in elevator inspection by the State where project is located. The Certified Elevator Inspector shall inspect the installation of the elevator(s) to assure that the installation conforms with all contract requirements. The Elevator Inspector shall be directly employed by the Prime Contractor and shall be independent of the Elevator System Manufacturer and the Elevator System Installer. The Elevator Inspector shall witness the acceptance inspections and tests, approve all results and sign and certify the successful results. The Elevator Inspector, after completion of the acceptance inspections and tests, shall certify in writing that the installation is in accordance with the contract requirements. The Elevator Inspector shall bring any discrepancy, including any safety related deficiencies, to the attention of the Contracting Officer in writing, no later than three working days after the discrepancy is discovered.

E. POSTAL/MAIL BOX REQUIREMENTS:

1) **Exterior:** Mail access area shall be a mail kiosk separated from the main building with box access on outside, and rear (or front) loading. Location of mail kiosk shall conform to the requirements of ATFP UFC 4-010-01. Mail kiosk shall be protected from the elements and shall be architecturally compatible with the associated barracks building.

2) **Interior:** Not Used

F. ACOUSTICAL REQUIREMENTS: Exterior walls and roof/floor/ceiling assemblies, doors, windows and interior partitions shall be designed to provide for attenuation of external noise sources such as airfields in accordance with applicable criteria, but no less than the following:

1) Exterior Walls: STC 49

2) Interior Partitions: STC 49

3) Walls/Floors separating Module Spaces: STC 50 / IIC 55

4) Module Entry, Bedroom and Bathroom Doors: STC 25

5) Sound conditions (and levels) for interior spaces, due to the operation of mechanical and electrical systems and devices, shall not exceed levels as recommended by ASHRAE handbook criteria. Provide acoustical treatment for drain lines and other utilities to prevent noise transmission into the interior of dwelling units

G. THERMAL REQUIREMENTS:

1) **Thermal Insulation:** Provide exterior wall, floor, and roof/ceiling assemblies with thermal transmittance (U-values) required to comply with the proposed energy calculations for the facilities. Insulation shall not be installed directly on top of suspended acoustical panel ceiling systems. See Paragraph 3.12 Energy Conservation for details.

3.5.1. FINISHES AND INTERIOR SPECIALITIES

A. GENERAL: Provide sustainable materials and furnishings that are easily maintained and replaced. Maximize use of day lighting. Provide interior surfaces that are easy to clean and light in color. Design barracks interior with a residential ambience.

B. FINISHES: Designers are not limited to the minimum finishes listed in this paragraph and are encouraged to offer higher quality finishes.

1) **Minimum Finish Requirements:** Wall, ceiling and floor finishes shall conform to the requirements of the IBC, NFPA and UFC 3-600-01. Where code requirements conflict, the most stringent code requirement shall apply.

a) **Walls:** All wall finish shall be minimum 5/8" painted gypsum board, except where stated otherwise. All gypsum board shall achieve a score of 10, the highest level of performance for mold resistance under the ASTM D 3273 test method. All gypsum board shall be transported, handled, stored and installed in accordance with the GYPSUM ASSOCIATION – Guidelines For Prevention Of Mold Growth On Gypsum Board (GA-238-03). Use impact resistant gypsum board in corridors, storage rooms, stairwells and activity rooms and centralized laundries (if centralized laundries are required by RFP).

b) **Ceilings:** All ceiling finishes shall be minimum 5/8" painted gypsum board, except where stated otherwise. All gypsum board shall achieve a score of 10, the highest level of performance for mold resistance under the ASTM D 3273 test method. All gypsum board shall be transported, handled, stored and installed in accordance with the GYPSUM ASSOCIATION – Guidelines For Prevention Of Mold Growth On Gypsum Board (GA-238-03).

c) **Floors:**

(1) **Resilient Flooring):** Resilient flooring shall be a minimum 1/8 inch thick, conforming to ASTM F 1066, Class 2, through-pattern tile, Composition 1, asbestos free, with color and pattern uniformly distributed throughout the thickness of the tile.

(2) **Porcelain/Quarry Tile:**

(3) **Ceramic Tile:**

(4) **Sealed Concrete:**

d) **Counter Tops:** Countertops shall have waterfall front edge. Bathroom, kitchen and public toilet countertops shall have integral coved backsplash.

(1) **Bathroom & Public Toilet(s):** Bathroom and public toilet (if required by RFP) vanity countertop shall be minimum ½ inch thick cast 100 percent acrylic polymer solid surfacing material with waterfall front edge and integral coved backsplash.

(2) Kitchens:

e) **Window Stools:** Window stools shall be minimum ½ inch thick cast 100 percent acrylic polymer solid surfacing material.

f) **Elevator(s) Finishes:** Elevator interior walls, ceiling, doors and fixtures shall have a satin No. 4 stainless steel finish. Floor finish shall be resilient flooring as specified in Paragraph 3.5.1 above. All elevators shall be furnished with removable hanging protective pads and fixed hooks to facilitate conversion to use for moving freight.

2) **Minimum Paint Finish Requirements:** All paints used shall be listed on the "Approved product list" of the Master Painters Institute, (MPI). Application criteria shall be as recommended by Master

Painters Institute (MPI) guide specifications for the substrate to be painted and the environmental conditions existing at the project site.

a) **Exterior Surfaces:** Except factory pre-finished material or exterior surfaces receiving other finishes shall be painted a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, confirmed or suspected human carcinogens shall not be used on this project. Exterior paints and coating products shall be classified as containing low volatile organic compounds (VOCs) in accordance with MPI criteria. Application criteria shall be as recommended by MPI guide specifications. Provide an MPI Gloss Level 5 Finish (Semi-gloss), unless otherwise specified.

b) **Interior Surfaces:** Except factory pre-finished material or interior surfaces receiving other finishes shall be painted a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, confirmed or suspected human carcinogens shall not be used on this project. Interior paints and coating products shall contain a maximum level of 150 g/l (grams per liter) of volatile organic compounds (VOCs) for non-flat coatings and 50 g/l of VOCs for flat coatings. Provide an MPI Gloss Level 5 Finish (Semi-gloss) in wet areas and a flat finish in all other areas.

3) **Finish Table:**

MINIMUM INTERIOR FINISHES														
	FLOORS					BASE			WALLS		CEILING			REMARKS
	RESILIENT FLOORING	PORCELAIN OR QUARRY TILE	CERAMIC TILE	RECESSED ENTRY MAT	SEALED CONCRETE	RESILIENT BASE	SANITARY COVE CERAMIC BASE	PORCELAIN OR QUARRY TILE	GYPSUM BOARD PAINT	CERAMIC	GYPSUM BOARD PAINT	ACOUSTICAL CEILING TILE	MINIMUM HEIGHT	
COMMON AREAS														
LOBBY (IF REQUIRED BY RFP)		•						•	•		•	•	9'-0"	SEE NOTE 6
PUBLIC TOILET			•				•		•	•	•		8'-0"	SEE NOTES 2, 3 & 5
VESTIBULES		•		•				•	•		•		9'-0"	
MUDROOM (IF REQUIRED BY RFP)			•				•		•	•	•		8'-0"	SEE NOTES 2 & 5
BOOT WASH (IF REQUIRED BY RFP)					•								-	
ACTIVITY ROOM (IF REQUIRED BY RFP)		•						•	•		•	•	9'-0"	SEE NOTE 6
MAIL ACCESS AREA		•						•	•		•		8'-0"	IF LOCATED WITHIN BUILDING
MAIL ACCESS AREA					•								8'-0"	IF LOCATED OUTSIDE BUILDING SEE NOTE 10
STAIRS	•				•	•			•		•		8'-0"	SEE NOTE 4
CORRIDORS	•					•			•		•	•	9'-0"	SEE NOTE 6
VENDING											•		8'-0"	SEE NOTE 1
RECYCLABLES STORAGE	•					•			•		•		8'-0"	SEE NOTE 1
JANITOR CLOSETS			•				•		•	•	•		8'-0"	SEE NOTES 2 AND 5
MECHANICAL					•	•			•		•		-	SEE NOTES 5 AND 7
ELECTRICAL					•	•			•		•		-	

TELECOMMUNICATIONS					•	•			•		•			SEE NOTE 8
CENTRALIZED LAUNDRY (IF REQUIRED BY RFP)		•						•	•		•		8'-0"	SEE NOTE 5
DWELLING UNITS														
KITCHEN	•					•			•		•		8'-0"	SEE NOTE 3
BATHROOM			•				•		•	•	•		8'-0"	SEE NOTES 2, 3 & 11
BEDROOM	•					•			•		•		9'-0"	SEE NOTE 9
CLOSET	•					•			•		•		8'-0"	

1. FINISHES IN VENDING OR RECYCLABLES STORAGE AREA SHALL MATCH FINISHES IN ADJACENT SPACE.
2. ALL WET WALLS SHALL HAVE A 4'-0" HIGH CERAMIC TILE WAINSCOT.
3. ALL KITCHEN AND BATHROOM COUNTERS SHALL HAVE A MINIMUM OF 4" HIGH BACKSPLASH.
4. STAIR LANDING SHALL BE RESILIENT FLOORING OR SEALED CONCRETE. TREADS SHALL BE RESILIENT FLOORING OR SEALED CONCRETE, PROVIDE SLIP RESISTANT NOSING. RISERS SHALL BE PAINTED STEEL OR RESILIENT FINISH AS REQUIRED FOR STAIR CONSTRUCTION TYPE.
5. PROVIDE FLOOR DRAIN IN CENTER OF ROOM. SLOPE FLOOR TO DRAIN IN ALL ROOMS WITH FLOOR DRAIN
6. UP TO 50% OF CEILING AREA MAY BE ACOUSTICAL CEILING TILE. ALL ACOUSTICAL CEILING TILE SHALL BE INSTALLED WITH HOLD DOWN CLIPS TO PREVENT UPWARD MOVEMENT. CEILING LAYOUT SHALL BE A BALANCED MIX OF GYPSUM BOARD AND ACOUSTICAL CEILING TILE, SUCH THAT ONE FINISH MATERIAL IS NOT CONCENTRATED IN OR RESTRICTED TO ONE AREA OF THE CEILING.
7. PROVIDE FLOOR DRAIN IN CENTER OF ROOM. CEILING MAYBE PAINTED EXPOSED STRUCTURE IF ALLOWED BY APPLICABLE CODE AND CRITERIA. THIS NOTE DOES NOT APPLY TO DWELLING UNIT MECHANICAL CLOSETS.
8. COMPLY WITH THE REQUIREMENTS OF ANSI/TIA/EIA-569-B
9. WHERE MASONRY WALLS ARE PROPOSED AS THE BEDROOM WALL FINISH SYSTEM, THE LONGEST WALL IN EACH BEDROOM SHALL BE FINISHED WITH A TACKABLE MATERIAL. TACKABLE MATERIAL SHALL BE GYPSUM BOARD AND SHALL COMPLY WITH THE REQUIREMENTS OF PARAGRAPH 3.5.1 MINIMAL FINISH REQUIREMENTS.
10. CEILING SHALL BE PAINTED EXPOSED STRUCTURE
11. TUB SURROUND SHALL BE FIBERGLASS OR ACRYLIC.
12. CARPET SHALL NOT BE USED AS A FLOOR FINISH ON THIS PROJECT.

C. INTERIOR SPECIALITIES:

1) **Signage & Directories:**

a) **Room Signage:** Room signage shall conform to the Housing Automated Management System, (HOMES4). At each dwelling unit, provide two (one on each side of entry door) dwelling unit/room number and changeable two-line message strip signage. Dwelling units and shall be sequentially numbered. For example, the first unit on the first floor shall be “101”, first unit on the second floor shall be “201”. Rooms shall be designated using the letters “A and B”. The room designation is determined by standing in the corridor facing the entry door of the dwelling unit, the bedroom on the left is “A” and the one on the right is “B”. The complete dwelling unit/room numbering shall be as in this example, first unit on the second floor “201A and 201B”. Changeable message strip signs shall be of same construction as standard room signs to include a clear sleeve that will accept a paper or plastic insert with identifying changeable text. The insert shall be prepared typeset message photographically enlarged to size and mounted on paper card stock.

b) **Stair Exit Door Signage:** The inside face of each stair exit door on the first floor shall be furnished with a photo-luminescent sign. Photo-luminescent signs shall be manufactured and tested in accordance with the most current versions of ASTM E 2072 and ASTM E 2073. Sign shall be minimum 14-inches wide by 10-inches high, and shall be made of anodized aluminum. Lettering shall be red text on a yellow background. Lettering shall be upper case, and shall read as follows: “EMERGENCY EXIT ONLY” (minimum 4-inches high letters) “SECURITY ALARM WILL SOUND IF DOOR IS OPENED” (minimum 3-inches high letters). Signs shall be mounted centered on interior face of door above exit device.

2) **Visual Display Units/Cases:**

a) **Bulletin Boards:** Provide one bulletin board centrally located on all floors. Bulletin board shall be 4’-0” high and 6’-0” wide. Bulletin boards shall have a header panel and shall have lockable, glazed doors. Glazing shall be laminated glass.

3) **Toilet Accessories:** Furnish and install the items listed below and all other toilet accessories necessary for a complete and usable facility. All toilet accessories shall be Type 304 stainless steel with satin finish.

a) **Public Toilet(s):** Public Toilets (IF REQUIRED BY THE RFP): Toilet accessories shall conform to the requirements of the ABA and shall include, but are not limited to the following:

(1) Glass mirrors on stainless steel frame and shelf – at each lavatory

(2) Liquid soap dispenser – at each lavatory

(3) Combination recessed mounted paper-towel dispenser/waste receptacle

(4) Sanitary napkin disposal at each female\unisex toilet

(5) Recessed mounted lockable double toilet paper holder – at each water closet.

(6) Sanitary toilet seat cover dispenser – a minimum of one per toilet room

(7) Grab bars – as required by ABA

b) **Dwelling Unit/Bedroom Toilet(s):** Shall at a minimum include:

(1) Two heavy duty towel bars – minimum 24 inches wide each

(2) Two recessed mounted mirrored medicine cabinets – at each lavatory.

(a) A minimum of 16-inches wide by 24 inches high with adjustable shelves, mounted on the back wall of the vanity.

(b) Medicine cabinet construction shall be heavy gauge steel, all welded, with a powder-coated finish.

(c) Mirror shall be ¼ inch thick select float glass in a one piece ½ inch by ½ inch by ½ inch Type 304 satin finished, stainless steel frame, with mitered corners.

(3) Two soap dish - at tub/shower

(4) One wall mounted retractable clothesline – across tub/shower

(5) Two combination tumbler holder/toothbrush holder – one at each medicine cabinet

(6) Toilet paper holder – at each water closet.

(7) Curved shower curtain rod - extra heavy duty.

(8) Shower curtain – white anti-bacterial nylon/vinyl fabric shower curtain.

(9) Two soap dish – one at each medicine cabinet.

4) **Wall Protection:**

a) **Chair Rail:** Chair rails shall be installed in areas prone to hi-impact use, such as corridors and lobby.

b) **Corner Guards:** Provide surface mounted, high impact resistant, integral color, snap-on type resilient corner guards, extending from floor to ceiling for wall/column outside corners in high traffic areas. Factory fabricated end closure caps shall be furnished for top and bottom of surface mounted corner guards.

5) **Storage Shelving:**

a) **Janitor's Closet:** Provide a minimum of six linear feet of 18 inch deep, heavy duty, stainless steel shelving for storage of janitorial supplies.

b) **Walk-in-Closets:** Closet shelf shall be capable of supporting a minimum of 30 pounds per linear foot. Closet shelf shall be 15 inches deep and top of shelf shall be set at 70 inches above closet finish floor. Closet rod and bracket system shall be capable of supporting a minimum of 30 pounds per linear

foot. Provide a minimum of 78 linear inches of rod and shelf with no rod and shelf being less than 48 inches long.

6) **Fire Extinguisher Cabinets & Mounting Brackets:** Furnish and install fire extinguisher cabinets and fire extinguisher mounting brackets as required by applicable codes and criteria. Furnish a list of installed fire extinguisher cabinets and mounting brackets (including location, size and type) to the Contracting Office Representative.

3.6. STRUCTURAL REQUIREMENTS:

A. GENERAL: Design and construct as a complete system in accordance with APPLICABLE CRITERIA.

B. DESIGN LOADS:

1) **Live Loads:** Design live loads shall be per the IBC but not lower than the following minimums.

a) **Elevated floors:** 60 pounds per square foot (psf) minimum

b) **Slab on grade:** 150 psf minimum

c) **Centralized laundry area (if required by RFP):** 150 psf, (but not less than actual equipment loads)

3.7. SEE PARAGRAPH 6.7 THERMAL PERFORMANCE – NOT USED

3.8. PLUMBING REQUIREMENTS:

A. DOMESTIC WATER:

1) **Heating System:** Domestic water heating system shall be sized based on 20 gallons of 110 deg. F hot water consumption per occupant during morning peak period. Peak period duration shall be 30 minutes (10 minute duration for shower and lavatory use per occupant per dwelling unit plus a 10 minute transition period). Hot water storage capacity shall be based on 75% usable storage and a storage temperature of 140 deg F. Domestic hot water distribution shall be at 120 deg F from a central system mixing valve. Domestic hot water distribution piping shall be designed to handle up to 180 deg F water temperatures.

2) **Pipe Sizing:** For domestic hot water pipe sizing, peak hot water flow rate shall be based on all showers flowing simultaneously at a rate of 2.0 gpm per shower. Waste stacks, building waste drains, and lift stations (if required) shall be sized with consideration of increased flow rates as well.

B. FIXTURE FLOW RATES:

1) **Water Closets:** Shall have a maximum flow rate of 1.28 gallons per flush or dual flush with an equivalent average flush volume of 1.28 gallons per flush.

2) **Shower heads**: Shall have a maximum flow rate not to exceed 1.5 gpm.

3) **Bathroom Sinks:** Shall have a maximum flow rate not to exceed 0.5 gpm.

4) **Kitchen Sinks**: Shall have a maximum flow rate not to exceed 1.0 gpm.

5) **Janitor Sinks**: Shall have a maximum flow rate not to exceed 2.0 gpm.

C. DRAINS, INTERCEPTORS SEPARATORS & CLEANOUTS:

1) **Interceptors:**

a) **Sand Interceptors:**

(1) **Mudroom/Bootwash:**

b) **Solid Interceptors:**

(1) **Centralized Laundry:** Centralized laundry facilities shall be considered commercial laundries with respect to the IPC and shall be provided with solids interceptor in accordance with the IPC.

2) **Cleanouts:**

a) **Centralized Laundry:** If Dryer vents are manifolded to a common exhaust, provide an easily accessible means of cleanout.

3) **Drains:**

a) **Vending Area:** Provide water and drain connections for ice cube machine-dispensers.

b) **Centralized Laundry:** Provide water and drain connections for all washers.

D. PLUMBING FIXTURES:

1) **Residential Plumbing Fixtures:**

a) **Kitchen Fixtures (Dwelling Unit):**

(1) **Sink:** Furnish and install a single bowl stainless steel kitchen sink. “Minimum bowl inside dimensions shall be 400mm x 400 mm x 180mm deep [16”x16”x7”deep].”

(2) **Faucet:**

b) **Bathroom Fixtures (Dwelling Unit):**

(1) **Water Closet:** Furnish and install an elongated floor mounted flush tank type vitreous china water closet.

(2) **Tub/Shower Head:** Shall be of porcelain enameled cast-iron or enameled steel.

(3) **Vanity Fixture:**

2) **Commercial Plumbing Fixtures:**

a) **Mudroom/Bootwash:**

(1) **Utility Sink:**

(2) **Pedestal Mounted Faucet:**

(3) **Hosed Facet:**

3.9. COMMUNICATIONS AND SECURITY SYSTEMS:

A. TELECOMMUNICATION SYSTEMS: Telecommunications outlets shall be provided per the applicable criteria based on functional purpose of the space within the building.

1) **CATV**: All CATV outlet boxes, connectors, cabling, and cabinets shall conform to applicable criteria unless noted otherwise. All horizontal cabling shall be homerun from the CATV outlet to the nearest telecommunications room unless indicated otherwise. See paragraph 6 for possible additional requirements.

B. SECURITY INFRASTRUCTURE/SYSTEMS:

1) **Door Status/Alarm Monitoring:**

a) **Stair Exit Doors:** Each stair exit door on the first floor shall be furnished with a hard-wired contact switch connected to an alarm system. Alarm system shall sound an alarm at the door location and the CQ Desk when a stair exit door is opened. Switching OFF activated alarm shall be by key at the specific door and remotely at the CQ Desk.

C. MASS NOTIFICATION SYSTEMS:

3.10. ELECTRICAL REQUIREMENTS:

A. GENERAL: Select electrical characteristics of the power system to provide a safe, efficient, and economical distribution of power based upon the size and types of loads to be served. Use distribution and utilization voltages of the highest level that is practical for the load to be served. The effect of nonlinear loads such as computers, other electronic equipment and electronic ballasts shall be considered and accommodated as necessary. Voltage drop shall not exceed the maximum allowed per ASHRAE 90.1. Transient voltage surge protection shall be provided on service equipment. Bedrooms shall be considered to be living and sleeping rooms, therefore they are to be considered to be part of a dwelling unit per NFPA 70 definition.

B. POWER: Power shall be provided for all installed equipment requiring power to include convenience receptacles and government furnished government installed equipment.

1) **Panels:** Panelboards located in accessible areas, shall be lockable and keyed to one master key.

2) **Outlets:**

a) **Dwelling Unit:** In addition to the requirements of NFPA 70 for dwelling units, a duplex receptacle shall be mounted adjacent to the CATV outlet.

b) **Lobby:** Provide a minimum of one 125 volt duplex receptacle in the lobby (if lobby is provided) for housekeeping purposes.

(1) **Lobby–CQ Station:** ***Not Used***

c) **Corridors:** Provide a minimum of one 125 volt duplex receptacle per corridor for housekeeping. No point along a corridor wall at 18" above finished floor shall be more than 25 feet from a receptacle.

d) **Mechanical & Electrical Room:** Provide a minimum of two 125 volt duplex receptacles in mechanical rooms in addition to those required by NFPA 70. This requirement does not apply to the small mechanical rooms used for individual dwelling units. In addition, provide a minimum of one 125 volt duplex receptacle in each electrical room.

e) **Vending Area:** ***<UEPH_VENDING_NOT***>Not UsedProvide power receptacles for vending machines and ice cube machine-dispensers.

f) **Centralized Laundry:** Provide power receptacles for washers, dryers and laundry supplies vending machines. Provide a minimum of one convenience duplex power receptacle on each wall.

g) Electrical service shall be provided for electric dryers regardless of whether or not electric dryers are to be used.

C. LIGHTING LEVELS, FIXTURES & CONTROLS: Interior lighting controls shall be provided in accordance with ASHRAE 90.1. Electronic ballasts for linear florescent lamps shall be the high efficiency programmed start type. Provided lighting levels shall be within +/- 10% of required lighting levels.

1) **Dwelling Units:**

a) **Bedrooms:** Lighting level in bedrooms shall be 15 foot-candles. Lighting shall utilize compact fluorescent fixtures with automatic occupancy sensor detection switching. Switching shall be manual-ON/Automatic OFF.

b) **Dining:**

c) **Kitchen:** Lighting level in kitchen areas shall be 30 foot-candles with automatic occupancy sensor detection switching. Switching shall be manual-ON/Automatic OFF. Counter top task lighting shall be installed under cabinets utilizing fixtures with 2 foot linear T8 fluorescent lamps with manual on/off switching. Task lighting switching shall be separate from general lighting switching.

d) **Walk-in-Close**t: Provide automatic occupancy sensor detection switching in each walk-in closet. Switching shall be manual-ON/Automatic OFF.

2) **Lobby:** Lighting level in lobbies (if required by the RFP) shall be 10 foot-candles. Lighting in common areas such as corridors and lobbies shall have automatic occupancy sensor detection switching. Sensors in corridors shall be wired such that only the lighting fixtures within the activation range of a particular sensor shall turn on.

a) **Lobby–CQ Station:** Not Used

3) **Centralized Laundry:** >Lighting level in laundry room(s) shall be 30 foot-candles. Lighting shall have automatic occupancy sensor detection switching.

4) **Mechanical, Electrical, and Telecommunication Rooms:** Lighting level in mechanical and electrical rooms shall be 30 foot-candles. Lighting shall utilize fixtures with T8 fluorescent lamps with manual on/off switching.

5) **Mail Access Area:** If mail is distributed from an exterior kiosk or through an exterior wall provide a minimum illuminance level of 5-footcandles.

6) **Mudroom/Bootwash:** Provide an luminance level of 20-footcandles and automatic occupancy sensor detection switching to control fixture(s) in the mudroom (if mudroom is provided).

3.11. HEATING VENTILATING AND AIR CONDITIONING (HVAC) REQUIREMENTS:

A. HVAC DESIGN CRITERIA:

1) **Unit Location and Access:**

a) **Dwelling Unit**: All room/dwelling unit HVAC units shall be located in equipment closets accessible only through a corridor access door with keyed deadbolt. Corridor HVAC access doors shall be sized for ease of service and maintenance of HVAC units. Access for maintenance shall not require entry into the dwelling unit. Air filters shall be located in the equipment closet. All dwelling unit HVAC units shall have piping and duct connections that allow quick and easy removal and replacement of individual units.

2) **Ventilation:**

a) **Dwelling Unit:** Each dwelling unit shall be positively ventilated using dedicated outdoor air units. Dedicated outdoor air units (DOAUs) shall continuously supply dehumidified, tempered air ducted directly to each bedroom from DOAU. DOAU supply air ductwork shall not connect to dwelling unit heating/cooling unit. Supply air conditions from DOAU shall be between 68 and 75 degree F dry bulb and no greater than 48 degree F dew point. Supply quantity shall be 30 cfm per bedroom for a total of 60 cfm per dwelling unit.

b) **Corridors:** Corridors shall be ventilated per ASHRAE 62.1 by supply from the dedicated outdoor air unit.

c) **Vending Area:** Provide additional ventilation/exhaust to maintain vending areas temperature at levels specified for corridors.

3) **Exhaust:**

a) **Dwelling unit**: Dwelling unit exhaust shall be 45 cfm continuous through a bathroom exhaust. (Note: This exceeds ASHRAE 62.1 but provides compliance with IMC chapter 4 and maintains slight building positive pressurization with respect to dwelling unit exhaust rate of 45 cfm). DOAU unit shall be direct expansion (DX) type and cooling/dehumidification shall be available 24/7/365. Refer to chapter 6 for site specific constraints. The number of exhaust fans and DOAUs shall be the same, and exhaust fans and DOAUs shall be arranged for and shall include exhaust air energy recovery. Exhaust and DOAU systems shall be provided with variable frequency drives (VFDs) and shall be provided with a control logic that provides reduced ventilation rates during periods of low interior humidity and still meet minimum ASHRAE 62.1 requirements.

b) **Centralized Laundry**: Dryers shall be vented to exterior according to all applicable criteria and manufacturer's installation instructions. Dryer exhaust vent exterior terminations shall be located no closer

than 15 feet from dwelling unit bedroom windows. Provide individual vent connections for all dryers. Locate laundry rooms on exterior wall so that dryer exhaust can be vented directly to the exterior.

4) **Ductwork:**

a) **Kitchen Range Hoods:**

(1) Ductless Type: Kitchen range hoods shall be the U.L. listed ductless type.

(2) **Ducted Type:** Not Used

B. TEMPERATURE CONTROLS:

1) Dwelling unit room temperature control shall be through the direct digital control (DDC) system. Each dwelling unit shall have a heating/cooling unit with thermostat/temperature control sensor located in common area. Occupant control will include fan selection (on/off) and an occupant temperature set point adjustment mechanism that allows +/- 2 deg F of adjustment from the DDC programmed set points (70 deg F heating, 75 deg F cooling). Additionally, the DDC controls shall monitor each dwelling unit for sub-cooling. The DDC system shall record an alarm event if the space temperature drops below 71 degree F (adjustable) when the outside air is greater than 85 degree F (adjustable). Occupant control shall also include ability to select heating or cooling mode. HVAC system shall be able to provide for year round heating or cooling in individual dwelling units as selected by the occupants. Occupant controller shall not have any provisions for occupant adjustment beyond that stated in this paragraph. Any further adjustments beyond as described shall be by authorized personnel only.

3.12. ENERGY CONSERVATION REQUIREMENTS:

A. ENERGY PERFORMATION: The building, including the building envelope, HVAC systems, service water heating, power, and lighting systems shall be designed to achieve a non-plug load energy consumption that is at least 40% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2007 (see paragraph 5.9 Energy Conservation). (Note: Plug loads shall be included in building energy modeling but are subtracted in the final calculation of Energy Performance. See section “Design After Award” for additional guidance.)

1) **Solar Water Heating:**

B. REQUIRED ENERGY CONSERVATION FEATURES & TABLES: All design features not described below will be in accordance with the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2007 including conformance with paragraph 5.9.2, which requires purchase of Energy Star and FEMP designated products. Additional energy conservation features may be required to meet the above energy performance. The contractor is responsible for determining and providing additional energy conservation features to meet the energy performance requirement.

1) **Energy Conservation Features Table:**

Climate Zone 5B, Energy Conservation Features Table

Item	Component	Minimum Requirements
Roof	Attic	R-50
	Surface reflectance	0.27
Walls	Light Weight Construction	R-25
Exposed Floors	Mass	R-20
Slabs	Unheated	NR (2)
Doors	Swinging	U-0.70
	Non-Swinging	U-1.45

Infiltration		0.25 cfm/ft^2 @ 75 Pa (3)
Vertical Glazing	Window to Wall Ratio (WWR)	10% - 20%
	Thermal transmittance	U-0.42
	Solar heat gain coefficient (SHGC)	0.46
Interior Lighting	Lighting Power Density (LPD)	0.9 W/ft^2
	Ballast	Electronic ballast
HVAC	Air Conditioner	Energy Efficient Heating and Cooling System with Associated Heating and Reheat Coil DOAS with 14 SEER DX coil (3.52 COP), Hot Gas Reheat and Auxiliary Heat/ Reheat Coil
	Gas Furnace	none
	ERV	70% - 75% sensible effectiveness
Economizer		yes
Ventilation	Outdoor Air Damper	Motorized control
	Demand Control	NR
	Laundry Room	Decoupled (5)
Ducts	Friction Rate	0.08 in. w.c./100 feet
	Sealing	Seal class B
	Location	Interior only
	Insulation level	R-6 (6)
Service Water Heating	Gas storage	90% E_t

2) <u>Table Notes:</u>

(1) NOT USED

(2) NR means there is no requirement or recommendation for a component in this climate.

(3) Increased Building Air tightness. Building air leakage (measured in cfm/ft2) is the average volume of air(measured in cubic feet per minute) that passes through a unit area of the building envelope (measured in square feet) when the building is maintained at a specified internal pressure (measured in Pascals). Testing requirements are specified in Chapter 5..

(4) Dedicated Outdoor Air System. A central dedicated outdoor air system (DOAS) providing the following:

(a) Outside air for building indoor air quality and humidity control

(b) Make-up air for bathroom and kitchen exhausts

(c) Building pressurization to prevent infiltration which allows for reduction of heating/cooling and moisture loads on the system.

(d) NOTE: The Central DOAS does not provide sensible heating or cooling. Sensible loads are provided by a complementing heating and cooling system

(5) Decoupling exhaust and supply systems for laundry rooms. To reduce unneeded energy use for heating and cooling of the make-up air and for air transportation of supply and exhausted air from the dryers, laundry exhaust and supply systems are separated in the efficient building model from the rest of the building exhaust and supply systems. Laundry exhaust system and corresponding make-up systems operate only when dryers are operating.

(6) The duct and pipe insulation values are from the ASHRAE Advanced Energy Design Guide for Small Offices.

C. COMPLIANCE DOCUMENTATION: The required energy conservation features shown in the following tables contribute to the achievement of the above energy performance and are life cycle cost effective for a UEPH facility. Use of the required energy conservation features does not eliminate the requirement for energy analysis calculations documenting compliance. The D-B contractor must document compliance with the above energy performance utilizing the methodology described in ASHRAE 90.1, Appendix G as discussed in section 01 33 16 Design After Award.

D. LOAD & SET POINT SCHEDULES: The following facility schedules must be used in all facility energy simulations for purposes of documenting compliance with energy performance requirement. The peak values indicated for each schedule shall be used for the baseline energy calculation. The hourly peak fraction values for various load components for each schedule shall be used for both the baseline and proposed design energy calculations.

1) **UEPH Common Area Internal Load Schedules**

Hr	Occupancy			Lighting			Washer/Dryer Use			Washer SHW		
	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun
1-6	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
7-10	0.20	0.20	0.20	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
11-18	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.00	0.00	0.00	0.00
20-21	0.20	0.20	0.20	0.80	0.80	0.80	0.50	0.50	0.50	0.50	0.50	0.50
22-23	0.40	0.40	0.40	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00
24	0.20	0.20	0.20	0.80	0.80	0.80	0.50	0.50	0.50	0.50	0.50	0.50
Peak	5 occ/floor			1.0 W/ft^2 (10.8 W/m^2)			8.4 kW/floor			53.3 gal/hr/flr (202 L/hr/flr)		

2) **UEPH Apartment Unit Internal Load Schedules**

Hr	Occupancy			Lighting			Plug Loads			Service Hot Water		
	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun
1-5	0.80	0.75	0.75	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00
6	0.70	0.65	0.75	0.40	0.30	0.20	0.20	0.20	0.20	0.10	0.10	0.10
7	0.60	0.60	0.70	0.70	0.50	0.30	0.40	0.35	0.20	0.40	0.40	0.40
8	0.50	0.50	1.00	0.50	0.50	0.50	0.40	0.40	0.40	0.20	0.20	0.20
9	0.25	0.25	0.00	0.20	0.20	0.20	0.30	0.40	0.40	0.00	0.00	0.00
10-17	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.00	0.00	0.00
18	0.30	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.10	0.10	0.10
19	0.50	0.30	0.30	0.70	0.70	0.70	0.50	0.50	0.50	0.10	0.10	0.10
20	0.50	0.50	0.50	0.70	0.70	0.70	0.60	0.50	0.50	0.10	0.10	0.10
21	0.70	0.50	0.50	0.70	0.70	0.70	0.60	0.50	0.50	0.00	0.00	0.00
22	0.70	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00
23	0.80	0.75	0.75	0.40	0.40	0.40	0.40	0.50	0.50	0.00	0.00	0.00
24	0.80	0.75	0.75	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00

Hr	Occupancy	Lighting	Plug Loads	Service Hot Water
Peak	2 occ/unit	1.1 W/ft^2 (10.8 W/m^2)	1.7 W/ft^2 (18 W/m^2)	40 gal/hr/person (114 L/hr/person)

3) **UEPH Apartment Unit Internal Load Schedules**

Hr	Refrigerator			Range and Oven		
	Wk	Sat	Sun	Wk	Sat	Sun
1-6	1.00	1.00	1.00	0.01	0. 01	0. 01
7-16	1.00	1.00	1.00	0.04	0.04	0.04
17-18	1.00	1.00	1.00	0.05	0.05	0.05
19-20	1.00	1.00	1.00	0.11	0.11	0.11
21-23	1.00	1.00	1.00	0.10	0.10	0.10
24	1.00	1.00	1.00	0.03	0.03	0.03
Peak	76.36 W/unit			68.95 W/unit		

4) **UEPH Apartment Unit Thermostat Set-Point Schedules**

Hr	Heating (°F)			Heating (°C)			Cooling (°F)			Cooling (°C)		
	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun	Wk	Sat	Sun
1-24	68	68	68	20	20	20	75	75	75	24	24	24

5) **UEPH Unoccupied Zones (ie stairwells, mechanical rooms) Thermostat Set-Point Schedules**

Hr	Heating (°F)			Heating (°C)		
	Wk	Sat	Sun	Wk	Sat	Sun
1-24	55	55	55	12.8	12.8	12.8

3.13. FIRE PROTECTION REQUIREMENTS

A. FIRE DETECTION AND ALARM SYSTEMS: The fire alarm system installation shall be supervised by a National Institute for Certification of Engineering Technologies (NICET) Level 3 (minimum) technician.

1) **Software:** All software, software locks, special tools and any other proprietary equipment required to maintain, add devices to or delete devices from the system, or test the Fire Alarm system shall become property of the Government and be furnished to the Contracting Officer's Representative prior to final inspection of the system.

2) **Smoke Detectors:** Smoke detectors shall be provided in all bedrooms. Smoke alarm signals shall be transmitted as a supervisory signal to the fire department.

3.14. See paragraph 6.14 Sustainable Design – Not Used

3.15. See paragraph 6.15 Environmental – Not Used

3.16. See paragraph 6.16 permits – Not used

3.17. See paragraph 6.17 Demolition – Not used

3.18. See paragraph 6.18 Additional Facilities – Not used

3.19. EQUIPMENT AND FURNITURE REQUIREMENTS

3.19.1. FURNISHINGS

A. FURNITURE LIST/CHARTS:

1) **Dwelling Unit Furniture**:

a) **Bedrooms:** Bedroom shall be able to accommodate the following furniture with adequate circulation for one occupant:

(1) One twin bed with headboard and footboard 40” wide x 85 long”.

(2) One entertainment center 36” wide x 25” deep x 76” high.

(3) One chest of drawers 36” wide x 20” deep.

(4) One nightstand 26” wide x 20” deep.

(5) One desk 60” wide x 26” deep with retractable keyboard tray and overhead study carrel.

(6) One desk chair 19 ½” wide by 18” deep.

b) **Kitchens:** If counter seating/dining is not provided, kitchen layout shall have a dining/seating space which can accommodate the furnishing listed below:

(1) One 36 inch diameter dining table.

(2) Two chairs for the dining table.

B. CASEWORK: Provide cabinets complying with AWI Quality Standards.

1) **Dwelling Unit Casework:**

a) **Kitchens:** Provided a minimum of twelve (12) linear feet of base cabinet systems with twelve (12) linear feet of standard height counter and twelve (12) linear feet of wall cabinet systems. Twelve (12) linear feet of standard height counter includes required sink. In addition to the twelve (12) linear feet of standard height counter, kitchen layout shall accommodate a minimum of 36 linear inches of counter style seating and dining for two people, or provide space for dining table outside of the kitchen area. Provide a minimum of two 18 inches wide drawer units in the kitchen base cabinet system. Future dishwasher space shall be furnished with a removable built-in full width shelf dividing it into two equal spaces, and a pair of removable swing doors matching the rest of the kitchen cabinetry.

b) **Vanities:**

C. WINDOW TREATMENTS: Provide horizontal mini blinds at all exterior windows. Uniformity of window covering color and material shall be maintained to the maximum extent possible throughout each building. Blinds in barracks bedrooms shall be room darkening mini blinds.

3.19.2. EQUIPMENT

A. RESIDENTIAL APPLIANCES:

1) **Kitchen Appliances:** Each dwelling unit shall have a full kitchen with adequate space and circulation to accommodate:

a) **Refrigerator:** A full size refrigerator 28 inches wide.

b) **Range:**

c) **Cooktop:** Cooktop shall be CFCI built-in two-burner electric cooktop with a CFCI built-in combination vent hood and convection/microwave oven.

d) **Garbage Disposer:**

2) **Dwelling Laundry:** Not Used

B. COMMERCIAL EQUIPMENT:

1) **Laundry Equipment**:

a) **Washer:** Washers shall be GFGI commercial grade.

b) **Dryers:** Dryers shall be GFGI commercial grade.

c) **Fixed Tables:** Each CFCI fixed heavy gauge stainless steel clothes folding/hanging table shall be 2'-0" deep by 5'-0" wide.

d) **Utility Sinks:** Utility sinks shall be CFCI.

2) **Vending and Ice Machine Equipment**:

a) **Vending Machines:** Vending Machines shall be full-size and shall be GFGI.

b) **Ice Machines:** Ice cube machine-dispenser shall be capable of producing a minimum 250 pounds of regular ice cubes in 24 hours, with 180 pound storage capacity and shall be GFGI

3.20. FACILITY SPECIFIC REFERENCES: (NOT USED)

4.0 APPLICABLE CRITERIA

Unless a specific document version or date is indicated, use criteria from the most current references, including any applicable addenda, unless otherwise stated in the contract or task order, as of the date of the Contractor's latest accepted proposal or date of issue of the contract or task order solicitation, whichever is later. In the event of conflict between References and/or Applicable Military Criteria, apply the most stringent requirement, unless otherwise specifically noted in the contract or task order.

4.1. INDUSTRY CRITERIA

Applicable design and construction criteria references are listed in Table 1 below. This list is not intended to include all criteria that may apply or to restrict design and construction to only those references listed. See also Paragraph 3 for additional facility-specific applicable criteria.

Table 1: Industry Criteria

Air Conditioning and Refrigeration Institute (ARI)	
ARI 310/380	Packaged Terminal Air-Conditioners and Heat Pumps
ARI 440	Room Fan-Coil and Unit Ventilator
ANSI/ARI 430-99	Central Station Air Handling Units
ARI 445	Room Air-Induction Units
ARI 880	Air Terminals
Air Movement and Control Association (AMCA)	
AMCA 210	Laboratory Methods of Testing Fans for Rating
American Architectural Manufacturers Association (AAMA)	
AAMA 605	Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
AAMA 607.1	Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
AAMA 1503	Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections
American Association of State Highway and Transportation Officials (AASHTO)	

	Roadside Design Guide [guardrails, roadside safety devices]
	Standard Specifications for Transportation Materials and Methods of Sampling and Testing [Road Construction Materials]
	Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
	Guide for Design of Pavement Structures, Volumes 1 and 2 [pavement design guide]
	A Policy of Geometric Design of Highways and Streets
American Bearing Manufacturers Association (AFBMA)	
AFBMA Std. 9	Load Ratings and Fatigue Life for Ball Bearings
AFBMA Std. 11	Load Ratings and Fatigue Life for Roller Bearings
American Boiler Manufacturers Association (ABMA)	
ABMA ISEI	Industry Standards and Engineering Information
American Concrete Institute	
ACI 302.2R	Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
ACI 318	Building Code Requirements for Structural Concrete
ACI SP-66	ACI Detailing Manual
ACI 530	Building Code Requirements for Masonry Structures
ADA Standards for Accessible Design	
See US Access Board	ADA and ABA Accessibility Guidelines for Buildings and Facilities, Chapters 3-10.
American Institute of Steel Construction (AISC)	
	Manual of Steel Construction – 13th Edition (or latest version)

American Iron and Steel Institute	
AISI S100	North American Specification for the Design of Cold-Formed Steel Structural Members
American National Standards Institute 11 (ANSI)	
ANSI Z21.10.1	Gas Water Heaters Vol. 1, Storage water Heaters with Input Ratings of 75,000 Btu per Hour or less
ANSI Z124.3	American National Standard for Plastic Lavatories
ANSI Z124.6	Plastic Sinks
ANSI Z21.45	Flexible Connectors of Other Than All-Metal Construction for Gas Appliances
ANSI/IEEE C2	National Electrical Safety Code
ANSI/AF&PA NDS	National Design Specification for Wood Construction
American Society of Civil Engineers (ASCE)	
ASCE 7	Minimum Design Loads for Buildings and Other Structures
ASCE 37	Design and Construction of Sanitary and Storm Sewers, Manuals and Reports on Engineering Practice [sanitary sewer and storm drain design criteria]
ASCE/SEI 31-03	Seismic Evaluation of Existing Buildings [Existing Building Alteration/Renovation]
ASCE/SEI 41-06	Seismic Rehabilitation of Existing Buildings [Existing Building Alteration/Renovation]
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)	
ASHRAE 90.1	ANSI/ASHRAE/IESNA 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE Guideline 0	The Commissioning Process
ASHRAE Guideline 1.1	The HVAC Commissioning Process

ASHRAE Handbooks	Fundamentals, HVAC Applications, Systems and Equipment, Refrigeration (Applicable, except as otherwise specified)
ASHRAE Standard 15	Safety Standard for Refrigeration Systems
ASHRAE Standard 62.1	Ventilation for Acceptable Indoor Air Quality
ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy (Design portion is applicable, except where precluded by other project requirements.)
ASHRAE Standard 189.1-2009	Standard for the Design of High-Performance Green Buildings (ANSI Approved; USGBC and IES Co-sponsored), - (APPLICABLE TO THE EXTENT SPECIFICALLY CALLED OUT IN THE CONTRACT)
American Society of Mechanical Engineers International (ASME)	
ASME BPVC SEC VII	Boiler and Pressure Vessel Code: Section VII Recommended Guidelines for the Care of Power Boilers
ASME A17.1	Safety Code for Elevators and Escalators
ASME B 31 (Series)	Piping Codes
American Water Works Association (AWWA)	
	Standards [standards for water line materials and construction]
American Welding Society	
	Welding Handbook
	Welding Codes and Specifications (as applicable to application, see International Building Code for example)
Architectural Woodwork Institute (AWI)	
Latest Version	AWI Quality Standards
Associated Air Balance Council (AABC)	
AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems

	AABC Associated Air Balance Council Testing and Balance Procedures
ASTM International	
ASTM C1060-90(	Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings
ASTM E 779	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
ASTM E1827-96	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
Builders Hardware Manufacturers Association (BHMA)	
ANSI/BHMA	The Various BHMA American National Standards
Building Industry Consulting Service International	
	Telecommunications Distribution Methods Manual (TDMM)
	Customer-Owned Outside Plant Design Manual (CO-OSP)
Code of Federal Regulations (CFR)	
49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
10 CFR 430	Energy Conservation Program for Consumer Products
Consumer Electronics Association	
CEA 709.1B	Control Network Protocol Specification
CEA 709.3	Free-Topology Twisted-Pair Channel Specification
CEA 852	Tunneling Component Network Protocols Over Internet Protocol Channels
Electronic Industries Association (EIA)	
ANSI/EIA/TIA 568	Structured Cabling Series

ANSI/EIA/TIA 569	Commercial Building Standard for Telecommunications Pathways and Spaces (includes ADDENDA)
ANSI/TIA/EIA-606	Administrative Standard for the Telecommunications Infrastructure of Commercial Buildings
J-STD EIA/TIA 607	Commercial Building Grounding and Bonding Requirements for Telecommunications
Federal Highway Administration (FHWA)	
	Manual on Uniform Traffic Control Devices for Streets and Highways [signage and pavement markings for streets and highways]
FHWA-NHI-01-021	Hydraulic Engineering Circular No. 22, Second Edition, URBAN DRAINAGE DESIGN MANUAL
Illuminating Engineering Society of North America (IESNA)	
IESNA RP-1	Office Lighting
IESNA RP-8	Roadway Lighting
IESNA Lighting Handbook	Reference and Application
Institute of Electrical and Electronics Engineers Inc. (IEEE)	
	Standard for Use of the International System of Units (SI): the Modern Metric System
Standard 1100	Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
International Code Council (ICC)	
IBC	International Building Code Note: All references in the International Building Code to the International Electrical Code shall be considered to be references to NFPA 70. All references in the International Building Code to the International Fuel Gas Code shall be considered to be references to NFPA 54 and NFPA 58. All references in the International Building Code to the International Fire

	Code and Chapter 9 shall be considered to be references to Unified Facilities Criteria (UFC) 3-600-01.
IMC	International Mechanical Code – Note: For all references to “HEATING AND COOLING LOAD CALCULATIONS”, follow ASHRAE 90.1 Note: For all references to “VENTILATION”, follow ASHRAE 62.1
IRC	International Residential Code
IPC	International Plumbing Code
IEC	Energy Conservation Code (IEC) –Applicable only to the extent specifically referenced herein. Refer to Paragraph 5, ENERGY CONSERVATION requirements.
IGC	International Gas Code - not applicable. Follow NFPA 54, National Fuel Gas Code and NFPA 58, Liquified Petroleum Gas Code.
International Organization for Standardization (ISO)	
ISO 6781:1983	Qualitative detection of thermal irregularities in building envelopes – infrared method
LonMark International (LonMark)	
LonMark Interoperability Guidelines	(available at www.lonmark.org), including: Application Layer Guidelines, Layer 1-6 Guidelines, and External Interface File (XIF) Reference Guide
LonMark Resource Files	(available at www.lonmark.org), including Standard Network Variable Type (SNVT) definitions
Metal Building Manufacturers Association (MBMA)	
	Metal Building Systems Manual
Midwest Insulation Contractors Association (MICA)	
	National Commercial and Industrial Insulation Standards Manual
National Association of Corrosion Engineers International (NACE)	

NACE RP0169	Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE RP0185	Extruded, Polyolefin Resin Coating Systems with Adhesives for Underground or Submerged Pipe
NACE RP0285	Corrosion Control of Underground Storage Tank Systems by Cathodic Protection
NACE RP0286	Electrical Isolation of Cathodically Protected Pipelines
National Electrical Manufacturers Association (NEMA)	
National Environmental Balancing Bureau (NEBB)	
	Procedural Standards Procedural Standards for Testing Adjusting Balancing of Environmental Systems
National Fire Protection Association (NFPA)	
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 13	Installation of Sprinkler Systems
NFPA 13R	Residential Occupancies up to and Including Four Stories in Height Sprinkler Systems
NFPA 14	Standard for the Installation of Standpipes and Hose Systems
NFPA 20	Installation of Centrifugal Fire Pumps
NFPA 24 NFPA 25	Standard for the Installation of Private Fire Service Mains and Their Appurtenances [underground fire protection system design] Inspection, Testing And Maintenance Of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 30A	Motor Fuel Dispensing Facilities and Repair Garages
NFPA 31	Installation of Oil Burning Equipment
NFPA 54	National Fuel Gas Code

NFPA 58	Liquefied Petroleum Gas Code
NFPA 70	National Electrical Code
NFPA 70E	Standard for Electrical Safety in the Workplace
NFPA 72	National Fire Alarm Code
NFPA 76	Fire Protection of Telecommunications Facilities
NFPA 80	Standard for Fire Doors and Fire Windows
NFPA 90a	Installation of Air Conditioning and Ventilating Systems
NFPA 96	Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
NFPA 101	Life Safety Code
NFPA 780	Standard for the Installation of Lightning Protection Systems
National Roofing Contractor's Association (NRCA)	
	Roofing and Waterproofing Manual
National Sanitation Foundation, International	
NSF/ANSI Std. 2, 3, 4, 5, 6, 7, 8, 12, 13, 18, 20, 21, 25, 29, 35, 36, 37, 51, 52, 59, 169	Food Equipment Standards
ANSI/UL Std. 73, 197, 471, 621, 763	Food Equipment Standards
CSA Std. C22.2 No. 109, 120, 195	Food Equipment Standards
Occupational Safety and Health Administration (OSHA)	
Title 29, Part 1926	OSHA Construction Industry Standards, Title 29, Code of Federal Regulations, Part 1926, Safety and Health Regulations for Construction

Plumbing and Drainage Institute (PDI)	
PDI G 101	Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data
PDI WH201	Water Hammer Arrestors
Precast Concrete Institute	
PCI Design Handbook	Precast and Prestressed Concrete
Sheet Metal and Air Conditioning Contractor's National Association (SMACNA)	
SMACNA HVAC Duct Construction Standards	HVAC Duct Construction Standards - Metal and Flexible
SMACNA Architectural Manual	Architectural Sheet Metal Manual
SMACNA HVAC TAB	HVAC Systems - Testing, Adjusting and Balancing
State/Local Regulations	
	State Department of Transportation Standard Specifications for Highway and Bridge Construction
	Sedimentation and Erosion Control Design Requirements
	Environmental Control Requirements
	Storm Water Management Requirements
Steel Door Institute (SDI)	
ANSI A250.8/SDI 100	Standard Steel Doors and Frames
Steel Deck Institute	
	SDI Diaphragm Design Manual
Steel Joist Institute	
	Catalog of Standard Specifications and Load Tables for Steel Joists and

	Joist Girders
Underwriters Laboratories (UL)	
UL 96A	Installation Requirements for Lightning Protection Systems
UL 300	Standard for Safety for Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas
UNITED STATES ACCESS BOARD: U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD	
ADA and ABA Accessibility Guidelines for Buildings and Facilities	ABA Accessibility Standard for DoD Facilities Derived from the ADA and ABA Accessibility Guidelines: Specifically includes: ABA Chapters 1 and 2 and Chapters 3 through 10. Use this reference in lieu of IBC Chapter 11. Excluded are: (a) Facilities, or portions of facilities, on a military installation that are designed and constructed for use exclusively by able-bodied military personnel (See Paragraph 3 for any reference to this exclusion). (b) Reserve and National Guard facilities, or portions of such facilities, owned by or under the control of the Department of Defense, that are designed and constructed for use exclusively by able-bodied military personnel. (See paragraph 3 for any reference to this exclusion).
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES	
	FDA National Food Code
U.S. GREEN BUILDING COUNCIL (USGBC)	
LEED-NC	Green Building Rating System for New Construction & Major Renovations
	Application Guide for Multiple Buildings and On-Campus Building Projects

4.2. MILITARY CRITERIA

The project shall conform to the following criteria. Certain design impacts and features due to these criteria are noted for the benefit of the offeror. However, all requirements of the referenced criteria will be applicable, whether noted or not, unless otherwise specified herein.

4.2.1. Energy Policy Act of 2005 (Public Law 109-58) (applies only to the extent specifically implemented in the contract, which may or may not directly cite or reference EPACT)

4.2.2. Energy Independence and Security Act of 2007- “EISA” (applies only to the extent specifically implemented in the contract)

4.2.3. Executive Order 12770: Metric Usage In Federal Government

(a) Metric design and construction is required except when it increases construction cost. Offeror to determine most cost efficient system of measurement to be used for the project.

4.2.4. TB MED 530: Occupational and Environmental Health Food Sanitation

4.2.5. Unified Facilities Criteria (UFC) 3-410-01FA: Heating, Ventilating, and Air Conditioning - applicable only to the extent specified in paragraph 5, herein.

4.2.6. UFC 3-101-0 Architectural Design, (Applies only to the extent specifically implemented herein).

4.2.7. UFC 3-210-10, Low Impact Development, applicable only to the extent specified herein.

4.2.8. UFC 3-600-01 Design: Fire Protection Engineering for Facilities. Use the latest edition of the IBC in coordination with this UFC. Use Chapters 3, 6, 7, 33 and UFC 3-600-01. If any conflict occurs between these Chapters and UFC 3-600-01, the requirements of UFC 3-600-01 take precedence. Use UFC 3-600-01 in lieu of IBC Chapters 4, 8,9,10.

4.2.9. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings

4.2.10. UFC 4-023-03 Design of Buildings to Resist Progressive Collapse (Use most recent version, regardless of references thereto in other publications)

(a) Note the option to use tie force method or alternate path design for Occupancy Category II.

4.2.11. UFC 4-021-01 Design and O&M: Mass Notification Systems

4.2.12. UFC 3-420-01, Plumbing Systems, (Applicable only to the extent specifically implemented herein).

4.2.13. Technical Criteria for Installation Information Infrastructure Architecture (I3A)

(a) Email: DetrickISECI3Aguide@conus.army.mil

4.2.14. U.S. Army Information Systems Engineering Command (USAISEC) SECRET Internet Protocol (IP) Router Network (SIPRNET) Technical Implementation Criteria (STIC).. See Paragraph 3 for applicability to specific facility type. May not apply to every facility. This is mandatory criteria for those facilities with SIPRNET.

4.2.14.1. Draft Guide Specification for Section 27 05 28 PROTECTIVE DISTRIBUTION SYSTEM (PDS) FOR SIPRNET COMMUNICATIONS SYSTEMS, found at http://mrsi.usace.army.mil/rfp/Shared%20Documents/SECTION_270528-v3.pdf

5.0 GENERAL TECHNICAL REQUIREMENTS

This paragraph contains technical requirements with general applicability to Army facilities. See also Paragraph 3 for facility type-specific operational, functional and technical requirements. Residential or similar grade finishes and materials are not acceptable for inclusion in these buildings, unless otherwise specifically allowed. References to ASHRAE Standard 189.1 are to ASHRAE Standard 189.1-2009 unless otherwise specified in this Paragraph.

5.1. SITE PLANNING AND DESIGN

5.1.1. STANDARDS AND CODES: The site planning and design shall conform to APPLICABLE CRITERIA and to paragraph 6, PROJECT SPECIFIC REQUIREMENTS.

5.1.2. SITE SELECTION: Meet the allowable site requirements of ASHRAE Standard 189.1, Section 5.3, Manadatory Provisions, and either Section 5.4, Prescriptive Option, or Section 5.5, Performance Option; and ASHRAE Standard 189.1, Section 10.3.2.1.1, unless otherwise specified by the current Department of Defense Minimum Antiterrorism Standards for Buildings, UFC 4-010-01.

5.1.3. SITE PLANNING OBJECTIVES: Group buildings in configurations that create a sense of community and promote pedestrian use. See Paragraph 3 for additional site planning requirements relating to building functions.

5.1.3.1. Enclosures and Visual Screens: Provide enclosures and or visual screening devices for Outdoor Utility such as dumpsters, emergency generators, transformers, heating, ventilation, and air conditioning units from streetscape and courtyard views to limit visual impact. Enclosures shall be compatible with the building they serve and accessible by vehicle. The location of dumpsters can have a significant visual impact and should be addressed as part of an overall building design and incorporated in site planning.

5.1.3.2. Dumpster Pads: Where included in the project, dumpster pads shall be concrete (minimum of 8 inches thick on 4 inch base course, unless site conditions dictate more conservative requirements) and directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles. Provide space at dumpster areas for recycling receptacles. Coordinate with Installation on recycling receptacle types, sizes and access requirements and provide space at dumpster areas to accommodate them.

5.1.3.3. Vehicular Circulation: Apply design vehicle templates provided by the American Association of State Highway and Transportation Officials (AASHTO) to the site design. The passenger car class includes passenger cars and light trucks, such as vans and pick-ups. The passenger car template is equivalent to the non-organizational – privately owned vehicle (POV). The truck class template includes single-unit trucks, recreation vehicles, buses, truck tractor-semi-trailer combinations, and trucks or truck tractors with semi-trailers in combination with full trailers. Provide vehicle clearances required to meet traffic safety for emergency vehicles, service vehicles, and moving vans. Provide required traffic control signage Site entrances and site drive aisles shall maximize spacing between drives, incorporate right-angle turns, and limit points of conflict between traffic. Design Services Drives to restrict access to unauthorized vehicles by removable bollards, gates, or other barriers to meet Anti-Terrorism/Force Protection (ATFP) requirements. Orient service drives to building entrances other than the primary pedestrian entry at the front of the building.

5.1.3.4. Emergency Vehicle Access: Provide Emergency Vehicle Access around the facility and shall be in accordance with AT/FP requirements. Maintain a 33-foot clear zone buffer for emergency vehicles, designed to prevent other vehicles from entering the AT/FP standoff to the building.

5.1.3.5. Stormwater Management and Low Impact Design: Employ design and construction strategies (Best Management Practices, or BMPs) that reduce stormwater runoff, reduce discharges of polluted

water offsite and maintain or restore predevelopment hydrology with respect to temperature, rate, volume, quality and duration of flow. See "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act (EISA)" (http://www.epa.gov/owow/NPS/lid/section438/pdf/final_sec438_eisa.pdf) and Paragraph 6, PROJECT SPECIFIC requirements for additional information. BMPs used to treat runoff must be capable of removing 80% of the average annual postdevelopment total suspended solids (TSS) load based on existing monitoring reports. BMPs are considered to meet these criteria if:

(a) They are designed in accordance with standards and specifications from a state or local program that has adopted these performance standardsOR

(b) There exists infield performance monitoring data demonstrating compliance with the criteria. Data must conform to accepted protocol (e.g., Technology Acceptance Reciprocity Partnership [TARP], Washington State Department of Ecology) for BMP monitoring.

(c) In addition, meet the requirements of ASHRAE Standard 189.1, Section 5.3, and either Section 5.4, Prescriptive Option or Section 5.5 Performance Option for Site Development and UFC 3-210-10. If any of the requirements in this subsection are prohibited by state law, state law shall take precedence but only as to those requirements found to be in conflict.

5.1.3.6. Erosion and Sedimentation Control: Meet the requirements of ASHRAE Standard 189.1, Section 10.3.1.3.

5.1.4. EXTERIOR SIGNAGE: Provide exterior signage in accordance with Appendix H, Exterior Signage. Provide exterior NO SMOKING signage that conveys building and grounds smoking policy. Meet the requirements of ASHRAE Standard 189.1, Section 8.3.1.4 (a).

5.1.5. EXISTING UTILITIES: Base utilities maps and capacities for this site are included as part of this RFP. See paragraph 6 for more detailed information.

5.2. SITE ENGINEERING

5.2.1. STANDARDS AND CODES: The site engineering shall conform to APPLICABLE CRITERIA.

5.2.2. SOILS:

5.2.2.1. Subsurface Conditions Report: A report has been prepared to characterize the subsurface conditions at the project site and is appended to these specifications. The report provides a general overview of the soil and geologic conditions with detailed descriptions at discrete boring locations. The Contractor's team shall include a licensed geotechnical engineer to interpret the report and develop earthwork and foundation recommendations and design parameters in which to base the contractor's design. If any additional subsurface investigation or laboratory analysis is required to better characterize the site or develop the final design, the Contractor shall perform it under the direction of a licensed geotechnical engineer. There will be no separate payment for the cost of additional tests. If differences between the Contractor's additional subsurface investigation and the government provided soils report or the reasonably expected conditions require material revisions in the design, an equitable adjustment may be made, in accordance with the provisions of the Differing Site Conditions clause. The basis for the adjustment would be the design and construction appropriate for the conditions described in the Government furnished report or the reasonably expected conditions, in comparison with any changes required by material differences in the actual conditions encountered, in accordance with the terms of contract clause Differing Site Conditions.

5.2.2.2. Geotechnical Evaluation Report: The contractor's licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal, as described in Section 01 33 16, *Design After Award*.

5.2.3. VEHICLE PAVEMENTS: (as applicable to the project)

5.2.3.1. Pavement Requirements: Except in Department of Energy (DOE) Climate Zones 6, 7, and 8, meet ASHRAE Standard 189.1, Section 5.3.2.1. If the project is located in DOE Climate Zones 6, 7, or 8, design procedures and materials shall conform to one of the following: 1) the USACE Pavement Transportation Computer Assisted Structural Engineering (PCASE) program, 2) American Association of State Highway and Transportation Officials (AASHTO) or, 3) the applicable state Department of Transportation standards in which the project is located. See Paragraph 5.2.2.2 and Section 01 33 16 for required information for the Contractor's geotechnical evaluation report. The minimum flexible pavement section shall consist of 2 inches of asphalt and 6 inches of base or as required by the pavement design, whichever is greater, unless specifically identified by the Government to be a gravel road. Design roads and parking areas for a life expectance of 25 years with normal maintenance. Parking area for tactical vehicles (as applicable to the project) shall be Portland Cement Concrete (PCC) rigid pavement design. For concrete pavements, submit joint layout plan for review and concurrence. Design pavements for military tracked vehicles (as applicable to the project) IAW USACE PCASE. Traffic estimates for each roadway area will be as shown on the drawings or listed in Section 01 10 00 Paragraph 6.4.4. Pavement markings and traffic signage in all DOE Climate Zones shall comply with the Installation requirements and with the Manual on Uniform Traffic Control Devices. Develop a Transportation Management Plan that meets the requirements of ASHRAE Standard 189.1, Section 10.3.2.4.1.

5.2.3.2. Parking Requirements. This subsection is applicable only to parking lots/areas that permit POV parking:

(a) General Parking Requirements:

(1) Design POV parking spaces for the type of vehicles anticipated, but shall be a minimum of 9 ft by 18 ft for POVs, except for two wheel vehicles.

(2) Handicap POV parking. All handicap POV parking lots (where applicable in the facility specific requirements) shall meet the ADA and ABA Accessibility Guidelines for accessible parking spaces.

(3) All handicap POV parking lots (where applicable in the facility specific requirements) shall meet the ADA and ABA Accessibility Guidelines for accessible parking spaces. Design POV parking spaces for the type of vehicles anticipated, but shall be a minimum of 9 ft by 18 ft for POVs, except for two wheel vehicles.

(b) Preferred Parking:

(c) Low-Emitting and Fuel Efficient Vehicles:

5.2.3.3. Sidewalks: Design the network of walks throughout the complex (where applicable) to facilitate pedestrian traffic among facilities, and minimize the need to use vehicles. Incorporate sidewalks to enhance the appearance of the site development, while creating a sense of entry at the primary patron entrances to the buildings. Minimum sidewalk requirements are in Paragraph 3, where applicable and/or paragraph 6 and/or site plans, where applicable. In addition, meet the requirements of ASHRAE Standard 189.1, Section 5.3.2.1.

5.2.4. CATHODIC PROTECTION: Provide cathodic protection systems for all underground metallic systems and metallic fittings/portions of non-metallic, underground systems, both inside and outside the building 5 foot line that are subject to corrosion. Coordinate final solutions with the installation to insure an approach that is consistent with installation cathodic protection programs.

5.2.5. UTILITIES: See Paragraph 6.4.6 for specific information on ownership of utilities and Paragraph 5.9.3.5 below for utility metering requirements.

5.2.6. PERMITS: The CONTRACTOR shall be responsible for obtaining all permits (local, state and federal) required for design and construction of all site features and utilities.

5.2.7. IRRIGATION: Landscape and irrigation systems, if provided, shall comply with ASHRAE Standard 189.1, Section 6.3, Mandatory Provisions, and either Section 6.4, Prescriptive Option, or Section 6.5, Performance Option. In addition, meet the requirements of ASHRAE Standard 189.1, Standard 10.3.2.

5.2.8. EPA WATERSENSE PRODUCTS AND CONTRACTORS: Except where precluded in this Paragraph or by other project requirements, use EPA WaterSense labeled products and irrigation contractors that are certified through a WaterSense labeled program where available.

5.3. COMMISSIONING: Execute total building commissioning practices in order to verify performance of building components and systems and ensure that Owner Project Requirements (OPR) are met. Adopt and follow the requirements of ASHRAE Standard 189.1 Section 10.3.1.2, ASHRAE Guideline 0, ASHRAE Guideline 1.1, LEED Energy and Atmosphere (EA) Prerequisite 1 and LEED EA Credit 3. Do not use the sampling techniques discussed in ASHRAE Guideline 1.1 and in ASHRAE Guideline 0. Commission 100% of the HVAC controls and equipment. Commissioning activities shall be consistent with the Pre-Design Phase, Design Phase, Construction Phase and Occupancy and Operations Phase. Perform and document a post occupancy system monitoring and inspection to review building operation within 12 months after beneficial occupancy. Post occupancy system monitoring and inspection results will be used to verify compliance with the Owner's Project Requirements (OPR), to revise and update the Systems Manual and for completion of the Final Commissioning Report.

5.3.1. The Government in its capacity as the Commissioning Authority (CxA), shall oversee the execution of commissioning process activities to assure the owner's project requirement are met by validating performance of building components and systems. The Government, will provide the Commissioning Contractor (CxC). The CxC roles and responsibilities are outlined in the commissioning plan. The Design-Build Contractor shall provide for commissioning support in the execution of building commissioning as outlined in the D-B Contractor's commissioning support obligations. Refer to attached commissioning plan, OPR and D-B Contractor's commissioning support obligations for complete description of D-B Contractor's commissioning requirements. The Contracting Officer's Representative will act as the Owner's representative in performance of duties spelled out under OWNER in Annex F of ASHRAE Guideline 0. All buildings with Minimum LEED Silver requirement will earn LEED Credit EA3 Enhanced Commissioning.

5.3.2. Plan Development: Meet the requirements for the development of the Maintenance Plan and Service Life Plan in ASHRAE Standard 189.1, Section 10.3.2.

5.4. ARCHITECTURE AND INTERIOR DESIGN.

5.4.1. STANDARDS AND CODES: The architecture and interior design shall conform to APPLICABLE CRITERIA.

5.4.2. GENERAL: Overall architectural goal is to provide a functional, quality, meet expected usable life standards, and visually appealing facility that is a source of pride for the installation and delivered within the available budget and schedule.

5.4.3. MATERIALS AND RESOURCES: Meet ASHRAE Standard 189.1, Section 9.3, Mandatory Provisions, and either Section 9.4, Prescriptive Option, or Section 9.5, Performance Option.

5.4.3.1. Construction and Demolition (C&D) Waste Management: Meet the requirements of ASHRAE Standard 189.1, Section 9.3.1. A waste management plan and waste diversion reports are required, as detailed in Section 01 57 20.00 10, ENVIRONMENTAL PROTECTION.

5.4.4. COMPUTATION OF AREAS: See APPENDIX Q of this RFP for how to compute gross and net areas of the facility(ies).

5.4.5. BUILDING EXTERIOR: Design buildings to enhance or compliment the visual environment of the Installation and reflect a human scale to the facility. Building entrance should be architecturally defined and easily seen. Exterior materials, roof forms, and detailing shall be compatible with the surrounding development and adjacent buildings on the Installation and follow locally established architectural themes. Use durable materials that are easy to maintain. Exterior materials colors shall conform to the Installation requirements and if brick or stone, have color that is throughout the material. See Paragraph 6 for project specific requirements.

5.4.5.1. Building Numbers: Permanently attach exterior signage on two faces of each building indicating the assigned building number or address. Building number signage details and locations shall conform to Appendix H, Exterior Signage of this RFP.

5.4.5.2. Roofs and Exterior Walls: Meet the requirements of ASHRAE Standard 189.1, Section 5.3, Mandatory Provisions, and Section 5.4, Prescriptive Option, or Section 5.5, Performance Option. In addition, if a green roof is considered for this project, meet the requirements of ASHRAE Standard 6.2, Mandatory Provisions, and Section 6.3, Prescriptive Option, or Section 6.4, Performance Option.

5.4.6. BUILDING INTERIOR

5.4.6.1. Daylighting and Low Emitting Materials: Meet the requirements of ASHRAE Standard 189.1, Section 8.3, Mandatory Provisions, and either Section 8.4, Prescriptive Option, or 8.5, Performance Option. In addition, meet the daylighting requirements of ASHRAE Standard 189.1, Section 7.3, Mandatory Provisions, and either Section 7.4, Prescriptive Option, or Section 7.5, Prescriptive Option.

5.4.6.2. Surfaces and Color:

(a) Surfaces: Appearance retention is the top priority for building and furniture related finishes. Provide low maintenance, easily cleaned room finishes that are commercially standard for the facility occupancy specified, unless noted otherwise. In daylit zones, meet the requirements of ASHRAE Standard 189.1 section 8.4.1.

(b) Color: The color, texture and pattern selections for the finishes of the building shall provide an aesthetically pleasing, comfortable, easily maintainable and functional environment for the occupants. Coordinate the building colors and finishes for a cohesive design. Select colors appropriate for the building type. Use color, texture and pattern to path or way find through the building. Trendy colors that will become dated shall be limited to non-permanent finishes such as carpet and paint. Select finishes with regards to aesthetics, maintenance, durability, life safety and image. Limit the number of similar colors for each material. Use medium range colors for ceramic and porcelain tile grout help hide soiling. Plastic laminate and solid surface materials shall have patterns that are mottled, flecked or speckled. Coordinate finish colors of fire extinguisher cabinets, receptacle bodies and plates, fire alarms / warning lights, emergency lighting, and other miscellaneous items with the building interior. Match color of equipment items on ceilings (speakers, smoke detectors, grills, etc.) to the ceiling color.

5.4.6.3. Builidng Entrance: Meet the requirements of ASHRAE Standard189.1, Section 8.3.1.5.

5.4.6.4. Signage: Provide interior signage for overall way finding and life safety requirements. A comprehensive interior plan shall be from one manufacturer. Include the following sign types: (1) Lobby Directory, (2) Directional Signs; (3) Room Identification Signs; (4) Building Service Signs; (5) Regulatory Signs; (6) Official and Unofficial Signs (7) Visual Communication Boards (8) NO SMOKING signage that conveys building smoking policy. Use of emblems or logos may also be incorporated into the signage plan.

5.4.7. COMPREHENSIVE INTERIOR DESIGN

5.4.7.1. SID and FF&E: Comprehensive Interior Design includes the integration of a Structural Interior Design (SID) and a Furniture, Fixtures and Equipment (FF&E) design and package. SID requires the

design, selection and coordination of interior finish materials that are integral to or attached to the building structure. Completion of a SID involves the selection and specification of applied finishes for the building's interior features including, but not limited to, walls, floors, ceilings, trims, doors, windows, window treatments, built-in furnishings and installed equipment, lighting, and signage. The SID package includes finish schedules, finish samples and any supporting interior elevations, details or plans necessary to communicate the building finish design and build out. The SID also provides basic space planning for the anticipated FF&E requirements in conjunction with the functional layout of the building and design issues such as life safety, privacy, acoustics, lighting, ventilation, and accessibility. See Section 01 33 16 for SID design procedures.

5.4.7.2. FF&E Package: The FF&E design and package includes the design, selection, color coordination and of the required furnishing items necessary to meet the functional, operational, sustainability, and aesthetic needs of the facility coordinated with the interior finish materials in the SID. The FF&E package includes the specification, procurement documentation, placement plans, ordering and finish information on all freestanding furnishings and accessories, and a cost estimate. Coordinate the selection of furniture style, function and configuration with the defined requirements. Examples of FF&E items include, but are not limited to workstations, seating, files, tables, beds, wardrobes, draperies and accessories as well as marker boards, tack boards, and presentation screens. Criteria for furniture selection include function and ergonomics, maintenance, durability, sustainability, comfort and cost.

5.5. STRUCTURAL DESIGN

5.5.1. STANDARDS AND CODES: The structural design shall conform to APPLICABLE CRITERIA.

5.5.2. GENERAL: The structural system must be compatible with the intended functions and components that allows for future flexibility and reconfigurations of the interior space. Do not locate columns, for instance, in rooms requiring visibility, circulation or open space, including, but not limited to entries, hallways, common areas, classrooms, etc. Select an economical structural system based upon facility size, projected load requirements and local availability of materials and labor. Base the structural design on accurate, site specific geotechnical information and anticipated loads for the building types and geographical location. Consider climate conditions, high humidity, industrial atmosphere, saltwater exposure, or other adverse conditions when selecting the type of cement and admixtures used in concrete, the concrete cover on reinforcing steel, the coatings on structural members, expansion joints, the level of corrosion protection, and the structural systems. Analyze, design and detail each building as a complete structural system. Design structural elements to preclude damage to finishes, partitions and other frangible, non-structural elements to prevent impaired operability of moveable components; and to prevent cladding leakage and roof ponding. Limit deflections of structural members to the allowable of the applicable material standard, e.g., ACI, AISC, Brick Industry Association, etc. When modular units or other pre-fabricated construction is used or combined with stick-built construction, fully coordinate and integrate the overall structural design between the two different or interfacing construction types. If the state that the project is located in requires separate, specific licensing for structural engineers (for instance, such as in Florida, California and others), then the structural engineer designer of record must be registered in that state.

5.5.3. LOADS: See Paragraph 3 for facility specific (if applicable) and Paragraph 6 for site and project specific structural loading criteria. Unless otherwise specified in paragraph 6, use Exposure Category C for wind. If not specified, use Category C unless the Designer of Record can satisfactorily justify another Exposure Category in its design analysis based on the facility Master Plan. Submit such exceptions for approval as early as possible and prior to the Interim Design Submittal in Section "Design After Award". Design the ancillary building items, e.g. doors, window jambs and connections, overhead architectural features, systems and equipment bracing, ducting, piping, etc. for gravity, seismic, lateral loads and for the requirements of UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings. Ensure and document that the design of glazed items includes, but is not limited to, the following items under the design loads prescribed in UFC 4-010-01:

(a) Supporting members of glazed elements, e.g. window jamb, sill, header

(b) Connections of glazed element to supporting members, e.g. window to header

(c) Connections of supporting members to each other, e.g. header to jamb

(d) Connections of supporting members to structural system, e.g. jamb to foundation.

5.5.4. TERMITE TREATMENT AND GREEN CLEANING: (Except Alaska) Provide termite prevention treatment in accordance with Installation and local building code requirements, using licensed chemicals and licensed applicator firm. In all States, meet the requirements of ASHRAE Standard 189.1, Section 10.3.2, regarding the building Green Cleaning Plan.

5.6. THERMAL PERFORMANCE

5.6.1. STANDARDS AND CODES: Building construction and thermal insulation for mechanical systems shall conform to APPLICABLE CRITERIA.

5.6.2. BUILDING ENVELOPE SEALING PERFORMANCE REQUIREMENT: Design and construct the building envelope for office buildings, office portions of mixed office and open space (e.g., company operations facilities), dining, barracks and instructional/training facilities with a continuous air barrier to control air leakage into, or out of, the conditioned space that shall meet the requirements of ASHRAE Standard 189.1, Section 7.3, Mandatory Provisions, and either Section 7.4, Prescriptive Option, or 7.5, Performance Option. In addition, meet the requirements of ASHRAE Standard 189.1, Sections 10.3.1.4, 10.3.1.5, 10.3.1.6, and 10.3.2 as well as UFC 3-101-0, Section 3-6. Clearly identify all air barrier components of each envelope assembly on construction documents and detail the joints, interconnections and penetrations of the air barrier components. Clearly identify the boundary limits of the building air barriers, and of the zone or zones to be tested for building air tightness on the drawings. The use of painted interior walls is not an acceptable air barrier method.

5.6.2.1. Air Barrier: The air barrier must be durable to last the anticipated service life of the assembly. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers at elevator shafts. Coordinate the motorized elevator hoistway vent damper(s) with the Fire Protection System design in Paragraph 5.10. Ensure that the damper(s) is accessible to facilitate regular inspection and maintenance.

5.6.2.2. Thermal Bridge. A Thermal Bridge (or cold bridge) occurs when a thermally conductive material (such as a metal stud, steel frame or concrete beam, slab or column) penetrates or bypasses the exterior insulation system. Design the building envelope to align all insulating elements, ie, the continuous wall insulation, insulated glazing, insulated doors from top of footing to bottom of roof deck. Wrap insulation around roof overhangs. Disconnect window and door sills from interior construction. Utilize thermally broken window and door frames. Provide details to eliminate thermal bridges particularly at floor slabs, roof/wall intersections, steel lintels and relief angles, metal through-wall flashings and at building corners.

5.6.2.3. Damper and Control: Close all ventilation or make-up air intakes and exhausts, , etc., when leakage can occur during inactive periods. Atrium smoke exhaust and intakes shall only open when activated per IBC and other applicable Fire Code requirements.

5.6.2.4. Garages: Compartmentalize garages under buildings by providing air-tight vestibules at building access points.

5.6.2.5. Spaces Under Negative Pressure: Compartmentalize spaces under negative pressure such as boiler rooms and provide make-up air for combustion.

5.6.2.6. TESTING, ADJUSTING AND BALANCING: Test and balance air and hydronic systems, using a firm certified for testing and balancing by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing Adjusting, and Balancing Bureau (TABB). The prime contractor shall hire the TAB firm directly, not through a subcontractor. Perform TAB in accordance

with the requirements of the standard under which the TAB Firm's qualifications are approved, i.e., AABC MN-1, NEBB TABES, or SMACNA HVACTAB unless otherwise specified herein. All recommendations and suggested practices contained in the TAB Standard shall be considered mandatory. Use the provisions of the TAB Standard, including checklists, report forms, etc., as nearly as practicable to satisfy the Contract requirements. Use the TAB Standard for all aspects of TAB, including qualifications for the TAB Firm and Specialist and calibration of TAB instruments. Where the instrument manufacturer calibration recommendations are more stringent than those listed in the TAB Standard, adhere to the manufacturer's recommendations. All quality assurance provisions of the TAB Standard such as performance guarantees shall be part of this contract. For systems or system components not covered in the TAB Standard, the TAB Specialist shall develop TAB procedures. Where new procedures, requirements, etc., applicable to the Contract requirements have been published or adopted by the body responsible for the TAB Standard used (AABC, NEBB, or TABB), the requirements and recommendations contained in these procedures and requirements are mandatory.

5.6.2.7. Performance Criteria and Substantiation: Test the completed building for air tightness in accordance with UFC 3-101-0, Section 3-6.3. Submit the qualifications and experience of the testing entity for approval. Demonstrate performance of the continuous air barrier for the opaque building envelope by the following tests:

(a) Air Barrier Quality Control Plan: Develop an Air Barrier Quality Control plan to assure that a competent air barrier inspector/specialist inspects the critical components prior to them being concealed. At a minimum, three onsite inspections are required during construction to assure the completeness of the construction and design.

(b) Notification of Testing: Notify the Government at least three working days prior to the tests to provide the Government the opportunity to witness the tests. Provide the Government written test results confirming the results of all tests.

5.7. PLUMBING AND WATER CONSUMING EQUIPMENT

5.7.1. STANDARDS AND CODES: The plumbing system and water consuming equipment shall conform to APPLICABLE CRITERIA and ASHRAE Standard 189.1, Section 6.3, Mandatory Provisions, and either Section 6.4, Prescriptive Option, or Section 6.5, Performance Option. In addition, meet the requirements of ASHRAE Standard 189.1, Section 10.3.2.

5.7.2. PRECAUTIONS FOR EXPANSIVE SOILS: Where expansive soils are present, include design features for underslab piping systems and underground piping serving chillers, cooling towers, etc, to control forces resulting from soil heave. Some possible solutions include, but are not necessarily limited to, features such as flexible expansion joints, slip joints, horizontal offsets with ball joints, or multiple bell and spigot gasketed fittings. For structurally supported slabs, suspend piping from the structure with adequate space provided below the pipe for the anticipated soil movement.

5.7.3. HOT WATER SYSTEMS: For hot water heating and supply systems, meet the requirements in UFC 3-420-01 and amendments, and the service water heating requirements of ASHRAE 189.1, Section 7.4.4.

5.7.4. SIZING HOT WATER SYSTEMS: Unless otherwise specified or directed in Paragraph 3, design in accordance with ASHRAE Handbook HVAC Applications, Chapter 49, “Service Water Heating,” UFC 3-420-01 and amendments, and ASHRAE 189.1, Section 7.4.3. Size and place equipment so that it is easily accessible and removable for repair or replacement.

5.7.5. JANITOR CLOSETS: In janitor spaces/room/closets, provide at minimum, a service sink with heavy duty shelf and wall hung mop and broom rack(s).

5.7.6. FLOOR DRAINS: As a minimum, provide floor drains in mechanical rooms and areas, janitor spaces/rooms/closets and any other area that requires drainage from fixtures or equipment, drain downs, condensate, as necessary.

5.7.7. WATER EFFICIENT PLUMBING FIXTURES: Indoor plumbing fixture equipment shall comply with the following criteria: ASHRAE 189.1, Section 6.3, Mandatory Provisions, and either Section 6.4, Prescriptive Option, or Section 6.5, Performance Option.

5.7.7.1. Water Closets (Toilets): ASHRAE 189.1, Sections 6.3.2.1.a and b. requirements for water closets (toilets) shall be as follows: Flushometer valve type: For single flush, maximum flush volume shall be determined in accordance with ASME A112.19.2/CSA B45.1 and shall be 1.28 gal (4.8 L). For dual-flush, the effective flush volume shall be determined in accordance with ASME A112.19.14 and shall be 1.28 gal (4.8 L). Water closets (toilets)—tank-type: Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification and shall have a maximum flush volume of 1.28 gal (4.8 L).

5.7.7.2. URINALS: As required by ASHRAE 189.1, Section 6.3.2.1.c, maximum flush volume when determined in accordance with ASME A112.19.2/CSA B45.1 shall be 0.5 gal (1.9 L). Non-water urinals shall comply with ASME A112.19.19 (vitreous china) or IAPMO Z124.9 (plastic) as appropriate.

5.7.7.3. PUBLIC LAVATORY FAUCETS: Lavatory faucets in a public setting shall have a maximum flow rate of 0.5 gallons per minute and be in accordance with ASME A112.18.1/CSA B125.1.

5.7.7.4. PUBLIC METERING SELF-CLOSING FAUCETS: Faucets in a public setting that supply a specific amount of water over a given period shall have a maximum water use of 0.25 gallons per cycle and be in accordance with ASME A112.18.1/CSA B125.1.

5.7.7.5. PRIVATE LAVATORY FAUCETS: Faucets in a private setting such as barracks, family housing, or hospitals shall have a maximum flow rate of 1.5 gallons per minute and be in accordance with ASME A112.18.1/CSA B125.1 and shall comply with the performance requirements of the US EPA WaterSense High-Efficiency Lavatory Faucet Specification.

5.7.7.6. KITCHEN FAUCETS: Kitchen faucets shall have a maximum flow rate of 2.2 gallons per minute and be in accordance with ASME A112.18.1/CSA B125.1.

5.7.7.7. Cooling Towers: In addition to the requirements of Subsection 5.7.1. above, conduct a one-time potable water analysis, measuring at least the following control parameters, in ppm or mg/l: calcium (Ca); total alkalinity; silica (Si); chloride (Cl); and conductivity . Calculate the number of cooling tower cycles by dividing the amount of each parameter in the condenser water by the amount in the potable makeup water. The maximum acceptable levels of the parameters in the condenser water are: Ca (as $CaCO_3$) and Total alkalinity – 1000 ppm; SiO_2 –100 ppm; Cl – 250 ppm; Conductivity – 3500 µS/ml. Limit cooling tower cycles to avoid exceeding maximum values for any of these parameters. AND Complete the following: A system to monitor and control microbiological growth is recommended; Meter the potable makeup water to the cooling tower and blowdown from the cooling; Blowdown must be controlled with a conductivity meter; Report monthly results of the amount of potable water used, microbiological levels, blowdown, and corrosion; On cooling towers, install drift eliminators that achieve minimum efficiencies of 0.2% for counter-flow systems or 0.5% for cross-flow systems.

5.7.7.8. Drainage Systems: Do not use engineered vent or Sovent® type drainage systems.

5.7.7.9. Pipe Location and Insulation: Where the seasonal design temperature of the cold water entering a building is below the seasonal design dew point of the indoor ambient air insulate plumbing piping with a vapor barrier type of insulation to prevent condensation. Do not locate water or drainage piping over electrical wiring or equipment unless adequate protection against water (including condensation) damage

is provided. Insulation alone is not adequate protection against condensation. Meet pipe insulation requirements of ASHRAE 189.1, Section 7.4.3.11 and Table C-11 of Normative Appendix C.

5.7.7.10. Pipe Protection During Construction: Cover all drain, waste and vent piping to prevent mortar or other debris during such construction activities.

5.8. ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

5.8.1. STANDARDS AND CODES: The electrical systems for all facilities shall conform to APPLICABLE CRITERIA.

5.8.2. MATERIALS AND EQUIPMENT: Materials, equipment and devices shall, as a minimum, meet the requirements of Underwriters Laboratories (UL) where UL standards are established for those items. Wiring for branch circuits shall be copper. Motors larger than one-half horsepower shall be three phase. All electrical systems shall be pre-wired and fully operational unless otherwise indicated. Wall mounted electrical devices (power receptacles, communication outlets and CATV outlets) shall have matching colors, mounting heights and faceplates.

5.8.3. POWER SERVICE: Primary service from the base electrical distribution system to the pad-mounted transformer and secondary service from the transformer to the building service electrical equipment room shall be underground. See paragraph 6 for additional site electrical requirements.

5.8.3.1. Space Capacity: Provide 10% space for future circuit breakers in all panelboards serving residential areas of buildings and 15% spaces in all other panelboards.

5.8.4. TELECOMMUNICATION SERVICE: Connect the project's facilities to the Installation telecommunications (voice and data) system through the outside plant (OSP) telecommunications underground infrastructure cabling system per the I3A Criteria. Connect to the OSP cabling system from each facility main cross connect located in the telecommunications room.

5.8.5. LIGHTING: Comply with the recommendations of the Illumination Engineering Society (IES) and requirements of EPAct-2005 and Federal Energy Management Program (FEMP) for lighting products.

5.8.5.1. Interior Lighting:

(a) Reflective Surfaces: Coordinate daylighting requirements and interior architectural space surfaces and colors with the lighting systems to provide the most energy-efficient workable combinations.

(1) Fluorescent Lighting: Fluorescent lighting systems shall utilize NEMA premium electronic ballasts and high performance fluorescent lamps with a Correlated Color Temperature (CCT) of 4100 Kelvin (K) to 5000 K. Linear fluorescent and compact fluorescent lamps shall have a Color Rendering Index (CRI) of ≥ 82. All fluorescent lamps (compact and linear) shall be reclaimed through a process that captures and properly disposes of or recycles the mercury content. Do not use surface mounted luminaires on acoustical tile ceilings. Provide outside each building emergency egress door an un-switched emergency egress luminaire controlled by photocell or astronomical time clock. All other emergency egress luminaires shall be controlled the same as non-emergency luminaires in a shared space during normal (non-emergency) operation.

(2) Solid-State Lighting: Fixtures shall have a lumen maintenance life expectancy (L_{70}) of ≥ 36,000 hours, a CRI of ≥ 82, and a CCT of 4100 K to 5000 K. Each solid-state fixture model shall be tested in accordance with IES LM-79. Test reports shall verify the fixture performance (lumen output, lumen maintenance, power consumption, efficacy and color) meets or exceeds the fixture manufactures published data. Laboratory testing shall be completed by a National Voluntary Laboratory Accreditation Program laboratory. Provide a five year warranty for fixtures.

(3) Light Level Tuning: Light level tuning is a closed-loop feedback system that measures the illumination level in a space and dims the luminaires when the measured level exceeds the target level,

thereby saving the energy that otherwise would be used to compensate for future light depreciation. Provide a life-cycle cost-benefit analysis (LCCA) of light level tuning for all spaces where the general lighting luminaires are equipped with dimming ballasts or LED drivers. The LCCA shall follow the methodology contained in 10 CFR 436. Provide light level tuning where the LCCA shows it to be life cycle cost effective.

(4) Lighting Systems and Controls: Lighting systems (including lighting controls, daylighting controls, and lighting power density limits) shall comply with the requirements of Section 7.4.6 of ASHRAE Standard 189.1 and Section 9 of ANSI/ASHRAE/IES 90.1-2007. Lighting designs shall follow the recommended practices of the IES and shall target the recommended illumination levels of the IES.

(5) Occupancy or Vacancy Sensors: Use occupancy or vacancy sensors to automatically turn off lighting a specified time after all occupants leave the space. The off time shall be user adjustable to 5, 15, or 30 minutes. Selection of the sensor type (single or dual technology, wired or wireless) shall be based on the space configuration, user functionality and life-cycle cost-benefit analysis. Single technology solutions shall incorporate signal processing technology that distinguishes between background noise and actual motion without automatically changing their sensitivity.

(6) Automated Shading: Automated shading shall be considered in spaces utilizing daylight harvesting to maximize the energy savings of the daylighting system. The shades shall be controlled to reduce glare and unwanted heat gain while still allowing natural light to enter the space. When utilizing automated shading consider the following :

i. For ease of use and space aesthetics, incorporate the automated shades with the lighting control system.

ii. For maximum energy savings the automated shading system shall predictably position the shades based on a combination of time of day, façade direction, and sky conditions.

iii. For maximum design flexibility and ease of installation, shade system should have the capability to address and control each shade individually.

iv. The shading system shall have a manual override that allows the occupant to temporarily adjust the shades to any desired position. The system shall revert back to automatic control after a specified period of time.

(b) Provide a life-cycle cost-benefit analysis (LCCA) of automated shading for all spaces where daylight harvesting is provided. The LCCA shall follow the methodology contained in 10 CFR 436. Provide automated shading where the LCCA shows it to be economical.

(1) Scene-Based Dimming: Use scene based dimming in multiple-use areas including auditoriums, conference rooms and classrooms. Also provide scene based dimming in dining rooms and gymnasiums with multiple functions. One button preset touch recall shall allow multiple zones of light within a space to go to the appropriate light levels, known as a scene, for a specific task or use. Scene based control shall allow the integration of AV controls, shading/projection screens and lighting to work seamlessly with one button preset touch (i.e. lights dim, projection screen lowers, and shades go down).

(2) Personal Lighting Control: Personal lighting controls exceeding ASHRAE requirements shall be considered. Personal lighting controls allow users to vary the general light level based on the task at hand. Personal control can be achieved by wall mounted controls (hard wired or wireless), Infrared or Radio Frequency (RF) wireless devices, or via computer. Digital addressable ballasts and light emitting diode (LED) drivers allow the control flexibility of personal dimming of installed lighting on the occupant's work area (i.e. dim the luminaire over their cubicle to the appropriate light level).

(3) Wireless and Plug-and-Play Controls: Wireless and plug-and-play lighting controls shall be considered for all installations where flexibility is paramount. To avoid interference, wireless products shall communicate in an FCC frequency band that does not allow continuous transmissions.

(4) Testing Agent: An independent agent with no less than three years experience in testing of complex lighting control systems shall be hired to conduct and certify functional testing of lighting control devices and control systems. The testing agent shall not be directly involved in either the design or construction of the project and shall certify the installed lighting controls meet or exceed all requirements

of ASHRAE Standard 189.1, ANSI/ASHRAE/IES Standard 90.1-2007, and all documented performance criteria. The lighting control manufacturer's authorized technical representative may serve as the testing agent. Submit qualifications of the testing agent for approval.

(5) Manufacturer Support: shall include technical phone support located in the United States. The technical phone support shall be available 24 hours a day, 365 days a year.

5.8.5.2. Exterior Lighting Requirements: These requirements apply to exterior lighting illuminating any building, site, property, structure, gate, sign, roadway, parking lot, pathway, sidewalk, landscape, structure, etc. that is owned, operated by, or constructed to be leased to the Department of the Army. This includes all Sustainment, Restoration, and Modernization (SRM) and Military Construction activities within the United States, its territories, and overseas on permanent Active Army installations, Army Reserve Centers, Army National Guard Readiness Facilities, and Armed Forces Reserve Centers, regardless of funds source. See Paragraph 6.9 for site specific information, if any, on exterior lighting systems.

(a) General: Exterior lighting technology should be selected based on a balance of energy performance and quality of light, while remaining life-cycle cost effective and environmentally responsible. Exterior lighting systems or luminaires selected for use should have demonstrated adherence to quality standards by being recognized by the DesignLights Consortium (reference e), the ENERGY STAR Program, the FEMP or other third-party qualifier appropriate to the technology. Manufacturers should also stand behind their products by providing a Luminaire warranty for at least five years or more. Design teams should carefully consider the occupancy and purpose of the lighting requirements and incorporate energy-saving controls, sensors, and the use of bi-level fixtures to provide exterior lighting levels only as appropriate and only during the hours of night needed. Other energy-saving and lighting quality design considerations include ensuring better uniformity of lighting distribution to required levels to reduce over-lighted hotspots and control light trespass outside the area of intended coverage.

(b) Exterior Lighting Performance by Application: Exterior lighting systems should meet, at a minimum, the better of the standards below in Table 1 or the DLC Product Qualification Criteria (reference e) or current ENERGY STAR qualification or FEMP designation requirements.

(c) General Exterior Lighting: Typically lighting to provide visibility for security and people moving along established circulation pathways through an illuminated area to or from a destination. Examples include roadways, parking lots, parking structures, sidewalks, tarmacs, service areas, and secondary exits from buildings.

(d) Architectural Lighting: Lighting in use where exterior spaces are occupied at night for a functional purpose, such as plazas, gas stations, pavilions, or amphitheaters. Also, for use where a higher quality of light is desired, such as building entrances, wall-wash luminaires, illumination of architectural or landscaping features, sculpture, displays, exhibits, flags, gates, primary signage, etc.

(e) Exceptions: Where a non-white light color is specifically desired by aesthetic design or a color-specific functional requirement (e.g. water feature lighting, entertainment, signal lights, airfield lights, marine wildlife protection, etc.), the CRI and CCT range values indicated may not apply. Specialized lighting, such as lighting for monitoring systems designed to use non-visible spectrum light, are also exempt from the minimum CRI and CCT standards as well. Luminaires primarily powered by on-site renewable energy (e.g. solar and/or wind) are also exempt from the requirements herein.

Table 1 – Minimum Exterior Lighting Performance by Application. These values represent minimum standards and do not supersede higher standards that may also be applicable or specified by design.

Application	Luminaire Efficacy	CRI	Nominal CCT Ranges	Lamp Life
General Exterior Lighting	65	65	3000-5700	50,000

Architectural Lighting	50	75	3500-5000	50,000

Units:

Luminaire Efficacy (with complete fixture load including ballast/driver loads) is in lumens per watt
CRI (Color Rendering Index) is a value without units
CCT (Correlated Color Temperature) Range is in Kelvin Temperature
Minimum Lamp Life is in Rated Hours per TM-21

(f) Life-Cycle Cost Analysis (LCCA) and Renewable Energy Opportunities. On-site renewable or alternative energy power system cost over a 25-year life-cycle should be compared to the cost of the conventional grid-connection infrastructure, operation and maintenance costs thereof, proper time-of-use grid energy cost with line losses and price escalation. Renewable or alternative energy systems should be used wherever the payback period less than or equal to the life cycle period. Design team selections and Value Engineering evaluations are to prioritize a reduced total cost of ownership during the full life-cycle period over the first costs of design and construction. The LCCA shall follow the methodology contained in 10 CFR 436.

(g) Sustainability and Environmental Impact Reduction. To meet the mercury-use reduction intent of EISA 2007 (Reference c) and other sustainability goals, lighting systems should not contain added mercury in excess of 5mg per lamp or 80 picograms per Lumen Hour. Whenever two or more viable lighting technologies are substantially equal in life-cycle cost and performance, preference should be given to the technology with the lowest mercury content per Lumen Hour.

5.8.6. TELECOMMUNICATION SYSTEM: Building telecommunications cabling systems (BCS) and OSP telecommunications cabling system shall conform to APPLICABLE CRITERIA, including but not limited to I3A Technical Criteria. An acceptable BCS encompasses, but is not limited to, copper and fiber optic (FO) entrance cable, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, workstation outlets, racks, cable management, patch panels, cable tray, cable ladder, conduits, grounding, and labeling. Items included under OSP infrastructure encompass, but are not limited to, manhole and duct infrastructure, copper cable, fiber optic cable, cross connects, terminations, cable vaults, and copper and FO entrance cable.

5.8.6.1. Testing: Design, install, label and test all telecommunications systems in accordance with the I3A Criteria and ANSI/TIA/EIA 568, 569, and 606 standards. A Building Industry Consulting Services International (BICSI) Registered Communications Distribution Designer (RCDD) with at least 2 yrs related experience shall develop and stamp telecommunications design, and prepare the test plan. See Paragraph 5.9.2.5 for design of environmental systems for Telecommunications Rooms.

5.8.6.2. Installation: The installers assigned to the installation of the telecommunications system or any of its components shall be regularly and professionally engaged in the business of the application, installation and testing of the specified telecommunications systems and equipment. Key personnel; i.e., supervisors and lead installers assigned to the installation of this system or any of its components shall be BICSI Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification for each of the key personnel. In lieu of BICSI certification, supervisors and installers shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products.

5.8.6.3. End to End Test: Perform a comprehensive end to end test of all circuits to include all copper and fiber optic cables upon completion of the BCS and prior to acceptance of the facility. Provide adequate advanced notification to the COR to allow COR and Installation personnel attendance The BCS circuits include but are not limited to all copper and fiber optic(FO) entrance cables, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, and workstation outlets. Test in accordance with ANSI/EIA/TIA 568 standards. Use test instrumentation that meets or exceeds the

standard. Submit the official test report to include test procedures, parameters tested, values, discrepancies and corrective actions in electronic format. Test and accomplish all necessary corrective actions to ensure that the government receives a fully operational, standards based, code compliant telecommunications system.

5.8.7. LIGHTNING PROTECTION SYSTEM: Provide a lightning protection system where recommended by the Lightning Risk Assessment of NFPA 780, Annex L.

5.9. HEATING, VENTILATING, AND AIR CONDITIONING

5.9.1. STANDARDS AND CODES: The HVAC system shall conform to APPLICABLE CRITERIA.

5.9.2. DESIGN CONDITIONS:

5.9.2.1. Outdoor and Indoor Calculations and Requirements: Indoor design conditions and load calculations shall be in accordance with UFC 3-410-01FA. Outdoor air and exhaust ventilation requirements for indoor air quality shall be in accordance with ASHRAE 62.1-2007. Outdoor design conditions are in UFC 3-410-01FA except that weather data is specified in paragraph 6, rather than at the URL (web link) listed in the UFC.

5.9.2.2. Indoor Air Quality: Buildings indoor air quality sytems, thermal comfort, acoustical control, equipment, calculation procedures, construction and start-up shall comply with ASHRAE Standard 189.1, Section 8.3, Mandatory Provisions, and Section 8.4, Prescriptive Option, and either Section 8.5, Performance Option unless otherwise specified in this subsection.

5.9.2.3. Outdoor Air Delivery Monitoring: Spaces Ventilated by Mechanical Systems. Reference Sections 7.4.3.2, 8.3.1.2.1, and 10.3.2, of ASHRAE Standard 189.1. A densely occupied space is defined as those spaces with a design occupant density greater than or equal to 25 people per 1000 ft^2 ($100m^2$).

5.9.2.4. Environmental Tobacco Smoke: a. Smoking shall not be allowed inside the building. Signage stating such shall be posted within 10 ft (3 m) of each building entrance. b. Any exterior designated smoking areas shall be located a minimum of 50 ft (7.5 m) away from *building entrances*, *outdoor air* intakes, and operable windows. c. Section 6.2.9 of ANSI/ASHRAE Standard 62.1 shall not apply.

5.9.2.5. High Humidity Areas: Design HVAC systems in geographical areas meeting the definition for high humidity in UFC 3-410-01FA to comply with the special criteria therein for humid areas.

5.9.2.6. Controls Maintenance: Locate all equipment so that service, adjustment and replacement of controls or internal components are readily accessible for easy maintenance.

5.9.2.7. Environmental Requirements for Telecommunications Rooms and Telecommunications Equipment Rooms, (including SIPRNET ROOMS, where applicable for specific facility type): Comply with ANSI/EIA/TIA 569 (including applicable Addenda**)**. Maintain environmental conditions at the Class 1 and 2 Recommended Operating Environment. Before being introduced into the room, filter and pre-condition outside air to remove particles with the minimum MERV filtration quality shown in the ASHRAE HVAC Applications, Chapter 19. Maintain rooms under positive pressure relative to surrounding spaces. Design computer room air conditioning units specifically for telecommunications room applications. Build and test units in accordance with the requirements of ANSI/ASHRAE Standard 127. A complete air handling system shall provide ventilation, air filtration, cooling and dehumidification, humidification (as determined during the design phase), and heating. The system shall be independent of other facility HVAC systems and shall be required year round.

5.9.2.8. Fire dampers: dynamic type with a dynamic rating suitable for the maximum air velocity and pressure differential to which the damper is subjected. Test each fire damper with the air handling and distribution system running.

5.9.3 Utility Meters: Measurement devices with remote communication capability shall be provided to collect energy and water consumption data for each energy supply source and water supply source to each facility, including gas, water (potable, reclaimed and rainwater), electricity, and distributed energy that exceeds the thresholds listed in ASHRAE Standard 189.1. Meet the requirements of ASHRAE Standard 189.1, Sections 6.3.3, 7.3.3, 10.3.2 and AR 420-1, Chapter 22. For Government owned utilities, install meters with remote communication capability as well as have a continuous manual reading option. Water meters shall provide daily data and shall record hourly consumption. Gas and electric meters will also provide demand readings based on consumption over a maximum of any 15 minute period. Configure all meters to transmit to a meter data management system at least daily even if no receiver for the data is currently available at the time of project acceptance. For privatized utilities, coordinate with the privatization utility(ies) for the proper meter base and meter installation. Exception: Renovation or energy projects with programmed costs less than $200,000 shall incorporate lower-cost energy monitors when cost effective over the life-cycle of the building following the monitoring guidance as detailed in ASHRAE Standard 189.1 Section 7.3.3.

5.9.3.1 Data Storage and Retrieval. The meter data management system shall be capable of electronically storing water meter and sub-meter data and creating user reports showing calculated hourly, daily, monthly and annual water consumption for each meter and sub-meter and provide alarming notification capabilities as needed. In addition, verification of meter operation will be conducted at installation.

5.9.3.2 Evaporative Cooling Sub-metering: For buildings that use evaporative cooling, cooling tower(s), hot water makeup systems, or automatic landscape irrigation system(s), separate submeters shall be provided for each such application. Water use data shall be collected at each source (e.g. *potable water*, reclaimed water, rainwater) for any source that exceeds the thresholds of: Potable water- 3,800 L/day (1,000 gal/day); Municipally reclaimed water - 3,800 L/day (1,000 gal/day); and Alternate sources of water - 1,900 L/day (500 gal/day).

5.9.3.3 Water Sub-metering: Sub-metering shall also be provided to collect water use data for each of following building subsystems, if they are sized above the threshold levels: Cooling towers – Primary flow > 30 L/s (500 gpm); Evaportative Coolers – Makeup water > 0.04 L/s (0.6 gpm); Steam and hot water boilers - > 50 kW (500,000 Btu/h) input; Irrigated landscape area with controllers - > 2500 m2 (25,000 ft2); Any large water using process – Consumption > 3,800 L/day (1000 gal/day).

5.9.3.4 Outdoor Irrigation: Outdoor irrigation shall have smart controllers that will shut off when rainfall is sensed (ASHRAE Standard 189.1 paragraph 6.3.1.3 (2011 version)). Outdoor irrigation shall be used only to temporarily for plant establishment and shall be removed within a period not to exceed 18 months of installation.

5.9.3.5 Energy Metering: Meters with remote metering capability or automatic meter reading (AMR) capability shall be provided to collect energy use data for each supply energy source (e.g. gas, electricity, district steam) to the building that exceed thresholds of: Electrical service - > 200 kVA; On-site renewable electric power – All systems > 1 kVA (peak); Gas and steam service - >300 kW (1,000,000 Btu/h); Geothermal - >300 kW (1,000,000 Btu/h0 heating; Solar thermal - >10 kW (30,000 Btu/h). Utility company service entrance/interval meters are allowed to be used provided they are configured for automatic meter reading (AMR) capability. Sub-metering with remote metering capability shall be provided to collect energy use data for each subsystem component that meet the following thresholds: Chillers/heat pumps - >70 kW (240,000 Btu/h) cooling capacity; Packaged AC units - > 70 kW (240,000 Btu/h) cooling; Fans - > 15 kW (20 hp); Pumps - > 15 kW (20 hp); Cooling towers - > 15 kW (20 hp); Boilers and other heating equipment - >300 kW (1,000,000 Btu/h) input; General lighting circuits - > 100 kVA; Miscellaneous electric loads - > 100 kVA).

5.9.4 BUILDING AUTOMATION SYSTEM. Provide a Building Automation System consisting of a building control network , and integrate the building control network into the UMCS as specified.

The building control network shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of the heating, ventilating and air conditioning (HVAC) systems as specified herein. The building control network shall be an Open implementation of LONWORKS® technology using ANSI/EIA 709.1B as the only communications protocol and use only LonMark Standard Network Variable Types (SNVTs), as defined in the LonMark® Resource Files, for communication between DDC Hardware devices to allow multi-vendor interoperability.

5.9.4.1 The building automation system shall be open in that it is designed and installed such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without further dependence on the original Contractor. This includes, but is not limited to the following:

(a) Install hardware such that individual control equipment can be replaced by similar control equipment from other equipment manufacturers with no loss of system functionality.

(b) Necessary documentation (including rights to documentation and data), configuration information, configuration tools, programs, drivers, and other software shall be licensed to and otherwise remain with the Government such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without subsequent or future dependence on the Contractor.

5.9.4.2 All DDC Hardware shall:

(a) Be connected to a TP/FT-10 ANSI/EIA 709.3 control network.

(b) Communicate over the control network via ANSI/EIA 709.1B exclusively.

(c) Communicate with other DDC hardware using only SNVTs

(d) Conform to the LonMark® Interoperability Guidelines.

(e) Be locally powered; link power (over the control network) is not acceptable.

(f) Be fully configurable via standard or user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself to support the application. All settings and parameters used by the application shall be configurable via standard or user-defined configuration parameter types (SCPT or UCPT), standard network variable type (SNVT) network configuration inputs (*nci*), or hardware settings on the controller itself

(g) Provide input and output SNVTs required to support monitoring and control (including but not limited to scheduling, alarming, trending and overrides) of the application. Required SNVTs include but are not limited to: SNVT outputs for all hardware I/O, SNVT outputs for all setpoints and SNVT inputs for override of setpoints.

(h) To the greatest extent practical, not rely on the control network to perform the application.

5.9.4.3 Controllers shall be Application Specific Controllers whenever an ASC suitable for the application exists. When an ASC suitable for the application does not exist use programmable controllers or multiple application specific controllers.

5.9.4.4 Application Specific Controllers shall be LonMark Certified whenever a LonMark Certified ASC suitable for the application exists. For example, VAV controllers must be LonMark certified.

5.9.4.5 Application Specific Controllers (ASCs) shall be configurable via an LNS plug-in whenever t an ASC with an LNS plug-in suitable for the application exists.

5.9.4.6 Each scheduled system shall accept a network variable of type SNVT_occupancy and shall use this network variable to determine the occupancy mode. If the system has not received a value to this network variable for more than 60 minutes it shall default to a configured occupancy schedule.

5.9.4.7 Gateways may be used provided that each gateway communicates with and performs protocol translation for control hardware controlling one and only one package unit.

5.9.4.8 Not Used

5.9.4.9 Perform all necessary actions needed to fully integrate the building control system. These actions include but are not limited to:

(a) Configure M&C Software functionality including: graphical pages for System Graphic Displays including overrides, alarm handling, scheduling, trends for critical values needing long-term or permanent monitoring via trends, and demand limiting.

(b) Install IP routers or ANSI/CEA-852 routers as needed to connect the building control network to the UMCS IP network. Routers shall be capable of configuration via DHCP and use of an ANSI/CEA-852 configuration server but shall not rely on these services for configuration. All communication between the UMCS and building networks shall be via the ANSI/CEA-709.1B protocol over the IP network in accordance with ANSI/CEA-852.

5.9.4.10 Provide the following to the Government for review prior to acceptance of the system:

(a) The latest version of all software and user manuals required to program, configure and operate the system.

(b) Points Schedule drawing that shows every DDC Hardware device. The Points Schedule shall contain the following information as a minimum:

(1) Device address and NodeID.

(2) Input and Output SNVTs including SNVT Name, Type and Description.

(3) Hardware I/O, including Type (AI, AO, BI, BO) and Description.

(4) Alarm information including alarm limits and SNVT information.

(5) Supervisory control information including SNVTs for trending and overrides.

(6) Configuration parameters (for devices without LNS plug-ins) Example Points Schedules are available at https://eko.usace.army.mil/fa/besc/

(c) Riser diagram of the network showing all network cabling and hardware. Label hardware with ANSI.CEA-709.1 addresses, IP addresses, and network names.

(d) Control System Schematic diagram and Sequence of Operation for each HVAC system.

(e) Operation and Maintenance Instructions including procedures for system start-up, operation and shut-down, a routine maintenance checklist, and a qualified service organization list.

(f) LONWORKS® Network Services (LNS®) database for the completed system.

(g) Quality Control (QC) checklist (below) completed by the Contractor's Chief Quality Control (QC) Representative

Table 5-1: QC Checklist

Instructions: Initial each item, sign and date verifying that the requirements have been met.		
#	Description	Initials
1	All DDC Hardware is installed on a TP/FT-10 local control bus.	
2	Communication between DDC Hardware is only via EIA 709.1B using SNVTs. Other protocols and network variables other than SNVTs have not been used.	
3	All sequences are performed using DDC Hardware.	
4	LNS Database is up-to-date and accurately represents the final installed system	
5	All software has been licensed to the Government	
6	M&C software monitoring displays have been created for all building systems, including all override and display points indicated on Points Schedule drawings.	
7	Final As-built Drawings accurately represent the final installed system.	
8	O&M Instructions have been completed and submitted.	
9	Connections between the UMCS IP network and ANSI/CEA-709.1B building networks are through ANSI/CEA-852 Routers.	
By signing below I verify that all requirements of the contract, including but not limited to the above, been met.		
Signature:_____ Date:_____		

5.9.4.11 Perform a Performance Verification Test (PVT) under Government supervision prior to system acceptance. During the PVT demonstrate that the system performs as specified, including but not limited to demonstrating that the system is Open and correctly performs the Sequences of Operation.

5.9.4.12 Provide a 1 year unconditional warranty on the installed system and on all service call work. The warranty shall include labor and material necessary to restore the equipment involved in the initial service call to a fully operable condition.

5.9.4.13 Provide training at the project site on the installed building system, including all commissioned systems and equipment (ASHRAE Standard 189.1, Section 10.3.1.2), . Upon completion of this training each student, using appropriate documentation, should be able to start the system, operate the system, recover the system after a failure, perform routine maintenance and describe the specific hardware, architecture and operation of the system.

5.10 ENERGY CONSERVATION

5.10.1 ENERGY EFFICIENCY: The building(s), including the envelope(s), HVAC systems, service water heating, power, and lighting systems, shall meet, at a minimum, the Mandatory Provisions in Section 7.3 and either the Prescriptive Option in Section 7.4 or the Performance Option in Section 7.5 of ASHRAE Standard 189.1. ASHRAE 189.1 is the minimum requirement that incorporates by reference the requirements of ASHRAE Standard 90.1-2007 and shall be used as the project baseline for life-cycle cost comparisons. A LCCA is not required on the baseline project. Substantiation requirements are defined in Section 01 33 16, Design After Award and ASHRAE Standard 189.1, Section 10.3.2. Exception 1: The on-site renewable energy systems included in ASHRAE Standard 189.1, Section 7.4.1.1 are not required.

5.10.1.1 Minimum Energy Consumption: The building, including the building envelope, HVAC systems, service water heating, power, lighting systems and process and plug loads shall achieve an energy consumption that is a minimum of 30% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2007 and that is life cycle cost effective. Energy calculation methodologies and substantiation requirements are defined in Section 01 33 16, Design After Award. A LCCA is required.

5.10.1.2 EISA 2007 Requirement: Design the building to achieve the maximum possible fossil fuel-generated energy consumption reduction based on the requirements of EISA 2007 Section 433 that is life cycle cost effective. A LCCA is required.

5.10.1.3 LCCA: Where a LCCA is required, an incremental LCCA shall be completed for all energy efficiency or conservation features provided in excess of the baseline to ensure the payback period is no greater than the lesser of 40 years or the projected life of the facility. Equipment procurement, fuel, maintenance, repair, replacement, and any other quantifiable benefits and costs are to be included in the LCCA. The LCCA will be documented and made part of the design analysis. The LCCA shall follow the methodology contained in 10 CFR 436.

5.10.2 EnergyStar AND FEMP PRODUCTS: The heating, ventilation, and air conditioning shall comply with Section 6 of ANSI/ASHRAE/IESNA 90.1-2007 and Section 7.4.2.1.b of ASHRAE Standard 189.1, including the Normative Appendix C of ASHRAE Standard 189.1 with the following modification: Purchase Energy Star products, except use FEMP designated products where FEMP is applicable to the product type. The term “Energy Star” means a product that is rated for energy efficiency under an Energy Star program. The term “FEMP designated” means a product that is designated under the Federal Energy Management Program of the Department of Energy as being among the highest 25 percent of equivalent products for energy efficiency. For projects located OCONUS the products listed in ASHRAE Standard 189.1, Section 7.4.7, shall have an equipment efficiency that is equivalent or greater than the criteria required to achieve the ENERGY STAR label or meets or exceeds the equivalent of FEMP designated efficiency requirements.

5.10.3 SOLAR HOT WATER HEATING: Design and construct all new construction projects with an average daily non-industrial hot water requirement of 50 gallons or more, and located in an area shown on the NREL solar radiation maps (http://www.nrel.gov.gis.solar.html) as receiving an annual average of 4kWh/m2/day or more to provide a minimum of 30 percent of the facility’s hot water demand by solar water heating. Waste heat harvesting, integrated co-generation systems, or a combination thereof may be used in lieu of solar water heating where they achieve equivalent energy savings, as documented in the project’s design analysis and commissioning analysis.

5.10.4 WATER USED FOR HEATING AND COOLING: Meet the requirements of ASHRAE 189.1 Section 6.3.2.3 – HVAC Systems and Equipment and Section 6.4.2.1 – Cooling Towers. When potable water is used to improve a building’s energy efficiency, employ life-cycle cost effective water conservation measures per requirements of EPAct 2005 Section 109. This includes potable water used for both domestic and process purposes.

5.10.5 RENEWABLE ENERGY: See Paragraph 6, PROJECT SPECIFIC REQUIREMENTS for renewable energy requirements for this project.

5.10.6 FUNDAMENTAL REFRIGERANT MANAGEMENT: Meet the requirements of ASHRAE Standard 189.1, Section 9.3.3.

5.11 FIRE PROTECTION

5.11.2 STANDARDS AND CODES Provide the fire protection system conforming to APPLICABLE CRITERIA.

5.11.3 INSPECTION AND TESTING: Inspect and test all fire suppression equipment and systems, fire pumps, fire alarm and detection systems and mass notification systems in accordance with the applicable NFPA standards. The fire protection engineer of record shall witness final tests. The fire protection engineer of record shall certify that the equipment and systems are fully operational and meet the contract requirements. Two weeks prior to each final test, the contractor shall notify, in writing, the installation fire department and the installation public work representative of the test and invite them to witness the test.

5.11.4 FIRE EXTINGUISHER CABINETS: Provide fire extinguisher cabinets and locations for hanging portable fire extinguishers in accordance with NFPA 10 Standard for Portable Fire Extinguishers. The Government will furnish and install portable fire extinguishers, which are personal property, not real property installed equipment.

5.11.5 FIRE ALARM AND DETECTION SYSTEM: Required fire alarm and detection systems shall be the addressable type. Fire alarm initiating devices, such as smoke detectors, heat detectors and manual pull stations shall be addressable. When the system is in alarm condition, the system shall annunciate the type and location of each alarm initiating device. Sprinkler water flow alarms shall be zoned by building and by floor. Supervisory alarm initiating devices, such as valve supervisory switches, fire pump running alarm, low-air pressure on dry sprinkler system, etc. shall be zoned by type and by room location.

5.11.6 ROOF ACCESS: Paragraph 2-9 of UFC 3-600-01 Fire Protection for Facilities will be modified in the next update to that UFC. Pending revision, comply with roof access and stairway requirements in accordance with the International Building Code. Where roof access is required by the IBC or other criteria, comply with UFC 4-010-01, Anti-Terrorist Force Protection, Standard 14. "Roof Access".

5.11.7 FIRE PROTECTION ENGINEER QUALIFICATIONS: In accordance with UFC 3-600-01, FIRE PROTECTION ENGINEERING FOR FACILITIES**,** the fire protection engineer of record shall be a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveys (NCEES), or a registered P.E. in a related engineering discipline with a minimum of 5 years experience, dedicated to fire protection engineering that can be verified with documentation.

5.12 SUSTAINABLE DESIGN

5.12.2 STANDARDS: Sustainable design shall conform to APPLICABLE CRITERIA. See Paragraph 6, PROJECT-SPECIFIC REQUIREMENTS for which version of LEED applies to this project, however, this project shall achieve a minimum of LEED Silver Certification by Green Building Certification Institute (GBCI). Each building must individually comply with the requirements of paragraphs ENERGY CONSERVATION and PLUMBING AND WATER CONSUMING EQUIPMENT. The project must earn the points associated with compliance with paragraph 5.10, ENERGY CONSERVATION,of this RFP.

5.12.3 In accordance with the National Defense Appropriations Acto fo 2012, Section 2830, the contractor will not be compensated for any expenses associated with the express intent to obtain LEED certification above the SILVER level. It is recognized that competitive best balue proposal details and requirements cited else where in this document and supporting documents may provide for features which allow for a certification higher than SILVER to be obtained. Whether to achieve a future marketing advantage or for toher purposes, the contractor may obtain LEED GOLD or PLATINUM certification(s) provided that achieving such certification imposes no additional cost to the government.

5.12.4 LEED INNOVATION AND DESIGN AND REGIONAL PRIORITY CREDITS: LEED Innovation and Design (ID) credits are acceptable only if they are supported by formal written approval by GBCI (either published in USGBC Innovation and Design Credit Catalog or accompanied by a formal ruling from GBCI). LEED ID and RP credits that require any Owner actions or commitments are acceptable only when Owner commitment is indicated in paragraph PROJECT-SPECIFIC REQUIREMENTS or Appendix LEED Project Credit Guidance.

5.12.5 DOCUMENTATION FOR CERTIFICATION: All LEED Prerequisite and Credit documentation shall be provided to GBCI and the Owner (if requested) in addition to any other documentation requirements Online documentation shall be uploaded to GBCI and updated at each phase of the project.

5.13 SECURITY (ANTI-TERRORISM STANDARDS): Unless otherwise specified in Project Specific Requirements, only the minimum protective measures as specified by the current Department of Defense

Minimum Antiterrorism Standards for Buildings, UFC 4-010-01, are required for this project. The element of those standards that has the most significant impact on project planning is providing protection against explosives effects. That protection can either be achieved using conventional construction (including specific window requirements) in conjunction with establishing relatively large standoff distances to parking, roadways, and installation perimeters or through building hardening, which will allow lesser standoff distances. Even with the latter, the minimum standoff distances cannot be encroached upon. These setbacks will establish the maximum buildable area. All standards in Appendix B of UFC 4-010-01 must be followed and as many of the recommendations in Appendix C that can reasonably be accommodated should be included. The facility requirements listed in these specifications assume that the minimum standoff distances can be met, permitting conventional construction. Lesser standoff distances (with specific minimums) are not desired, however can be provided, but will require structural hardening for the building. See Project Specific Requirements for project specific siting constraints. The following list highlights the major points but the detailed requirements as presented in Appendix B of UFC 4-010-01 must be followed.

(a) Standoff distance from roads, parking and installation perimeter; and/or structural blast mitigation

(b) Blast resistant windows and skylights, including glazing, frames, anchors, and supports

(c) Progressive collapse resistance for all facilities 3 stories or higher. Unless determined otherwise by the Installation and noted in paragraphs 3 or 6, the building shall be considered to have areas of uncontrolled public access when designing for progressive collapse.

(d) Mass notification system (shall also conform to UFC 4-021-01, Mass Notification Systems)

(e) For facilities with mailrooms (see Paragraph 3 for applicability) – mailrooms have separate HVAC systems and are sealed from rest of building

6.0 PROJECT SPECIFIC REQUIREMENTS FORT CARSON, CO

6.1. GENERAL

The requirements of this paragraph augment the requirements indicated in Paragraphs 3 through 5.

6.2. APPROVED DEVIATIONS

The following are approved deviations from the requirements stated in Paragraphs 3 through 5 that only apply to this project. NONE

6.3. SITE PLANNING AND DESIGN

6.3.1. General:

6.3.1.1. Omaha District Corps of Engineers Standard Details and CADD Cells

The Omaha District's Civil CADD standard details and cells are available at:

https://www.nwo.usace.army.mil/html/ed-d/civil.html. The Omaha District's Environmental standard details and CADD cells are available on the Omaha District FTP site. These standards and cells are available for the Contractor's use. References to using exact details and drawings are found in this section. In those cases, use the referenced standard drawings and or details.

6.3.1.2. Contractor's Staging Area

Locate the Contractor’s staging area as shown on the RFP drawings. Return the staging area to its original condition upon completion of construction.

6.3.1.3. Project Sign

Provide a project sign in accordance to Omaha District Standard drawing C8-2 PROJECT SIGN DETAILS.

6.3.1.4. New Construction

All new construction is located entirely within the limits of Government-controlled lands. Develop the design drawings using the same vertical and horizontal datum's as the engineering survey.

6.3.1.5. Building Site

Locate and construct the new facility including associated site structures, roads, parking, utilities, entry courtyards, loading areas, storm water drainage systems and landscaping as indicated on the drawings located in Appendix J - Drawings and as specified herein. All features shown on the site plan are considered project requirements. Contractor may slightly modify exact locations of all features shown on the site plan as needed to accommodate the final project layout. All site layout changes are subject to approval by the Government. Government supplied site plans are provided to assist the Contractor in the preparation of their proposal and design. The site plans are available to the Contractor in Appendix J furnished with this solicitation. Identify any errors to the Contracting Officer immediately for resolution and direction. The Contractor shall take all professionally prudent and reasonable actions to verify the accuracy of the data provided. The Contractor will prepare the final site plans.

6.3.1.6. Asphalt Parking Areas

Utilize existing parking areas for this project and associated concrete curb & gutter. Provide handicap parking ramps and signage meeting the requirements of 28 CFR Part 36. Provide concrete handicap ramps with precast concrete paver detectable warnings on the walking surfaces at locations where sidewalks end at curbs adjacent to parking lots, roads, intersections, and at other locations shown on the drawings. Detectable warnings consist of raised truncated domes with a diameter of nominal 0.9 inches, a height of nominal 0.2 inches and a center-to-center spacing of nominal 2.35 inches and shall contrast visually with adjoining surfaces, either light-on-dark, or dark-on-light. The material used to provide contrast needs to be an integral part of the walking surface. Detectable warnings used on interior surfaces shall differ from adjoining walking surfaces in resiliency or sound-on-cane contact. Delineate parking stalls with 4-inch wide white stripes. Provide separate drawing showing pedestrian circulation in the final design package.

6.3.1.7. Concrete Paved Areas

a. Motorcycle Parking Areas

Utilize existing motorcycle parking areas for this project.

b. Building courtyards

Provide concrete or concrete and paver building courtyards in locations indicated on the drawings. Allow space for plantings within the courtyards. Design the courtyards to allow for emergency vehicle access to conform with to conform to UFC 3-600-01 and NFPA 1 and to support potential emergency vehicle weights.

6.3.1.8. Walks and Entry Sidewalks

Provide exterior concrete walks, courtyards, bicycle parking, and entry sidewalks at the locations and widths as shown on the drawings. The Contractor may revise locations as needed to accommodate the final project layout and floor plan. All site layout changes are subject to approval by the Government. Provide walks accessing the handicapped entrances that meet the requirements of the American Disability Act. P.C. concrete sidewalks are to be a minimum of 4 inches thick. Walks used for fire department (emergency vehicle) access need to conform to UFC 3-600-01 and NFPA 1 and to support potential emergency vehicle weights.

6.3.1.9. Fencing

N/A

6.3.1.9.1. Construction Area/Safety Fencing

Enclose the construction site with a construction area fence throughout the duration of the contract. Fence is to be a minimum of 4 feet tall and fence fabric needs to be chain-link or approved equal. Dispose all construction area and safety fence materials outside the limits of Government-controlled lands upon completion of construction.

6.3.2. Site Structures and Amenities

6.3.2.1. Dumpster and Recycle Bin Pads and Screen Wall Enclosures

Provide concrete pads and dumpster and recycle bin screen wall enclosures at the location(s) shown in Appendix J - Drawings. Construct screen wall enclosures and gates of materials compatible with the new facility exterior walls. Coordinate the color with the installation. Provide 8 cubic yard size dumpsters. Provide openings to the dumpsters that are large enough to allow the dump truck to access the dumpters without having to move them outside of the enclosure.

6.3.2.2. Retaining Walls

Provide interlocking segmental concrete block retaining walls where required. Engineer the storm drainage to flow around the top and not over the walls. Color, design and size of the concrete blocks for retaining walls need to compliment the building.

6.3.2.3. Exterior Equipment Pads

Provide P.C. concrete pads for exterior equipment. Design and size pads to accommodate the furnished equipments weight and dimensions.

6.3.2.4. Exterior Furniture, Structures, and Basketball Courts

6.3.2.4.1. Exterior Furniture and Structures.

Provide exterior furniture and structures including benches, bicycle shelters, mail kiosks, shade structures, ground mounted outdoor grills, trash containers, cigarette and disposal containers, and picnic tables according to the RFP drawings for quantities. Construct bicycle racks of materials strong enough to resist attempted forcible removal of bicycles and be permanently mounted to the surfacing. Provide shelters for the bicycle racks where required to meet LEED credit. Provide all metal furnishings with baked on powder coated finishes capable of withstanding local weather extremes for a period of 10 years. Provide exterior furniture that is durable, permanently mounted to the surfacing and made of materials and colors to compliment the building. Acceptable materials for site furnishings include the following materials or combination thereof: precast concrete, tubular steel, or LPE wood.

6.3.2.4.2. Basketball Courts

Design and construct required 3 basketball courts. Provide striping of courts and standard goals and nets at each end of court. Refer to CS501 for basketball court details.

6.3.3. Site Functional Requirements:

6.3.3.1. Fort Carson Stormwater Management Plan (SWMP)

The stormwater management requirements in this paragraph are only applicable for projects that disturb more than 5,000 square feet. Fort Carson has been divided into three distinct zones for stormwater management. Each zone represents a different environmental stormwater setting requiring specific Best Management Practices (BMPs). Review the Fort Carson SWMP to determine which zone the project is located within.The Fort Carson SWMP is available at http://sems.carson.army.mil/environmental/water/stormwater/. Fort Carson's goal is to maximize the utilization of multiple BMP placements at each new construction site by focusing on Low Impact Development and other green strategies. Unless otherwise indicated, large structures such as detention basins will be subject to approval.

(a) Peak Flow and Runoff Volume

(1) Construct BMPs to mitigate 110 percent of the difference in peak discharge and runoff volume between the pre-development and post-development conditions to the maximum extent technically feasible. "Pre-development" refers to the natural condition before any development. The peak flow and volume of runoff will be determined using the 5-year, 24-hour duration SCS Type II storm. The 5-Year, 24-hour rainfall depth at Fort Carson is 2.7 inches.

(2) For example, assume the pre-development peak flow for a site is 12 cfs and the post-development peak flow (without mitigation) is 15 cfs. 110% of the difference is 1.1 x (15 - 12) = 3.3 cfs. Construct BMPs so that the final post-development peak flow is equal to 15 – 3.3 = 11.7 cfs.

(3) Assume a 4.0 acre site has a pre-development runoff volume of 0.80 ac-ft and a post-development runoff volume (without mitigation) of 0.90 ac-ft. 110% of the difference is 1.1 x (0.90 – 0.80) = 0.11 ac-ft. Construct BMPs to infiltrate 0.11 ac-ft of storm runoff.

(4) The Project Information Form included in Appendix E - Environmental Information provides site runoff calculations for the site plan furnished with this solicitation. If the Contractor modifies the site plan and changes the impervious area, submit a revised Project Information Form to the Fort Carson Stormwater Program Office. The Fort Carson Stormwater Program Office will provide the revised peak flow and runoff volume for the site.

(5) Determine peak flow and runoff volumes for subbasins within the project site. For purposes of determining compliance with the SWMP, calculate the peak flow and runoff volume using the methodology contained within TR-55 “Urban Hydrology for Small Watersheds”.

(6) Unless otherwise specified, design BMPs to mitigate the 5-year storm event as described above while passing the 25-year storm without damage to the BMP.

(7) 24-hour rainfall depths for Fort Carson are as follows:

Frequency	24-Hour Depth
5-Year	2.7 inches
10-Year	3.2 inches
25-Year	3.7 inches
100-Year	4.6 inches

(b) Water Quality Capture Volume (WQCV) BMPs

(1) The WQCV is equal to 110 percent of the difference in runoff volume from the site between the pre-development and post-development conditions.

(2) Runoff from the impervious surfaces of the site must flow though one or more WQCV BMPs to the maximum extent technically feasible.

(c) Post-Construction BMP Requirements.

(1) Select amongst the BMPs listed in paragraph 10.5.2 of the SWMP for the zone where the project is located . Unless otherwise specified below, design post-construction BMPs to the requirements in Appendix J of the Fort Carson Stormwater Management Plan.

(2) PC-09 Bioretention Areas. Drainage area for each bioretention area shall not exceed 2 acres and shall preferably be less than 1 acre. Design bioretention areas to draw down any pooled water within 12 hours after a storm event. Locate bioretention areas at least 25-feet from buildings with basements and 10-feet from buildings without basements. Where the in situ soil has an infiltration rate of less than 0.5 inches/hour, design bioretention areas with an underdrain discharge pipe. The bottom and sides of bioretention areas adjacent to pavements may require an impervious liner to prevent damage to the pavement. Provide an overflow structure or outlet to convey flow from storms that are not treated by the bioretention facility.

(3) PC-13 Dry Detention Ponds. Use Dry Detention Ponds only when indicated (see Appendix J Drawings). Design the outlet works to release the WQCV over a 40-hour period. Design the embankment not to fail during 100-year and larger storms.

(d) Technical Infeasibility. Document and quantify in the design analysis that the stormwater strategies included in the design meet the requirements for peak flow, runoff volume, and WQCV to the maximum extent technically feasible. Provide documentation in the Design Analysis if it is

determined that it is technically infeasible to meet the requirements for peak flow, runoff volume, and WQCV. Documentation of technical infeasibility should include, but may not be limited to, engineering calculations, geologic reports, hydrologic analyses, and site maps. A determination that the performance design goals cannot be met on site should include analyses that rule out the use of an adequate combination of infiltration, evapotranspiration, and use measures.

(e) Operations & Maintenance Plan. Describe any operations and maintenance requirements for all BMPs in the design analysis.

6.3.3.2. Stormwater Management (SWM) Systems.

(a) Determination of Storm Runoff. Determine discharges from storm event using the methodology contained within TR-55 “Urban Hydrology for Small Watersheds

(b) Design Storm Return Period. Size storm drains and culverts for a design storm with a return period of 10 years. Unless otherwise indicated or specified, size cross culverts beneath roads and streets for a design storm with a return period of 25 years and a maximum headwater depth/pipe diameter ratio of 1.25. The maximum allowable depth of overtopping at the road centerline during the 100 year storm shall be 6 inches. Make provisions to protect all buildings and critical structures from a major storm event with a return period of 100 years.

(c) Rainfall Depth-Duration-Frequency Data . See paragraph above for 24-hour rainfall depths for Fort Carson.

(d) Storm Drainage System Design. Design the storm drainage system. Submittals of pipe samples are not required. Design the storm drainage system so as to minimize the number of drainage structures required. Locate structures at all changes in direction of storm drain line, at the intersection of two or more storm drain lines, and where required to intercept rainfall runoff. The maximum distance between drainage structures shall be approximately 300 feet for conduits less than 30 inches in diameter. The maximum distance between drainage structures shall be approximately 500 feet for conduits 30 inches and greater in diameter. Where possible, provide a minimum drop of 0.2 feet between inverts of equal diameter storm drain pipes at the centerline of drainage structures. Where storm drain pipes are of different diameters, match the pipe crown elevations at the drainage structure. Storm drain pipes shall have a minimum diameter of 12 inches. Locate storm drain lines outside of paved areas to the extent possible. Do not locate storm drain lines beneath buildings.

(e) Hydraulic Design. Design new storm drain pipes for gravity flow during the 10-year design storm unless otherwise approved by the Government. Calculate the hydraulic grade line for the storm drain system and all energy losses accounted for. Design storm drain systems to provide a minimum flow velocity of 2.5 feet per second when the drains are one-third or more fill.

(f) Manholes. Diameter of manholes needs to be large enough to accommodate pipes entering/exiting the manhole. Provide manhole cast iron frames with a minimum opening diameter of 24 inches.

(g) Area Inlets. Size and design area inlets to accommodate the design flows.

(h) Curb Inlets. Avoid locating parking area curb inlets at building entrances and handicap ramps. Space and size curb inlets along two-lane streets so that the flow in the gutter and ponded areas at low points do not cover the crown of the street.

(i) Headwalls and Flared End Sections. Unless otherwise approved, provide headwalls or flared end sections at the ends of culverts and at storm drain outfalls. Provide protection from erosion and scouring at headwall and flared end section outfalls as needed. Use the design storm frequency for the culvert design to design energy dissipaters at outfalls.

(j) Culverts. Provide culvert pipes with a minimum diameter of 18 inches wherever possible.

(k) Roof Drain Outfall Lines. Where downspouts discharge onto rock mulched beds, concrete splash blocks are required as a minimum. Downspouts may not discharge onto turfed areas or sidewalks. Where downspouts discharge onto paved areas, connect to the storm drainage system with PVC or HDPE pipe. The minimum diameter for roof drain lines is 6 inches. Use 45 degree bends for all changes in direction.

(l) Storm Drain and Culvert Pipe Materials. Select the appropriate storm drain and culvert pipe materials from the list below. Pipe, bedding, and backfill shall be of adequate strength (or stiffness) to support the earth, live, and construction loads imposed on the pipe. Only pipe materials which have a minimum design service life of 25 years are allowed for permanent installations. As a minimum, provide soil tight pipe joints. Specify watertight pipe joints and flexible resilient pipe connectors at drainage structures when the water table is at or above the pipeline.

(1) Concrete Pipe. Reinforced concrete pipe shall be a minimum of Class III. Assume concrete pipe to have a minimum design service life of 50 years unless the Contractor determines that conditions at the site will reduce the service life. Protect concrete culverts and storm drains by a minimum of 3 feet of cover during construction to prevent damage before permitting heavy construction equipment to pass over them during construction.

(2) Plastic Pipe. Stiffness of the plastic pipe and soil envelope shall be such that the predicted long-term deflection shall not exceed 7.5 percent. Protect plastic culverts and storm drains by a minimum of 3 feet of cover during construction to prevent damage before permitting heavy construction equipment to pass over them during construction. Split couplers shall not be allowed for corrugated high-density polyethylene pipe. Assume plastic pipe to have a minimum design service life of 50 years unless the Contractor determines that conditions at the site will reduce the service life.

(m) Storm Drainage Security Requirements. Install bars on drainage structures and water passages penetrating under a security fence or boundary to provide penetration resistance equivalent to the fence itself. Protect openings to the drainage structures having a cross-sectional area greater than 96 square inches and a smallest dimension greater than 6 inches by securely fastened welded bar grills. As an alternative, drainage structures may be constructed of multiple pipes, each pipe having a diameter of 10 inches or less, joined to each other and to the drainage culvert.

See Appendix E - Environmental Information.

6.3.3.3. Erosion and Sediment Control

Select and implement Best Management Practices (BMPs) to minimize pollutants in storm water discharges associated with construction activity at the construction site. Maintain all erosion and sediment measures and other protective measures in effective operating condition. Remove all temporary structural practices once the corresponding disturbed drainage area has been permanently stabilized. In the State of Colorado, EPA has authority for the National Pollutant Discharge Elimination System (NPDES) on Federal Facilities. If construction activities results in the disturbance of 1 acre of land or more, coverage under the EPA Storm Water General Permit For Construction Activities (Permit No. COR10000F) is required. The Contractor is the responsible permittee. Comply with the requirements in Appendix E. Fort Carson Army installation is required to comply with EPA Region 8 MS4 (Municipal Separate Storm Sewer Systems) for federal facilities. To the maximum extent possible within the government identified contract cost limitation (CCL), the design should retain or utilize existing landscape vegetation in the Contractor's landscape and architectural design development.

(a) Temporary Construction Entrance. Keep tracking of mud from the construction site onto adjacent roads and streets to a minimum. Construct a temporary stabilized stone pad at points where vehicular traffic will be leaving the construction site and moving directly onto a paved road or street. It shall extend the fill width of the vehicular ingress and egress area and have a minimum length of 70 feet. Maintain the entrance in a condition which will prevent tracking or flow of mud onto adjacent roads or

streets. If conditions on the site are such that the majority of the mud is not removed by the vehicles traveling over the stone, wash the tires of the vehicles before entering the road or street. Remove any mud which is tracked onto roads or streets at least once daily.

(b) Erosion Control Blanket.. Cover bottoms and side slopes of ditches and any other disturbed slopes 1V on 3H or steeper with an erosion control blanket immediately after seeding.

(c) Silt Fence. Install silt fencing below disturbed areas where erosion would occur in the form of sheet and rill erosion. The size of the drainage area above the silt fence shall not exceed one fourth of an acre per 100 feet of silt fence length. Silt fencing may be installed across ditches only when the maximum contributing drainage area is not greater than 1 acre. Silt fence constructed across a ditch shall have wire support and shall be of sufficient length to eliminate endflow.

(d) Outlet Protection. Install preformed riprap lined scour holes or other suitable measures at outlets of culverts and storm drains as needed to prevent erosion.

(e) Storm Drain Inlet Protection. Install storm drain inlet protection around any new or existing storm drain inlets that will become operational before permanent stabilization of the corresponding disturbed drainage area has occurred. Include either a sediment filter or an excavated area around the storm drain inlet for storm drain inlet protection.

(f) Rock Check Dam. Rock check dams may be installed in ditches which drain 2 to 10 acres. The allowable drainage area will be dependent on the gradation of the rock used to construct the check dam. The maximum height of the dam is 3 feet. The center of the dam shall be at least 6 inches lower than the outer edges. For added stability, the base of the check dam may be keyed into the soil approximately 6 inches. The maximum spacing between the dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.

(g) Temporary Sediment Trap. Temporary sediment traps may be constructed below disturbed areas where the total drainage area is less than 3 acres.

(h) Temporary Sediment Basin. Temporary sediment basins may be constructed below disturbed areas where the total drainage area is equal to or greater than 3 acres.

(i) Other Controls. Other controls such as diversion dikes, level spreaders, temporary seeding, etc. may be used if the Contractor deems necessary

6.3.3.4. Vehicular Circulation.

See Appendix J – Drawings for Vehicular Circulation.

6.4. SITE ENGINEERING

6.4.1. Existing Topographical Conditions

Existing Topographical Conditions:

6.4.1.1 Government-Supplied Engineering Survey

Use the Government supplied survey data in the preparation of the proposal and design. An engineering field survey has been performed and data is available to the Contractor on CD-ROM furnished with this solicitation. The survey CADD files are in English units and Microstation V8 format. A Microstation Digital Terrain Model (dtm) of the survey is also included with the CADD files. The field survey data information

was gathered by a topographical survey performed in [insert date of survey]. Contours were gathered at 1-foot intervals. Below grade utility data was obtained from "best-available" as-built mapping. Government provided survey drawings are provided to assist the Contractor in preparing their proposal. Bring any errors identified to the attention of the Contracting Officer immediately for resolution and direction. The Contractor shall take all professionally prudent and reasonable actions to verify the accuracy of the data provided. During design and construction, the Contractor shall be responsible for obtaining any additional data necessary for the execution of this project.

(a) Ground Control

The survey was developed using Colorado State Plane Coordinate System Central Zone. The horizontal and vertical control reference datum's were NAD 83 and NAVD 88 respectively. All final supplied results are in True State Plane at zero elevation.

(b) As-Built Conditions

Locate all new underground utility lines (including electrical power and communications, gas, water, sanitary sewer, storm drains, roof drains and culverts) during installation using surveying equipment. Survey pipe invert of gas, water, sanitary sewer, industrial waste, storm drains, roof drains and culverts and top of duct bank of electrical power and communications lines. Survey storm drains and sanitary sewer lines where pipes enter manholes and inlets and at 100-foot maximum intervals along the line. Survey the inverts of all cleanouts and tees. Survey inverts at each end of culverts. Survey electrical power, communications, gas and water lines at all manholes, tees, valves, corners, changes in direction and at intervals along the line which will accurately depict the location of the line in both horizontal and vertical directions (50-foot maximum interval). Survey accuracy shall meet or exceed National Map Standards for 1"-50' mapping. Survey shall be in Colorado State Plane Coordinate System Central Zone. The horizontal and vertical control reference datum's shall be NAD 83 and NAVD 88 respectively.

6.4.2. Existing Geotechnical conditions: See Appendix A for a preliminary geotechnical report.

6.4.2.1. Preliminary Geotechnical Report

The preliminary report is based on the best available data at the time the RFP document was prepared. As such, the preliminary report provides a general overview of soil and geologic conditions anticipated at the project site. In some instances, preliminary data may not be site specific, but is based on data from near-by projects. Use this information for early planning and preliminary design only. This information may also be used to supplement future site-specific geotechnical information for final design.

6.4.2.2. Final Geotechnical Report

Conduct and prepare the final geotechnical investigation and report in accordance with generally accepted engineering principles and practices in the State of Colorado. A licensed professional geotechnical engineer in the State of Colorado with at least five years experience preparing geotechnical reports in similar soil conditions shall prepare the report. Submit the final report in sufficient detail to accurately characterize site conditions and provide final design parameters for utility excavations, foundations, floor slabs, retaining walls, embankments, surface and subsurface drainage, and pavements. In the report, provide a log of each boring that includes as a minimum a clear description of each soil type encountered, the depths at which changes in material occur, ground water levels, and the depths of bedrock including the start of competent bedrock suitable as a bearing surface for foundations.

6.4.2.3. Other Design Criteria

Expansive soils are known to exist at Fort Carson. Address mitigation requirements for foundations, floor slabs, and pavements in the final geotechnical report. Drilled shafts with structural floor systems or over excavation and replacement of native soils with non-expansive soils are proven techniques for successfully mitigating expansive soils at Fort Carson. Moisture conditioning and re-compaction of native soils beneath footings and floor slabs is not acceptable as a suitable, long-term method for expansive soil mitigation. Address viable alternatives for mitigating expansive soils and recommend a preferred method for design in the final geotechnical report.

6.4.3. Fire Flow Tests. See Appendix D for results of fire flow. See paragraph 6.4.6.2.2 Dedicated Fire Water Service Lines for additional information.

See paragraph 6.4.6.2.2. Dedicated Fire Water Service Lines.

6.4.4. Pavement Engineering and Traffic Estimates:

6.4.4.1. Pavement Design

Design pavements for permanent installations for a life of 25 years. Design pavements for seasonal frost conditions. Base final pavement design on the Final Geotechnical Report. Design all pavements using the State of Colorado DOT requirements. For the AASHTO design method, use the following parameters:

Reliability = 90 percent
Standard Deviation = 0.35 for rigid and 0.45 for flexible pavement
Initial Serviceability Index = 4.2
Terminal Serviceability Index = 2.5
Aggregate Base Course = Class 4 or 5

6.4.4.2. Sidewalks and Curb and Gutter

(a) Sidewalks

Sidewalks shall conform to the applicable State of Colorado DOT requirements. Provide sidewalks as shown on Appendix J – Drawings and connect to other existing walks in the immediate vicinity.

(b) Sidewalks for Fire Department (Emergency Vehicle) Access

Concrete sidewalks used for Fire Department access shall be a minimum 8 inches Portland Cement Concrete and 10 inches of base course material with 12 inches of compacted subgrade to 90%.

6.4.4.3. Curb and Gutter

Curb and gutter shall conform to the applicable State of Colorado DOT requirements. Curb face shall be 1/2-inch off of vertical with straight faces and a 1-1/2 inch radius maximum at the gutter line and at the top of curb.

6.4.4.4. Joint Sealing

Joint Sealing shall conform to the applicable State of Colorado DOT requirements.

6.4.4.5. Additional Information

N/A

6.4.4.5.2. Jogging Trails

Provide jogging trails at locations according to the Appendix J – Drawings and as needed to connect to trails within the immediate vicinity. Design jogging trail to accommodate emergency vehicle loads as noted on the drawings. Design surface course using a minimum of 4 inch thick, predominantly red, 1/2" minus crushed dolomitic limestone materials or equal.

6.4.5. Traffic Signage and Pavement Markings Provide traffic signage and striping for all new roads and parking areas. Design signage and striping in accordance with MUTCD Manual on Uniform Traffic Control Devices for Streets and Highways. Provide striped parking areas, roads and streets with non-reflectorized paint that contains low volatile organic compounds (VOCs). Provide exterior signage for handicap parking stalls, including van accessible parking areas. Provide stop signs at intersections where access roads from parking areas enter roadways. Provide pedestrian signage and striping at all crosswalks.

6.4.6. Base Utility Information

6.4.6.1. Existing Base Utility Information

(a) Electrical Service

The Fort Carson Department of Public Works (DPW) provides electrical service on this installation Coordinate with DPW / Base Operations Division (BOD) for points of connection to the base electrical system. Contact DPWIBOD, Mr. Alan Davis, (719) 526-6673 or alan.l.davis@us.army.mil. See Appendix J for drawings of existing utilities and also utilities that may be proposed or under construction but is relevant to this project.

(b) Communications Service

The Fort Carson Network Enterprise Center (NEC) provides communications service on this installation. Coordinate with NEC, Mr. Don Arnold, (719) 526-4800 or donald.arnold@us.army.mil. See Appendix J for drawings of existing utilities and also utilities that may be proposed or under construction but is relevant to this project.

(c) Cable TV Service

Cable TV service on this installation is privatized and is provided by:

Baja Broadband
521 Corporate Center Drive
Suite 100
Fort Mill, SC 29707

Contact Delores Womble (980) 235-7643 for TV service information (dwomble@orangebroadband.com). Coordinate with cable TV service for cable TV provisions. Provide all cabling back to the cable television backboard. Baja Broadband will bring cable plant to the building entrance and will connect all terminations at the backboard.

(d) Local Telephone Service

CenturyLink Communications provides commercial local telephone service on this installation .

6.4.6.2. Waterlines

(a) Design and construct water distribution systems and service lines in accordance with applicable criteria. Protect existing waterlines. If any potable waterlines are damaged during construction, immediately notify the Contracting Officer. Disinfect all new water lines and any remaining lines which do not remain fully pressurized during construction or connection in accordance with state and local criteria. Notify the Contracting Officer prior to disinfection of the water lines. The disinfection methods utilized will be in accordance with the American Water Works Association Standard AWWA C651 and shall not be considered complete until two consecutive days of bacteriological samples show no contamination. Colorado Department of Public Health and Environment (CDPHE) certified laboratories shall perform all bacteriological, lead and copper tests. Bac-T test results are valid for 5 calendar days from the time the sample was taken. Water service lines not activated within this time frame require another Bac-T test before line activation. Forward copies of results of the analyses to the Contracting Officer and the DPW upon receipt and prior to placing the water line in service.

(b) Design and provide all facilities required to deliver adequate water to the project. Make service connections or extensions to the existing water distribution system without interruption to service, using standard “wet-tap” fittings and methods. Be cognizant of the different pressure zones existing in the Ft Carson Water distribution system and coordinate with the installation to ensure new waterlines do not cross connect pressure zones. Loop new water distribution mains in accordance with UFC 3-600-01. Design the domestic demand for the new facility served in accordance with the International Plumbing Code Fixture Count Method. For design of the waterlines, use maximum Hazen-Williams "C" value of 130 for plastic pipe and 120 for other pipe materials. Waterlines shall have a minimum depth of bury of 5 feet and fire waterlines shall have an additional 6 inches of depth of bury. Limit water lines to a maximum depth of 84 inches from proposed finished grade. Exceeding the maximum depth should only used in rare cases when topographical or other utility interferences prevent other economical alternatives and shall be approved by the Contracting Officer. Limit all buried water line valves to a maximum depth of 84 inches to allow operation with standard valve wrenches. An air relief valve is required at the high point of all water mains. A blow-off valve or hydrant shall not be considered as a substitute for an air relief valve. Design pipe grades to minimize the use of air relief valves wherever possible. Stainless steel tapping sleeves are allowed where the branch line is less than or equal to one half the size of the line being tapped. Use cast iron tapping sleeves if the tap size is greater than 50% of the pipe being tapped. Use only a mechanical joint tee fitting when tapping into existing asbestos cement (AC) piping where the tap size is greater than 2-inch in diameter.

6.4.6.2.1. Water Service Lines

(a) Flow Requirements. Supply water by service lines of appropriate capacity to provide the flows and pressure determined to be necessary to meet all requirements of the new facility. The requirements include all domestic use, interior and exterior fire protection water, and lawn sprinkler/irrigation systems, as required.

(b) Service Connections. Make service connections using corporation stops, appropriate gooseneck and service connection fittings connections, or tapping sleeves and valves.

(c) Dewatering, Hydrostatic Testing, and Flushing of Lines. Implement the terms and requirements of AWWA C605 and AWWA M55 for dewatering, hydrostatic testing, and flushing of lines prior to disinfection.

(d) Valves on Domestic Services. Provide a valve on each domestic service line(s) serving a facility. Locate valves in areas readily accessible to maintenance and emergency personnel. Valves located in walks are prohibited. Provide all valves with a cast iron valve box and removable lid for operating wrench access. All valve boxes, whether located in pavement or other landscaped areas, shall be surrounded by an 18-inch concrete ring 4-inch thick at final grade. When located in a paved area the top of the valve box and concrete ring shall be flush with the finished grade.

(e) For all service valves larger than 2-inch, use gate valves, with non-rising stems and 2-inch operating nuts (open left).

(f) Potable water service lines shall be a minimum of 3/4- inch in diameter. Non-potable water service lines shall be a minimum of 1-1/2-inches in diameter. Type “K” copper is approved for water service lines. When using copper, do not place flared joints under a vertical foundation wall or footer. Poly Ethylene (PE) DR9, CTS (Copper Tubing Size), 200 PSI or PE 3408, AWWA C901, ASTM D2737 is also approved for water service lines for pipe sizes 1-inch to 2-inch service lines only.

(g) For service lines 2-inches and smaller, provide a corporation stop at the point of tap to the water main. Provide a curb stop valve on each service line. The location of the curb stop is normally between the street curbing and the building as close to the main as possible.

(h) For water service lines, the following materials are not allowed: PVC schedule 40, PVC schedule 80, galvanized steel pipe, black iron steel pipe, and PEX plastic tubing.

(i) Water service lines larger than 2-inches can be ductile iron, plastic (PVC, AWWA C-900 or C-905, Class 200, DR 14) or HDPE (DR 13.5) only. The above piping is not allowed under the structure foundation or slab with the exception of Ductile Iron. For any piping larger than 2-inches, transition to ductile iron pipe no closer than 5 feet from the structure they service. Water service piping shall not come into contact with the buildings concrete foundation or slab. Use a pressure-rated plastic casing to protect the pipe as it passes through any concrete structure.

(j) When tapping an existing distribution line for a service line 2-inches or larger, use a split-sleeve mechanical joint tapping sleeve designed for service for the material of the distribution line to be tapped. For service lines less than 2-inches, use direct corporation tap or appropriate service saddle connections in accordance with the tapped piping manufacturer’s recommendations. Use only a mechanical joint tee fitting when tapping into existing asbestos cement (AC) piping where the tap size is greater than 2-inch in diameter.

6.4.6.2.2. Dedicated Fire Water Service Lines

(a) Fire Flow Data. Government has provided the fire flow test for this site as part of this RFP for bidding purposes only. See Appendix D. For determination and documentation of fire protection, conduct and provide all fire hydrant flow tests. Data to be included with the flow tests are static pressures, residual pressures, flowrates, date, domestic and fire pumps in operation, and PRV setting (open/close), time tests were conducted, and name of personnel conducting the fire hydrant flow tests. Show the static pressures, residual pressures, flowrates, test hydrant and flow hydrants on the appropriate contract drawings. Conduct fire hydrant flow tests required for fire protection design in accordance with the procedures specified in AWWA M17, Installation, Field Testing, and Maintenance of Fire Hydrants. Coordinate with the Contracting Officer prior to conducting such tests. Submit fire hydrant flow test data to the Corps of Engineers prior to performing the design calculations. Become familiar with the existing water system prior to conducting the hydrant flow test(s). If actual conditions vary from the presumed conditions depicted in the government furnished flow tests, which require a change in the design from that assumed in the proposal, contact the government immediately for a determination of whether a changed site condition exists.

(b) Fire Hydrants. Install fire hydrants for the new facility. Locate one fire hydrant within a minimum of 150 feet (unobstructed) of the building fire department connection. Locate all other hydrants in accordance with NFPA 24 or such that all portions of the facility (and hardstand, where applicable) can be reached by 350 foot length of hose. Assure the Fire Department has access to all fire hydrants. Fire hydrant branches (from the main to the hydrant) shall not be less than 6 inches in diameter and preferably

not longer than 50 feet from the main. Install a fire hydrant isolation valve and valve box at the tap point for each new or relocated fire hydrant.

(c) Dedicated Fire Line. Provide a separate fire water service line to the building for interior fire sprinkler protection in accordance with NFPA 24 and UFC 3-600-01. Equip the fire water service line to the building with a Post Indicator Valve (PIV) that can be readily located by the fire department. Do not place the PIV closer than 40 feet to the building it is serving and provide it with a tamper switch connected to the building fire control panel.

(d) The Government desires a fire protection system which avoids the use of fire pumps. If fire pumps are utilized, provide complete calculations and documentation verifying the need for fire pumps.

(e) For building fire suppression and domestic service lines, provide an independent tap connection to the main water line when the fire suppression line is less than 100 linear feet from the system riser. When the Building fire suppression and domestic service line is greater than 100 linear feet from the system riser, provide the connection point for the domestic water supply upstream and just prior to the fire system's post indicator valve.

(f) Unified Facilities Criteria UFC 3-600-01 Hydrant Color Coding. Hydrants on both potable and non-potable water systems must be color coded to avoid cross-connections during firefighting. Hydrant barrels shall be red for non-potable water and equipment yellow for potable water. Regardless of water source, hydrant bonnet color shall be in accordance with NFPA 291, Fire Flow and Marking of Hydrants, based on flow capacity.

(g) NFPA 291 Information - Fire Hydrants identification shall be colored to denote flow capability. Classification and Color Marking:

Class AA – Capacity of 1500 GPM – Blue

Class A – Capacity of 1000-1499 GPM – Green

Class B – Capacity of 500-999 GPM – Orange

Class C – Capacity less than 500 GPM – Red

(h) Fire Hydrants shall open left with pentagon operation nut, dry barrel (5 1/4-inch), two (2) each (2-1/2) inch hose outlets and one (4-1/2) inch suction connection with national standard fire hose threads.

6.4.6.2.3. Water Distribution Lines

(a) Water main lines sizes 6 inch and larger shall be non-metallic Polyvinyl Chloride (PVC) or High Density Polyethylene Pipe (HDPE). PVC pressure pipe shall be (Slip Joint) elastomeric gasket joint type. Unless expected pressure service conditions dictate more stringent ratings, PVC pipe 6-inch through 12-inch shall be pressure Class 305 (DR-14), AWWA C900. PVC pipe 14 inch through 24 inch shall be Pressure Class 235 (DR-18), AWWA C905 (Transmission-Pipe Pressure Rating). HDPE pipe shall be SDR 13.5, AWWA C906, PE 3408, ductile iron pipe size (DIPS).

(b) For all water distribution line valves, use gate valves or buried-service butterfly valves, with non-rising stems and 2 inch operating nuts (open left). Provide all valves with a cast iron valve box and removable lid for access. Buried-service butterfly valve boxes shall indicate the position of the valve and prevent soil from entering the box. Surround all valve boxes with a 18 inch concrete ring 4 inch thick at final grade. When located in a paved area the top of the valve box and concrete ring shall be flush with the finished grade. Use only butterfly valves on water lines larger than 12-inches in diameter.

(c) Follow all applicable codes for horizontal and vertical separation from non-potable water and sewer lines. Where codes dictate a procedure to follow if separations cannot be provided, follow that procedure. If silent, the following shall be used:

Where water mains and sewers must cross, the sewer can have no joint within 3 feet of the water main unless the sewer is encased in concrete for a distance of at least 10 feet each side of the crossing. If

special conditions dictate that a water main be laid under a gravity-flow sewer, the sewer pipe shall be fully encased in concrete per requirements of the Colorado Springs Utilities for a distance of 10 feet each side of the crossing, or can be made of pressure pipe with no joint located within 3 feet horizontally of the water main, as measured perpendicular to the water main. The sewer must be adequately supported to prevent settling. Sewer force main pressure piping shall always cross beneath water pipe. Maintain a minimum vertical separation of 18-inches between the sewer and water main piping.

(d) Pressure Regulating Valves (PRV), where required, shall be single-seated, hydraulically operated, pilot controlled, diaphragm type globe valves. Valves manufactured by CLA-VAC are currently in use at Fort Carson, however, valves of equal construction and performance may be used.

(e) A pipe casing is not required for HDPE water lines under roadways; however, to avoid road collapse the HDPE pipe shall be bored at a 7 foot depth under existing roadways. Install all other underground utility lines going under roadways, streams, creeks or rivers in a pipe casing. For lines constructed below railroad tracks, consult the Owner of the Railroad for applicable crossing requirements.

6.4.6.3. Wastewater

6.4.6.3.1. Design Criteria

Design and construct sewage system in accordance with applicable criteria. Provide a system which will last a minimum of 50 years in service without major repairs or operating expense. Field verify the sewer system capacity and invert elevations to ensure that it is adequate for the flows generated by the new facilities. No interruption of service shall be allowed on the existing sewer line. Coordinate the sequencing of construction as it affects the existing sewer line with the Contracting Officer. Exterior building sanitary sewer service lines shall be 6 inch minimum diameter. The minimum pipe size between manholes shall be 8 inches. Calculate all design slopes using the Manning formula. Provide all calculations.

6.4.6.3.2. Manholes

Manholes are required at all changes of direction, slope, and size. Space manholes not more than 400 feet apart. Locate manholes at intersections of streets when possible. Avoid placing manholes where the tops will be submerged or subject to surface water inflow. Where the invert of the inlet pipe would be more than 1.5 feet above the manhole floor. provide an exterior drop connection. Provide all calculations.

6.4.6.4. Gas Distribution

6.4.6.4.1. Design, install, and test in accordance with:

(a) National Fuel Gas Code 2009 as applicable.

(b) International Code Council International Fuel Gas Code 2009 exterior to the building limits of construction shall be by the site contractor only.

6.4.6.4.2. Gas Distribution System

Install all new gas lines exterior to the building structure with medium density polyethylene (MDPE), DR-11. Valve and cap service lines at the limits of construction as equired.

(1) Bury natural gas lines to a depth of thirty-six (36) inches in new and existing open areas and under new and existing parking lots; forty-eight (48) inches under new and existing paved or dirt roads and new and existing drainage ditches in the limits of construction by the building Contractor.

(2) Provide meter and pressure regulator assembly (reduce from 50 psig to 2 psig) exterior of building, outside mechanical room, prior to entrance.

6.4.6.4.3. Natural Gas Meters for Buildings Only

Building Meter/Regulator Assembly: Install a shutoff valve, anodeless riser, meter set assembly, and service regulator set assembly on the service line outside each building, eighteen (18) inches above the ground on the building gas service riser. Install an insulating joint on the inlet side of the meter set assembly and service regulator to prevent flow of electrical current. Provide a 3/8 inch tapped fitting equipped with a plug on both sides of the service regulator, downstream of the gas shutoff valve, for installation of pressure gages for adjusting the regulator. Terminate all service regulator vents and relief vents in the outside air in rain and insect resistant fittings. Locate the open end of the vent where gas can escape freely into the atmosphere, away from any openings into the building and above areas subject to flooding. Provide meters that have a pulse generator with each pulse representing an adjustable volume of gas. The meter shall be capable of operating up to speeds of five hundred (500) pulses per minute with no false pulses. Pulse generators shall provide the maximum number of pulses up to five hundred (500) per minute that is obtainable from the manufacturer. Connect meters to the Post wide Utility Control System (UCS). Provide meters that are temperature and pressure compensating. The preferred gas meter is a Dresser Roots Micro Series PTZ-LOG ML-241 or equal.

6.4.6.4.4. Natural Gas Calorific Value

The calorific value of the natural gas supplied to Fort Carson by Colorado Springs Utilities is 805 BTU/ft3. Use the aforementioned value in any applicable calculations.

6.4.6.5. Utility Installation

Avoid running utilities underneath buildings, streets, and parking lots. In cases where it is necessary for the utilities to cross existing streets, install the lines by boring and jacking methods. No open trenching will be allowed through existing streets unless written permission is obtained and approved by the Contracting Officer. Case wet utilities (including water, sanitary sewer, storm sewer, industrial waste, gas) crossing under roads or tank trails in steel pipe or approved equal and vented or grouted as necessary.

6.4.6.5.1. Trenches

Jacking and boring is required when an underground utility line crosses any roadway. Place sewer and water lines, mains or laterals in separate trenches. The separate trenches shall maintain a minimum horizontal separation of 10 feet and the bottom of the water line shall be at least 1.5 feet above the top of the sewer. Sewers crossing above potable water lines shall maintain a vertical separation of 1.5 feet and must be constructed of suitable pressure pipe or fully encased in a minimum of 6-inch thick concrete for a distance of 10 feet on each side of the crossing. Excavate the trench as recommended by the manufacturer of the pipe to be installed. Bedding and initial backfill material shall consist of select granular material. Select granular material shall consist of materials classified as GW, SW, GW-SW or SW-SM by ASTM D 2487. Select granular material shall have 100 percent by weight passing the 1-inch sieve size and not more than 15 percent by weight passing the No. 200 sieve. Do not use material referred to locally as "Squeegee" or "Pea Gravel". Where no manufacturer's installation manual is available, excavate trench walls to a stable angle of repose as required to properly complete the work. Trench excavations shall adhere to requirements prescribed in EM 385-1-1, Safety and Health Requirements Manual. Give special attention to slopes which may be adversely affected by weather or moisture content.

6.4.6.5.2. Tracer Wire and Utility Warning Tape:

Tracer wire leads shall be brought up, identified, and protected by test stations of the flush-curb-box type and shall be the standard product of a recognized manufacturer (HANDLEY or equal). Test stations shall have a cast iron lid and be mounted in 18 inches of concrete. When test station structures and lids area located in paved areas provide products that are H-20 rated. Where possible, combine the Cathodic Test Station, Valve Box, and Tracer Wire Test Stations in the same concrete pad. Do not place test stations further that 400-ft apart. Coil 18-inches of extra wire into the test stations for maintenance. See standard

detail C1-29a Fort Carson UTILITY TRACER WIRE INSTALLATION DETAILS. Apply the following items to tracer wires and utility warning tape:

(a) Tracer Wire:

(1) Gas lines; #6 AWG type RHW-2, UF Tracer wire or HMWPE CU, (Direct Bury application) stranded copper, colored yellow, installed 6 inches above the pipe.

(2) All other utilities; #12 AWG type RHW-2, UF Tracer wire or HMWPE CU, (Direct Bury application) stranded copper installed along top surface of the utility, wire color to match warning tape color, placed on top of the utility. Tracer wire should be secured to the utility pipe every 3 feet with duct tape (except gas) to hold it in place during backfilling.

(b) Utility Warning Tape:

All underground utilities shall have a 3 to 6-inch wide, non-detectable warning tape, buried 12 to 18-inches below the surface of the ground. Color and marking to match “Warning Tape Color Codes”. Warning tape shall have the utility being identified written in discernable, non-degrading letters spaced in increments of not more than 3 feet.

(c) Wire / Warning Tape Color:

Color	**Utility**
Red;	Electric
Yellow;	Gas, Oil, Dangerous Materials
Orange;	Telephone & Other Communications
Blue or Purple;	Water Systems
Green;	Sewer Systems

6.4.7. Cut and Fill

Cut and Fill requirements include the following:

6.4.7.1. General

Provide positive drainage for all areas and utilize existing drainage ways to the extent possible. It is desirable to direct drainage away from buildings to curb and gutter or road ditches. Avoid swales between buildings and parking areas, if possible. Grade parking areas such that storm water is directed off to the sides, with curbs and gutters to control drainage, and not down the center of the parking area, where possible. Balance earthwork, cut and fill, to the extent possible without compromising the design. Keep the number of existing trees to be removed to a minimum. Do not grade within drip lines of existing trees to be preserved. Provide final grading plans.

6.4.7.2. Adjustment of Existing Structures

Adjust all manholes, valve boxes, or inlets of any nature within the project that do not conform to the new finish grade in either surfaced or unsurfaced areas to the new finish grade. Where inlets, manholes, or valve boxes fall within a surfaced or unpaved roadway or parking, remove and replace the existing frame and cover with a heavy-duty frame and cover. Adjust the structure as needed to fit the new conditions. Provide structures that are of a type suitable for the intended use.

6.4.7.3. Sidewalks

Concrete walks shall have a transverse grade of 2 percent. Maximum longitudinal walk grade shall be 5 percent. Walks designed to provide a handicapped accessible route shall conform to 28 CFR Part 36 ADA Standards for Accessible Design. Give special attention to sidewalks that are on the north (shaded) side of buildings. Design these walks to ensure a freeze/thaw cycle does not result in the formation of ice on the walk. Ice on walks should be a safety consideration for all areas. Double purpose walks are a combination of a straight curb and a concrete walk. Limit their use to areas where the drainage flows away from the curb line or gutter.

6.4.7.4. Stairs

Avoid the use of stairs in sidewalks whenever possible. When stairs are unavoidable, provide at least three risers and handrails. All steps within a stair shall have a uniform tread width and riser height. Risers shall have a height of 4.5 to 6 inches and treads shall have a width of 12 to 17 inches. Treads should slope 2 percent for positive drainage. Keep the height between landings to a maximum of 5 feet to allow a view of the next higher landing whenever possible. The height between landings shall not exceed 12 feet. Landings shall be at least 4 feet long.

6.4.7.5. Transverse Parking Area Grades

(a) Desirable minimum of 2 percent.

(b) Absolute minimum of 1.5 percent for flexible pavement and 1 percent for rigid pavement.

6.4.7.6. Longitudinal Parking Area Grades

Maximum of 4 percent.

6.4.7.7. Road and Street Longitudinal Grades

Desirable maximum grade of 7 percent and absolute maximum grade of 10 percent (absolute maximum grade is subject to government approval.

6.4.7.8. Gutter Grades

(a) Desirable minimum of 0.8 percent.

(b) Absolute minimum of 0.5 percent.

6.4.7.9. Building Floor Elevation

Set building finished floor elevation to ensure that the required minimum and maximum grades are met. Do not construct buildings within a 100-year floodway. Construct first floor of new buildings a minimum of 1 foot above the 100-year flood plain elevation. The finished grades adjacent to the new building will be a minimum of 6 inches below finished floor except where grades are required on walk ways and entrances to buildings that are handicap accessible.

6.4.7.10. Grades Away From Building

(a) Minimum of 5 percent for 10 feet.

(b) Maximum of 10 percent for 10 feet.

6.4.7.11. Overlot Grades

(a) Minimum 1 percent for cohesionless sandy soils.

(b) Minimum 2 percent for cohesive soils or turfed areas.

(c) Sideslopes for ditches, roads, and other turfed areas shall be no steeper than 1V on 3H.

6.4.7.12. Ditches

Grade ditches at non-erodible slopes or line the ditch with an appropriate material to prevent erosion. Use a design storm with a return period of at least 2 years to determine erodibility of ditches and swales. The depth of ditches along pavement shoulders shall be such that the water surface from the 10 year design storm is below pavement subbase and base courses which daylight through the adjacent shoulder.

6.4.8. Borrow Material

(Note to Designer: Edit this paragraph for each project. Coordinate with Fort Carson Department of Public Works (DPW) as to the availability of borrow material and area(s) to be used for disposal of excavated material not required for fill.

Obtain borrow material from areas outside government property. Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Material required for fill or embankment in excess of that produced by excavation within the grading limits shall be obtained from approved private sources outside the limits of Government property. The Contractor shall obtain from the owners the right to procure material, pay royalties and other charges involved, and bear the expense of developing the sources, including rights-of-way for hauling. The source of borrow material shall be submitted for approval. Necessary clearing, grubbing, and satisfactory drainage of borrow pits and the disposal of debris thereon shall be considered related operations to the borrow excavation. The Contractor is responsible for all permitting requirements associated with utilizing borrow locations.

Dispose of surplus excavated material not required for fill outside the government's property. Soil disposed of outside the limits of Government property shall be disposed of in accordance with federal, state, and local laws. The Contractor is responsible for all permitting requirements associated with utilizing stockpile locations.

6.4.9. Haul Routes and Staging Areas

The Contractor's access and haul routes to the project location shall be as shown on the RFP drawings in Appendix J – Drawings. Locate Contractor's parking areas near the staging areas. The Coordinate with the Installations Security if access to the site is modified based on FPCON level at the installation. Submit all traffic control plans for work zones, site entries, and haul routes for approval and shall be in accordance with DOT and MUTCD.

6.4.10. Clearing and Grubbing:

(a) Existing Vegetation

Retain and incorporate, where feasible, existing tree(s) into the Landscape Plan of the project to mitigate the loss of the urban forest to the community. Designated tree types to retain and incorporate into the project are listed in Appendix I. Protect tree(s) remaining on site from construction / equipment activities. Protect the critical root zone (drip line) of tree (s) and tree trunk(s). No construction activities or stockpiling of materials or fill shall be within the Critical Root Zone. Tree(s) to remain on-site that are damaged or removed shall be replaced at no additional cost to the Government. The appraised value of the trees will be calculated using the Council of Tree and Landscape Appraisers, Guide for Plant Appraisal, 9th Edition using trunk formula method. The value does not include the replacement cost for another tree.

(b) Tree Removal

If tree(s) in the project area must be removed then replace tree(s) at a 4 to 1 ratio. All tree(s) deemed necessary for removal are subject to Army Regulation 200-1 (4-3, d, 7, and 8). This policy dictates that all merchantable wood products on Army Lands may not be abandoned, destroyed, or donated. Cut all merchantable wood greater than 8 inches in diameter into 14-16 inch lengths and dropped off at the Community Recycling Center. (Building 155, woodlot east of Gate 3.) Contact DPW-Environmental Forestry at (719) 526-1667 or 1692 for the proper tree removal policy, when tree removal is scheduled and arrange with the Installation Recycling Manager (719) 491-0218) to have the wood yard open for delivery.

(c) Tree Transplanting

Tree(s) that are larger than or equal to 4 inches, but less than or equal to 14 inches DBH (Diameter at Breast Height) shall be transplanted. All tree (s) larger than or equal to 10 inches DBH must be evaluated on a case by case basis. Due to environmental conditions all trees must be on drip irrigation systems.

6.4.11. Landscaping:

(a) General

Provide the final Landscape Plan as part of the design package. Landscape improvements shall comply with UFC 4-010-01, and as described below. Design the Landscape plan to visually enhance the new facility and outdoor amenities with color, form and texture, while screening unsightly elements and visually framing views to the new facility and that conforms to the Concept Landscape Plan, if provided, in the RFP. Provide landscaping that is concentrated in various sized, "clustered" group arrangements in mulched beds with metal edging, rather than individually planted trees or shrubs in lawn areas. Trees, shrubs, and ground covers shown on the plan are indicative of areas to be landscaped and should be considered minimum requirements. Plantings shall consist of low maintenance, low water use plants installed in planting beds. Individually planted trees in lawn areas are not permitted. Provide a plant irrigation system to all plants and plant beds. Due to extreme growing conditions for plant establishment, an immediate visual impact by landscaping is required. The use of earth berms to accent the site perimeter, to provide visual relief to flatter sites, and to help screen unsightly features is encouraged. Protect existing trees/planting to remain as indicated on the RFP drawings. Landscaping shall provide shading for walkways, parking lots, patio areas, framing of the building and enhancements to the front entry. Provide as a minimum, the following plantings:

TYPE:

See Plan List, Appendix - I, for allowable plant materials.

QUANTITY & SIZE:

Evergreen trees: 6' tall minimum. The designer is encouraged to stagger heights of evergreen trees, when provided within each individual bed, to create a visual variety. Large deciduous trees; 2 1/2-inch caliper; small deciduous trees: 1-1/2-inch caliper; Shrubs: 5 gallon containers (large shrubs) and 3 gallon containers (medium & small shrubs and ornamental grasses); perennials: 1 quart containers; and ground covers: 3-inch flats.

Provide landscaping consisting of balled and burlapped trees and container-grown shrubs, ornamental grasses, and ground cover. Provide plant materials from sources within the Colorado Springs area to assure climate adaptability. Coordinate with local nurseries when developing the planting plan to ensure that chosen plants are readily available, and are top performers, in the project area. Extend all planting beds a minimum of 30 inches beyond the tips of tree branches. Plant beds not edged by pavements shall be edged with commercial-quality black metal edging.

(b) Mulching

Provide rock mulch at locations according to the drawings and as a top dressing to all planting beds. Wood mulches are not permitted. Prepare all rock mulch beds and areas indicated for rock surfacing on the drawings with landscape weed barrier fabric installed per manufacturer's instructions. Rock mulch shall be a minimum of 4 inch thick, and consist of Colorado Red 1-1/2-inch crushed dolmitic limestone. The designer is encouraged to use another variety of rock mulch as an accent material or to highlight special site features such as at-grade planters, building entrances, etc.. Acceptable accent mulch includes 1-1/2" or 2" to 4" river gravel.

Areas along the perimeter of the building that do not have sidewalks or paving shall have a minimum 3 foot wide rock mulch bed with metal edging between the building and the grass.

(c) Boulders

A limited use of boulders of a variety of sizes is encouraged in primary landscaped areas to provide visual "variety". The color and type selected must complement the rock mulch selected, and shall conform to ATFP criteria.

6.4.12. Turf:

(a) Soil Preparation

As soon after the site has been stripped of topsoil and vegetation and rough grading has been completed reduce and eliminate weed growth with mowing and other methods. Do not allow weeds to grow more than 6 inches tall in any areas. Seed rough graded areas that will not be finish graded and have final seeding or sodding for an extended length of time with oats at the rate of 50 pounds per acre to reduce

soil erosion and reduce weed growth. Fine grade and seed all areas as soon as possible to reduce soil erosion and reduce weed growth.

Prior to seeding or sodding, scarify all surface soils to a minimum depth of 6 inches and break up soils to a fine, workable texture suitable for seeding and sodding. Remove rocks larger than 3/4" diameter for sodded areas and seed mix areas “A”, “C”, “D”, and “E”. Remove rocks larger than 2” for seed mix “B” areas. Install topsoil to a depth of 2 inches. Topsoil shall be existing topsoil stripped from the site prior to construction or imported from off site and be weed free and without visible plant remains, roots, stalks and grass. Areas within the limits of seeding for mixtures “A”, “C”, “D”, and “E” and sodding shall have 4 cubic yards per 1,000 square feet of well composted organic matter thoroughly worked into the top 6 inches of soil with a rototiller.

After soils have been amended and topsoiled, fine grade all areas to a smooth even surface with no low spots to allow water to puddle. Soil preparation shall occur before designated times allowed for seeding. Prepared seed or sod bed areas shall be approved by the Contracting Officer’s Representative prior to seeding or sodding.

(b) Seeding and Sodding

Sod and seed mixtures “C” and “D” are considered high maintenance grasses. Limit high maintenance type grass areas to be sodded or seeded with grass mixtures “C” and “D” as they will require a permanent irrigation system. Areas with irrigation systems are on designated high value facilities where necessary for the appearance of the facility and located between the building and the parking areas and other designated areas including playgrounds and athletic fields where irrigated high maintenance grasses are a life safety consideration. Seed all other disturbed areas not otherwise surfaced with a native grass of drought tolerant species described in more detail below.

(c) Grass Seeding

TYPE:

See Plant List, Appendix - I, for allowable grass seeds and mixtures. No other mixes will be allowed. Do not use nurse crop or annual grass seeds for erosion control (unless specified) or seeds other than those specified for seeding. All seed shall be bagged and labeled with seed tags on site and available for inspection prior to use.

Reseed areas that have not been seeded as specified with allowable seeds and mixtures as required.

Mix “A” low growing native grass seed is intended for areas immediately adjacent to the building and between parking areas and building entrances.

Mix “B” medium height native grass seed is intended for outlying and industrial areas requiring little or no maintenance. Mix “B” seeding is not appropriate for areas adjacent to walkways or pedestrian routes near buildings.

Mix “C” low maintenance grass seed is intended for baseball and athletic fields and other areas around buildings that are allowed to be irrigated. Seed mix “C” may also be used as a specified mixture for sod areas.

Mix “D” high maintenance grass seed is intended for special use areas where a well kept lawn for special presentation areas and appearance are necessary. Seed mix “D” may also be used as a specified mixture for sod areas.

Mix “E” low growing native grass seed is intended for areas adjacent to buildings but not in areas having an important visual impact and also on slopes equal to or steeper than 4:1.

(d) Seeding Dates

Seed Mix “A” and “E” Seeding shall occur in the Spring between May 15 and June 30 to eliminate early weed development prior to seeding and give the warm season grasses a competitive advantage over weeds. No other seeding periods will be permitted. Cover seed mix “A” area soils that have been graded and exposed to erosion for more than 30 days with hydromulch with tackifier at the rate of 1,500 pounds per acre.

Seed Mix “B” Seeding shall occur between May 15 and September 1. Dormant seeding shall occur between October 15 and February 28. No seeding shall occur outside of these dates. Protect seed mix “B” area soils that have been graded and are exposed to erosion with a cover crop of oats seeded at the rate of 50 pounds per acre no later than August 15 to allow time for adequate cover crop growth.

Seed Mix “C” and “D”. Seeding shall occur between April 1 and August 15. Seeding of these grasses can begin sooner than warm season grasses because these grasses will germinate under cooler conditions. Dormant seeding of these grasses is not permitted. Soil for these grasses must be closely monitored to be kept moist if seeded during the summer. No seeding shall occur outside of these dates. Cover soils for these seed mixes that are graded and exposed to erosion for more than 30 days with hydromulch and tackifier at the rate of 1,500 pounds per acre.

(e) Seeding Methods

(1) Slopes less than 3:1 - Seed mixtures shall be seeded with mechanical equipment. All areas seeded with mix “A”, “C”, “D” and “E” shall use mechanical drill or drop seeders approved by the Contracting Officer’s Representative. Seed mixture “B” shall be drill seeded using a rangeland or grass drill with a small seed/legume box and an agitator box for fluffy or bulky seed. Seed mix “B” seed rows shall be spaced 6 inches apart, and planted 0.5 inches deep. The drill shall have double disk furrow openers with depth bands and packer wheels. Seeding shall be accomplished by following the contour of the slope. The drill shall be calibrated each day or whenever changing seed mixes to ensure even seed distribution. Broadcast seeders may be used in small areas not accessible to the above methods.

(2) Slopes greater than or equal to 3:1 and areas less than 0.5 acre - Seed shall be broadcast by hand, small mechanical spreader, or hydraulic equipment. Broadcast seeded areas shall be raked or harrowed to incorporate the seed into the soil at a depth not exceeding 0.50 inches. Seed shall not be mixed in a tank with hydro-mulch and broadcast. A bio-degradable erosion control blanket is required for slopes 3:1 or greater.

(3) Seeding shall occur at the rate specified when using drop type seeders for seed mixes “A”, “C”, “D”, and “E” and drill seeders for mix “B”. Double the specified seeding rate when broadcast seeding is necessary.

(4) After seeding and fertilizing lightly roll the seed bed to obtain good seed to soil contact. After rolling the soil shall compress approximately 0.5 inches when walked upon.

(f) Fertilizing

Fertilize all seeded and sodded areas, except seed mixture “B” areas, at a rate to supply one pound of fertilizer per 1,000 square feet. Fertilizer should be in the ratio of 3-1-2 with at least 35% slow release fertilizer. Fertilize non native grasses and sodded areas at least one more time during the establishment period with a 20-10-10 fertilizer at the above rate. Seed mix “A” and “E” shall be fertilized only once at time of seeding. Fertilize seed mixes “C” and “D” every 3 months.

(g) Mulching

Use weed-free native hay, weed-free straw, virgin wood fiber hydro-mulch or erosion control blankets to mulch seeded areas and promote germination and seedling establishment. Seed mixtures “A”, “C”, “D” and “E” shall have hydro-mulch with tackifier applied at the rate of 2000 pounds/acre on slopes less than 3:1 and erosion control blankets on slopes 3:1 or greater. Seed mixture “B” shall have hydro mulch or native hay or straw as a mulch and erosion control blankets on slopes 3:1 or greater. Crimp native hay or

straw into the soil to a depth of 3-4 inches. Straw or hay mulch shall protrude above the ground 3-4 inches. Apply hydro-mulch using the recommended rate of an organic tackifier. Use erosion control blankets to protect slopes 3:1 or greater and along drainage areas and drainage swales.

(h) Weed Control

If weed competition becomes abundant (approximately 10% or more of the stand) on the seeded areas use an appropriate herbicide for the type of grass seeded to remove the weeds. However, comply with all federal, state and base requirements for the use of herbicides. Herbicides must be specifically approved for the type of grasses seeded.

(i)Mowing

Mow all seeded and mulched areas the during the establishment period. Mow sodded areas and areas seeded with mixtures “C” and “D” to a height of 2-1/2 inches when the height of the grass become 3-1/2 inches. Mow all low growing warm season grasses seeded areas during the establishment period to a height of 2-1/2 inches whenever the grass or weeds reach a height of 4 to 5 inches. Mow seed mix “B” areas to a height of 6” whenever the height of the grass or weeds exceed 10 inches.

(j) Reseeding

If a partial or total seeding failure is apparent during or after the first growing season, reseed unvegetated areas in the same manner described above. Use appropriate site preparation practices used to create a suitable seedbed for planting, but any established native vegetation shall be undisturbed. Areas that erode and lose seed before establishment can occur shall be immediately reseeded during the next suitable planting period.

(k) Sod

Provide sod that is state-certified as classified by applicable state laws. Provide sod that is locally grown and is comprised of a mixture of improved varieties of turf-type tall fescues or bluegrass depending on the application. Sod shall be required if damaged or removed in areas where an irrigation system exists. If provided as replacement for areas disturbed by the contractor's operations, match the sod type as closely as possible to the existing variety. All sod is required to be supported by sprinkler systems. Provide sod that is free of thatch, diseases, nematodes, soil-borne insects, weeds or undesirable plants, stones larger than 3/4 inches in diameter, woody plant roots and other material detrimental to a healthy stand of grass. Reject dry moldy, yellow, irregularly shaped, torn or uneven end sod pieces. Machine cut sod to a uniform thickness of 1 inch within a tolerance of 0.25 inches, excluding top growth and thatch. Measurement for thickness shall exclude top growth and thatch. Use sod anchors for sloped areas as

recommended by the sod supplier. Water the sod with the lawn irrigation sprinkler system for a period of 90 days after installation of the sod. Water sod with 1/2 inch of water daily for the first three weeks, and then 2 inches per week for the remainder of the 90-day period. If sod is provided as replacement for areas disturbed by the Contractor's operations, assure that the existing irrigation system is shut-off in the affected operations area, but still functions properly in adjacent areas. When operations are complete and replacement sod is installed, reconnect the existing system to assure watering of newly sodded areas as specified above.

(l) Grass Establishment

Establish and maintain a healthy stand of grass for a period of 90 days for sod and seed mix “B” areas. For seed mix “A”, “C”, “D” and “E”, the establishment period is one year which includes irrigating, mowing to the required heights, fertilizing, controlling weed and crabgrass growth. Maintenance periods commence after seeding operations under this Contract are complete or until all work under this entire Contract has been completed and accepted, whichever period is longer. Immediately reseed or repair areas that are damaged or eroded.

Irrigate required seed mixes so the ground remains consistently moist during the first three weeks of sprinkling. Beginning with the fourth week of sprinkling, water the areas every other day, delivering 1/2 inch of water to the ground for each water day. Constantly monitor water irrigation amounts and adjust as necessary to allow optimum growth of grass. Do not over-irrigate or allow irrigation water to cause erosion, ponding in grass, or excessive drainage down streets or walkways.

6.4.12.1 Irrigation System

(a) Irrigate sod areas, areas seeded with seed mixtures “A”, “C”, “D”, and “E” and landscape plantings with a permanent underground irrigation system. Seed mixtures “A”, “C”, “D”, and “E” shall be watered for one year and have the irrigation system maintained and adjusted to cover all turfed areas until final acceptance of the grass establishment and installation of the irrigation system.

(b) Provide an irrigation system that consists of standard, commercially available components. Provide components that are products of manufacturers regularly engaged in the manufacture of such items and shall essentially duplicate those that have been in satisfactory operation for at least ten years. Specify industry standards for xeric region irrigation or water conservation irrigation systems. Irrigation system shall be metered prior to and separately from domestic water.

(c) Provide a sprinkler system that is completely underground, automatically operated by a central sprinkler controller, and capable of providing a precipitation rate of no less than 2 inches of water over all lawn areas per week over a maximum period of 56 hours during mainly the night time hours. Design the lawn sprinkler pop-up retractable heads to be adjustable for coverage and flow. Design tree, shrub, and ground cover bed irrigation to be on separate irrigation zones from grass areas. Provide a drip system for

all tree, shrub, and ground cover beds. Install pipe casings under walks and pavements where irrigation lines cross. Do not allow lawn spray heads to spray over into tree and shrub beds, or on to walks, or pavements. Do not locate irrigation lines within 4 feet of the building to avoid saturating the ground near the building foundations in case an irrigation line breaks. The irrigation system shall operate through a backflow prevention device. Supply all necessary tools and equipment for complete installation. Provide weather shut-off components to regulate irrigating lawns and planting beds. Include sensors for rain override of the controller.

(d) Provide head spacing per the manufacturer's recommendations. Prepare complete design drawings that include typical head spacing, system layout, pipe size, controller and backflow prevention device locations, and available and required pressures. Show components on the irrigation plans for review. Provide O&M manual with the above information for the project adjacent to the controller.

(e) Install a reduced pressure principle backflow preventer between the irrigation system and the potable water system. Install a strainer upstream of the backflow preventer with a screening element compatible with the emitters or sprinkler heads used and as recommended by the manufacturer. Provide a self-draining, freeze-proof, shutoff valve upstream of the backflow preventer and strainer. Do not use vacuum breakers in lieu of the reduced pressure principle backflow preventer. Equip the system with a quick coupler valve immediately outside the building for blowing water out of the system at the end of the season. Locate the air connection downstream of the backflow preventer and strainer.

(f) Equip high points in the irrigation system with air relief valves. Install shut off valves at various points along the water main serving the irrigations system so if it is necessary to repair a certain portion of the system the entire system will not be shut down.

(g) Sprinkler system supply piping from building to exterior system should be copper or galvanized steel through wall and where susceptible to freezing. PVC is acceptable if underground.

(h) Provide rain sensors to prevent activation of irrigation system after a rain of 1/2-inch or greater and remain off for 24 hours.

(i) Design the irrigation system to allow easy disconnection of the water source for the lawn portion of the irrigation system so that the installation may stop all water use in order to comply with LEED requirements and to allow for a future connection after the establishment period to a non-potable water source.

6.4.12.2 Bio-Retention and Rain Gardens

The use of bio-retention areas and/or rain gardens are encouraged to obtain LEED points for water quality control and part of an overall storm water management plan for the project.

The designer is encouraged to use these innovative features in association with traditional methods of storm water detention. Plants that tolerate these conditions are included in the Plant List in Appendix I.

6.5. ARCHITECTURE

6.5.1. General: To the maximum extent possible within the contract cost limitation, the buildings shall conform to the look and feel of the architectural style and shall use the same colors as adjacent facilities as expressed herein. The Government will evaluate the extent to which the proposal is compatible with the architectural theme expressed in the RFP during the contract or task order competition. The first priority in order of importance is that the design provides comparable building mass, size, height, and configuration compared to the architectural theme expressed herein. The second priority is that design is providing compatible exterior skin appearance based upon façade, architectural character (period or style), exterior detailing, matching nearby and installation material/color pallets, as described herein.

6.5.2. **Design**

6.5.2.1. Appendix F is provided “For Information Only”, to establish the desired site and architectural themes for the area. Appendix F identifies the desired project look and feel based on Fort Carson’s Installation Architectural Theme from existing and proposed adjacent building forms; i.e. building exterior skin, roof lines, delineation of entrances, proportions of fenestration in relation to elevations, shade and shadow effects, materials, textures, exterior color schemes, and organizational layout.

6.5.2.2. The design should address Fort Carson’s identified preferences. Implement these preferences considering the following:

(a) Achievable within the Construction Contract Cost Limitation (CCL)

(b) Meets Milestones within Maximum Performance Duration.

(c) Achieves Full Scope indentified in this Solicitation

(d) Best Life-Cycle Cost Design

(e) Meets the Specified Sustainable Design and LEED requirements.

(f) Complies with Energy Conservation Requirements Specified in this RFP.

6.5.2.3. Priority #1. Visual Compatibility: Facility Massing (Size, Height, Spacing, Architectural Theme, etc.) Exterior Aesthetic Considerations: The buildings massing, exterior functional aesthetics, and character shall create a comprehensive and harmonious blend of design features that are sympathetic to the style and context of the Installation. The Installation’s intent for this area is:

The Barrack(s) will be located at the Wilderness Road complex, Fort Carson, Colorado. The site for the building(s) is as indicated on the Civil drawings. Barrack(s) shall be restricted to a maximum of three stories to fall within the required height restrictions of Butts Air Field as oulined immediately below.

BUILDING HEIGHT RESTRICTION - Maximum Elevation: 5991.61

The maximum height of ANY portion of the Barracks as constructed, including but not limited to roof ridges, lightning rods, antennae, solar panels, and all other vertically or horizontally oriented portions of the building whether part of the structure or affixed by mechanical means shall not break the plane of the elevation indicated above. Contractor shall coordinate and field verify maximum construction height with the Contracting Officer.

If more than one building is constructed then aesthetics of the buildings shall all be similar. The building(s) shall be designed to identify them as barrack type facilities. The building(s) shall be designed to have main entrance(s) oriented towards the existing parking lot.

6.5.2.4. Priority #2. Architectural Compatibility: Exterior Design Elements (Materials, Style, Construction Details, etc.) Roofs, Exterior Skin, and Windows & Door Fenestrations should promote a visually appealing compatibility with the desired character while not sacrificing the integrity and technical competency of building systems.

6.5.2.5. See Appendix F for exterior colors that apply to Architectural character at Fort Carson. The manufacturers and materials referenced are intended to establish color only, and are not intended to limit manufacturers and material selections.

6.5.2.6. Additional architectural requirements:

(a) Install fall protection anchor points on all roofs with a slope greater than 2:12

(b) Design quality is achieved through the integration of buildings with the site, sustainability, selection of building systems for low-cost maintenance and operation, and an overall balance of aesthetics and functionality. Innovative, creative, or cost-saving proposals, which meet or exceed these requirements are encouraged and will be considered more favorably.

(c) Corridors. With the exception of fire sprinkler heads, no piping, conduit or ductwork shall be exposed in corridors.

(d) Mechanical, Electrical and Communications Rooms. Access to Mechanical, Electrical and Communications spaces shall be limited to authorized personnel through lockable doors. Locate exterior Mechanical, Electrical, Communications Equipment, Air intake and openings in exterior walls to comply with force protection standards.

(e) As a minimum provide Moisture Resistant Gypsum Board (MR) on walls of all Toilet Rooms.

(f) Pre-decorated gypsum board panels and trim system or similar type products and assemblies are not permitted.

(g) The facilities shall have a non-combustible roof covering that meets or exceeds Class 4 impact resistance rating when tested in accordance with UL 22 18.1. Provide permanently attached snow and ice guards above entrances, pedestrian walkways, play areas and hardstand surfaces, where due to the roof layout, there is the potential for moisture runoff (snow, water or ice) at roof edges.

(h) For roof coverings with standing seam metal, provide the material with 22 gauge minimum steel panels that are textured, ribbed, or striated to minimize possibility of oil canning.

(i) If operable windows are provided, install insect screens.

(j) Exterior guard and stair railings shall have a non painted durable weather resistant finish.

(k) Do not expose Insulation on interior wall surfaces accessible to building occupants. As a minimum, provide wall surfaces from finished floor to a height of 8 feet-0 inches or 4inches above finished ceilings as applicable, with gypsum board or similar products that are durable and easy to maintain. Note that this also applies to wall surfaces of mezzanines. Where pipe insulation is exposed in maintenance areas, use insulation jackets of durable, protective fabric, in accordance with the applicable criteria.

(l) Where gypsum wall board is provided, except as otherwise indicated, as a minimum use Impact Resistant Gypsum Board from T.O.S. to 8feet above finished floor along walls of Corridors, Stairs, Conference Rooms, Training Rooms, Break Rooms, Storage Rooms, Supply Rooms, Vending Rooms Recycle Rooms and similar type spaces.

(m) Stairs as applicable. Provide fully enclosed stairs as required to allow circulation to upper floors of the building, and to comply with applicable code egress requirements and to facilitate the movement of people and equipment. Except for egress only, open stairs, risers and metal grating treads are prohibited.

(n) Minimum roofing warranty: Manufacturer's comprehensive non-pro-rated material and labor, no-dollar limit liability, edge to edge coverage, including membrane and accessories, from single source manufacturer for a period of at least 25 years. Warranty is to cover leaks, incidental punctures resulting from normal rooftop inspection, maintenance and/or service, hail up to 2" diameter, and sustained wind speed and/or peak wind gusts up to the structural design wind speed as stated within this RFP. A manufacturer authorized roofing applicator shall install the roofing system, using compatible materials and accessories that will not void or otherwise compromise the integrity of the warranty.

(o) (Provide acrylic placard on the inside face of all Module (1 + 1) entry doors, which will accept an 8-1/2-inch X 11-inch sheet of paper. Mount placard at 66-inches above finish floor.

(p) Ft Carson prefers that counter/dining tables in Modules, that are provided for dining of two people be standard table height, 30-inches above finish floor.

6.5.3. Programmable Electronic Key Card Access Systems:

6.5.3.1. Hardware Requirements:

(a) Provide Keyless Access Entry Control for all UEPH doors as indicated in paragraph 3. Except for exit only doors, provide Keyed Access Entry Control for all other doors, including all bedroom closet doors, as indicated in paragraph 6.5.3.2.

(b) Provide padlock strike plates on all bedroom closet doors and frames to protect door and frame finishes from occupants padlock that are attached to padlock eyes as required in paragraph 3.2.2.1.

(c) Use lever handles per ADA.

(d) Provide a Knox Box, series 3200, as manufactured by Knox Company Phoenix, Arizona, at the main entrance to each building.

Coordinate with the Contracting Officer and Post Fire Marshall the amount and location(s) of Knox Box(s) as required.

(e) For all Public and Module Toilet Rooms, provide dead bolt lock on the main entry door(s) into the space, so that the entire space can be closed off for maintenance or other access control purposes.

6.5.3.2. Keyed Access Entry Control System

(a) Install all locksets and exit devices, including combination and installation of any required cores and key duplication. The core type and combination shall meet the requirements of the Installation's master key system.

(b) To meet the Ft Carson master key plan, provide all keyed lockset devices with patented Best Lock Corporation or ASSA ABLOY Corporation cores. The type of core required will be dependent on the security requirement for the building and/or room. Security requirements do not allow a master/sub-master keying system, unless directed otherwise. During the planning phase in coordination with the Contracting Office, Directorate of Public Works (DPW), the Fort Carson O&M locksmith and Post Physical Security may assist in determining the core type.

(c) Install all permanent lock cores. Coordinate with Best Lock Corporation or ASSA ABLOY Corporation for installation of the cores. Prepare the core schedule, install all cores and validate functionality of all keys for the respective core including the master key(s). Submit a keying schedule prior to making any keys for the project.

(d) Provide cylinders and cores for new locks, including locks provided under other sections of this RFP. Provide fully compatible cylinders with products of the Best Lock Corporation or ASSA ABLOY Corporation with Small Format Interchangeable Cores (SFIC), which are removable by a special control key. Factory set the cores with seven pin tumblers using the BEST or MEDECO Keymark x4 patented keyways. Submit a core code sheet with the cores. Provide master keyed cores in one system for this project. Provide construction interchangeable cores. DPW areas (Equipment spaces; electrical,

communications and mechanical rooms) shall be keyed independently from the building master system. The communication room door(s) shall be on a different core than the DPW areas.

(e) For medical projects, key all pharmacy door locks separately from the building master key system.

(f) All cores shall include four keys for each interior doors and five keys for each exterior doors and with two master keys for each KNOX box placed at the building location. Furnish a quantity of key blanks equal to 20-percent of the total number of file keys. Stamp all keys with “U.S. GOVERNMENT DO NOT DUPLICATE”. In addition, stamp the keys and cores with the core number. Do not place room number on keys. Turn over all master keys provided to the Fort Carson O&M locksmith for security control through the COR. Inventory and turn over all other keys to the Government for issue to the building occupants through the COR. Provide a key cabinet and control system for all facility keys, including a floor plan cross referenced to all key locations

6.5.4. INTERIOR DESIGN

6.5.4.1 Additional Structural Interior Design Requirements:

(a) Not Used.

(b) In reference to 01 10 00 paragraph 3.4.4.8 and 5.3.5.6, also provide window treatment at interior windows where privacy is required, such as bedrooms. Exterior windows requiring window treatment may include but not be limited to rooms such as activity rooms and laundry rooms. In addition, window treatment to be horizontal blinds designed for use in commercial type buildings.

(c) Not Used.

(d) If incorporated into the building color theme, limit blue to minor accents. Use of blue requires DPW and Corps of Engineers approval prior to submitting color boards for review.

(e) Variation of color and/or floor patterns is desired to visually shorten long corridors and add interest.

(f) Not Used.

(g) Incorporate the following in addition to color guidance provided in Section 01 10 00, paragraph 5.3.5.3:

- provide finish color and pattern selections that help hide soiling. Examples of soiling include, but are not limited to:

* boot marks and tracked in dirt on floors

* marks and fingerprints on doors and door frames, systems furniture panels, overheads and tack boards

- do not specify dark color solid surface material, it shows scratches.

(h) Consider building maintenance, functionality and future flexibility when designing the building interior.

(i) It is preferred that porcelain tile and trim, when provided, be unglazed with color extending uniformly through the body of the tile.

Interior building signage requirements:

In reference to 01 10 00 paragraph 5.3.5.5, provide interior signage that conforms to UFC 3-120-01 Air Force Sign Standards (applies to Army projects). Coordinate all signage requirements, including message content, room numbering, and placement with User and COR. Consider UNICOR System 2/90 signage as a good basis of design. Provide signage for all rooms, unless otherwise noted or directed by the Contracting Officer.

6.6. STRUCTURAL DESIGN

6.6.1. Minimum Design Wind Load Requirements

Determine wind loads in accordance with ASCE 7, and based upon the following parameters:

Design Wind Speed: 100 mph
Exposure Category: “C”.
Wind Load Importance Factor: See Table 6-1, in ASCE 7, based on the Occupancy Category.

6.6.2. Minimum Design Snow Load Requirements

Determine snow loads including flat and sloped roof snow loads; drift loads; sliding snow loads; and windward and leeward snow loads in accordance with ASCE 7, using a ground snow load of 15 psf. However, regardless of the snow load values determined in accordance with ASCE 7, the snow loads shall not be less than those required by the most recent edition of the Pikes Peak Regional Building Code (PPRBC). To determine the snow load Importance Factor see Table 7-4, in ASCE 7, based on the Occupancy Category.

6.6.3. Minimum Roof Live Load

Provide for a minimum roof live load of 20 psf, reducible based on tributary area and slope in accordance with ASCE 7, in the design to account for construction and maintenance loads.

6.6.4. Minimum Design Seismic Load Requirements

Determine the seismic design loads in accordance with ASCE 7, and based upon the following parameters:

Site Classification: Based on Final Geotechnical Report
Mapped MCE Short Period Spectral Response Acceleration: Ss =21%
Mapped MCE 1 Second Period Spectral Response Acceleration: S1 = 6%
Seismic Design Category: Based on the Occupancy Category.

6.7. THERMAL PERFORMANCE

There are no additional requirements other than those previously stated/referenced.

6.8. PLUMBING

6.8.1. General Plumbing Requirements

6.8.1.1. Mount equipment in mechanical rooms on four (4) inch thick reinforced concrete housekeeping pads that shall extend six (6) inches beyond the edges of the equipment.

6.8.1.2. Install backflow preventers for accessibility, complying with the requirements of the Colorado Department of Public Health and Environment (CDPHE), the International Building Code, and the International Plumbing Code. State licensed plumbers shall install and/or test backflow preventers and cross connection devices. Perform initial testing and certification of new backflow devices and submit for approval prior to domestic water usage. Do not provide bypass piping around backflow preventers.

6.8.1.3. Install trap seal primer valves in floor drains in accordance with International Plumbing Code, where applicable to a facility type.

6.8.1.4. Unless otherwise specified, locate exterior (key-operated) freeze-proof wall hydrants with vacuum-breaker backflow-preventer on outside walls at 100 feet intervals. Provide a wall hydrant near all Mechanical Room exterior doors. Mount exterior wall hydrants thirty-six (36) inches above finished grade.

6.8.1.5. Urinals. Do not use copper pipe for urinal drain connections to the rest of the plumbing system. The Government prefers one pint flush type urinals.

6.8.1.6. Water Meters. For domestic water supply to each building provide a water meter located inside the building. Meters shall have a pulse generator with each pulse representing an adjustable volume of water. The meter shall be capable of operating up to speeds of 500 pulses per minute with no false pulses. Pulse generators shall provide the maximum number of pulses up to five hundred (500) per minute that is obtainable from the manufacturer. Connect meters to the Post Utility Control System (UCS). Provide isolation valves upstream and downstream of the meter with a building piping drain valve downstream of the meter.

6.8.1.7. Natural gas-fired domestic water heater or boiler used as a domestic water heater shall produce no greater than twenty (20) parts per million (ppm) nitrogen oxides NOx) in the flue gases, at 3% excess oxygen and a combustion air temperature of 68 degrees F.

6.8.1.8. Provide equipment suitable for use at the project altitude, which is approximately 6,000 feet above mean sea level (MSL).

6.8.1.9. Steel domestic water piping is not permitted.

6.8.1.10. Showers as applicable. When vinyl, resin or similar type shower pans are utilized, set in grout mortar bed. Fiberglass showers are not preferred at Ft. Carson.

6.9. SITE ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.9.1. Exterior Primary Electrical Distribution System (15kV)

6.9.1.1. The exterior primary electrical distribution system on Fort Carson is a 12,470Y/7200 volt, 3-phase, 4-wire, 60 hertz, and grounded neutral system.

6.9.1.2. Provide the primary feeder to the facility transformer from the Fort Carson Distribution system connection point using a concrete duct-vault/manhole system. Design all Electrical distribution systems in such a way to allow for switching and sectionalizing to be achieved from above ground. Fort Carson Operations and Maintenance Contractor will energize all new 15 kV systems under separate contract with the Government.

Provide power for the barrack facility or facilities from existing 4x7 200 amp tap box vaults. The existing vaults V0432 and V0438 are located in the vicinity of the location for the new barrack facility or facilities. Contractor is responsible to run primary conductors and conduits from the tap box vault or vaults to a new contractor provided facility transformer pad and transformer for each facility. Facility transformer shall be located as near to the electrical room as possible to minimize voltage drop on secondary conductors. Secondary conductors and conduits shall be provided from the facility transformer to the building main distribution panel of each facility.

Provide power to the Consolidated Boiler/Chiller Facility from new contractor provided 12’-6” long x 6’ wide x 7’ high vault. The new vault is located by the contractor to the northeast of the Consolidated Boiler/Chiller Facility. The new vault will be fed from new contractor provided PMH-9 switch placed on existing vault V0440. Contract shall provide medium voltage cabling and concrete encased ductbank of

four 6” conduits from new PMH-9 to new 12’-6” long x 6’ wide x 7’ high vault. Contractor is responsible to run primary conductors and conduits from new 12’-6” long x 6’ wide x 7’ high vault to a new contractor provided facility transformer pad and transformer for each facility. Facility transformer shall be located as near to the electrical room as possible to minimize voltage drop on secondary conductors. Secondary conductors and conduits shall be provided from the facility transformer to the building main distribution panel of each facility.

6.9.1.3. Run secondary power to the building through a duct system containing copper conductors. The service is to be metered and provide outputs to the base wide utility monitoring and control system (see paragraph 6.9.7 for electric meter values). Install meters in the main switchgear.

Install primary exterior power underground utilizing S&C PMH style pad mounted switches, and/or 4 feet x 7 feet-8 inches x 4 feet sectionalizing vaults, and/or 6 feet x 16 feet-6inches x 7 feet vaults. See paragraph: Electric Vaults and Switches.

6.9.1.4. Primary Cables

(a) The primary cable shall be 15 kV rated, aluminum conductor cable. Insulation shall be 133 percent ethylene-propylene rubber (EPR) not less than 220 mils average thickness. Concentric neutral shall be bare copper wires spaced uniformly around the insulation screen. EPR cable insulation shall conform to the requirements of ICEA S-94-649 and AEIC CS8. Cable jacket shall be black polyethylene with red extruded stripe(s). The cable shall be suitable for wet or dry locations, in conduit, underground duct systems, and direct buried.

6.9.1.4.1. Cable shall be one of three standard sizes used on Fort Carson #2 AWG, 4/0 or 350 kcml. The three sizes, number of strands (concentric neutral), size of neutral wire (No. X AWG), max outside diameter (in) are as follows:

350 kcmil, 37 1/3, 18 X 14, 1.52

4/0 AWG, 19 1/3, 12 X 14, 1.33

2 AWG, 7 Full, 10 X 14, 1.09

6.9.1.4.2. Selection of cable size shall be: 350 kcmil for main 600 amp distribution lines, 4/0 AWG for 200 amp sub-loop feeders, between 4’x7’x4’ vaults and 2 AWG or 4/0 for radial building feeds. Color code phase conductors as follows:

Phase A-1 "RED", Phase B-2 "YELLOW", Phase C-3 "BLUE". After installation of the l5KV cable feeding transformers, all load break elbow are to be placed on insulated parking bushings attached to the transformer parking stand. The DPW operations and Maintenance contractor will check for operation and energize the transformer. (Insulated parking stand will be provided by DPW upon request.)

(a) Install medium voltage 15kv primary conductor in a underground duct in accordance with 6.9.1.5 Underground Duct .

(b) Not Used.

(c) Provide test points for all elbows and separable connectors. **Fault indicators may be required.**

6.9.1.5. Underground Duct

Install primary cable in concrete encased Schedule 40 PVC conduit duct bank. Top of concrete shall be at least 42 inches below finished grade. Concrete cover shall be 3 inches over the duct. Install one spare duct in each primary power duct bank. Duct seal all spare conduits and around conductors and provide pull string in spare duct. Provide red marker maker tape 12 inches above conduit.

6.9.1.6. Pad Mount Transformers

(a) Three Phase transformers shall have the following parameters: internal loop feed type, dead-front, compartmentalized, Bay-O-Net oil immersed in series w/ ELS-P Current limiting fuse, "3 Switch" 200 amp load break internal type switch, internal tap changer, oil temperature gauge, liquid level gauge, pressure vacuum gauge, drain valve, surge arrestors (8.40 MCOV for Solidly Grounded Neutral Circuits), ANSI standard transformer impedances, Aluminum or Copper windings, Delta-Wye. Transformers shall comply with DOE 2010 Transformer efficiency standards and ANSI standard transformer impedances. Transformers shall contain Less-flammable biodegradable fluid with no detectable level of PCB. TRANSFORMER SECONDARY must have: "CLOCK WISE ROTATION".

(b) Single phase transformers shall have the following parameters: loop feed, dead-front, internal Bay-O-Net fusing with ELS-P current limiting fuse and a load break switch bayonet fusing, internal tap changer, oil temperature gauge, liquid level gauge, pressure vacuum gauge, drain valve, surge arrestors required at the end of line (8.40 MCOV), Less-Flammable biodegradable fluid with no detectable level of PCB and have aluminum or copper windings. Transformers shall comply with DOE 2010 transformer efficiency standards and ANSI standard transformer impedances.

6.9.1.7. Primary System Grounding

(a) Primary electrical grounding shall be irreversible compression style crimps or Exothermic welded. Crimps shall be listed & rated for wire sized used, approved crimping tool with proper size dies.

(b) Transformer grounding. Provide #2AWG continues bare copper loop inside the transformer compartment from the tank ground in the primary compartment to the tank ground in the secondary compartment. Extend to the ground rod.

(c) 200 Amp 4 foot X 7 foot – 8 inches x 4 foot self grounding vault. Provide a continuous #2 AWG bare copper wire loop between the vault lid grounding connect studs. Route the ground loop approx one foot below the junction points. Install two each #2 AWG support conductors from each junction point ground lugs to ground to loop. Connect with compression crimps for support, connect vault electrode and 15kv concentric neutral connections.

(d) 600 Amp 6 foot X 12 foot X 7 foot self grounding vault, provide a continuous, bare copper #2/0 AWG wire loop for at the approximate level of the vault electrode level connection, to connect all concentric neutrals, provide a #6 AWG bare copper ground conductor to locater test station pin in top of vault lid.

(e) Pad mounted switch grounding. Provide a continuous bare copper #2/0 AWG ground loop in the base of the switch that is mechanically connected and bonded in the four corners of the switch. Provide two separate ground conductors from opposite corner and connect to two each 10’ X 3/4" ground rods. Ground loop must be installed to allow for switch removal without cutting the ground loop.

6.9.1.8. Electrical Vaults and Switches

(a) Electrical vaults 200 amp sectionalizing for 200 amp feeders shall be 4 feet x7 feet self grounding bottomless type with a torsion assisted vault lid, pentagon head closing bolt, 200 amp 4 point junction points, 6 inches’ of 3/8 inch gravel in the bottom with stairs. 800 foot maximum spacing..

(b) Electric vaults for 600 amp feeders shall be 6’ wide, 12’ long 7’ deep with two each 36 inch lids for vaults without switches one each 36 inch lid and one each switch lid. NO SEPARABLE CONNECTORS ARE ALLOWED IN VAULT.

(1) Use 600 amp vaults for splices, pad mounted switches, capacitor banks, meter stations and pull points in 600 amp lines. Determine manhole spacing per cable pulling limitations and do not spaced more than 1000 feet apart under any circumstance. All vaults require a service loop in the cable, racked to the wall and grounded with proper cable and phasing identification (350 MCM cable minimum).

(2) Use 200 amp vaults for 200 amp sub loop feeds for service extensions, multiple tap locations, and pull points and sectionalizing in 200 amp lines sub feeders lines. (4/0 between vaults)

(3) All separable connectors must be accessible from above grade with a clear level 10 foot working space.

(4) All other switch types are subject to the Contracting Officer's approval.

(c) Pad Mounted Switch shall be PMH style pad mount live front on top of 600 amp vaults. Approved switch configurations are PMH-9, 10 or 11 with required options: P1 Arrestor Provisions, G7 Inner Barriers.

(1) PMH-9 style shall be two 200 amp fused compartments, two 600 amp gang operated switch compartments.

(2) PMH-10 style shall be four 600 amp gang operated switch compartments.

(3) PMH-11 style shall be three 600 amp gang operated switch compartments, one 200 amp fused compartment.

6.9.1.9. Protective Coordination Study

Protective devices proposed shall be based on recommendations of this study. The Government shall not be held responsible for any changes to equipment, device ratings, settings, or additional labor for installation of equipment or devices ordered and/or procured prior to approval of the study. Data consisting of manufacturer's time-current characteristic curves for individual protective devices, recommended settings of adjustable protective devices, and recommended ratings of non-adjustable protective devices shall be submitted. Coordinate medium voltage system fusing with the Contracting Officer's Representativefor fuse size or available system fault data.

6.9.1.10. Field Testing

The proposed test plan, prior to field tests, consisting of complete field test procedure including tests to be performed, test equipment required, and tolerance limits, including complete testing and verification of the ground fault protection equipment, where used. Performance test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. Each test report shall indicate the final position of controls.

6.9.2. Exterior Secondary Electrical Distribution System (600V)

6.9.2.1. Service Entrance (duct, conductors, depth)

Install building service entrances underground, consisting of copper conductors in Schedule 80 PVC duct, with the top of duct 24" below finished grade. Run a spare duct to the service entrance.

6.9.3. Underground Lighting Circuits

Install exterior lighting circuits underground, consisting of copper conductors in PVC duct, minimum size ¾ inch, and with top of duct 24 inches below finished grade. For each ungrounded conductor, install inline fusing at the base of the pole.

6.9.4. Exterior Feeders and Branch Circuits

Install exterior feeder and branch circuits underground, consisting of copper conductors in Schedule 80 PVC duct, with the top of duct 24 inches below finished grade. Include an insulated equipment grounding conductor in all circuits.

6.9.5. Exterior Lighting System

Provide area lighting for all walkways, above all exit doors and area signage. Pole mounted fixtures shall be square or rectangular, shoebox type, and shall be cutoff type to limit light from spilling off-site. Lamps shall be high pressure sodium (HPS) or metal halide (MH) to match surrounding fixture types.. Coordinate fixture types and lamp sizes to meet IESNA illumination criteria. Provide photocell and HOA control and power to all exterior fixtures. Design exterior lighting circuits such that half of all lighting can be turned off. Control the half of the lights that will be turned off from a breaker or breakers or UFS controlled contactor. Provide a lighting design and construct a lighting layout to achieve the Sustainable Site LEED Credit 8 for Light Pollution Reduction. Provide LEED documentation that Credit 8 has been achieved.

6.9.5.1. Parking Lot Lighting

Parking lot lighting shall be HPS or MH to match surrounding fixtures. The light poles shall be square, non-tapered or round tapered aluminum with a dark bronze anodized finish. All poles exceeding 30 feet in height shall have vibration dampers. Provide lighting for all parking provided as part of this project. Limit pole height to 35 feet or less if possible. The lighting system shall be provided with a time clock, a photo cell and a hand off auto switch.

6.9.5.2. Walkway Lighting

Walkway lighting shall HPS or MH (to match surrounding area lighting), Shoebox type. Square Pole, Helix base top of base at ground level, 15 feet in height. Install inline fusing in each ungrounded conductor at the pole base. All poles must have access door in the base to allow access to fuses. Buried junction boxes are not allowed. Square steal pole shall have vibration dampeners factory installed. Where poles are not appropriate, or where barriers are needed between pedestrian and vehicular traffic, lighting bollards may be used. Bollards shall be square, non-tapered aluminum with a dark bronze anodized finish, 42 inches in height.

6.9.5.3. Building Lighting

Provide wall mounted light fixtures above the door at all building entrances , exits, mechanical and electrical room exterior access. Light fixtures shall be designed to illuminate the immediate area around the door, but also minimize light spillage. Light the area around the building to a level of 5 foot-candles over door entrances and 0.5 foot-candles around the rest of the building.

6.9.5.4. Exterior Lighting Control

Provide a Hand-Off-Auto switch to control all exterior lights. Locate this switch in the main electrical room with outside access. Provide a single, north-facing, roof-mounted, photocell and connect to the “Auto” position of the HOA switch. Connect the time clock to the “Auto” position. The photocell shall be the primary controlling device but allow the time clock to override the photo cell if manually selected.

6.9.6. Underground Circuits

Provide parking and walkway lighting with underground branch circuits originating in the building served by the lights. Underground branch circuits shall be insulated copper conductors with an insulated grounding conductor in PVC conduit. Aluminum or direct buried conductors are not permitted. Ground all lighting poles at the base of the pole. Provide a ¾ inch x 10 feet copper clad ground rod at each pole.

6.9.7. Electrical Metering

(a) Electric services are required to be metered for facilities less than 30,000 sq ft. Install watt hour meter for each service. Services 200 amp single phase and less can be dial or digital. Services 200 amps and larger, single or three-phase require digital LCD meter, transformer rated CT meters, factory programmed for 1 to 1 ratio with registers reading KWH and KW 15 minute demand. ANSI/CEA-709-1 b

(LonTalk) protocol compatible connected to the UCS JACE controller. MOD buss or other protocol substitution must have additional licensing and programming needed to communicate correct data (SNVTs) Standard Network Variable Types to the JACE controller.

(b) Meter electric services for facilities of 30,000 Sq ft and larger with smart meter and the following values reported to the base UCS (Utility control system) though the building Tridium JACE controller.

KWH
Current phase A-B-C-N, current unbalance, (coincidence).
Current Average phase A-B-C-N
Current Maximum, date & time, phase A-B-C-N
Voltage coincidence A-B-C
Voltage minimum maximum A-B-C date & time
Phasor angle voltage A-B-C
Phasor angle current A-B-C
Power factor 3 phase (coincidence)
Power factor 3 phase maximum date & time
Power
3 Phase real power (coincidence)
3 Phase reactive power (coincidence)
3 Phase apparent power (coincidence)
Demand 15 min intervals
3 Phase real power demand date & time
3 Phase reactive power demand date & time
3 Phase apparent power demand date & time

(c) The meters shall also meet the following specifications:

(1) Quantities Measured: Power (kilowatt), average demand over 15 minute intervals.
Energy (kilowatt-hours)

(2) Measurement Configuration: For single phase application, 120 - 240V

For three phase application, 208 - 600V, 3 wire delta or 4 wire wye

(3) Operating Temperatures: -20 degrees C to +60 degrees C. For exterior mounting, consider the local ambient temperature extremes and moisture proof enclosures.

(4) Humidity Operating Range: 5% to 90% RH (non-condensing)

(5) Accuracy: Revenue grade:
+ 0.2% at unity power factor
+ 0.5% at 0.5 power factor

(6) Frequency: 60 Hz +I- 5%

(7) Digital Output Only: ANSI/CEA-709.1 b protocol (LonTalk) output for communications using Standard Network Variable

(8) Types (SNVTs) Standard Network Variable Types for measured values.

6.9.8. Cathodic Protection Systems

6.9.8.1. General

Cathodic protection for non-metallic underground utilities (i.e. water, sewer, industrial waste, gas, & storm drainage) that have metal fittings in contact with the earth shall consist of a sacrificial anode system. A “Corrosion Expert” shall design the sacrificial system. Such a person must be accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a

NACE certified Cathodic Protection (CP) Specialist or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metallic piping and tank systems.

6.9.8.2. Cathodic Protection for Non-Metallic Underground Utilities

The sacrificial anode system shall consist of the following:

(a) Design and installation shall meet the requirements of National Association of Corrosion Engineers (NACE) standard RP0169 for metallic piping and metallic components and RP0285 for underground storage tanks. Provide proper protection by showing that one of the criteria in NACE TM0497 is met.

(b) Minimum 25 year life span for the cathodic protection system

(c) Pre-packaged magnesium anodes. Magnesium anode shall be high-potential.

(d) Install anodes at or below the depth of the metallic structure.

(e) Color coded wiring: Black or white for anodes; Red for metallic structure; Blue for reference cell; Yellow for foreign line crossing.

(f) Conductors shall be 12 AWG minimum and shall be rated for direct burial (wet locations) as defined by the latest edition of the National Electric Code (NEC). Conductors shall be solid wire copper.

(g) Continuity bonds between different metallic structures shall consist of two 8 AWG. Conductor shall be rated for use in direct bury wet environments per the NEC.

(h) Coating compound shall be cold-applied wax base material. Wax-tape primer and #1 wax-tape shall be used to cover bolts and exposed uncoated metal fittings. (Trenton Corporation, 313-426-3955, Wax-tape primer / #1 Wax-tape or approved equal).

(i) Test Stations:

1. Flush, curb-type that is H-20 rated.

2. Standard, off-the-shelf product. (Handley or equal).

3. Install in a concrete ring that is at least 4 inches thick and 12-18 inches in diameter.

4. Lockable cover

5. Labeled “C.P. Test”

6. Test stations shall be located not more than 10 feet from the metallic structure.

7. Test station cover shall be color coded to match the type of structure as follows:
a. Yellow - Gas, oil, dangerous materials.
b. Blue - Water systems
c. Green - Sewer systems

8. Test stations shall have two leads to the structure and one lead from the anode. Provide an appropriately rated shunt to tie the anode and one structure lead together. The second structure lead is a spare.

(j) Install a statistical/representative sample of Cathodic Protection Test Stations to provide continued maintenance data and represent all cathodic protection installed in that area. This means that not all of the metallic structures will have a test station, but instead will have the anode connected directly to the metallic structure. This item is specific to metallic fittings on a non-metallic pipeline.

(k) In situations where you have a cluster of fittings provide one statistical/representative reference test station for the below situations:

1. Tee with valves (1-2 or 3 valves)

2. Tee with valve and hydrant within 50-feet

3. Tee with valve to one service line

4. Mechanical joint and valve (same location)

6.9.8.3. Cathodic Protection for Metallic Underground Utilities

Design and construction of the sacrificial anode system shall comply with all the applicable items indicated for metallic fittings on a non-metallic line and the following additional items:

(a) Provide a foreign line crossing test station for metallic lines that cross another metallic line. Run two conductors to each structure. The Corrosion Expert shall verify through testing if the two structures need to be tied together and by what method.

(b) Anodes can be installed on a header in order to reduce the number of test stations.

6.9.8.4. Cathodic Protection for Metallic Underground Storage Tanks (UST)

Cathodic protection design and construction of the sacrificial anode system shall comply with all the applicable items indicated for metallic fittings on a non-metallic line and the following additional items:

(a) An UST that is a certified by the Steel Tank Institute (STI) is typically provided with an anode solidly attached to each end. This may be appropriate for small tanks. The Corrosion Expert will determine the number of anodes required. If more than two anodes are required, then place the additional anodes along the sides of the tank in pairs. Connect the additional anodes shall be connected through a test station to the UST in a method approved by STI.

(b) Provide all tanks with a test station for taking potential readings.

6.9.8.5. Cathodic Protection for Tracer Wire

Design and construction of the sacrificial anode system shall comply with all the applicable items indicated for metallic fittings on a non-metallic line and the following additional items:

(a) Protect underground utility tracer wires with a 1-lb anode for every 400-feet of wire (no CP test station is needed for this situation).

(b) Where possible combine the cathodic protection test station, utility locate tracer wire test station and valve box in the same concrete pad.

6.9.8.6. Installation Documentation.

The following items are common to all sacrificial anode systems, except for the tracer wire cathodic protection:

(a) Identify each protected fitting(s)/structure with a unique alphanumeric number.

(b) Identify each protected fitting(s)/structure with a GPS coordinate.

(c) Provide photographs for each installation of a protected fitting(s)/structure showing the following:

1. Location of the anode in reference to the protected fitting/structure. (Both items should be visible in the picture)

2. Alpha numeric reference number; (that can be related to an exact location on the drawings).

3. Date of installation.

4. Contract description.

5. Contract number.

(d) Conduct and document soil resistivity testing. Soil resistivity testing must be performed to help verify the assumptions made in the calculations. Provide information in the report on where the soil sample was obtained and show soil resistivity locations on the scaled CADD drawings.

(e) Provide a test report with the readings for each location. This shall include the date, time, native, instant off and connected.

(f) Provide a scaled CADD drawing showing the protected fitting(s)/structure with its unique alphanumeric number, structure layout and route, location of anodes, GPS coordinates, and location of soil samples. Provide sufficient landmark information to easily find the items.

(g) Corrosion Expert shall provide training for the system installed.

6.9.9. Telecommunications Outside Plant

6.9.9.1. Outside plant includes all cable pathways, splicing, trenching, plowing, pole mounting hardware, duct banks, cable vaults, main distribution frames and building entrance conduits. 300 pair of copper and 36 strands of fiber optic cable is available to serve the barrack facility or facilities. The copper and fiber optic cable can be acquired from existing communication manholes MH0955 and MH0960. The existing manholes are located in the vicinity of the new barrack facility or facilities. The barrack facility or facilities may obtain the following cabling. From manhole MH0955 - CA 11-03, 701-800/FO11-03, 13-24: From manhole MH0955 - CA11-03, 601-700/FO11-03, 1-12: From manhole MH0960 - CA11-04, 701-800/FO11-04, 13-24: New 100 pair of copper cables CA11-04 1701-1800 and 24 strands of fiber optic cable FO11-04 37-48/85-96 shall be spliced to existing cabling at existing Maintenance Hole MH0962 to serve the Consolidated Boiler/Chiller Facility and CAB Restationing Trailer. Provide 50 pair of copper, CA11-04 1751-1800, and 12 strands of fiber optic cables, FO11-04 85-96, for Consolidated Boiler/Chiller Facility. Provide 50 pair of copper, CA11-04 1701-1750, and 12 strands of fiber optic cables, FO11-04 37-48, for the CAB Restationing Trailer.

6.9.9.2. Building Entrance Protector Terminal (BEP) / Protected Entrance Terminal (PET) / and Labeling

6.9.9.3. Terminate all copper and fiber on BEP/PET that are labeled according to paragraph 6.10.1.2 Building Entrance Protector Terminal (BEP) / Protected Entrance Terminal (PET) / and Labeling and 6.10.1.3 Fiber Optic Patch Panel (FOPP) Labeling.

6.9.9.4. Underground and Direct Buried Cable

Label underground cable, including maintenance loop, where it enters and exits a maintenance hole or Telecommunication Room and on each service loop. Label in accordance with (IAW) specifications identified in section one (1) for copper cable and section two (2) for fiber optic cable of this supplement. Label direct buried cable at every pedestal and at every junction where the cable is exposed.

6.9.9.5. Underground Duct

(a) Duct bank shall consist of 3 (2+spare) EA Barrack bld & 2 EA for RROC & CB/CF 4 inch inside diameter (ID) concrete encased ducts.

(b) The inner duct system shall consist of only three-1 1/4" inner ducts. Do not use Multi Cell or fabric inner duct. Use the 1 1/4" inner ducts for FO cable runs. Install pre-lubricated measuring pulling tape with a minimum breaking strength of 200 lbs (i.e. Mule Tape) secured at each end. When performing duct placement, sweep new ducts and install in the lowest available duct position within the lowest available duct window in the MH.

(c) Install #12 AWG insulated solid copper tracer wire in all ductbanks. Terminate tracer wire at MH in a test well to allow for base locators not to have to enter the MH. In the main telecommunications room or terminate tracer wire on test lug on backboard.

6.9.9.5.1. Fiber Optic Cable

(a) Fiber Optic Cable shall be manufactured by major well-recognized manufacturers with experience in the manufacturing, assembly, and factory testing of cable and components which comply with, EIA TIA/EIA-568-C, and with optical and mechanical performance requirements in accordance with ICEA S-87-640.

(b) The type of protective covering required for fiber optic cables installed in a variety of methods and differing environments situations are as follows:

Type	Installation	Jacket Layers	Armor
(1)	Direct Burial	Double	Double
(2)	Duct Bank	Single	Single
(3)	Concrete Encased Duct Bank	Single	Dielectric

(c) Use Lucent Connectors for terminating connectors on fiber optic cable.

6.9.9.6. Maintenance Holes (MH) and Hand Holes (HH)

(a) Install maintenance holes for all changes in direction. Do not space maintenance holes more than 600 feet apart. Provide the padlock per the specifications of the NEC.

(b) Maintenance hole placement and specifications shall be in accordance with I3A Technical Criteria of sections 3.7.1 – 3.8.1.3. Additional requirements for every newly installed standard MH shall include an approved ladder, support bar and C-Steps placed 18” apart.

(c) Provide a locking lid for maintenance holes. Provide padlocks per NEC specifications. The locking system shall be equivalent or better than the LockDown-System produced by the Barton Southern Company Incorporated. Specifications for the LockDown System are available at: http://www.LockDown-LockDry.com.

(d) Orient maintenance holes so that the top of the “T” is facing away from the Dial Central Office (DCO) or Communication Node (CN). The top or the “T” is the end of the maintenance hole that has conduit knockouts on all 3 sides.

(e) Schedule maintenance hole placement to allow a Quality Assurance Representative from the NEC to observe.

(f) Stencil maintenance holes, using NEC numbers (contact NEC Project POC for MH/HH numbering Scheme and stencil size).

(g) Hand-holes shall be precast with the preferred size of 4 feet wide x 4 feet long x 4 feet high standard type with pull hooks.

(h) Install a ground rod of iron or steel that is galvanized or copper clad (Copper clad steel is preferred) to at least 3/4 inch (19 mm) in diameter and at least 10 feet (2.75 mm) long installed in the floor of each MH or HH, connected to the internal bonding system.

(i) Horizontal Unistrut channels are the preferred method of anchoring the vertical cable racks in MH’s.

6.9.9.7. Splices and Splice Cases

When existing copper splice cases are re-entered to place an additional cable, replace the entry end cap and all sealing tape on the cable going through that end cap followed by the closing of the case. Depending on the type of case and manufacturers recommendations, perform a sustainment test by pressurizing the splice case. Filled splice cases are not the preferred method of installation. Do not place re-enterable compound in a splice case. Preferred splice case type is a “PLP” or equivalent.

6.9.9.8. Existing Cable Usage

(a) Follow the procedures below and report the results back to the NEC. Within a reasonable time frame, the NEC project manager or Quality Assurance Representative will make a repair effort with little or no impact on the project. Consider an alternative routing or repair, where such is feasible.

(b) Evaluating Existing Copper Cable/Testing New Cable. When the installation includes work on an existing cable, test all affected pairs before completing any throws or splices. Submit a list of the defective pairs before the work proceeds. After the cable work is completed, test all affected cable pairs. Clear trouble on any existing pairs that were not on the original list. Test existing copper cable using Multi-pair tester and verify noted issues with a loop analyzer (TDR).

(c) Fiber Optic Existing Cable Guidelines. Use of existing fiber optic cables is acceptable if the following conditions are achieved. Accomplish these determinations during the survey and design phase of the project.

(1) The number of existing strands are adequate to support the required number of links (transmit and receive, multiple closet uplinks, dual uplinks, etc.).

(2) Test the strands to verify that they meet the requirements/specifications of the proposed transport method (1Gig, 10 Gig, DWDM, etc.). Test existing fiber cable using an optical time domain relectometer.

6.9.9.9. As-Built Drawings

(a) Record Drawings of as-built conditions for exterior communications shall include the following: a table of contents, a legend of all symbols, line-types and abbreviations, shop drawings, bore logs, (T0) site plan, outside plant route drawing, (T3) equipment elevations, logical diagrams (T4) details, (T5) schedules and test results. Reference TIA/EIA-606-A, annex C for explanations of the T-series drawings and for drawing symbols.

(b) Accurately reflect the actual installation, specific as to type, size and placements. Show all items installed as a part of the infrastructure and call out.

(c) Supply one electronic copy of all record drawings to the NEC at the completion of the contracted performance of work. The preferred electronic format is a geospatial sub-meter accurate drawing supplied in Bentley .dgn formats.

(d) Show measurements on all drawings.

(e) Show all numbers assigned, applied, stenciled, or labeled during design, construction or installation.

(f) Indicate references to details and other drawings.

(g) T0 Campus or Site Plans

(1) Cable route drawings shall show measurements to all placements, changes of path direction and transitions in path types. Reference: RUS 1751F-643, figure 11 and figure 13. See: http://www.usda.gov/rus/telecom/publications/bulletins.htm

(2) Identify all conduits and ducts on the OSP routing as to the type, size and length to include burial type and depth of cover. Show duct assignment for each section of duct/conduit. Include bore logs.

(3) Identify all tracer wire and grounding.

(4) Identify all maintenance holes, hand holes, pedestals and splices.

(5) Identify all cable using the NEC labeling scheme. Call out cable type, cable sheathing, length of cable between splices. If re-labeling is required then show all re-labeling.

(6) Show the Building Entrance Facilities on the Outside Plant route drawings. Include measurements of where the cable goes under or through the foundation of the building.

(7) A maintenance hole detail is required for all maintenance holes, hand holes and vaults installed or where a change in the existing infrastructure occurred. Maintenance hole/hand-hole/vault details shall be of the butterfly configuration. The BICSI Outside Plant Design reference manual 4th edition chapter 10 Figure 10.16 and 10.17 provide examples of butterfly details. Show splices on the MH details.

(8) Include shop drawings of new MHs/HHs.

(h) T4 Details. Typical details allow one to present a lot of information that otherwise would be redundantly called out many times on the drawings. IE; duct bank sections including tracer wires and typical duct assignments. But do show out all non-typical variations.

(i) Schedules. A splice schedule is required for every splice that is not a 1 to 1 splice. Use schedules for the elimination of redundant information I.E. maintenance hole schedules stating size, type, locking covers etc, pedestal schedule stating size, type, etc.., and conduit schedule, stating cables, duct assignments, etc.

(j) Test results. Include test plans, test results, test equipment calibration certification and test documentation.

6.10. FACILITY ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

6.10.1. Interior Communications

6.10.1.1. General

The premise distribution system shall consist of inside plant, horizontal, riser cables (both copper and fiber optic) and connecting of all station locations to Main Telecommunication Room and Secondary Telecommunication Rooms within a building. Standard outlet configuration shall provide one data and one voice outlet. All wall phone outlets shall be metal chrome plated with two (2) posts

6.10.1.2. Terminate incoming outside plant cables on protector modules, 110-type blocks, R399 Central Office blocks with fuses, with separate patch panels. Terminate the incoming fiber cable on a 19 inch 24-port single-mode fiber optic patch panel. Terminate the patch panel with LC connectors. Racks for all patch panels shall be standard self standing 7 feet high, 19 inches wide racks Run the interior communications in cable trays for the major runs around the building. Supply all the rack(s), patch panels, patch cables and fiber patch cords for the telecommunication rooms. Cables shall be colored accordingly: white for data, blue for voice and red for SIPRNet (if applicable).

6.10.1.3. Building Entrance Protector Terminal (BEP) / Protected Entrance Terminal (PET) / and Labeling

(a) Label BEPs and Fiber Optic Distribution Panels, using yellow 1-inch x 1-inch sized labels. The following are examples for the labeling of BEPs to include BLDG #, CA ID, CA Count:

BLDG#	B3450
CA ID #	CA-07-05
CA Count	CT-601-800+100XD
CA ID #	CA-07-05
CA Count	CT-601-800+100XD
CA ID #	CA-07-05
CA Count	CT-100XD

(b) Identify copper cables with the SIZE + TYPE and CABLE ID + COUNT. For example: 300-pair (P3) cable shall be identified as, P3-24PF CA 07-05 PAIR 601-800+100XD.

6.10.1.4. Fiber Optic Patch Panel (FOPP) Labeling

(a) Below is an example for labeling Single-Mode (SM) fiber optic distribution panel to include fiber optic ID, fiber strands count and labeling scheme.

FIBER OPTIC ID FO 07-07

FIBER STRANDS 12 FO SM

CA COUNT 1-12

(b) Below is an example for labeling Multi-Mode (MM) fiber optic distribution panel to include fiber optic ID, fiber strands count and labeling scheme.

FIBER OPTIC ID FO 07-07

FIBER STRANDS 12 FO MM

CA COUNT 1-12

(c) Label fiber optic cables with the following: SIZE, MODE, CABLE ID, CABLE COUNT

For example: 12 FO SM, 07- 07, 1-12 Strands

6.10.1.5. Locate cable TV equipment in the telecommunications room.

6.10.1.6. For electrical, mechanical, SIPRNet (where applicable to the project) and telecommunications rooms provide a single phone outlet located on the wall for phones that can be mounted on lugs. Wire all telephone voice & data jacks from jack locations on floor plan back to floor mounted voice and data racks in telecommunications room.

6.10.1.7. Horizontal Cable Copper

(a) Sheath colors are as follows: white for data, blue for voice, red shielded twisted pair (STP) for SIPRNET (where applicable). Secure all cables only with Velcro type cable retainers. Do NOT use ratchet type cable (zip) ties on horizontal cabling.

(b) Label cable, using scheme in accordance with TIA/EIA-606-A Standard. Starting at the main entrance of a building, label each outlet clockwise around the room continuing to the left clockwise around the building.

Example: 140-A-2-48 means, Telecomm Room # “140”, Data Rack “A”, Patch panel “2”, Port # “48.”

The removal of the dashes between the first three (3) designators are allowed for more space on faceplate and patch panel “designator strips”.

6.10.1.8. Riser Cable Copper.

Riser cable is that portion of the wiring system that extends vertically to provide connectivity between Telecommunication Rooms or between the BEP and the Telecommunication Rooms located on different floors. Riser cable shall meet the requirements of TIA/EIA-568-B for category 3 Unshielded Twisted Pair. Cable shall be 24 AWG solid copper, labeled and verified with jacket markings.

6.10.1.9. Backbone Cable – Fiber Optic

Backbone fiber optic cable is that portion of the system that provides interconnections between the Main Telecommunication Room and Secondary Telecommunication Rooms. Single-Mode fiber shall meet ICEA S-83-596 requirements. Install backbone fiber in 1-1/4 inch ISP orange HDPE inner-duct.

6.10.1.10. Cable Termination Station Location

The face-plate shall be a minimum of four (4) ports and of the type used with removable/interchangeable snap-in jacks. Install blanks in unused ports that can be removed for later use. The jacks shall be RJ-45 snap-in type and color coded with data jacks- orange and voice jacks- blue.

6.10.1.11. Installation

(a) Cables shall be "home run" to the nearest TR and supported by conduit, cable tray, and ladder rack. J-hooks shall only be used as stated above. J hooks may only be used above suspended ceilings and no more than 25 feet from the conduit outlet above ceiling to the cable tray,

(b) Install signal wire to projectors from the ceiling down the wall into a dedicated outlet for use by a computer and/or run into a cable tray and back to the telecommunications room.

(c) Protected distribution systems (PDS) shall be an approved PDS system that is surface attached. Use in all zone one (1) rated building areas requiring SIPRNET drops (where applicable to the project). The current approved systems by Certified TEMPEST Technical Authority are produced by Holocom Incorporated or Wiremold Incorporated. All Protective Distribution System designs need approval of the Network Enterprise Center Information Assurance Policy Branch section before being installed. Justification for deviation from the NSTISSI No7003 is to allow for future expansion and diverse use of building infrastructure. The Information Assurance point of contact is Cindy Thornburg, (719) 526-1386.

6.10.1.12. Telecommunications Room.

(a) Label equipment racks, using consecutive letters; starting with “A” for the first DATA rack and continue with the next letter for each DATA rack on to the VOICE racks labeled with the next available letter. Label patch panels (PP) consecutively, including Voice Tie Patch Panels. Example: if there are four (4) Voice Tie patch panels, port one of the fourth station’s patch panel would be labeled: TR#-RACK# 4-01.

(b) Maintain a minimum of three feet separation between unclassified and classified equipment racks.

(c) Provide a single wall mounted voice jack outlet for the SIPRNet room (where applicable).

6.10.1.13. Fiber Optic Inner Duct

Install a 1-1/4 inch ISP orange HDPE split inner-duct (or appropriate size) in the wire management section of data and voice racks (when needed). The purpose of the inner duct is to prevent fiber optic patch cables from being crushed and or damaged by other cables i.e. Cat-6 Patch Cords

6.10.1.14. Voice Tie Cables

Terminate pairs of all tie cables on wall mounted 110 type punch-down blocks and on to the other end of CAT-6 patch panels. Size tie cables so that each station location to include a four (4) pair straight thru configuration. This is facilitated by the use of C4 clips.

6.10.1.15. Testing.

(a) Conduct testing, using TIA/EIA standards and with all equipment within current manufacture’s recommended time frame for calibration. Carry a copy of the calibration certification all test equipment and present upon request by NEC’s designated representative (PM or QA). If equipment is not within current manufacture’s recommended time frame, NEC will reject test results and telecommunication services will not be activated in the tested facility until corrected and retested. All work is subject to NEC visual and operational inspection prior to acceptance.

(b) OSP Fiber Optic Cable

(1) Test all OSP fiber strands with Optical Time Domain Reflectometer (OTDR) and power meter / light source. OTDR shall be dual frequency, launch and receive cable. Power meter / light source shall be dual frequency / bi-directional.

(2) Test Result Formatting. Submit test reports in softcopy format in either original or PDF format. All failed readings found require a description of corrective actions taken. NEC must receive a copy of the test documentation a minimum of 10 days prior to pre-final inspection of facility or building complex (2 or more buildings sharing infrastructure resources).

6.10.1.16. As Built Drawings

(a) General Requirements: Record Drawings, accurately reflecting actual as-built installation for interior communications, include the following: a table of contents, a legend of all symbols, line-types and abbreviations, shop drawings, (T1, T2, T3) floor plans, (T3) equipment elevations, logical diagrams (T4) details, (T5) schedules and test results. Reference TIA/EIA-606-A annex C for explanations of the T-series drawings and for drawing symbols. Drawings shall be specific as to type, size and placements. Show and call out all items installed as a part of the infrastructure. Supply one electronic set to the NEC at the completion of the contracted performance of work. The preferred electronic format is a geospatial sub-meter accurate drawing supplied in AutoDesk .dwg or Bentley .dgn formats. Show measurements on all drawings. Include T1 & T2 drawings to show the demarcation points. Show all numbers assigned, applied, stenciled, or labeled during design, construction or installation. Show references to details and other drawings, where applicable.

(b) T1 Layout of complete building per floor. Show and call out sizes of all cable trays, ducts, and main conduits (to include the entrance of the OSP). Also note the use of J-hooks along runs. Show and call out all backbone cable, vertical riser locations, main conduits, chases, pathways. If the complete grounding path is not shown on the T2 or T3 drawings, then show it on the T1 drawings.

(c) T2 Serving zones building areas drop locations and cable IDs. Call out pathway conditions. Label drops on the T2 drawings as they are labeled in the building.

(d) T3 Telecommunications rooms, Enlarged plans, Elevations of racks, backboards etc.

(1) In general, show measurements for all items in the rack elevation. Call out and show all cables and grounding when they appear in elevation. The scale of drawing elevations shall show all measurements and the required details.

(2) Provide elevation drawings of all backboards. Provide an elevation, showing of all racks, cabinets, shelves or other telecommunication Information system equipment.

(3) Provide a floor plan of all telecommunications rooms at a scale no less than 1/4” =1’0” showing all items installed in this space. If this is a newly renovated or constructed room then show every item in this room.

(4) Provide Logical/Riser/One-line diagrams. This is a diagram showing the logical architecture from the OSP to the end user stations. This drawing is also required for all OSP projects containing more than 2 demarcation points. Provide a grounding diagram, which may be incorporated into these diagrams if clarity allows. Show all MDFs. BETs, PETs, 110 blocks, horizontal and vertical backbone cabling, and major equipment items including hubs switches routers etc., from the OSP to the end-user stations. For clarity, vertical and horizontal drawings may be separated. If clarity allows these may be combined with the rack/backboard elevations.

(e) T4 Details. Typical details allow one to present a lot of information that otherwise would be redundantly called out many times on the drawings. IE; duct bank sections including tracer wires and typical duct assignments. But do show out all non-typical variations.

(f) T5 Schedules. A splice schedule is required for every splice that is not a 1 to 1 splice. Use schedules for the elimination of redundant information.

(g) Test results. Include test plans, test results, test equipment calibration certification and test documentation.

6.10.2. Interior Power

The electrical room shall contain the main service to the building and shall have an exterior entrance. Locate all panel boards in the electrical room or non public area. Do not install panel boards in hallways or general access areas. There shall be electrical room on each floor to serve the power needs of each respective floor. Coordinate with the systems furniture supplier to assure that the proper wiring is provided at each outlet for the systems furniture. After coordination, submit the plan to the Contracting Officer for information.

6.10.3. Interior Lighting

Provide 50 foot-candles lighting level in mechanical, communications and electrical rooms.

6.10.4. Equipment Special Conditions

All electrical equipment shall be derated for an altitude of 5900 feet.

6.10.5. Keyless Access and ICIDS

The Government reserves the right to modify the contract to include the installation of keyless access and/or ICIDS.

6.11. HEATING, VENTILATING, AND AIR CONDITIONING

6.11.1. Integrate the control system to the installation's existing UMCS. The existing UMCS is Tridium.

6.11.1.1. The Fort Carson workstation operator, which runs Tridium Niagara AX Framework software and is located in building 214.

6.11.1.2. As part of the HVAC DDC system, provide a JACE controller or approved equal, including the required Tridium Niagara AX Framework software, in the building to allow communication between the building DDC system and the Post Utility Control System (UCS).

(a) Locate JACE controller adjacent to the main building DDC equipment panel in the building mechanical room(s).

(b) Install latest version of graphics within the JACE controller. Use existing media for communication between the building DDC system(s) and the post UCS. Provide a WebUi to each installed JACE panel.

6.11.1.3. Supply the DDC/UCS and coordinate with the Ft. Carson Post Operation Contractor. All HVAC functions and input/output points in the building DDC system(s) shall be capable of being monitored and/or controlled by the Ft. Carson Post UCS at the Ft. Carson operator workstation.

The Ft. Carson Post Operation's Contractor operating the existing UCS server/operator workstation will re-program the UCS operator server, under separate contract, during normal business hours to accommodate the integration of the new building(s) into the existing UCS. Reprogramming will include, but not be limited to, software database programming, development of trend logs, alarm reporting, graphics generation, system calibration, and end-to-end testing of the DDC integration into the UCS.

6.11.1.4. Provide full support to the post Operations Contractor, providing all necessary information to complete the reprogramming of the UCS server and testing of the DDC integration into the UCS, prior to the contract final completion date.

6.11.1.5. If emergency generator(s) and/or UPS are included in the contract, provide the following information, as applicable to the post Operations Contractor, including (but not limited to): equipment data sheets, written control sequences, IF files, and input/output points list.

(a) Generator

(1) Status On/Off

(2) Load KW, KVa, Kvars

(3) Amps A-B-C

(4) Output Voltage

(5) Fuel Level

(6) Battery voltage

(7) Alarms

(b) Uninterruptable Power Supply (UPS)

(1) Contact #1 Status

(2) Contact #2 Status

(3) Battery Test

(4) AC power

(5) UPS Switched

(6) UPS notice

(7) Load, amps, voltage, True Power, apparent Power Bypass Status Net Time Used

6.11.2. General Requirements. The following requirements apply to all heating and cooling systems in the building:

6.11.2.1. Provide refrigeration equipment with an ozone depletion factor of 0.0. Provide manufacturer's optional hail guard for exposed coils on condensers. Provide chillers with manufacturer's standard debris guards enclosing the base of the chiller. For systems utilizing outdoor chillers or cooling coils exposed to outside air, the chilled water shall be a mixture of 35% propylene glycol and 65% distilled or reverse osmosis water. Where available, provide with manufacturer's standard packaged controls:

6.11.2.2. Heating fluid (if used) shall be a mixture of 35% propylene glycol and 65% distilled or reverse osmosis water.

6.11.2.3. Heating and cooling systems with glycol shall include an automatic glycol makeup system.

6.11.2.4. The use of evaporative cooling (including cooling towers, etc) is not permitted.

6.11.2.5. For water source heat pumps, closed-circuit or conventional cooling towers are not permitted.

6.11.2.6. For water cooled chillers, cooling towers are not permitted.

6.11.2.7. Natural gas-fired water boiler shall produce no greater than twenty (20) parts per million (ppm) nitrogen oxides (NOx) in the flue gases, at 3% excess oxygen and a combustion air temperature of 68 degrees F.

6.11.2.8. Install P/T taps on the entering and leaving side of each coil, boiler, chiller, pump, HVAC control sensing device and strainer. Provide a strainer prior to each control valve and pump

6.11.3. Communications Room (Including SPIRNET if applicable)

Provide stand alone, split system, direct expansion cooling systems for communications rooms, which shall operate independent of the building heating and cooling system. Reject heat to the mechanical room or to the building exterior. Design the communications room cooling equipment to maintain a temperature of 72 degrees F.

6.11.4. Electrical Rooms

Consider providing building relief air through the electrical room providing conditioned air through the room.

6.11.5. Mechanical Rooms

Provide mechanical ventilation whenever the mechanical room temperature exceeds 84 degrees F.

6.11.6. Outdoor Design Conditions

[Not Supplied - PS_HVAC : HVAC]

6.12. ENERGY CONSERVATION

6.12.1. Inclusion of Renewable Energy Features. The following renewable energy features have been determined lifecycle cost effective, are included in the project budget and shall be provided:

6.12.1. Not Used.

6.12.2. **Not Used.**

6.12.3. US ARMY GARRISON – FORT CARSON, **WILDERNESS ROAD COMPLEX AND BUTTS ARMY AIRFIELD, ENERGY OBJECTIVE AND STRATEGY**

Vision: Plan, design, construct, and operate a Net Zero Energy community.

Justification: According to Department of Defense Annual Energy Management Report, May 2010; Goal is to have five (5) Army Installations to be Net Zero by 2020, of which Fort Carson is one pilot site listed.

Definition of Net Zero Energy: “An installation or building produces as much energy as it consumes, resulting in a net usage of zero.” Reference: Katherine Hammack, the Assistant Secretary of the Army for Installations, Energy, and the Environment. A Net Zero Energy Installation (NZEI) is an installation that produces as much energy on site as it uses, over the course of a year. To achieve this goal installation must first implement aggressive conservation and efficiency efforts while benchmarking energy consumption to identify further opportunities.

Definition of Net Zero Water: A Net Zero Water Installation limits the consumption of freshwater resources and returns water back to the same watershed so not to deplete the groundwater and surface water resources of that region in quantity and quality over the course of a year.

Definition of Net Zero Waste: A net zero waste installation is an installation that reduces, reuses, and recovers waste streams, converting them to resource values with zero landfill over the course of a year. The components of net zero solid waste start with reducing the amount of waste generated, re-purposing waste, maximizing recycling of waste stream to reclaim recyclable and compostable materials, recovery to generate energy as a by-product of waste reduction, with disposal being non-existent. Every day, more recycling strategies are developed moving beyond metals, paper and cardboard to include mattresses, glass, plastics, batteries, computer printers and motor oil.

Objective: All new vertical construction to be Net Zero Energy Ready. This would mean that each individual building would be designed and constructed to minimize electric, heating and cooling demand, and these utility demands will be met by any economically viable site specific source of renewable energy and/or central energy plant that will ultimately be powered by renewable energy sources.

Justification: EISA 2007 requires new facilities (2010 to 2014) must meet a 55% reduction in fossil fuels than the documented baseline in 2003. This requirement increases until 2030 when new construction must consume no fossil fuels on a net basis. Direction on how to implement this energy analysis is yet to be provided.

Definition of Net Zero Energy Ready: A facility designed and constructed in accordance with the National Renewable Energy Laboratory definition for Net Zero Energy Site, but without some or all of the renewable energy components. The primary focus is on ultra low energy design. Additionally to the maximum extent feasible, future potential fixtures, pathways, structural considerations, and space allocations for renewable energy equipment will be incorporated into the facility at the time of construction and the design should anticipate synergistically working with nearby buildings to reliably and economically meet energy load requirements. FY 12 Projects. Build “Net-Zero Ready” ultra-efficient facilities to be compatible with a future Central Energy Plant (CEP).

Strategy: Maximize use of energy efficient equipment, construct highly insulated building envelopes, and include building orientation, continuous commissioning, and energy monitoring in all projects.

Objective: Ultimately provide a Central Energy Production Plant (CEP) and Distribution System to increase energy efficiency with electricity generation across the community, as well as other appropriate renewable generation systems (e.g. geothermal, wind, PV).

6.12.4. In order to meet the above goals the following items must be provided for the Barracks project:

HVAC:

a. Centralized exhaust system with ERV (80% minimum effectiveness).

b. Dedicated Outdoor Air System for ventilation.

c. Hot water system 4-pipe FCUs for room temperature control in living units; with radiant heating and cooling in ceilings for zone temperature control.

d. All cooling systems utilizing Consolidated Boilers and Chiller Facility must utilize chilled water (42 °F supply temperature, 54 °F. return temperature). The district cooling (DC) chilled water systems will be freeze protected with a 30% propylene glycol solution along with the building systems.

e. All heating hot water systems and domestic water heating systems (except were indicated otherwise for instantaneous domestic water heaters) shall utilize heating water from the Consolidated Boilers and Chiller Facility. **(See Section 01 10 00, paragraphs 3.7.1.1, 3.7.2.6, and 3.7.2.7.**).

f. Plate and frame heat exchangers will be located in mechanical rooms to convert heating hot water and DHW for the building from the distribution system supply lines. Flow meters and temperature sensors shall be provided on the Consolidated Boilers and Chiller Facility hot water piping connected to the heat exchanger to allow for the metering of energy consumption for the building domestic hot water system. A two way control valve shall be provided on the Consolidated Boilers and Chiller Facility hot water supply to the heat exchanger and shall modulate hot water flow to maintain the domestic hot water temperature.

g. The heating system will be operated with seasonally variable temperatures depending on outdoor temperature. Maximum Consolidated Boilers and Chiller Facility supply temperature will be 230 °F and minimum temperature 158 °F. The hot water supply temperature will be reset based on outdoor air temperature from a maximum temperature of 230 deg F to a minimum temperature of 158 deg F. Flow meters and temperature sensors shall be provided on the main distribution hot water system to allow for the metering of energy consumption for the building. A two way control valve shall be provided on the distribution system hot water supply to the heat exchanger and shall modulate hot water flow to maintain the building system hot water supply temperature. The building hot water supply temperature shall be reset based on outdoor air temperature. This will supply the fan coil units, energy recovery air handling units and heaters. The buildings will return water to the heat exchanger and no higher than 122 °F to the Consolidated Boilers and Chiller Facility.

h. The branch chilled water and heating hot water for each building Consolidated Boilers and Chiller Facility with ball valves at valve boxes located along the main trunks. Main trunk lines and one-way ball valves will provided by the CAB Barracks contractor.

i. Provide a separate building (Consolidated Boilers and Chiller Facility) energy plant see Para. 6.18) to provide the DH heating (hot water) and DC cooling outside building (chilled water) to all FY12 CAB Complex buildings indicated in subparagraph 6.12.5.j.1 below. Trunk lines are sized to accommodate the future Central Energy Plant (CEP), not only the FY12s projects, with stub off for 12 inch chilled, 8 inch hot water, and 10 inch gas line provided for the future CEP—and thus having only one point of connection in the future for the energy plant utilities. Four feet clearance shall be provided around each chiller provided, if two chiller(s) are provided a separation distance between chillers of 12 feet must be maintained.

j. Provide a minimum 6 million (output) Btuh, 83.5% thermal efficiency (@ 230 degrees F.), lead boiler with a matching size back-up boiler. [When syngas becomes available at sufficient

quality ensure that burners can be changed to allow fueling with syngas.] Each boiler shall be provided with primary boiler pumps with 100% back-up pumps. The DH system will be operated with seasonally variable temperatures depending on outdoor temperature. Pumps (including back-up) shall be VFD controlled by return hot water temperature not to exceed 122 °F Maximum DH supply temperature will be 230 degrees F. and minimum temperature 158 °F. This hot water system will provide DH system (and DHW) to the FY12 buildings (and all future buildings to be connected to the CEP) to supply the plate and frame heat exchangers located in the mechanical rooms provided by the building D/B contractor to convert heating hot water to the building supply lines at their design temperatures. The flow rates in the Trunk lines sized to accommodate the future CEP will be that that will heat and provide DHW for FY12 buildings only.

1. Verification of the heating loads shall be provided by the Contractor with input from the Corps and D/B AEs as follows the table will be completed by USACE—changes if necessary will be coordinated through the Contracting Officer:

	CERL Heating Load estimate	Heating Load Actual
Brigade Headquarters	10.5 Btuh/S.F.	290,000 Btuh
Barracks	10.5 Btuh/S.F.	xxx,xxx Btuh
ASB Hangar	10.5 Btuh/S.F.	xxx,xxx Btuh
Control Tower	10.5 Btuh/S.F.	xxx,xxx Btuh
	6,000,000 Btuh min.	x,xxx,xxx Btuh

k. Provide a minimum of one air-cooled chiller (9.0 EER) to provide the FY12 cooling needs with 30% propylene glycol provided in the distribution lines (Trunk lines are sized to accommodate the future CEP). Pumps (including back-up) shall be VFD controlled by return hot water temperature differential pressure, and shall be located inside the Consolidated Boilers and Chiller Facility. Chiller shall be 500-560 tons depending on manufacturer.

1. Verification of the heating loads shall be provided by the Contractor with input from the Corps and D/B AEs as follows the table will be completed by USACE —changes if necessary will be coordinated through the Contracting Officer:

	COS Cooling Load estimate	Cooling Load Actual
Brigade Headquarters	110 tons	56 tons
Barracks	210 tons	xx tons

ASB Hangar	100 tons	xx tons
Control Tower	80 tons	xx tons
	500 tons min.	xx tons

l. The Barracks contractor will provide and install the distribution piping to all the FY12 and future buildings as indicated on the RFP drawings. Valve boxes with ball valves shall be provided at each building connection point at the locations shown on the RFP drawings. The distribution piping has been sized to accommodate the Consolidated Boilers and Chiller Facility and the future CEP.

m. Pre-engineered, prefabricated, distribution piping: shall be one of the following or equal - Thermacor Process, L.P., of Fort Worth, Texas / Perma-Pipe Inc., a Subsidiary of MFRI, Inc., Niles, Illinois /European standard, Isoplus (EN 253) pre-insulated pipes. Conduit or outer jacket shall not be metallic; PVC, HDPE, or PEHD (EN 253) are acceptable. Ductile iron pipe shall not be allowed for use as the carrier pipe (inner fluid pipe). Polyurethane foam insulation or equal shall be provided between the inner piping and the conduit or outer jacket.

n. The nominal pressure is 150 psi for both systems. Heating water and chilled water distribution lines shall be installed a minimum of 4 feet-6 inches from finished grade to the top of the outer conduit or outer jacket. Lines shall be run deeper where necessary to avoid interference with other utilities but shall not be run less than 4 foot 6 inches below finished grade. The nominal design pressure is 150 psig.

o. To prevent corrosion, the ends of supply and return pipes of the branches towards yet non-existent buildings shall be interconnected allowing water circulation from supply to return (bypass).

p. The boilers and chiller will be connected to buildings using sections of the hot water and chilled water pipe distribution system. The pipes will be dimensioned as shown on RFP drawings.

q. For buildings that will be added in the future along the main transport pipe branch pipes will be constructed towards the potential sites of the buildings, so that the sidewalks and the pavement of the roads will not have to be touched at a later time when the buildings are connected at a future time. Install a valve at the ends of the branch lines to provide easy connection at a later date.

r. To reduce heat losses supply and return hot water and chilled water pipes shall be insulated, this shall include straight line runs. Install pre-insulated bonded pipes to be directly buried.

s. Manholes for one-way ball valves, etc. are not required. Valves are ball valves, directly buried with street caps on top of the shaft in valve boxes.

t. To reduce heat losses supply and return hot water and chilled water pipes shall be insulated, this shall include straight line runs. Install pre-insulated bonded pipes to be directly buried.

u. Hot water supply and return distribution and chilled water supply and return distribution lines for tracer wire and utility warning tape shall be provided as for “water” lines, see paragraph 6.4.6.5.2. Tracer Wire and Utility Warning Tape.

v. Both distribution systems shall have a leak detection system that matches European Standards e.g. “Nordic method”; “Nordic Monitoring Technology”.

6.12.5 Not Used.

6.12.6 Where Energy Recovery Ventilation (ERV) and Heat Recovery Ventilation (HRV) systems are provided effectiveness shall be greater than 80%.

6.12.7 The building heating and cooling system shall utilize water-to-water heat pumps to produce heating water and chilled water for the building, with at least one unit dedicated to heating and one unit dedicated to cooling. Source (condenser) water for the heat pumps shall be provided indirectly from the heating water and chilled water distribution system.

6.12.8 Drain Water Heat Recovery System. Domestic hot water (DHW) is one of the major heating energy users in the Army barrack buildings. With an average usage rate of 30gal/day per occupant at 110oF, depending upon location and climate, DHW can consume more than 60% of the total annual heating energy supplied to barrack buildings and be the dominant hot water consumer during the non-heating season. Approximately 80-90% of hot water energy goes down the drain. Gravity-Film Heat Exchanger (GFX) is a vertical counterflow heat exchanger that extracts heat out of drain water and applies it to preheat the cold water be mixed with hot water to be used in the shower. The CFX consists of a 3-or 4-inch central cooper pipe (that carries the warm wastewater) with ½-in.cooper coils wound around the central pipe. Heat is transferred from the wastewater passing through the large, central pipe to the cold water simultaneously moving upward through the coils on the outside of the pipe. The coils are flattened a little to increase the contact area and improve heat transfer. The system is beneficial for use with showers where the use of hot and cold water and the production of waste-water from the shower occur at the same time. The most efficient application is to combine several shower drains for each GFX

6.12.9 Building Envelope Insulation R-values: Exterior wall insulation shall be R-19 + R-30ci as a minimum. The roof shall be R-25ci above the roof deck with a total assembly rating of R-50 as a minimum. Windows shall have a maximum U-value of 0.31, with the remaining window requirements, as well as the rest of the fenestration (doors, skylights, etc), permanent shading projections (on the West, South and East walls), and slab on-grade floors, shall meet all the requirements of ASHRAE 189.1-2009 as a minimum.

6.12.10 Equipment efficiencies shall meet the requirements of ASHRAE 189.1-2009 unless indicated otherwise.

6.12.11 Lighting. See tables in Appendix CC for interior lighting recommendations.

*Electrical, Mechanical and Telecommunications rooms shall not have automatic lighting controls.

Exterior Lighting:

I. Required minimum lighting levels for secure areas:

a. 0.5 fc general areas

b. 1.0 fc vehicle entrances

c. 2.0 fc personnel entrances

II. Non-secure roadways, pathways, personnel entrances, and parking areas where exterior lighting is provided:

a. 0.2 fc minimum and 0.5 fc maximum

III. High traffic and pedestrian conflict areas (primary road crosswalks and intersections:

a. 0.5 fc minimum

IV. Optically control lighting to prevent light pollution

V. Lighting power density (LPD)

a. Parking lots and drives – 0.15 W/ft²

b. Walkways less than 10 feet wide – 1.0 W/linear foot

c. Walkways 10 feet wide or greater – 0.2 W/linear foot

d. Stairways – 1.0 W/ft²

e. Main Entrances – 30 W/linear foot of door width

f. Other doors – 20 W/linear foot of door width

g. Canopies and Overhangs – 1.25 W/ft²

6.12.5 EUI. The target site energy consumption budget (including plug loads), for this facility, which is located in DOE climate zone 5B, shall not exceed the EUI 44 (kBTU/ft2 yr) value for the Barracks facilities. Facilities meeting this EUI will be in compliance with ECB 2010-14 energy reduction requirements and will be EISA 2007-ready. They will comply with EISA 2007 fossil fuel reduction requirements, when connected to the CAB combined heat and power (CHP) plant and (Consolidated Boilers and Chiller Facility).

6.12.6 Benchmarking. Compare actual performance data from the first year of operation with the energy design target, preferably by using ENERGY STAR® Portfolio Manager for building and space types covered by ENERGY STAR®. Verify that the building performance meets or exceeds the design target, or that actual energy use is within 10% of the design energy budget for all other building types. For other building and space types, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings.

6.12.7 Measurement and Verification. Meters shall be provided as a minimum as required in accordance with ASHRAE 189.1 (Meters are also required by Section 01 10 00; Para. 6.4.6.4.3., Para. 6.8.1.6., and by Para. 6.9) and also, required to meet EAc5 for LEED 2009 using Option 2 implementing Option B; Energy Conservation Measure Isolation, as specified in the International Performance Measurement &Verification Protocol (IPMVP); Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003. Each facility shall include a DDC/JACE, periodically transmitting information in a format compatible with the installation's existing UMCS. The meters are part of the facility's direct digital control system, and those meters required by ASHRAE 189.1 (Section 01 10 00; Para. 6.4.6.4.3., Para. 6.8.1.6., and by Para. 6.9) and LEED 2009 EAc5, or Paragraph 6.11.1 and in accordance with Para. 5.8.3.2. (i), that information shall then be transmitted over the facility's direct digital control system network to the facility's DDC and then to the Post UCS.

l. Electrical sub-meters

a. The electrical sub-meters, if required by ASHRAE 189.1, shall report the following information:

a. KWh

b. kWh/demand with peak date and time

c. Power factor per Phase

d. Real-time load in Kw

e. Amps per phase

f. Volts per phase

p. Water sub-meters (and Water (and DH and DC even if less than 1,00,000 Btuh) meters even if less than 1000 gallon per day building load)

a. The water sub-meters, if required by ASHRAE 189.1, shall report the following information:

a. At a minimum, meters, shall provide daily data and shall record hourly consumption of water.

q. User reports shall calculate the following consumption (Energy meters shall have a minimum of 36 months storage) (shall include gas meters even if less than 1,000,000 Btuh building load):

a. hourly

b. daily

c. monthly

d. annually

Energy profiles shall be capable of being used to access building performance at least monthly.

None.

6.13. FIRE PROTECTION

6.13.1. Fire detection And Mass Notification

Provide a tamper switch for the Post Indicator Valve (PIV). The tamper switch serving the PIV must report a trouble signal to the Fire Alarm Control Panel (FACP).The system shall be addressable looped with all devices interconnected. The fire alarm system shall communicate to the Fort Carson central fire system which is a radio based Monaco system. Place the Local Operator Control (LOC) near the entrance and the Fire Alarm panel. Provide a LCD and graphic map showing the zone of coverage for the fire alarm system. Coordinate location of exterior horn and light within 20 feet of the Fire Department Connection.

6.13.2. Use Schedule 40 piping for steel sprinkler system piping that is 50 mm (2 inches) and larger.

6.13.3. Location of Fire Department Connection shall be visible and unobstructed.

6.13.4. Provide fire extinguisher cabinet as required by the applicable criteria listed in chapter four of this section. Provide semi recessed fire extinguisher cabinets capable of housing a 10 pound ABC extinguisher. Fire extinguisher cabinet doors shall not be lockable and shall not be breakable.

6.13.5. For any coordination issue or question to the local AHJ please contact the Fort Carson Fire Department Fire Prevention Division (telephone: 719-526-3559).

6.14. SUSTAINABLE DESIGN

6.14.1. LEED Rating Tool Version. This project shall be executed using LEED-NC Version 3.

6.14.2. The minimum requirement for this project is to achieve LEED Silver level. Each non-exempt facility (building plus sitework) must achieve this level. In addition to any facilities indicated as exempt in paragraph 3, the following facilities are exempt from the minimum LEED achievement requirement: The Consolidated Boilers and Chiller Facility (CBF) is exempt from the LEED Silver requirements of Paragraphs 6.14.1 and 6.14.8 of this Section..

6.14.3. Credit Validation: LEED registration, compiling of documentation at LEED OnLine and use of the LEED Letter Templates is required. Registration and payment of registration fees will be by the Contractor. Administration/team management of the online project will be by the Contractor. Validation of credits will be accomplished by the Government. LEED certification of the project by the Contractor is required. The Contractor will obtain LEED certification prior to project closeout. Application, payment of certification of fees and all coordination with USGBC during the certification process will be by the Contractor. GBCI interim review of design phase data is not required by the Government but is recommended. Government validation during project execution does not relieve or modify in any way the Contractor's responsibility to satisfy all requirements for certification as defined by LEED and GBCI. Contractor is not responsible for design phase LEED documentation of any unaltered portion of the design that is accomplished by others. If the project includes unaltered complete design by others, during the certification process Contractor will coordinate all GBCI comments on LEED credits that fall outside Contractor's scope of responsibility with the Government for coordination with the Designer of Record, and Contractor will not be penalized if project fails to achieve certification at the minimum required level due to loss of credits that are the responsibility of others.

6.14.4. Commissioning: See Appendix M for Owner's Project Requirements document(s).

6.14.5. LEED Credits Coordination. The following information is provided relative to Sustainable Sites and other credits.

SS Credit 1 Site Selection:

Project site IS NOT considered prime farmland.

Project site is five feet or more above 100-year flood elevation.

Project site contains no habitat for threatened or endangered species.

No portion of project site lies within 100 feet of any water, wetlands or areas of special concern.

Project site WAS NOT previously used as public parkland.

SS Credit 2 Development Density & Community Connectivity.

Project site DOES NOT meets the criteria for this credit.

SS Credit 3 Brownfield Redevelopment.

Project site DOES NOT meets the criteria for this credit.

SS Credit 4.1 Public Transportation Access.

Project site DOES NOT meets the criteria for this credit.

EA Credit 6 Green Power.

35% of the project's electricity WILL NOT will be provided through an Installation renewable energy contract. Do not purchase Renewable Energy Credits (REC's) to earn this credit.

MR Credit 2 Construction Waste Management.

The Installation does not have an on-post recycling facility available for Contractor's use.

Regional Priority Credits (Version 3 only)

The project zip code is 80913.

6.14.6. LEED Credit Preferences, Guidance and Resources. See Appendix L LEED Project Credit Guidance for supplemental information relating to individual credits.

6.14.7. Not Used

6.14.8. Additional Information

Below are the project-specific differences from the default assumptions in Appendix L. 40% of the minimum points required for Silver level certification shall be earned in any combination of the following credit categories. The Consolidated Boilers and Chiller Facility (CBF) is exempt from these requirements and LEED requirements of Para. 6.14.1:

SS 7.1 Heat Island Effect, Non-roof

SS 7.2 Heat Island Effect, Roof

SS 8 Light Pollution Reduction

WE 1.1 Water Efficient Landscaping – Reduce Potable Water Use by 50% or more

WE 1.2 Water Efficient Landscaping - No Potable Use or No Irrigation - The Contractor shall not attempt to earn this credit

WE 2 Innovative Wastewater Technologies

WE 3 Water Use Reduction earn at least 2-3 points under this credit (30%-35%)

EA 1 Optimize Energy Performance earn at least 15 points under this credit (40%)

EA 2 On-Site Renewable Energy

EA 3 Enhanced Commissioning

EA 5 Measurement & Verification (Option 2)

IEQ 1 Outside Air Delivery Monitoring

IEQ 8.1 Daylight & Views – Daylight 75% of Spaces or more

ID1.1-1.5 Innovative Design, if achieved for energy and/or water savings

ID. 1 Exemplary Performance in Optimize Energy Performance EAc1 (50%)

ID.2 Exemplary Performance in On-Site Renewable Energy EAc2 (15%)

RP 1.1-1.4 Regional Priorities, if achieved for energy and/or water savings

WE 1.2 Water Efficient Landscaping - No Potable Use or No Irrigation - The Contractor shall not attempt to earn this credit

WE 3 Water Use Reduction earn at least 4 points under this credit (40%)

EA 1 Optimize Energy Performance earn at least 19 points under this credit (48%)

EA 2 On-Site Renewable Energy earn at least 7 points under this credit (13%)

In addition to the prerequisites, the following LEED-NC/NR credits are required where applicable:

SS 6.1 Stormwater Design, Quantity Control

SS 6.2 Stormwater Design, Quality Control

WE 1 Water Efficient Landscaping: No potable water used for irrigation not preferred and not allowed

WE 3 Water Use Reduction: earn at least 2-3 points under this credit (30%-35%)

EA 1 Optimize Energy: earn at least 15 points under this credit (40%)

- The FY 12 buildings connected to the district energy systems (DES) uses a central energy conversion plant and transmission and distribution system that provides thermal energy to a group of building (heating via hot water, and cooling via chilled water) criteria in includes the following:

“Required Treatment of District Thermal Energy”, published on May 28, 2008, by USGBC.

“Treatment of District or Campus Thermal Energy in LEED V2 and LEED 2009 – Design & Construction” published on August 13, 2010 --Option 2 Aggregate building and DES scenario is recommended.

EA 3 Enhanced Commissioning

EA 5 Measurement and Verification

MR 2 Construction Waste Management 50%-75%

MR 4 Recycled Content 20% minimum

IEQ 3.1 Construction IAQ Management Plans during construction

IEQ3.2 Construction IAQ Management Plans before Occupancy

IEQ 7.1 Thermal Comfort Design.

6.15. ENVIRONMENTAL

Refer to Paragraph 6.16, and to Appendix E - Environmental Information for additional environmental design statement of work information.

6.16. PERMITS

6.16.1. The following is a list of site specific Federal and State and local Environmental Regulations and Requirements for projects being constructed at Fort Carson. See also Contract Clause 52.236-7, “Permits and Responsibilities.”

6.16.1.1. Environmental Protection Agency (EPA) Region 8

(a) National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharge Associated with Construction Activities. A copy of the permit may be found in Appendix E - Environmental Information. The Building Contractor will be the permitee for this permit.

(1) The Building Contractor will develop a Storm Water Pollution Prevention Plan (SWPPP), which will be approved by the Contracting Office Representative (COR) and Fort Carson. NOTE: The Notice of Intent cannot be filed before SWPPP review has been signed off by the COR and Fort Carson. Fort Carson Storm Water SWPPP Review Form is attached in Appendix E – Environmental Information.

(2) Provide and submit electronically an EPA Notice of Intent (NOI) to EPA Region 8 and Omaha District US Army Corps of Engineers.

(3) Provide and submit an EPA Notice of Termination (NOT) to EPA Region 8 and Omaha District US Army Corps of Engineers once final ground cover is complete and growing. NOTE: Before Notice of Termination is submitted a NOT Form from Fort Carson must be signed off by the COR and Fort Carson. Fort Carson NOT Inspection Form is attached in Appendix E – Environmental Information.

(b) Municipal Separate Storm Sewer System (MS4) Permit. Fort Carson is under a Municipal Separate Storm Sewer System (MS4) permit, issued by the US Environmental Protection Agency (EPA), which allows discharges of storm water from Fort Carson. The MS4 permit also requires Fort Carson to manage a storm water program and enforce compliance with EPA-issued permits. Attached is a Fort Carson Storm water Program Project Information Form which needs to be completed and submitted to the Fort Carson Storm Water Program Manager with Fort Carson Directorate of Public Works, Environmental Division prior to the start of the project. The following are requirements under the MS4 which are not required in the Construction General Permit for NPDES and must be included in the SWPPP.

- Include a dewatering plan in the SWPPP, as the State of Colorado dewatering permit does not apply on Fort Carson.

- Cover trash containers at all times. When trash containers is approximately 85% full, haul container to approved dump location.

- Line all concrete washouts. Exchangeable pans are acceptable, as long as the washout water is managed adequately.

6.16.1.2. State of Colorado Fugitive Dust Permit

(a) Land Development Application. Form located in Appendix E - Environmental Information.

(b) Fugitive Dust Control Plan for Land Development - Notice of Start Up Form. Air Pollution Emission Notice (APEN) is required if project last longer than 6 months construction time and/or is more than 25 acres. Form is located in Appendix E - Environmental Information.

6.16.1.3. Fort Carson Environmental Requirements

(a) Air Emissions. Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards. All air emissions sources (boilers, hot water heaters, air conditioners, chillers, make up air units, emergency generators, etc..) will need to be sized, specified, or otherwise determined prior to construction (ground breaking), and reviewed by the air program to determine permitting requirements and PSD (prevention of significant deterioration) applicability. Information Required for Environmental Air Quality Assessment located in Appendix E - Environmental Information, Contractor needs to complete.

(1) Particulates. Control dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; at all times, including weekends, holidays and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other

work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with all State and local visibility regulations.

(2) Odors. Control odors from construction activities at all times. The odors will not cause a health hazard and will be in compliance with State regulations and/or local ordinances.

(3) Sound Intrusions. Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the state and Installation rules.

(4) Burning. Burning is not allowed on the project site unless specified in other sections of the specifications or authorized in writing by the Contracting Officer Representative. The specific time, location, and manner of burning will be subject to approval.

(5) CO Emissions. Fort Carson is located in a CO Emissions Maintenance Area. Provide the number and types of vehicle and equipment to be utilized during the project to the Directorate of Public Works, Environmental Division. Directorate of Public Works, Environmental Division will use this information to perform an Impact Analysis as part of the Environmental Assessment to determine if the project will meet conformity requirements of the Clean Air Act. Worksheet is provided in Information Required for Environmental Air Quality Assessment in Appendix E - Environmental Information.

(6) Low NOx Burners. All Fuel burning sources will have Low NOx burners capable of meeting NOx emissions of 20ppm or less.

(7) Non Ozone Depleting Refrigerants. All Air conditioning and chiller units will use Non Ozone depleting refrigerants such as R134a, R407, R410, etc.

(8) Emergency Generators. Any emergency generator to be installed will be EPA certified to Tier I11 emissions standards for engines with less than 750hp and Tier I1 for engines above 750hp.

(9) Fort Carson maintains a Title V air permit with a specific condition requiring the permit holder to track insignificant sources of Hazardous Air Pollutant Emissions in order to maintain our classification as a Synthetic Minor Area Source. The requirements for contractors, contract managers, and project proponents is to provide the Air Program with a listing of materials used such as paint, sealers and adhesives by completing the Product Use Data section of page 6 of the Air Quality Assessment form in its entirety.

(b) The POC at the Directorate of Public Works, Environmental Division is the Air Specialist for the Air Program.

(c) Notification of Demolition and Renovation Information Form located in Appendix E - Environmental Information.

(d) Provide Non Hazardous Solid Waste Diversion Report to Directorate of Public Works, Environmental Division. Form located in Appendix E - Environmental Information.

(e) Recycle and Waste Minimization. Fort Carson will provide receptacles, pick-up and dispose of cardboard and paper products. Call Fort Carson's Environmental Compliance Division Office of Solid Waste to arrange for this free service. Recycle materials that are recyclable, e.g., concrete, asphalt, aluminum, copper, brass, steel, plastic, cardboard, glass, etc. There are several recycling points on post.

(f) Fuel and Lubricants

(1) Fuel and lubricants must be brought to the site each day. Storage of these items beyond daily use is not allowed.

(2) Dispose of used lubricants per 40 CFR 279.

(g) Wetland. Do not enter, disturb, destroy or allow discharge of contaminants into wetlands except as authorized.

(h) Disposal of Waste Water

(1) Waste water from construction activities will not be allowed to enter waterways or be discharged prior to being treated to remove pollutants.

(2) Groundwater encountered during construction activities will be land applied.

(3) Discharge water generated from flushing lines after disinfection or on conjunction with hydrostatic testing into the sanitary sewer with prior approval of the Fort Carson Waste Water Treatment Plant. The discharged water must be dechlorinated prior to discharge to the sanitary sewer.

(i) Historical, Archaeological and Cultural Resources. If historical, archaeological or cultural resources are encountered during construction activities, temporarily suspend work and contact the Contracting Officer Representative (COR) and Fort Carson's Cultural Resources Manager.

(j) Integrated Pest Management. Coordinate with the Contracting Officer Representative and the Installation Pest Management Coordinator (IMPC) prior to pesticide application.

(k) Clean Equipment. Clean all equipment prior to arrival at Fort Carson. Remove soil residue egg deposits from plants and pests, noxious weeds and plant seeds.

(l) Military Munitions. Military munitions are defined in 40 CFR 260. Upon discovery, cease work immediately and contact the Contracting Office Representative (COR).

6.17. DEMOLITION

Remove all pavements, utilities and other appurtenances necessary to construct the new facility.

Unless otherwise specified, dispose all removed materials outside the limits of Government-controlled lands in accordance with federal, state, and local regulations. Notify the Contracting Officer if any material to be disposed of is found to contain hazardous, toxic, biological or radiological substances. Remove rubbish and debris from Government property daily to avoid accumulation at the project site.

6.17.1 Pavement Removals/Utility Protection

Avoid installing utilities underneath existing streets, sidewalks, and parking areas. Do not install any utilities underneath buildings and relocate existing utilities that are underneath building. In cases where it is necessary for the utilities to cross existing undisturbed streets, sidewalks, and parking lots, install the lines using trenchless methods. No open trenching will be allowed unless written permission is obtained and approved by the Contracting Officer. Open trenching may be used beneath existing roads that are scheduled for removal, relocation or reconstruction. When open trench methods are approved, streets, sidewalks, and parking lots shall be sawcut, removed and replaced. Remove portions of walks and concrete pavements requiring removal to the nearest joint.

6.17.2 Utility Interference

All existing utilities, including but not limited to storm drain, electrical power, sewer, gas, water, and communication lines that are impacted during the construction of this project shall remain in service. If this is not feasible, coordinate all outages with the Contracting Officer. Mark all underground utilities from

field data and surveys, site investigations, and digging permit locates, within and adjacent to areas of the work. Investigate all work areas with detection devices for cables and pipelines, to confirm locations, identify unknown utilities, and establish depths. Locate all underground utilities potentially disturbed by the work by hand digging or vacuum excavation prior to mechanical trenching or excavating in the vicinity. Notify the Contracting Officer of detection activities 48 hours in advance. Detection devices shall be on-site at all times.

6.18. ADDITIONAL FACILITIES

6.18.1. **CONSOLIDATED BOILERS and CHILLER FACILITY.** Provide a 1,672 SF building is for the consolidated boilers and chiller and associated equipment needed to support the 13th CAB complex. The facility shall have a pair of 3' X 7" personnel doors centered on the access drive side of the facility. An additional emergency egress 3' X 7' personnel door shall be located on the opposite side of the building. Exterior building dimensions shall be as required to accommodate the necessary equipment and its layout per applicable codes. Interior building space shall be clear span for maximum flexibility of future use and layout. Actual building layout shall also be sized to fit within the building site limits as indicated on the attached site plans.

6.18.1.1. **Architecture**

6.18.1.1.1. **Building Exterior.** Provide a facility that relates in appearance to the adjacent 13th CAB Organizational Storage as facilities shown in APPENDIX F.

6.18.1.1.1.1. **Exterior Materials.** Select exterior materials to be attractive, economical, durable and low maintenance. Pre-engineered metal building systems are preferred for their factory finished metal siding and roof panels.

6.18.1.1.1.2. **Roofing.** Roofs on adjacent building are a combination of flat and sloped roofs. The facility shall have a non-combustible roof covering that shall meet or exceeds Class 4 impact resistance rating when tested in accordance with UL 2218.1. For roof coverings with standing seam metal, provide the material with 22 gauge minimum steel panels that are textured, ribbed, or striated to minimize possibility of oil canning. For standing seam and other sloped roofs provide permanently attached measures on the roof to retain snow and ice above all entrances, pedestrian walkways and hardstand surfaces. Roof color shall match adjacent 13th CAB Organizational Storage buildings.

6.18.1.1.1.3. **Walls.** Provide non-combustible exterior walls to match the color of adjacent 13th CAB Organizational Storage buildings.

6.18.1.1.1.4. **Personnel Doors.** Provide exterior personnel doors as indicated and as required by code. Personnel doors shall be heavy duty insulated flush panel steel type and except for exit only personnel doors they shall be provided with vision panels.

6.18.1.1.1.5. **Handrails and Guardrails.** Provide bare or treated metal only on outside stair railing or banisters; do not paint.

6.18.1.1.1.6. **Bollards at Consolidated Boilers and Chiller Facility.** Provide 4-inch diameter by 5-foot high, concrete-filled, schedule 40 galvanized steel pipe bollards, at personnel doors and building corners where the building is adjacent to a vehicular accessed hard stand. Bollard footings shall be designed to withstand typical maintenance vehicular impact (Standard full sized pickup).

6.18.1.1.2. **Building Interior.** Insulation shall not be exposed on interior wall surfaces. As a minimum the full height of interior wall surfaces shall be provided with a prefinished metal liner panel or similar product that is durable and easy to maintain. Ceilings may have exposed insulation that is provided with a vapor barrier.

6.18.1.1.2.1. **Floors.** Provide concrete floors with floor hardener in the Consolidated Boilers and Chiller Facility sloped in accordance with NFPA 30A and IBC/IPC.

6.18.1.1.2.2. **Natural Lighting.** Preference will be given for designs providing natural lighting (ie. skylights, clerestory lighting) for the Consolidated Boilers and Chiller Facility.

6.18.1.1.2.3. **Door Hardware.** Except for exit only doors, provide Keyed Access Entry Control System for the Consolidated Boilers and Chiller Facility personnel doors as indicated in paragraph 6.5.3.2. Lever handles are to be used per ADA.

6.18.1.1.2.4. **Knox Box.** Provide a Knox Box, series 3200, as manufactured by Knox Company Phoenix, Arizona, at the main entrance to the facility. Only one Knox Box is required for this facility.

6.18.1.2. Sustainability. The Consolidated Boilers and Chiller Facility will be an unoccupied facility and is exempt from LEED.

6.18.2. NOT USED.

6.18.3. NOT USED.

6.18.4. NOT USED.

6.18.5. HEATING, VENTILATING AND AIR CONDITIONING:

6.18.5.1. CONSOLIDATED BOILERS AND CHILLER FACILITY

Ventilation air for Consolidated Boilers and Chiller Facility shall be preheated using transpired solar collectors. Design set points shall be as indicated in Table 6.1.

6.18.5.2. BUILDING EXHAUST SYSTEMS

Each facility shall be provided with an exhaust rate in accordance with ASHRAE 62.1 and requirements of paragraph 6.11.5.

6.18.5.3. DESIGN CONDITIONS:

6.18.5.3.1. INDOOR AIR QUALITY:

Base the design on weather data from recognized and authoritative sources weather data in paragraph 5.8.2. Indoor design conditions shall conform to Table 6.1. Indoor air quality shall conform to the current ASHRAE Standard 62.1 and OSHA requirements.

TABLE 6.1 – INDOOR DESIGN DATA

HEATING

Unoccupied Space Design Temperature - 55 deg F

COOLING

Unoccupied Space Design Temperature – 85 deg F

6.18.5.4. LOAD CALCULATIONS:

Heat gain and loss calculations shall be, as a minimum, in accordance with the current edition of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Handbook of Fundamentals. Computer load calculations shall be provided, and shall include complete input and output summaries. Pre-approved computer load analysis programs are Hourly Analysis Program (HAP) by Carrier Corp., TRACE 700 by Trane Corp., DOE-2 by US Department of Energy, and EnergyPlus by DOD/DOE. If the designer wishes to use a different load analysis program, this shall be specifically listed in the proposal and requires approval by the Contracting Officer's Representative. Room air flow requirements shall be computed based on the individual room load. The program shall determine the design heating load. Heating Plant shall be heated and ventilated.

6.18.5.5. ENERGY CONSERVATION:

A whole building approach should be used in achieving the target energy reduction. Energy consumption levels for both the baseline and proposed building shall be determined by using the Performance Rating Method found in ASHRAE Standard 90.1 Appendix G except for the formula for calculating the Performance rating in paragraph G1.2. The Performance Rating shall be calculated in accordance with paragraph 2-1.1 of UFC 3-400-01 Energy Conservation. All calculations shall be performed using a professionally recognized and proven computer program or programs that integrate architectural features with air-conditioning, heating, lighting, and other energy producing and consuming systems. These programs will be capable of simulating the features, systems, and thermal loads used in the design. The energy savings and any parasitic energy loads associated with the utilization of recovered energy and other renewable or waste heat applications shall be included. All calculations shall be included as part of the design analysis. A summary of the energy reduction features should also be included as part of the design analysis. This summary should include for both the baseline and proposed building such items as building insulation values, glass SHGGC and U-factor, roof construction, equipment efficiencies and lighting levels. At the final design all calculations and summary shall be submitted as a separate package in PDF format to be used for agency reporting purposes. See paragraph 5.9.2 for energy reduction targets and additional requirements.

6.18.5.6. LEED

CONSOLIDATED BOILERS AND CHILLER FACILITY is exempt from LEED v3 but, shall be provided with the following:

1. Sustainable Features – CONSOLIDATED BOILERS AND CHILLER FACILITY is exempt from LEED 2009 because it does not meet the square footage and occupancy requirements of the MPRs. Army Supporting Documentation:

- o New facilities that don’t meet LEED minimum program requirements

  - § Score using LEED-NC and incorporate sustainable design features to the maximum extent life cycle cost effective and technically possible

  - § Supporting documentation will be developed see also, paragraph 5.9.1. and section 01 36 13, paragraph 3.5.5.1. and 3.5.5.2.

6.18.5.7. PLUMBING

Plumbing shall be in accordance with paragraph 5.6.1. An emergency shower or eye/wash is not required.

6.18.5.8. WALL HYDRANTS.

6.18.5.8.1. EXTERIOR WALL HYDRANTS

Provide freeze proof wall hydrants around perimeter of CONSOLIDATED BOILERS AND CHILLER FACILITY. Wall hydrants shall have a maximum spacing of 100 feet. Provide freeze proof exterior yard hydrants in mechanical yards containing chillers. All hydrants shall be provided with a vacuum breaker to prevent back flow.

6.18.5.8.2. INTERIOR WALL HYDRANTS

Provide a wall hydrant in Consolidated Boilers and Chiller Facility. All hydrants shall be provided with a vacuum breaker to prevent back flow.

6.18.5.9. DOMESTIC HOT WATER HEATER

A domestic hot water heater is not required.

6.18.5.10. DIRECT DIGITAL CONTROL SYSTEM

See paragraph 5.8.3 and 6.11.1 for DDC control for boilers, chiller(s) and pumps. Which shall all be connected to the Post UCS see paragraph 6.11.1.2.

6.18.5.11. HOT WATER HEATING BOILERS

Provide hot water boilers as indicated in paragraph 6.11.3.7. and 6.12.4 but, not paragraph 5.6.3 and 5.6.4.

6.18.5.12. CHILLERS

Provide chilled water as indicated in paragraph 6.11.2.3. and 6.12.4. Chillers will be fenced with **barbed wire, gates, etc. to meet AT/FP requirements.**

6.18.5.13. MISCELLANEOUS

Provide control as indicated in paragraph 6.11.2.8.

6.18.5.14. COMMISSIONING

Provide commissioning as indicated in paragraph 5.11.4.

6.18.5.15. RENEWABLE ENERGY FEATURES

Provide in accordance with paragraph 5.9.6.and 6.12.3.

6.18.5.16. UTILITIES

Provide chilled water and hot water distribution lines as indicated in paragraph 6.12.4. Water lines shall be In accordance with paragraph 6.4.6.2.1. and natural gas distribution in accordance with paragraph 6.4.6.4. and all utilities paragraph 6.4.6.5.2. Tracer Wire and Utility Warning Tape. Hot water supply and return distribution and chilled water supply and return distribution lines for tracer wire and utility warning tape shall be provided as for “water” lines.

6.18.6. Electrical and Telecommunications Systems

See section 5.7 for general electrical and telecommunications requirements.

6.18.6.1. Site Electrical and Telecommunications Systems

See Paragraph 6.9 for Site Electrical and Telecommunications Systems requirements.

6.18.6.2. Interior Electrical and Telecommunications Systems

Select electrical characteristics of the power system to provide a safe, efficient, and economical distribution of power based upon the size and types of loads to be served. Use distribution and utilization voltages of the highest level that is practical for the load to be served. The effect of nonlinear loads such as computers, other electronic equipment and electronic ballasts shall be considered and accommodated as necessary. Voltage drop shall not exceed the maximum allowed per ASHRAE 90.1. Transient voltage surge protection shall be provided on service equipment.

6.18.6.2.1. Interior Lighting

Interior lighting controls shall be provided in accordance with ASHRAE 90.1. Electronic ballasts for linear fluorescent lamps shall be the high efficiency programmed start type. Provided lighting levels shall be within +/- 10% of required lighting levels.

6.18.6.2.1.1. Light level in mechanical and electrical rooms shall be 30 foot-candles. Lighting shall utilize fixtures T8 fluorescent lamps or LED, if cost effective, with manual on/off switching.

6.18.6.2.2. Interior Power

Power shall be provided for all installed equipment requiring power to include convenience receptacles and government furnished government installed equipment. Panelboards located in accessible areas, shall be lockable and keyed to one master key.

6.18.6.2.2.1. Provide a minimum of one 125V duplex receptacles near electrical equipment.

6.18.6.2.2.2. Provide a minimum of two 125V duplex receptacles in addition to those required by NFPA 70.

6.18.6.3. Telecommunications Requirements

Telecommunication outlets shall be provided per the applicable criteria based on functional purpose of the space within the building.

6.18.6.4. Fire Alarm Requirements

See sections 3.11 and 5.10.4 for fire alarm requirements.

End of Section 01 10 00

This page was intentionally left blank for duplex printing.

SECTION 01 32 01.00 10
PROJECT SCHEDULE

1.0 GENERAL

1.1. REFERENCES

1.2. QUALIFICATION

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. BASIS FOR PAYMENT AND COST LOADING

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

3.4. PROJECT SCHEDULE SUBMISSIONS

3.5. SUBMISSION REQUIREMENTS

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

3.7. REQUESTS FOR TIME EXTENSIONS

3.8. DIRECTED CHANGES

3.9. WEEKLY PROGRESS MEETINGS

3.10. OWNERSHIP OF FLOAT

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

1.0 GENERAL

1.1. REFERENCES

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

U.S. ARMY CORPS OF ENGINEERS (USACE) ER 1-1-11 (1995) Progress, Schedules, and Network Analysis Systems

ECB 2005-10 (2005) Scheduling Requirements for Testing of Mechanical Systems in Construction

(Both are available through the Publications page of the US Army Corps of Engineers TECHINFO Website at http://www.hnd.usace.army.mil/techinfo/. See link for Engineer Regulation ER 1-1-11).

1.2. QUALIFICATIONS

Designate an authorized representative who shall be responsible for the preparation of the schedule and all required updating (statusing) and preparation of reports. The authorized representative shall be experienced in electronic scheduling (has developed, created, and maintained) at least 2 projects similar in nature to this project and shall be experienced in the use of the scheduling software that meets the requirements of this specification.

1.3. SUBMITTALS

Government approval is required for submittals with a "G" designation. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Project Schedule and required updates thereto: G

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.1.1. Submit a project schedule pursuant to Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS and as specified herein for approval, showing the sequence in which the Contractor proposes to perform the work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project, including the design and construction sequences is required. Contractor management personnel shall actively participate in its development. Designers, subcontractors and suppliers working on the project shall also contribute in developing an accurate project schedule. The schedule must be a forward planning as well as a project monitoring tool.

3.1.2. Approved Project Schedule. The approved project schedule shall be used to measure the progress of the work and to aid in evaluating requests for excusable time extensions. The schedule shall be cost loaded and activity coded as specified herein. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments until the Contractor submits the required schedule

3.1.3. Schedule Status Report. Status the schedule on at least a monthly basis, as specified herein. If in the opinion of the Contracting Officer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress including those that may be required by the

Contracting Officer, without additional cost to the Government. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained. See paragraph 3.7.4.

3.1.4. Default Terms. Failure of the Contractor to comply with the requirements of the Contracting Officer shall be grounds for a 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 the contract.

3.2. BASIS FOR PAYMENT AND COST LOADING

The schedule shall be the basis for determining contract earnings during each update period and therefore the amount of each progress payment. Lack of an approved schedule update or qualified scheduling personnel will result in an inability of the Contracting Officer to evaluate contract earned value for the purposes of payment. Failure of the Contractor to provide all information, as specified herein will result in the disapproval of the preliminary, initial and subsequent schedule updates. In the event schedule revisions are directed by the Contracting Officer and those revisions have not been included in subsequent revisions or updates, the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until such revisions to the project schedule have been made. Activity cost loading shall be reasonable as determined by the Contracting Officer. The aggregate value of all activities coded to a contract CLIN as specified herein shall equal the value of the CLIN on the Schedule.

3.3. PROJECT SCHEDULE DETAILED REQUIREMENTS

The computer software system utilized to produce and update the project schedule shall be capable of meeting all requirements of this specification. Failure of the Contractor to meet the requirements of this specification will result in the disapproval of the schedule.

3.3.1. Use of the Critical Path Method

Use the Critical Path Method (CPM) of network calculation to generate the project schedule. Prepare the project schedule using the Precedence Diagram Method (PDM).

3.3.2. Level of Detail Required

Develop the project schedule to an appropriate level of detail. Failure to develop the project schedule to an appropriate level of detail, as determined by the Contracting Officer, will result in its disapproval. The Contracting Officer will consider, but is not limited to, the following characteristics and requirements to determine appropriate level of detail:

3.3.2.1. Activity Durations

Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities shall have Original Durations (OD) greater than 20 work days or 30 calendar days. Procurement activities are defined herein.

3.3.2.2. Design and Permit Activities

Include design and permit activities, including necessary conferences and follow-up actions and design package submission activities. Include the design schedule in the project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period.

This shall be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. Include review and correction periods associated with each item.

3.3.2.3. Procurement Activities

Include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 90 calendar days. A typical procurement sequence includes the string of activities: submit, approve/review, procure, fabricate, and deliver.

3.3.2.4. Mandatory Tasks

Include and properly schedule the following tasks (See also the Sample Preliminary Submittal Register Input Form):

(a) Submission, review and acceptance of design packages, including BIM

(b) Submission of mechanical/electrical/information systems layout drawings

(c) Submission and approval of O & M manuals

(d) Submission and approval of as-built drawings

(e) Submission and approval of 1354 data and installed equipment lists

(f) Submission and approval of testing and air balance (TAB)

(g) Submission of TAB specialist design review report

(h) Submission and approval of fire protection specialist

(i) Submission and approval of testing and balancing of HVAC plus commissioning plans and data. Develop the schedule logic associated with testing and commissioning of mechanical systems to a level of detail consistent with the contract commissioning requirements as well as ECB 2005-10

(j) Air and water balancing

(k) HVAC commissioning

(l) Controls testing plan submission

(m) Controls testing

(n) Performance Verification testing

(o) Other systems testing, if required

(p) Contractor's pre-final inspection

(q) Correction of punch list from Contractor's pre-final inspection

(r) Government's pre-final inspection

(s) Correction of punch list from Government's pre-final inspection

(t) Final Inspection

3.3.2.5. Government Activities. Show Government and other agency activities that could impact progress. These activities include but are not limited to: approvals, design reviews, review conferences, release for construction of design package(s), environmental permit approvals by State regulators, inspections, utility tie-ins, Government Furnished Property/Equipment (GFP) and phasing requirements, if any.

3.3.2.6. Activity Responsibility Coding (RESP)

Assign Responsibility Code for all activities to the Prime Contractor, Subcontractor or Government agency responsible for performing the activity. Activities coded with a Government Responsibility code include, but are not limited to: Government approvals, Government design reviews, environmental permit approvals by State regulators, Government Furnished Equipment (GFE) and authorization to proceed with phasing requirements. Code all activities not coded with a Government Responsibility Code to the Prime Contractor or Subcontractor responsible to perform the work. Activities shall not have more than one Responsibility Code. Examples of acceptable activity code values are: DOR (for the designer of record); ELEC (for the electrical subcontractor); MECH (for the mechanical subcontractor); and GOVT (for USACE). Unacceptable code values are abbreviations of the names of subcontractors.

3.3.2.7. Activity Work Area Coding (AREA)

Assign Work Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew from working in more than one work area at a time due to restraints on resources or space. Examples of Work Area Coding include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities shall not have more than one Work Area Code. Not all activities are required to be Work Area coded. A lack of Work Area coding will indicate the activity is not resource or space constrained.

3.3.2.8. Contract Changes/Requests for Equitable Adjustment (REA) Coding (MODF)

Assign Activity code to any activity or sequence of activities added to the schedule as a result of a Contract Modification, when approved by Contracting Officer, with a Contract Changes/REA Code. Key all Code values to the Government's modification numbering system. Any activity or sequence of activities added to the schedule as a result of alleged constructive changes made by the Government may be added to a copy of the current schedule, subject to the approval of the Contracting Officer. Assign Activity codes for these activities with a Contract Changes/REA Code. Key the code values to the Contractor's numbering system. Approval to add these activities does not necessarily mean the Government accepts responsibility and therefore liability for such activities and any associated impacts to the schedule, but rather the Government recognizes such activities are appropriately added to the schedule for the purposes of maintaining a realistic and meaningful schedule. Such activities shall not be Responsibility Coded to the Government unless approved. An activity shall not have more than one Contract Changes/REA Code

3.3.2.9. Contract Line Item (CLIN) Coding (BIDI)

Code all activities to the CLIN on the Contract Line Item Schedule to which the activity belongs. An activity shall not contain more than one CLIN Item Code. CLIN Item code all activities, even when an activity is not cost loaded.

3.3.2.10. Phase of Work Coding (PHAS)

Assign Phase of Work Code to all activities, based upon the phase of work in which the activity occurs. Code activities to either a Design Phase or a Construction Phase. Code fast track design and construction phases proposed by the Contractor to allow filtering and organizing the schedule by fast track design and construction packages. If the contract specifies construction phasing with separately defined performance periods, identify a Construction Phase Code to allow filtering and organizing the schedule accordingly. Each activity shall have only one Phase of Work code.

3.3.2.11. Category of Work Coding (CATW)

Assign Category of Work code to all Activities based upon the category of work which the activity belongs. Category of Work Code must include, but is not limited to: Design, Design Submittal, design reviews, review conferences, Construction Submittal, Approvals (if any), Acceptance, Procurement,

Fabrication, Delivery, Weather Sensitive Installation, Non-Weather Sensitive Installation, Start Up, Test, and Turnover. Assign a Category of Work code to each activity. Each activity shall have only one Category of Work Code.

3.3.2.12. Definable Features of Work Coding (FOW1, FOW2, FOW3)

Assign a Definable Feature of Work Code to appropriate activities based on the definable feature of work to which the activity belongs. Definable Feature of Work is defined in Specification Section 01 45 04.00 10, Contractor Quality Control. An activity shall not have more than one Definable Feature of Work Code. Not all activities are required to be Definable Feature of Work Coded.

3.3.3. Scheduled Project Completion and Activity Calendars

The schedule interval shall extend from NTP date to the required contract completion date. The contract completion activity (End Project) shall finish based on the required contract durationin the accepted contract proposal, as adjusted for any approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7 day calendar when the contract assigns calendar day durations for the activity such as a Government Acceptance activity. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code - Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The Government will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.

3.3.3.1. Project Start Date

The schedule shall start no earlier than the date on which the NTP was acknowledged. Include as the first activity in the project schedule an activity called "Start Project" or “NTP”. The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, with a zero day duration.

3.3.3.2. Schedule Constraints and Open Ended Logic

Constrain completion of the last activity in the schedule by the contract completion date. Schedule calculations shall result in negative float when the calculated early finish date of the last activity is later than the contract completion date. Include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the contract completion date for the project, and with a zero day duration or by using the “project must finish by” date in the scheduling software. The schedule shall have no constrained dates other than those specified in the contract. The use of artificial float constraints such as “zero fee float” or “zero total float” are typically prohibited. There shall only be 2 open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

3.3.3.3. Early Project Completion

In the event the Preliminary or Initial project schedule calculates an early completion date of the last activity prior to the contract completion date, the Contractor shall identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The Contractor shall include all project and site overhead expenses through the required contract duration period in the contract cost. The Contractor will not be entitled to a time extension or price adjustment for extended overhead related costs due to any delays which may affect early contract completion prior to the required contract completion date. The last activity shall have a late finish constraint equal to the contract completion date and the schedule will calculate positive float. The

Government will not approve an early completion schedule with zero float on the longest path. The Government is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.

3.3.4. Interim Completion Dates

Constrain contractually specified interim completion dates to show negative float when the calculated early finish date of the last activity in that phase is later than the specified interim completion date.

3.3.4.1. Start Phase

Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The “Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and a zero day duration.

3.3.4.2. End Phase

Include as the last activity for a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" constraint date equal to the specified completion date for that phase and a zero day duration.

3.3.4.3. Phase “X” Hammock

Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.

3.3.5. Default Progress Data Disallowed

Do not automatically update Actual Start and Finish dates with default mechanisms that may be included in the scheduling software. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the AS and AF dates on the Daily Quality Control report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's updated schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features which calculate one of these parameters from the other.

3.3.6. Out-of-Sequence Progress

Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the Contracting Officer. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated project schedule..

3.3.7. Negative Lags and Start to Finish Relationships

Lag durations contained in the project schedule shall not have a negative value. Do not use Start to Finish relationships (SF).

3.3.8. Calculation Mode

Schedule calculations shall retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect

sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied (“progress override”) will not be allowed.

3.3.9. Milestones

Include milestone activities for each significant project event including but not limited to: milestone activities for each fast track design package released for construction; design complete; foundation/substructure construction complete; superstructure construction complete; building dry-in or enclosure complete to allow the initiation of finish activities; permanent power complete; and building systems commissioning complete.

3.3.10. Use of Primavera “P6”

If P6 is being used, the following settings are mandatory in the Preliminary Project Schedule, Initial Project Schedule and all schedule submissions to the Government:

3.3.10.1. Activity Codes shall be Project Level not Global or EPS level.

3.3.10.2. Calendars shall be Project Level not Global or Resource level.

3.3.10.3. Set Activity Duration Types to "Fixed Duration & Units".

3.3.10.4. Set Percent Complete Types to "Physical".

3.3.10.5. Use Default Time Period Admin Preferences "8.0 hr/day, 40 hr/week, 172 hr/month, 2000 hr/year". Set Calendar Work Hours/Day to 8.0 Hour days. This is not to mandate the Contractor’s work week. Alternate workweeks may be set up in “Calendar Settings”.

3.3.10.6. Set Schedule Option for defining Critical Activities "Longest Path".

3.3.10.7. Set Schedule Option for defining progressed activities "Retained Logic".

3.3.10.8. Set up Cost loading a single lump sum Resource. The Price/Unit shall be $1/hr, Default Units/Time shall be "8h/d", and select settings "Auto Compute Actuals" and "Calculate costs from units".

3.3.10.9. Activity ID's shall not exceed 10 characters.

3.3.10.10. Activity Names shall have the most defining and detailed description within the first 30 characters.

3.4. PROJECT SCHEDULE SUBMISSIONS

Provide the submissions as described below. The data CD, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1. Preliminary Project Schedule Submission

Submit the Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days for approval within 15 calendar days after the NTP is acknowledged. The approved Preliminary Project Schedule will be used for payment purposes not to exceed 90 calendar days after NTP. Completely cost load the Preliminary Project Schedule to balance the contract award CLINS shown on the Price Schedule. Detail it for the first 90 calendar days. It may be summary in nature for the remaining performance period. It must be early start and late finish constrained and logically tied as previously specified. The Preliminary Project Schedule forms the basis for the Initial Project Schedule specified herein and must include all of the required Plan and Program preparations, submissions and

approvals identified in the contract (for example, Quality Control Plan, Safety Plan, and Environmental Protection Plan) as well as design activities, the planned submissions of all early design packages, permitting activities, design review conference activities and other non-construction activities intended to occur within the first 90 calendar days. Schedule any construction activities planned for the first 90 calendar days after NTP. Constrain planned construction activities by Government acceptance of the associated design package(s) and all other specified Program and Plan approvals. Activity code any activities that are summary in nature after the first 90 calendar days with Responsibility Code (RESP) and Feature of Work code (FOW1, FOW2, FOW3)

3.4.2. Initial Project Schedule Submission

Submit the Initial Project Schedule for approval within 42 calendar days after NTP. The schedule shall demonstrate a reasonable and realistic sequence of activities which represent all work through the entire contract performance period. The Initial Schedule shall be at a reasonable level of detail as determined by the Contracting Officer. Include detailed design and permitting activities, including but not limited to identification of individual design packages, design submission, reviews and conferences; permit submissions and any required Government actions; and long lead procurement activities required prior to design completion. The Initial Project Schedule shall include the entire construction sequence and all fast track construction activities, with as much detail as is known at the time but, as a minimum, shall include all construction start and completion milestone activities, and detailed construction activities through the dry-in milestone, including all activity coding and cost loading. Include the remaining construction, including cost loading, but it may be scheduled summary in nature. As the design proceeds and design packages are developed, fully detail the remaining construction activities concurrent with the monthly schedule updating process. Constrain construction activities by Government acceptance of associated designs. When the design is complete, incorporate into the then approved schedule update all remaining detailed construction activities that are planned to occur after the dry-in milestone.

3.4.3. Design Package Schedule Submission:

With each design package submitted to the Government, submit a frag-net schedule extracted from the then current Preliminary, Initial or Updated schedule which covers the activities associated with that Design Package including construction, procurement and permitting activities.

3.4.4. Periodic Schedule Updates

Based on the result of the meeting specified in PERIODIC SCHEDULE UPDATE MEETINGS, submit periodic schedule updates. These submissions shall enable the Contracting Officer to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgment of the Contracting Officer or authorized representative is necessary for verifying the Contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made. Update the schedule to include detailed lower WBS activities procurement and construction activities as the design progresses, but not later than the submission of the final, un-reviewed design submission for each separate design package. The Contracting Officer may require submission of detailed schedule activities for any distinct construction that is started prior to submission of a final design submission, if such activity is authorized.

3.4.5. Standard Activity Coding Dictionary

Use the activity coding structure defined in the Standard Data Exchange Format (SDEF) in ER 1-1-11, Appendix A. This exact structure is mandatory, even if some fields are not used. A template SDEF compatible schedule backup file (sdef.prx) is available on the QCS website: http://rms.usace.army.mil .

The SDEF format is as follows:

Field	Activity Code	Length	Description

1	WRKP	3	Workers per Day
2	RESP	4	Responsible Party (e.g. GC, subcontractor, USACE)
3	AREA	4	Area of Work
4	MODF	6	Modification or REA number
5	BIDI	6	Bid Item (CLIN)
6	PHAS	2	Phase of Work
7	CATW	1	Category of Work
8	FOW1	10	Feature of Work (used up to 10 characters in length)
9	FOW2	10	Feature of Work (used up to 20 characters in length)
10	FOW3	10	Feature of Work (used up to 30 characters in length)

3.5. SUBMISSION REQUIREMENTS

Submit the following items for the Preliminary Schedule, Initial Schedule, and every Periodic Schedule Update throughout the life of the project:

3.5.1. Data CD's

Provide two sets of data CD's containing the project schedule in the backup format. Each CD shall also contain all previous update backup files. File medium shall be CD. Label each CD, indicating the type of schedule (Preliminary, Initial, Update), full contract number, Data Date and file names. Each schedule shall have a unique file name as determined by the Contractor.

3.5.2. Narrative Report

Provide a Narrative Report with the Preliminary, Initial, and each Periodic Update of the project schedule, as the basis of the progress payment request. The Narrative Report shall include: a description of activities along the 2 most critical paths where the total float is less than or equal to 20 work days, a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken or required to be taken. The narrative report is expected to communicate to the Government, the Contractor's thorough analysis of the schedule output and its plans to compensate for any problems, either current or potential, which are revealed through its analysis. Identify and explain why any activities that, based their calculated late dates, should have either started or finished during the update period but did not.

3.5.3. Approved Changes Verification

Include only those project schedule changes in the schedule submission that have been previously approved by the Contracting Officer. The Narrative Report shall specifically reference, on an activity by

activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4. Schedule Reports

The format, filtering, organizing and sorting for each schedule report shall be as directed by the Contracting Officer. Typically reports shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date Total Float, Actual Start Date, Actual Finish Date, and Percent Complete. The following lists typical reports that will be requested. One or all of these reports may be requested for each schedule submission.

3.5.4.1. Activity Report

A list of all activities sorted according to activity number.

3.5.4.2. Logic Report

A list of detailed predecessor and successor activities for every activity in ascending order sorted by activity number.

3.5.4.3. Total Float Report

A list of all incomplete activities sorted in ascending order of total float. List activities which have the same amount of total float in ascending order of Early Start Dates. Do not show completed activities on this report.

3.5.4.4. Earnings Report by CLIN

A compilation of the Contractor's Total Earnings on the project from the NTP to the data date. This report shall reflect the earnings of specific activities based on the agreements made in the schedule update meeting defined herein. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining progress payments. Group activities by CLIN Item number and sort by activity number. This report shall: sum all activities coded to a particular CLIN and provide a CLIN Item percent earned value; and complete and sum CLIN items to provide a total project percent complete. The printed report shall contain, for each activity: the Activity Number, Activity Description, Original Budgeted Amount, Quantity to Date, Percent Complete (based on cost), and Earnings to Date.

3.5.5. Network Diagram

The network diagram is required for the Preliminary, Initial and Periodic Updates. Depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1. Continuous Flow

Show a continuous flow from left to right with no arrows from right to left. Show the activity number, description, duration, and estimated earned value on the diagram.

3.5.5.2. Project Milestone Dates

Show dates on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3. Critical Path

Clearly show the critical path.

3.5.5.4. Banding

Organize activities as directed to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5. S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6. PERIODIC SCHEDULE UPDATE MEETINGS

Conduct periodic schedule update meetings for the purposes of reviewing the Contractor's proposed out of sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy and determining earned value. Meetings shall occur at least monthly within five days of the proposed schedule data date and after the Contractor has updated the schedule with Government concurrence respecting actual start dates, actual finish dates, remaining durations and percent complete for each activity it intend to status. Match the actual start and finish dates with the dates exported, as described in paragraph 3.3.5. Provide a computer with the scheduling software loaded and a projector during the meeting which allows all meeting participants to view the proposed schedule update during the meeting. The meeting and resultant approvable schedule update shall be a condition precedent to a formal submission of the update as described in SUBMISSION REQUIREMENTS and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the Government and the Contractor the opportunity review the updated schedule on a real time and interactive basis. The Contractor's authorized scheduling representative will organize, sort, filter and schedule the update as requested by the Government. The meeting will last no longer than 8 hours. A rough draft of the proposed activity logic corrections and narrative report shall be provided to the Government 48 hours in advance of the meeting. The Contractor's Project Manager and Authorized Scheduler shall attend the meeting with the Authorized Representative of the Contracting Officer.

3.6.1. Update Submission Following Progress Meeting

Submit a complete update of the project schedule containing all approved progress, revisions, and adjustments, pursuant to paragraph SUBMISSION REQUIREMENTS not later than 4 working days after the periodic schedule update meeting, reflecting only those changes made during the previous update meeting.

3.6.2. Status of Activities

Update statusing information, including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD) and Percent Complete shall be subject to the approval of the Government prior to the meeting. As a minimum, address the following items on an activity by activity basis during each progress meeting:

3.6.2.1. Actual Start and Finish Dates

Accurately status the AS and/or AF dates for each activity currently in-progress or completed since the last update The Government may allow an AF date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign AS dates when actual progress occurs on an activity.

3.6.2.2. Remaining Duration

Update the estimated RD for all incomplete activities independent of Percent Complete. Remaining durations may exceed the activity OD or may exceed the activity's prior update RD if the Government considers the current OD or RD to be understated based on current progress, insufficient work crews actually manning the job, unrealistic OD or deficiencies that must be corrected that restrain successor activities.

3.6.2.3. Percent Complete

Update the percent complete for each activity started based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work and which do not restrain the initiation of successor activities may be statused 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from Government pre-final inspection activity(ies) not less than 1% of the total contract value, which activity(ies) may be declared 100 percent complete upon completion and correction of all punch list work identified during Government pre-final inspection(s).

3.6.2.4. Logic Changes

Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, and other changes that have been made pursuant to contract provisions. The Government will only approve logic revisions for the purpose of keeping the schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

3.6.2.5. Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary. 3) Changes required to correct a schedule that does not represent the actual or planned prosecution and progress of the work.

3.7. REQUESTS FOR TIME EXTENSIONS

In the event the Contractor believes it is entitled to an extension of the contract performance period, completion date, or any interim milestone date, furnish the following for a determination by the Contracting Officer: justification, project schedule data, and supporting evidence as the Contracting Officer may deem necessary. Submission of proof of excusable delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is a condition precedent to any approvals by the Government. In response to each Request For Proposal issued by the Government, the Contractor shall submit a schedule impact analysis demonstrating whether or not the change contemplated by the Government impacts the critical path.

3.7.1. Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with its request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information.The Contractor will not be entitled to a time extension or price adjustment for extended overhead related costs due to any delays which may affect early contract completion prior to the required contract completion date.

Actual delays that are found to be caused by the Contractor's own actions, which result in a calculated schedule delay, will not be a cause for an extension to the performance period, completion date, or any interim milestone date.

3.7.2. Submission Requirements

Submit a justification for each request for a change in the contract completion date of less than 2 weeks based upon the most recent schedule update at the time of the NTP or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

3.7.2.1. A list of affected activities, with their associated project schedule activity number.

3.7.2.2. A brief explanation of the causes of the change

3.7.2.3. An analysis of the overall impact of the changes proposed.

3.7.2.4. A sub-network of the affected area

Identify activities impacted in each justification for change by a unique activity code contained in the required data file.

3.7.3. Additional Submission Requirements

The Contracting Officer may request an interim update with revised activities for any requested time extension of over 2 weeks. Provide this disk within 4 days of the Contracting Officer's request.

3.7.4. If Progress Falls Behind the Approved Project Schedule

3.7.4.1. Should progress fall behind the approved schedule (more than 20 work days of negative float) due to Contractor generated problems, promptly provide a supplemental recovery or completion schedule that illustrates its efforts to regain time to assure a completion by the required contract completion date.

3.7.4.2. The supplemental recovery or completion schedule will not replace the original, approved schedule as the official contract schedule. Continue to update the original, approved schedule on at least a monthly basis. In addition, the Contractor and the Contracting Officer will monitor the supplemental recovery or completion schedule on at least a bi-weekly basis to determine its effect on regaining the rate of progress to assure project completion by the contractually required completion date.

3.7.4.3. Do not artificially improve progress by simply revising the schedule logic, modifying or adding constraints, or shortening future work activity durations. Resource and manpower load the supplemental recovery schedule or completion schedule with crew size and productivity for each remaining activity, indicating overtime, weekend work, and/or double shifts needed to regain the schedule, in accordance with FAR 52.236.15, without additional cost to the Government. Indicate assumptions made and the basis for any logic, constraint, or duration changes used in the creation of the supplemental recovery or completion schedule in a narrative submitted for the Contracting Officer’s approval. Any additional resources or manpower must be evident at the work site. Do not modify the official contract schedule to include these assumptions.

3.7.4.4. Failure to perform work and maintain progress in accordance with the supplemental recovery or completion schedule may result in an interim and final unsatisfactory performance rating and/or may result in corrective action by the Contracting Officer in accordance with FAR 52.236-15.

3.8. DIRECTED CHANGES

If the NTP is issued for changes prior to settlement of price and/or time, submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The Contracting Officer will approve proposed revisions to the schedule prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the

Contractor with suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9. WEEKLY PROGRESS MEETINGS

3.9.1. The Government and the Contractor shall meet weekly (or as otherwise mutually agreed to) between the meetings described in paragraph PERIODIC SCHEDULE UPDATE MEETINGS for the purpose of jointly reviewing the actual progress of the project as compared to the as planned progress and to review planned activities for the upcoming two weeks. The then current and approved schedule update shall be used for the purposes of this meeting and for the production and review of reports. The Contractor’s Project Manager and the Authorized Representative of the Contracting Officer shall attend. The weekly progress meeting will address the status of RFI’s, RFP’s and Submittals.

3.9.2. Provide a bar chart produced by the scheduling software, organized by Total Float and Sorted by Early Start Date, and a two week “look-ahead” schedule by filtering all schedule activities to show only current ongoing activities and activities schedule to start during the upcoming two weeks, organized by Work Area Code (AREA) and sorted by Early Start Date.

3.9.3. The Government and the Contractor shall jointly review the reports. If it appears that activities on the longest path(s) which are currently driving the calculated completion date (driving activities), are not progressing satisfactorily and therefore could jeopardize timely project completion, corrective action must be taken immediately. Corrective action includes but is not limited to: increasing the number of work crews; increasing the number of work shifts; increasing the number of hours worked per shift; and determining if Government responsibility coded activities require Government corrective action.

3.10. OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

3.11. TRANSFER OF SCHEDULE DATA INTO RMS/QCS

Download and upload the schedule data into the Resident Management System (RMS) prior to RMS databases being transferred to the Government and is considered to be additional supporting data in a form and detail required by the Contracting Officer pursuant to FAR 52.232-5 - Payments under Fixed-Price Construction Contracts. The receipt of a proper payment request pursuant to FAR 52.232-27 - Prompt Payment for Construction Contracts is contingent upon the Government receiving both acceptable and approvable hard copies and electronic export from QCS of the application for progress payment.

End of Section 01 32 01.00 10

This page was intentionally left blank for duplex printing.

SECTION 01 33 00
SUBMITTAL PROCEDURES

1.0 GENERAL

1.1. DEFINITIONS

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

1.5. DISAPPROVED SUBMITTALS

1.6. WITHHOLDING OF PAYMENT

1.7. GENERAL

1.8. SUBMITTAL REGISTER

1.9. SCHEDULING

1.10. TRANSMITTAL FORM (ENG FORM 4025)

1.11. SUBMITTAL PROCEDURES

1.12. CONTROL OF SUBMITTALS

1.13. GOVERNMENT APPROVED SUBMITTALS

1.14. INFORMATION ONLY SUBMITTALS

1.15. STAMPS

1.0 GENERAL

1.1. DEFINITIONS

1.1.1. Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2. Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

- Certificates of insurance.
- Surety bonds.
- List of proposed subcontractors.
- List of proposed products.
- Construction Progress Schedule.
- Submittal register.
- Schedule of prices.
- Accident Prevention Plan.
- Work plan.
- Quality control plan.
- Environmental protection plan.

SD-02 Shop Drawings

- Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.
- Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.
- Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

- Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.
- Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

- Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.
- Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.
- Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies that are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

- Calculations, mix designs, analyses or other data pertaining to a part of work.
- Design submittals, design substantiation submittals and extensions of design submittals.

SD-06 Test Reports

- Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)
- Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.
- Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.
- Investigation reports.
- Daily checklists.
- Final acceptance test and operational test procedure.

SD-07 Certificates

- Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.
- Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.
- Confined space entry permits.
- Text of posted operating instructions.

SD-08 Manufacturer's Instructions

- Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

- Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- Factory test reports.

SD-10 Operation and Maintenance Data

- Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

SD-11 Closeout Submittals

- Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

1.1.3. Approving Authority

Office authorized to approve submittal.

1.1.4. Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2. NOT USED

1.3. SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1. Designer of Record Approved (DA)

1.3.1.1. Designer of Record (DOR) approval is required for all extensions of design, critical materials, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". Provide the Government the number of copies designated hereinafter of all DOR approved submittals, after the DOR has taken appropriate action. The DOR shall ensure that submittals conform to the Solicitation, the Accepted Proposal and the completed design, however see below for those submittals proposing a deviation to the contract or a substitution of a material, system, or piece of equipment that was identified by manufacturer, brand name or model description in the accepted contract proposal.

1.3.1.2. The DOR shall ensure that the submittals comply with all applicable Buy American Act and Trade Agreement Act clauses in the contract. The DOR may confer with the Contracting Officer's Representative for advice and interpretation of those clauses, as necessary.

1.3.1.3. The Government may, but is not required to, review any or all DOR approved submittals for conformance to the solicitation, accepted proposal and the completed design. Except for submittals designated as deviating from the Solicitation, the Accepted Proposal or completed design, the Contractor may proceed with acquisition and installation upon DOR approval. Government Approved (GA)

1.3.2. Government Approved (GA)

Government approval is required for any item specifically designated as requiring Government approval in the Solicitation, for internal and external color finish selections and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.3. Government Conformance Review of Design (CR)

The Government will review all intermediate and final design submittals for conformance with the technical requirements of the solicitation. Section 01 33 16 **DESIGN AFTER AWARD** covers the design submittal and review process in detail. Review will be only for conformance with the applicable codes, standards and contract requirements. Design data includes the design documents described in Section 01 33 16 **DESIGN AFTER AWARD**. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.3.4. Designer of Record Approved/Government Conformance Review (DA/CR)

1.3.4.1. Deviations to the Accepted Design. Designer of Record approval and the Government’s concurrence are required for any proposed deviation from the accepted design which still complies with the contract (the Solicitation and Accepted Proposal) before the Contractor is authorized to proceed with material acquisition or installation. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings.” If necessary to facilitate the project schedule, the Contractor and the DOR may discuss a submittal proposing a deviation with the Contracting Officer's Representative prior to officially submitting it to the Government. However, the Government reserves the right to review the submittal before providing an opinion, if it deems it necessary. In any case, the Government will not formally agree to or provide a preliminary opinion on any deviation without the DOR's approval or recommended approval. The Government reserves the right to non-concur with any deviation from the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and concurred design.

1.3.4.2. Substitutions. Unless prohibited or provided for otherwise elsewhere in the Contract, where the accepted contract proposal named products, systems, materials or equipment by manufacturer, brand name and/or by model number or other specific identification, and the Contractor desires to substitute manufacturer or model after award, submit a requested substitution for Government concurrence. Include substantiation, identifying information and the DOR's approval, as meeting the contract requirements and that it is equal in function, performance, quality and salient features to that in the accepted contract proposal.

1.3.5. Designer of Record Approved/Government Approved (DA/GA)

Any proposed deviation to the solicitation and/or the accepted proposal constitutes a change to the contract. In addition to the above stated requirements for proposed deviations to the accepted design, both Designer of Record and Government Approval and, where applicable, a contract modification are required before the Contractor is authorized to proceed with material acquisition or installation for any proposed deviation to the contract. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". The Government reserves the right to accept or reject any such proposed deviation at its discretion.

1.3.6. Information Only

All submittals not requiring Designer of Record or Government approval will be for information only. Provide the Government "For Information Only" copies of all submittals not requiring Government approval or concurrence, after the Designer of Record has taken the appropriate action.

1.4. APPROVED OR CONCURRED WITH SUBMITTALS

Do not construe the Contracting Officer's approval of or concurrence with submittals as a complete check, but only that design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval or concurrence will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for design, dimensions, all design extensions, such as the design of adequate connections and details, etc., and the satisfactory construction of all work. The Government won't consider re-submittals for the purpose of substituting previously approved materials or equipment unless accompanied by an explanation of why a substitution is necessary.

1.5. DISAPPROVED SUBMITTALS

Make all corrections required by the Contracting Officer, obtain the Designer of Record's approval when applicable, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. Resubmit any "information only" submittal found to contain errors or unapproved deviations from the Solicitation or Accepted Proposal as one requiring "approval" action, requiring both Designer of Record and Government approval. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, provide prompt notice in accordance with the Contract Clause "Changes" to the Contracting Officer.

1.6. WITHHOLDING OF PAYMENT

No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.7. GENERAL

Make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, the Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, shall check, approve, sign, and stamp all items, indicating action taken. Clearly idenify proposed deviations from the contract requirements. Include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Schedule and make submittals requiring Government approval prior to the acquisition of the material or equipment covered thereby. Pick up and dispose of samples remaining upon completion of the work in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.8. SUBMITTAL REGISTER (GA)

Develop a complete list of submittals, including each separate design package submittal. Submit the initial submittal register within 15 days after Notice to Proceed, including, as a minimum, the design packages and other initial submittals required elsewhere in the contract. The Designer of Record shall identify required submittals in the specifications, and use the list to prepare the Submittal Register, utilizing the government-provided software, QCS (see Section 01 45 01.10), to create the ENG Form 4288. Appendix R is a preliminary submittal register input form for use with the Quality Management System and the Resident Office Management System (QCS and RMS). The Government will provide the Contractor the actual Excel Spreadsheet version of this sample input form after award to modify and to use for input into QCS. The Excel Spreadsheet is not totally inputable into QCS, so additional keystroke input will be necessary. The sample input form is not all-inclusive. In addition, additional submittals may be required by other parts of the contract. After award, the parties will meet to discuss contract specific (or task order specific for a task order contract) distribution for the submittals all-inclusive and additional submittals may be required by other parts of the contract. Develop and complete the submittal register as the design is completed. Submit it to the Contracting Officer with the un-reviewed final design package submission or as soon as the design specifications are completed, if before the final design submission. When applicable, if the Contractor elects to fast track design and construction, using multiple design package submissions, update the submittal register to reflect the submittals associated with each design submission, clearly denoting all revisions to the previous submission. The submittal register serves as a scheduling document for submittals and for control of submittal actions throughout the contract period. Coordinate the submit dates and need dates used in the submittal register with dates in the Contractor prepared progress schedule. Submit monthly updates to the submittal register showing the Contractor action codes and actual dates with Government action codes and actual dates or until all submittals have been satisfactorily completed. Revise and submit the submittal register when revising the progress schedule.

1.9. SCHEDULING

Schedule submittals covering component items forming a system or items that are interrelated to be coordinated and submitted concurrently. Schedule certifications to be submitted with the pertinent drawings. Allow adequate time (a minimum of 15 calendar days exclusive of mailing time) and show on the register for those items requiring Government approval or concurrence. No delay damages or time extensions will be allowed for time lost in late submittals by the Contractor.

1.10. TRANSMITTAL FORM (ENG FORM 4025)

Use the transmittal form (ENG Form 4025) for submitting submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor or are included in the QCS software if the Contractor is required to use QCS for this contract. Use a separate transmittal form for each specification section Complete this form by filling out all the heading blank spaces and identify

each item submitted. Exercise special care to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.11. SUBMITTAL PROCEDURES

Make submittals as follows:

1.11.1. Procedures

The Government will further discuss detailed submittal procedures with the Contractor at the Post-Award Conference.

1.11.2. Deviations

For submittals which include proposed deviations requested by the Contractor, check the column "variation" of ENG Form 4025. Set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.12. CONTROL OF SUBMITTALS

Carefully control his procurement operations to ensure that each individual submittal is made on or before the scheduled submittal date shown on the approved "Submittal Register."

1.13. GOVERNMENT APPROVED OR CONCURRED WITH SUBMITTALS

Upon completion of review of submittals requiring Government approval or concurrence, the Government will stamp and date the submittals as approved or concurred.. The Government will retain two (2) copies of the submittal and return one (1) copy(ies) of the submittal.

1.14. INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. 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; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. The Government will retain one (1) copies of information only submittals.

1.15. STAMPS

Use stamps similar to the following on the submittal data to certify that the submittal meets contract requirements:

CONTRACTOR

(FIRM NAME)

_____ Approved

_____

Approved with corrections as noted on submittal data and/or attached sheet(s)

_____

Signature: _____

Title: _____

Date: _____

For design-build construction, both the Contractor Quality Control System Manager and the Designer of Record shall stamp and sign to certify that the submittal meets contract requirements.

SECTION 01 33 16
DESIGN AFTER AWARD

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.2. DESIGNER OF RECORD

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVIES & CONFERENCES

3.1.1. Design Quality Control Plan

3.1.2. Post Award Conference

3.1.3. Partnering & Project Progress Processes

3.1.4. Initial Design Conference

3.1.5. Pre-Construction Conference

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

3.2.1. Site/Utilities

3.2.2. Interim Design Submittals

3.2.3. Over-the-Shoulder Progress Reviews

3.2.4. Final Design Submissions

3.2.5. Design Complete Submittals

3.2.6. Holiday Periods for Government Review or Actions

3.2.7. Late Submittals and Reviews

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

3.3.2. Tracking Design Review Comments

3.3.3. Design and Code Checklists

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

3.4.2. Procedures

3.4.3. Conference Documentation

3.5. INTERIM DESIGN REQUIREMENTS

3.5.1. Drawings

3.5.2. Design Analyses

3.5.3. Geotechnical Investigations and Reports

3.5.4. LEED Documentation

3.5.5. Energy Conservation

3.5.6. Specifications

3.5.7. Building Rendering

3.5.8. Interim Building Design Contents

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

3.7. FINAL DESIGN REQUIREMENTS

3.7.1. Drawings

3.7.2. Design Analysis

3.7.3. Specifications

3.7.4. Submittal Register

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

3.7.6. Acceptance and Release for Construction

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

3.9.2. Web based Design Submittals

3.9.3. Mailing of Design Submittals

3.10. AS-BUILT DOCUMENTS

ATTACHMENT A STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

ATTACHMENT B FURNITURE, FIXTURES AND EQUIPMENT REQUIREMENTS

ATTACHMENT C TRACKING COMMENTS IN DRCHECKS

ATTACHMENT D SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

ATTACHMENT E LEED SUBMITTALS

ATTACHMENT F BUILDING INFORMATION MODELING REQUIREMENTS

ATTACHMENT G DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

1.0 GENERAL INFORMATION

1.1. INTRODUCTION

1.1.1. The information contained in this section applies to the design required after award. After award, the Contractor will develop the accepted proposal into the completed design, as described herein.

1.1.2. The Contractor may elect to fast track the design and construction that is, proceed with construction of parts of the sitework and facilities prior to completion of the overall design. To facilitate fast tracking, the Contractor may elect to divide the design into no more than six (6) design packages per major facility type and no more than three (3) design packages for site and associated work. Designate how it will package the design, consistent with its overall plan for permitting (where applicable) and construction of the project. See Sections 01 33 00 SUBMITTAL PROCEDURES and 01 32 01.00 10 PROJECT SCHEDULE for requirements for identifying and scheduling the design packaging plan in the submittal register and project schedule. See also Sections 01 10 00 STATEMENT OF WORK and 01 57 20.00 10 ENVIRONMENTAL PROTECTION for any specified permit requirements. If early procurement of long-lead item construction materials or installed equipment, prior to completion of the associated design package, is necessary to facilitate the project schedule, also identify those long-lead items and how it will assure design integrity of the associated design package to meet the contract requirements (The Contract consists of the Solicitation requirements and the accepted proposal). Once the Government is satisfied that the long-lead items meet the contract requirements, the Contracting Officer will allow the Contractor to procure the items at its own risk.

1.1.3. The Contractor may proceed with the construction work included in a separate design package after the Government has reviewed the final (100%) design submission for that package, review comments have been addressed and resolved to the Government's satisfaction and the Contracting Officer (or the Administrative Contracting Officer) has agreed that the design package may be released for construction.

1.1.4. INTEGRATED DESIGN. To the maximum extent permitted for this project, use a collaborative, integrated design process for all stages of project delivery with comprehensive performance goals for siting, energy, water, materials and indoor environmental quality and ensures incorporation of these goals. Consider all stages of the building lifecycle, including deconstruction.

1.2. DESIGNER OF RECORD

Identify, for approval, the Designer of Record ("DOR") that will be responsible for each area of design. One DOR may be responsible for more than one area. Listed, Professional Registered, DOR(s) shall account for all areas of design disciplines. The DOR's shall stamp, sign, and date each design drawing and other design deliverables under their responsible discipline at each design submittal stage (see contract clause Registration of Designers). If the deliverables are not ready for release for construction, identify them as "preliminary" or "not for release for construction" or by using some other appropriate designation. The DOR(s) shall also be responsible for maintaining the integrity of the design and for compliance with the contract requirements through construction and documentation of the as-built condition by coordination, review and approval of extensions of design, material, equipment and other construction submittals, review and approval or disapproval of requested deviations to the accepted design or to the contract, coordination with the Government of the above activities, and by performing other typical professional designer responsibilities.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. PRE-WORK ACTIVITIES & CONFERENCES

3.1.1. Design Quality Control Plan

Submit for Government acceptance, a Design Quality Control Plan in accordance with Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL before design may proceed.

3.1.2. Post Award Conference

3.1.2.1. The government will conduct a post award contract administration conference at the project site, as soon as possible after contract award. This will be coordinated with issuance of the contract notice to proceed (NTP). The Contractor and major sub-contractor representatives shall participate. All designers need not attend this first meeting. Government representatives will include COE project delivery team members, facility users, facility command representatives, and installation representatives. The Government will provide an agenda, meeting goals, meeting place, and meeting time to participants prior to the meeting.

3.1.2.2. The post award conference shall include determination and introduction of contact persons, their authorities, contract administration requirements, discussion of expected project progress processes, and coordination of subsequent meetings for quality control (see Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL), Partnering (see below and SCR: Partnering), and the initial design conference (see below).

3.1.2.3. The government will introduce COE project delivery team members, facility users, facility command representatives, and installation representatives. The DB Contractor shall introduce major subcontractors, and other needed staff. Expectations and duties of each person shall be defined for all participants. A meeting roster shall be developed and distributed by the government with complete contact information including name, office, project role, phone, mailing and physical address, and email address.

3.1.3. Partnering & Project Progress Processes

3.1.3.1. The initial Partnering conference may be scheduled and conducted at any time with or following the post award conference. The Government proposes to form a partnership with the DB Contractor to develop a cohesive building team. This partnership will involve the COE project delivery team members, facility users, facility command representatives, installation representatives, Designers of Record, major subcontractors, contractor quality control staff, and contractor construction management staff. This partnership will strive to develop a cooperative management team drawing on the strengths of each team member in an effort to achieve a quality project within budget and on schedule. This partnership will be bilateral in membership and participation will be totally voluntary. All costs, excluding labor and travel expenses, shall be shared equally between the Government and the Contractor. The Contractor and Government shall be responsible for their own labor and travel costs. Normally, partnering meetings will be held at or in the vicinity of the project installation.

3.1.3.2. As part of the partnering process, the Government and Contractor shall develop, establish, and agree to comprehensive design development processes including conduct of conferences, expectations of design development at conferences, fast-tracking, design acceptance, Structural Interior Design (SID)/ Furniture, Fixtures & Equipment (FF&E) design approval, project closeout, etc. The government will explain contract requirements and the DB Contractor shall review their proposed project schedule and suggest ways to streamline processes.

3.1.4. Initial Design Conference

The initial design conference may be scheduled and conducted at the project installation any time after the post award conference, although it is recommended that the partnering process be initiated with or before the initial design conference. Any design work conducted after award and prior to this conference should be limited to site and is discouraged for other items. All Designers of Record shall participate in

the conference. The purpose of the meeting is to introduce everyone and to make sure any needs the contractor has are assigned and due dates established as well as who will get the information. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning the BIM Implementation Plan demonstration at this meeting. The DB Contractor shall conduct the initial design conference.

3.1.5. Pre-Construction Conference

Before starting construction activities, the Contractor and Government will jointly conduct a pre-construction administrative conference to discuss any outstanding requirements and to review local installation requirements for start of construction. It is possible there will be multiple Pre-Construction Conferences based on the content of the design packages selected by the Contractor. The Government will provide minutes of this meeting to all participants.

3.2. STAGES OF DESIGN SUBMITTALS AND OVER THE SHOULDER PROGRESS REVIEWS

The stages of design submittals described below define Government expectations with respect to process and content. The Contractor shall determine how to best plan and execute the design and review process for this project, within the parameters listed below. As a minimum, the Government expects to see at least one interim design submittal, at least one final design submittal before construction of a design package may proceed and at least one Design Complete submittal that documents the accepted design. The Contractor may sub-divide the design into separate packages for each stage of design and may proceed with construction of a package after the Government accepts the final design for that package. See discussion on waivers to submission of one or more intermediate design packages where the parties partner during the design process. See also Attachment F, BUILDING INFORMATION MODELING REQUIREMENTS for discussion concerning BIM and the various stages of design submittals and over-the-shoulder progress reviews**.**

3.2.1. Site/Utilities

To facilitate fast-track design-construction activities the contractor may submit a final (100%) site and utility design as the first design submittal or it may elect to submit interim and final site and utility design submittals as explained below. Following review, resolution, and incorporation of all Government comments, and submittal of a satisfactory set of site/utility design documents, after completing all other pre-construction requirements in this contract and after the pre-construction meeting, the Government will allow the Contractor to proceed with site development activities, including demolition where applicable, within the parameters set forth in the accepted design submittal. For the first site and utility design submission, whether an interim or final, the submittal review, comment, and resolution times from this specification apply, except that the Contractor shall allow the Government a 14 calendar day review period, exclusive of mailing time. No on-site construction activities shall begin prior to written Government clearance to proceed.

3.2.2. Interim Design Submittals

The Contractor may submit either a single interim design for review, representing a complete package with all design disciplines, or split the interim design into smaller, individual design packages as it deems necessary for fast-track construction purposes. As required in Section 01 32 01.00 10 PROJECT SCHEDULE, the Contractor shall schedule its design and construction packaging plan to meet the contract completion period. This submission is the Government's primary opportunity to review the design for conformance to the solicitation and to the accepted contract proposal and to the Building Codes at a point where required revisions may be still made, while minimizing lost design effort to keep the design on track with the contract requirements. The requirements for the interim design review submittals and review conferences are described hereinafter. This is not necessarily a hold point for the design process; the Contractor may designate the interim design submittal(s) as a snapshot and proceed with design development at its own risk. See below for a waiver, where the parties establish an effective

over-the-shoulder progress review procedure through the partnering process that would eliminate the need for or expedite a formal intermediate design review on one or more individual design packages.

3.2.3. Over-the-Shoulder Progress Reviews

To facilitate a streamlined design-build process, the Government and the Contractor may agree to one-on-one reviewer or small group reviews, electronically, on-line (if available within the Contractor's standard design practices) or at the Contractor's design offices or other agreed location, when practicable to the parties. The Government and Contractor will coordinate such reviews to minimize or eliminate disruptions to the design process. Any data required for these reviews shall normally be provided in electronic format, rather than in hard copy. If the Government and Contractor establish and implement an effective, mutually agreeable partnering procedure for regular (e.g., weekly) over-the shoulder review procedures that allow the Government reviewers the opportunity to keep fully informed of the progress, contents, design intent, design documentation, etc. of the design package, the Government will agree to waive or to expedite the formal intermediate design review period for that package. The Contractor shall still be required to submit the required intermediate design documentation, however the parties may agree to how that material will be provided, in lieu of a formal consolidated submission of the package. It should be noted that Government funding is extremely limited for non-local travel by design reviewers, so the maximum use of virtual teaming methods must be used. Some possible examples include electronic file sharing, interactive software with on-line or telephonic conferencing, televideo conferencing, etc. The Government must still perform its Code and Contract conformance reviews, so the Contractor is encouraged to partner with the reviewers to find ways to facilitate this process and to facilitate meeting or bettering the design-build schedule. The Contractor shall maintain a fully functional configuration management system as described herein to track design revisions, regardless of whether or not there is a need for a formal intermediate design review. The formal intermediate review procedures shall form the contractual basis for the official schedule, in the event that the partnering process determines that the formal intermediate review process to be best suited for efficient project execution. However, the Government pledges to support and promote the partnering process to work with the Contractor to find ways to better the design schedule.

3.2.4. Final Design Submissions

This submittal is required for each design package prior to Government acceptance of that design package for construction. The requirements for the final design submittal review conferences and the Government's acceptance for start of construction are described herein after.

3.2.5. Design Complete Submittals

After the final design submission and review conference for a design package, revise the design package to incorporate the comments generated and resolved in the final review conferences, perform and document a back-check review and submit the final, design complete documents, which shall represent released for construction documents. The requirements for the design complete submittals are described hereinafter.

3.2.6. Holiday Periods for Government Review or Actions

Do not schedule meetings, Government reviews or responses during the last two weeks of December or other designated Government Holidays (including Friday after Thanksgiving). Exclude such dates and periods from any durations specified herein for Government actions.

3.2.7. Late Submittals and Reviews

If the Contractor cannot meet its scheduled submittal date for a design package, it must revise the proposed submittal date and notify the government in writing, at least one (1) week prior to the submittal, in order to accommodate the Government reviewers' other scheduled activities. If a design submittal is

over one (1) day late in accordance with the latest revised design schedule, or if notification of a proposed design schedule change is less than seven (7) days from the anticipated design submission receipt date, the Government review period may be extended up to seven (7) days due to reviewers' schedule conflicts. If the Government is late in meeting its review commitment and the delay increases the Contractor's cost or delays completion of the project, the Suspension of Work and Defaults clauses provide the respective remedy or relief for the delay.

3.3. DESIGN CONFIGURATION MANAGEMENT

3.3.1. Procedures

Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. During the design process, this will facilitate and help streamline the design and review schedule. After the final design is accepted, this process provides control of and documents revisions to the accepted design (See Special Contract Requirement: Deviating From the Accepted Design). The system shall include appropriate authorities and concurrences to authorize revisions, including documentation as to why the revision must be made. Include the DCM procedures in the Design Quality Control Plan. The DCM data shall be available to the Government reviewers at all times. The Contractor may use its own internal system with interactive Government concurrences, where necessary or may use the Government's "DrChecks Design Review and Checking System" (see below and Attachment C).

3.3.2. Tracking Design Review Comments

Although the Contractor may use its own internal system for overall design configuration management, the Government and the Contractor shall use the DrChecks Design Review and Checking System to initiate, respond to, resolve and track Government design compliance review comments. This system may be useful for other data which needs to be interactive or otherwise available for shared use and retrieval. See Attachment C for details on how to establish an account and set-up the DrChecks system for use on the project.

3.3.3. Design and Code Checklists

Develop and complete various discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists with each design submittal, as applicable, as part of the project documentation. See Section 01 45 04.00 10 Contractor Quality Control, Attachment D for a Sample Fire Protection and Life Safety Code review checklist and Attachment E for LEED SUBMITTALS.

3.4. INTERIM DESIGN REVIEWS AND CONFERENCES

3.4.1. General

At least one interim design submittal, review and review conference is required for each design package (except that, per paragraph 3.2.1, the Contractor may skip the interim design submission and proceed directly to final design on the sitework and utilities package). The DB Contractor may include additional interim design conferences or over-the-shoulder reviews, as needed, to assure continued government concurrence with the design work. Include the interim submittal review periods and conferences in the project schedule and indicate what part of the design work is at what percentage of completion. The required interim design conferences shall be held when interim design requirements are reached as described below. See also Paragraph: **Over-the-Shoulder Progress Reviews** for a waiver to the formal interim design review.

3.4.2. Procedures

After receipt of an Interim Design submission, allow the Government fourteen (14) calendar days after receipt of the submission to review and comment on the interim design submittal. For smaller design packages, especially those that involve only one or a few separate design disciplines, the parties may agree on a shorter review period or alternative review methods (e.g., over-the–shoulder or electronic file sharing), through the partnering process. For each interim design review submittal, the COR will furnish, to the Contractor, a single consolidated, validated listing of all comments from the various design sections and from other concerned agencies involved in the review process using the DrChecks Design Review and Checking System. The review will be for conformance with the technical requirements of the solicitation and the Contractor's RFP proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he/she must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. Furnish disposition of all comments, in writing, through DrChecks. The Contractor is cautioned that if it believes the action required by any comment exceeds the requirements of this contract, that it should take no action and notify the COR in writing immediately. The Interim Review conference will be held for each design submittal at the installation. Bring the personnel that developed the design submittal to the review conference. The conference will take place the week after the receipt of the comments by the Contractor. For smaller fast-track packages that involve only a few reviewers, the parties may agree to alternative conferencing methods, such as teleconferencing, or televideo, where available, as determined through Partnering.

3.4.3. Conference Documentation

3.4.3.1. In order to facilitate and accelerate the Government code and contract conformance reviews, identify, track resolution of and maintain all comments and action items generated during the design process and make this available to the designers and reviewers prior to the Interim and subsequent design reviews.

3.4.3.2. The DB Contractor shall prepare meeting minutes and enter final resolution of all comments into DrChecks. Copies of comments, annotated with comment action agreed on, will be made available to all parties before the conference adjourns. Unresolved problems will be resolved by immediate follow-on action at the end of conferences. Incorporate valid comments. The Government reserves the right to reject design document submittals if comments are significant. Participants shall determine if any comments are critical enough to require further design development prior to government concurrence. Participants shall also determine how to proceed in order to obtain government concurrence with the design work presented.

3.5. INTERIM DESIGN REQUIREMENTS

Interim design deliverables shall include drawings, specifications, and design analysis for the part of design that the Contractor considers ready for review.

3.5.1. Drawings

Include comments from any previous design conferences incorporated into the documents to provide an interim design for the “part” submitted.

3.5.2. Design Analyses

3.5.2.1. The designers of record shall prepare and present design analyses with calculations necessary to substantiate and support all design documents submitted. Address design substantiation required by the applicable codes and references and pay particular attention to the following listed items:

3.5.2.2. For parts including sitework, include site specific civil calculations.

3.5.2.3. For parts including structural work, include structural calculations.

(a) Identify all loads to be used for design.

(b) Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.

(c) Provide calculations for all principal roof, floor, and foundation members and bracing and secondary members.

(d) Provide complete seismic analyses for all building structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone for which the facility is being constructed.

(e) Computer generated calculations must identify the program name, source, and version. Provide input data, including loads, loading diagrams, node diagrams, and adequate documentation to illustrate the design. The schematic models used for input must show, as a minimum, nodes/joints, element/members, materials/properties, and all loadings, induced settlements/deflections, etc., and a list of load combinations. Include an output listing for maximum/minimum stresses/forces and deflections for each element and the reactions for each loading case and combination.

(f) See also the Security (Anti-Terrorism) requirements below for members subject to Anti-Terrorist Force Protection (ATFP) and Progressive Collapse requirements.

(g) Fully coordinate and integrate the overall structural design between two different or interfacing construction types, such as modular and stick-built or multistory, stacked modular construction. Provide substantiation of structural, consolidation/settlement analysis, etc., as applicable, through the interfaces.

3.5.2.4. For Security (Anti-Terrorism): Provide a design narrative and calculations where applicable, demonstrating compliance with each of the 22 standards in UFC 4-010-01, which includes Design of Buildings to Resist Progressive Collapse (use the most recent version of UFC 4-023-03, regardless of references to any specific version in UFC 4-010-01). Where sufficient standoff distance is not being provided, show calculations for blast resistance of the structural system and building envelope. Show complete calculations for members subjected to ATFP loads, e.g., support members of glazed items (jambs, headers, sills) connections of windows to support members and connections of support members to the rest of the structure. For 3 story and higher buildings, provide calculations to demonstrate compliance with progressive collapse requirements.

3.5.2.5. For parts including architectural work, include building floor area analysis.

3.5.2.6. For parts including mechanical work, include HVAC analysis and calculations. Include complete design calculations for mechanical systems. Include computations for sizing equipment, compressed air systems, air duct design, and U-factors for ceilings, roofs and exterior walls and floors. Contractor shall employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation is required (see paragraph 3.5.5.2 for list of acceptable software). Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

3.5.2.7. For parts including life safety, include building code analysis and sprinkler and other suppression systems. Notwithstanding the requirements of the Codes, address the following:

(a) A registered fire protection engineer (FPE) must perform all fire protection analyses. Provide the fire protection engineer’s qualifications. See Section 01 10 00, paragraph 5 for qualifications.

(b) Provide all references used in the design including Government design documents and industry standards used to generate the fire protection analysis.

(c) Provide classification of each building in accordance with fire zone, building floor areas and height and number of stories.

(d) Provide discussion and description of required fire protection requirements including extinguishing equipment, detection equipment, alarm equipment and water supply. Alarm and detection equipment shall interface to requirements of Electronic Systems.

(e) Provide hydraulic calculations based on water flow test for each sprinkler system to insure that flow and pressure requirements can be met with current water supply. Include copies of Contractor's water flow testing done to certify the available water source.

3.5.2.8. For parts including plumbing systems:

(a) List all references used in the design.

(b) Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.

(c) Detail calculations for systems such as sizing of domestic hot water heater and piping; natural gas piping; LP gas piping and tanks, fuel oil piping and tanks, etc., as applicable.

(d) When the geotechnical report indicates expansive soils are present, indicate in the first piping design submittal how piping systems will be protected against damage or backfall/backflow due to soil heave (from penetration of slab to the 5 foot building line).

3.5.2.9. For elevator systems:

(a) List all criteria codes, documents and design conditions used.

(b) List any required permits and registrations for construction of items of special mechanical systems and equipment.

3.5.2.10. For parts including electrical work, include lighting calculations to determine maintained foot-candle levels, electrical load analysis and calculations, electrical short circuit and protective device coordination analysis and calculations and arc fault calculations.

3.5.2.11. For parts including telecommunications voice/data (including SIPRNET, where applicable), include analysis for determining the number and placement of outlets

3.5.2.12. For Cathodic Protection Systems, provide the following stamped report by the licensed corrosion engineer or NACE specialist with the first design submission. The designer must be qualified to engage in the practice of corrosion control of buried or submerged metallic surfaces. He/she must be accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE certified Cathodic Protection Specialist, or must be a registered professional engineer with a minimum of five years experience in corrosion control and cathodic protection, Clearly describe structures, systems or components in soil or water to be protected. Describe methods proposed for protection of each.

3.5.2.13. Air Barrier System: Provide a narrative of the design and installation requirements for the Air Barrier system. As part of the design quality control process an air barrier consultant shall review drawing details to assure that details of critical Air Barrier components are properly detailed and incorporated during the design drawings and process (i.e. window flashing details, penetration in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.). Furnish the Government written review details and results.

3.5.2.14. Life Cycle Cost Analysis (LCCA) Documentation: Sufficient documentation is required for all life cycle cost analyses required in paragraph 5 of Section 01 10 00, the Statement of Work. Each LCCA must be complete and substantial, sufficient of being read as a standalone document which defines all the parameters of the analysis. Use of commercially available software programs to calculate life cycle costs are acceptable, however, provide the LCCA Documentation requirements, as outlined below in addition to any input/output documents generated by the software. As a minimum, include the following items in the LCCA documentation:

(a) Definition of Baseline Condition

(b) Narrative Identification/Explanation of Each Alternative Considered

(c) Energy Usage Analysis (Narrative explanation as well as computer outputs)

(d) Energy Costs Used (Source of Rate Structure or Utility Rates)

(e) First Cost of Baseline Condition and Each Alternative (Cost information must demonstrate inclusion of applicable components and sub-components - single line, lump sum cost estimates for the baseline or alternative conditions are not acceptable)

(f) Cyclical Replacement Costs (Identify data source for equipment/component life used)

(g) Annual/Recurring Maintenance Costs (Identify data source for required maintenance tasks and duration/cost of tasks)

(h) Salvage Values (Identify data source for equipment/component life used)

(i) Life Cycle Cost Results Including:

(1) Life Cycle Cost of the Baseline Condition

(2) Life Cycle Cost of Each Alternative Evaluated

(3) Simple Payback Calculations for Each Alternative

(4) Savings to Investment Ratio for Each Alternative

(5) Study Period Utilized

(6) Net Savings for Each Alternative (As Applicable)

(7) Narrative Discussion/Analysis of Results

(8) Uncertainty Analysis

(9) Certification that the analysis conducted and documented is compliant with the terms, instructions, and conditions of 10 CFR 436 Subpart A.

3.5.3. Geotechnical Investigations and Reports:

3.5.3.1. The contractor's licensed geotechnical engineer shall prepare a final geotechnical evaluation report, to be submitted along with the first foundation design submittal. Make this information available as early as possible during the over-the-shoulder progress review process. Summarize the subsurface conditions and provide recommendations for the design of appropriate utilities, foundations, floor slabs, retaining walls, embankments, and pavements. Include compaction requirements for fill and backfill under buildings, sidewalks, other structures and open areas. Recommend foundation systems to be used, allowable bearing pressures for footings, lateral load resistance capacities for foundation systems, elevations for footings, grade beams, slabs, etc. Provide an assessment of post-construction settlement potential including total and differential. Provide recommendations regarding lateral earth pressures (active, at-rest, passive) to be used in the design of retaining walls. Include the recommended spectral accelerations and Site Class for seismic design along with an evaluation of any seismic hazards and recommendations for mitigation, if required. Include calculations to support the recommendations for bearing capacity, settlement, and pavement sections. Include supporting documentation for all recommended design parameters such as Site Class, shear strength, earth pressure coefficients, friction factors, subgrade modulus, California Bearing Ratio (CBR), etc. Provide earthwork recommendations, expected frost penetration, expected groundwater levels, recommendations for dewatering and groundwater control and the possible presence of any surface or subsurface features that may affect the construction of the project such as sinkholes, boulders, shallow rock, old fill, old structures, soft areas, or unusual soil conditions. Include pH tests, salinity tests, resistivity measurements, etc., required to design corrosion control and grounding systems. Include the raw field data. Arrange a meeting with the Government subsequent to completion and evaluation of the site specific geotechnical exploration to outline any differences encountered that are inconsistent with the Government provided preliminary soils

information. Clearly outline differences which require changes in the foundation type, or pavement and earthwork requirements from that possible and contemplated using the Government furnished preliminary soils investigation, which result in a change to the design or construction. Any equitable adjustment is subject to the provisions of the contract's Differing Site Conditions Clause.

3.5.3.2. Vehicle Pavements: The Contractor's geotechnical report shall contain flexible and rigid pavement designs, as applicable for the project, including design CBR and modulus of subgrade reaction and the required compaction effort for subgrades and pavement layers. Provide Information on the types of base course materials available in the area and design strengths.

3.5.3.3. The Contractor and the professional geotechnical engineer consultant shall certify in writing that the design of the project has been developed consistent with the Contractor's final geotechnical report. The certification shall be stamped by the consulting professional geotechnical engineer and shall be submitted with the first design submission. If revisions are made to the initial design submission, a new certification shall be provided with the final design submission.

3.5.4. LEED Documentation:

Assign a LEED Accredited Professional, responsible to track LEED planning, performance and documentation for each LEED credit through construction closeout. Incorporate LEED credits in the plans, specifications and design analyses. Develop LEED supporting documentation as a separable portion of the Design Analysis and provide with each required design submittal. Include the LEED Project checklist for each non-exempt facility (one checklist may be provided for multiple facilities in accordance with the LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects and the LEED SUBMITTALS (Attachment E, herein) with each submittal. Final design submittal for each portion of the work must include all required design documentation relating to that portion of work (example - all site credit design documents with final site design). Submittal requirements are as indicated in Attachment E, LEED SUBMITTALS. Submit all documentation indicated on Attachment E as due at final design at final design submittal (for fast-track projects with multiple final design submittals, this shall be at the last scheduled final design submittal). All project documentation related to LEED shall conform to USGBC requirements for both content and format, including audit requirements and be separate from other design analyses. Maintain and update the LEED documentation throughout project progress to construction closeout and shall compile product data, receipts, calculations and other data necessary to substantiate and support all credits claimed. The Government may audit any or all individual credits. Audit documentation is not required to be submitted unless requested. These requirements apply to all projects. If the project requires the Contractor to obtain USGBC certification, the Contractor shall also be responsible for obtaining USGBC certification and shall provide written evidence of certification with the construction closeout LEED documentation submittal. Install the USGBC building plaque at the location indicated by the Government upon receipt. If Contractor obtains USGBC interim design review, submit the USGBC review to the Government within 30 days of receipt for information only.

3.5.4.1. LEED Documentation for Technology Solution Set. If the Solicitation provides a Prescriptive Technology Solution Set, use of the Technology Solution set has no effect on LEED documentation requirements. Provide all required LEED documentation, including energy analysis, in accordance with LEED requirements when using the Technology Solution Set.

3.5.5. Energy Conservation:

3.5.5.1. Refer to Section 01 10 00, Paragraph 5. Interim and Final Design submittals shall demonstrate that each building including the building envelope, HVAC systems, service water heating, power, and lighting systems meet the Mandatory Provisions and the Prescriptive Path requirements of ASHRAE 90.1. Use Compliance Documentation forms available from ASHRAE and included in the ASHRAE 90.1 User's Manual for this purpose. The Architectural Section of the Design Analysis shall include completed forms titled "Building Envelope Compliance Documentation Parts I and II". The Heating Ventilating and Air Conditioning (HVAC) Section of the Design Analysis shall include a completed form titled "HVAC Simplified Approach Option - Part I" if this approach is allowed by the Standard. Otherwise, the HVAC

Section of the Design Analysis shall include completed forms titled “HVAC Mandatory Provisions - Part II” and “HVAC Prescriptive Requirements - Part III”. The Plumbing Section of the Design Analysis shall include a completed form titled “Service Water Heating Compliance Documentation”. The Electrical Section of the Design Analysis shall include an explanatory statement on how the requirements of ASHRAE 90.1 Chapter 8 Power were met. The Electrical Section of the Design Analysis shall also include a completed form titled “Lighting Compliance Documentation”.

3.5.5.2. Interim and Final Design submittals which address energy consuming systems, (heating, cooling, service hot water, lighting, power, etc.) must also include calculations in a separate Energy Conservation Section of the Design Analysis which demonstrate and document (a) the baseline energy consumption for the facility or facilities under contract, that would meet the requirements of ANSI/ASHRAE/IESNA Standard 90.1 and (b) the energy consumption of the facility or facilities under contract utilizing the materials and methods required by this construction contract. Use the USGBC Energy and Atmosphere (EA) Credit 1 compliance template / form or an equivalently detailed form for documenting compliance with the energy reduction requirements. This template / form is titled PERFORMANCE RATING METHOD and is available when the project is registered for LEED. The calculation methodology used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with two exceptions: a) receptacle and process loads may be omitted from the calculation; and b) the definition of the terms in the formula for Percentage Improvement found in paragraph G1.2 are modified as follows: Baseline Building Performance shall mean the annual energy consumption calculated for a building design intended for use as a baseline for rating above standard design meeting the minimum requirements of the energy standard, and Proposed Building Performance shall mean annual energy consumption calculated for the proposed building design intended for construction. This calculation shall address all energy consuming systems in a single integrated methodology. Include laboratory fume hoods and kitchen ventilation loads in the energy calculation. They are not considered process loads. Individual calculations for heating, cooling, power, lighting, power, etc. systems will not be acceptable. The following building simulation software is acceptable for use in calculating building energy consumption: Hourly Analysis Program (HAP) by Carrier Corp., TRACE 700 by Trane Corp., DOE-2 by US Department of Energy, EnergyPlus by DOD/DOE.

3.5.6. Specifications

Specifications may be any one of the major, well known master guide specification sources. Uuse only one source. Examples include specifications from MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Unified Facility Guide Specifications (UFGS using MASTERFORMAT 2004 numbering system), etc. The UFGS are available through the “Whole Building Design Guide” website, using a websearch engine. Manufacturers’ product specifications, utilizing CSI’s Manu-Spec, three part format may be used in conjunction with the selected specifications. The designers of record shall edit and expand the appropriate Specifications to insure that all project design requirements, current code requirements, and regulatory requirements are met. Specifications shall clearly identify, where appropriate, specific products chosen to meet the contract requirements (i.e., manufacturers’ brand names and model numbers or similar product information). Note that the UFGS are NOT written for Design-Build and must be edited appropriately. For instance, they assume that the Government will approve most submittals, whereas in Design-Build, the Designer of Record has that action, unless this Solicitation requires Government approval for specific submittals. The Designer of Record should also note that some UFGS sections might either prescribe requirements exceeding the Government’s own design standards in applicable references or contain requirements that should be selected where appropriately required by the applicable references. At any rate, where the UFGS are consistent with other major, well known master commercial guide specifications, then generally retain such requirements, as good practices.

3.5.7. Building Rendering

Present and provide a draft color computer, artist, or hand drawn rendering with the conceptual design submittal of the building exterior. Perspective renderings shall include a slightly overhead view of the

entire building to encompass elevations and the roof configuration of the building. After Government review and acceptance, provide a final rendering, including the following:

Three (3) 18” x 24” color prints, framed and matted behind glass with project title underneath the print.

One (1) Image file (high resolution) in JPG format on CD for those in the submittal distribution list.

3.5.8. Interim Building Design Contents

The following list represents what the Government considers should be included in the overall completed design for a facility or project. It is not intended to limit the contractor from providing different or additional information as needed to support the design presented, including the require design analyses discussed above. As the Contractor develops individual design packages and submits them for Interim review, include as much of the applicable information for an individual design package as is developed at the Interim design level for review purposes. These pieces shall be developed as the design progresses toward the design complete stage.

3.5.8.1. Lawn and Landscaping Irrigation System

3.5.8.2. Landscape, Planting and Turfing

3.5.8.3. Architectural

(a) Design Narrative

(b) Architectural Floor Plans, Typical Wall and Roof Sections, Elevations

(c) Finish schedule

(d) All required equipment

(e) Special graphics requirements

(f) Door and Window Schedules

(g) Hardware sets using BHMA designations

(h) Composite floor plan showing all pre-wired workstations

(i) Structural Interior Design (SID) package: See ATTACHMENT A for specific requirements

(j) Furniture, Fixtures & Equipment (FF&E) design package: See ATTACHMENT B for specific requirements

(k) Air Barrier Design: Details of all Air Barrier components, (i.e. window flashing details, penetrations in air barrier details, door flashing details, roofing/ceiling barrier interface details and etc.)

3.5.8.4. Structural Systems. Include:

(a) Drawings showing principal members for roof and floor framing plans as applicable

(b) Foundation plan showing main foundation elements where applicable

(c) Typical sections for roof, floor, and foundation conditions

3.5.8.5. Plumbing Systems

(a) Show locations and general arrangement of plumbing fixtures and major equipment

(b) Plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Include natural gas (and meter as required), (natural gas and meter as required), (LP gas), (fuel oil) and other specialty systems as applicable.

(c) Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required

3.5.8.6. HVAC Systems

(a) Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:

(1) Room designations.

(2) Mechanical legend and applicable notes.

(3) Location and size of all ductwork and piping.

(4) Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).

(5) Pre-Fabricated Paint Spray Booth (where applicable to project scope)

(6) Paint Preparation Area (where applicable to project scope)

(7) Exhaust fans and specialized exhaust systems.

(8) Thermostat location.

(9) Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).

(10) Location of all air handling equipment.

(11) Air balancing information.

(12) Flue size and location.

(13) Piping diagram for forced hot water system (if used).

(b) Equipment Schedule: Provide complete equipment schedules. Include:

(1) Capacity

(2) Electrical characteristics

(3) Efficiency (if applicable)

(4) Manufacturer's name

(5) Optional features to be provided

(6) Physical size

(7) Minimum maintenance clearances

(a) Details: Provide construction details, sections, elevations, etc., only where required for clarification of methods and materials of design.

(b) HVAC Controls: Submit complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information. See the Statement of Work for additional specific requirements.

3.5.8.7. Fire Protection and Life Safety.

(a) Provide plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Include the following types of information:

(1) The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.

(2) The location and coverage of any fire detection systems

(3) The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.)

(4) The location of any other major fire protection equipment

(5) Indicate any hazardous areas and their classification

(6) Schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required

(b) Working plans and all other materials submitted shall meet NFPA 13 requirements, with respect to required minimum level of detail.

3.5.8.8. Elevators. Provide:

(a) Description of the proposed control system

(b) Description, approximate capacity and location of any special mechanical equipment for elevators.

3.5.8.9. Electrical Systems.

(a) Electrical Floor Plan(s): Show all principle architectural features of the building which will affect the electrical design. Show the following:

(1) Room designations.

(2) Electrical legend and applicable notes.

(3) Lighting fixtures, properly identified.

(4) Switches for control of lighting.

(5) Receptacles.

(6) Location and designation of panelboards. Clearly indicate type of mounting required (flush or surface) and reflect accordingly in specifications.

(7) Service entrance (conduit and main disconnect).

(8) Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.

(b) Building Riser Diagram(s) (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.

(c) Load Center Panelboard Schedule(s): Indicate the following information:

(1) Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting.

(2) Branch Circuit Designations.

(3) Load Designations.

(4) Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)

(5) Branch Circuit Connected Loads (AMPS).

(6) Special Features

(d) Lighting Fixture Schedule(s): Indicate the following information:

(1) Fixture Designation.

(2) General Fixture Description.

(3) Number and Type of Lamp(s).

(4) Type of Mounting.

(5) Special Features.

(e) Details: Provide construction details, sections, elevations, etc. only where required for clarification of methods and materials of design.

3.5.8.10. Electronic Systems including the following responsibilities:

(a) Fire Detection and Alarm System. Design shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.)

(b) Fire Suppression System Control. Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Clearly describe how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. Designate all components shown on floor plans “FS system components” (as opposed to “Fire Alarm components”). Show location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors sub-zoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and under floor detectors with distinct symbols and indicate sub-zone of each.

(c) Public Address System

(d) Special Grounding Systems. Completely reflect all design requirements in the specifications and drawings. Specifications shall require field tests (in the construction phase), witnessed by the Government, to determine the effectiveness of the grounding system. Include drawings showing existing construction, if any.

(e) Cathodic Protection.

(f) Intrusion Detection, Card Access System

(g) Central Control and Monitoring System

(h) Mass Notification System

(i) Electrical Power Distribution Systems

3.5.8.11. Separate detailed Telecommunications drawings for Information Systems including the following responsibilities:

(a) Telecommunications Cabling

(b) Supporting Infrastructure

(c) Outside Plant (OSP) Cabling - Campus or Site Plans - Exterior Pathways and Inter-Building Backbones

(d) Include a layout of the voice/data outlets (including voice only wall & pay phones) on telecommunication floor plan drawing, location of SIPRNET data outlets (where applicable), and a legend and symbol definition to indicate height above finished floor. Show size of conduit and cable type and size on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans. Show underground distribution conduit and cable with sizing from point of presence to entrance facility of building.

(e) Layout of complete building per floor - Serving Zone Boundaries, Backbone Systems, and Horizontal Pathways including Serving Zones Drawings - Drop Locations and Cable ID's

(f) Communication Equipment Rooms - Plan Views - Tech and AMEP/Elevations - Racks and Walls. Elevations with a detailed look at all telecomm rooms. Indicate technology layout (racks, ladder-racks, etc.), mechanical/electrical layout, rack elevation and backboard elevation. They may also be an enlargement of a congested area of T1 or T2 series drawing.

3.6. FINAL DESIGN REVIEWS AND CONFERENCES

A final design review and review conference will be held upon completion of final design at the project installation, or – where equipment is available - by video teleconference or a combination thereof, for any design package to receive Government acceptance to allow release of the design package for construction. For smaller separate design packages, the parties may agree on alternative reviews and conferences (e.g., conference calls and electronic file sharing, etc.) through the Partnering process. Include the final design conference in the project schedule and shall indicate what part of the design work is at 100% completion. The final design conference will be held after the Government has had seven (7) calendar days after receipt of the submission to review the final design package and supporting data. For smaller packages, especially those involving only one or a few design disciplines the parties may agree on a shorter period.

3.7. FINAL DESIGN REQUIREMENTS

Final design deliverables for a design package shall consist of 100% complete drawings, specifications, submittal register and design analyses for Government review and acceptance. The 100% design submission shall consist of drawings, specifications, updated design analyses and any permits required by the contract for each package submitted. In order to expedite the final design review, prior to the conference, ensure that the design configuration management data and all review comment resolutions are up-to-date. Include the 100% SID and 100% FF&E binders for government approval. The Contractor shall have performed independent technical reviews (ITR's) and back-checks of previous comment resolutions, as required by Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL, including providing documentation thereof. Use DrChecks or other acceptable comment tracking system during the ITR and submit the results with each final design package

3.7.1. Drawings

3.7.1.1. Submit drawings complete with all contract requirements incorporated into the documents to provide a 100% design for each package submitted.

3.7.1.2. Prepare all drawings with the Computer-Aided Design and Drafting (CADD)/Computer-Aided Design (CAD) system, organized and easily referenced electronically, presenting complete construction information.

3.7.1.3. Drawings shall be complete. The Contractor is encouraged to utilize graphics, views, notes, and details which make the drawings easier to review or to construct but is also encouraged to keep such materials to those that are necessary.

3.7.1.4. Provide detail drawings that illustrate conformance with the contract. Include room finish schedules, corresponding color/finish/special items schedules, and exterior finish schedules that agree with the submitted SID binders.

3.7.1.5. The design documents shall be in compliance with the latest version of the A/E/C CAD Standard, available at https://cadbim.usace.army.mil/CAD. Use the approved vertical Corps of Engineers title blocks and borders on all drawings with the appropriate firm name included within the title block area.

3.7.1.6. CAD System and Building Information Modeling (BIM) (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order.)

All CAD files shall be fully compatible with MicroStation V8 or higher. Save all design CAD files as MicroStation V8 or higher files. All submitted BIM Models and associated Facility Data shall be fully compatible with Bentley BIM file format and the USACE Bentley BIM v8 Workspace.

(a) CAD Data Final File Format: During the design development capture geo-referenced coordinates of all changes made to the existing site (facility footprint, utility line installations and alterations, roads, parking areas, etc) as a result of this contract. There is no mandatory methodology for how the geo-referenced coordinates will be captured, however, Engineering and Construction Bulletin No. 2006-15, Subject: Standardizing Computer Aided Design (CAD) and Geographic Information Systems (GIS) Deliverables for all Military Design and Construction Projects identifies the format for final as-built drawings and data sets to be delivered to the government. Close-out requirements at the as-built stage; require final geo-referenced GIS Database of the new facility along with all exterior modifications. The Government will incorporate this data set into the Installation's GIS Masterplan or Enterprise GIS System. See also, Section 01 78 02.00 10 Closeout Submittals.

(b) Electronic Drawing Files: In addition to the native CAD design files, provide separate electronic drawing files (in editable CAD format and Adobe Acrobat PDF version 7.0 or higher) for each project drawing.

(c) Each file (both CAD and PDF) shall represent one complete drawing from the drawing set, including the date, submittal phase, and border. Each drawing file shall be completely independent of any data in any other file, including fonts and shapes not included with the basic CAD software program utilized. Fonts that are not included as part of the default CAD software package installation or recognized as an allowable font by the A/E/C CAD Standard are not acceptable in delivered CAD files. All displayed graphic elements on all levels of the drawing files shall be part of the project drawing image. The drawing files shall not contain any graphic element that is not part of the drawing image.

(d) Deliver BIM Model and associated Facility Data files in their native format. At a minimum, BIM files shall address major architecture design elements, major structural components, mechanical systems and electrical/communication distribution and elements as defined in Attachment F. See Attachment F for additional BIM requirements.

(e) Drawing Index: Provide an index of drawings sheet in CAD as part of the drawing set, and an electronic list in Microsoft Excel of all drawings on the CD. Include the electronic file name, the sheet reference number, the sheet number, and the sheet title, containing the data for each drawing.

(f) Hard Copies: Plot submitted hard copy drawings directly from the "electronic drawing files" and copy for quantities and sizes indicated in the distribution list at the end of this specification section. The Designers of Record shall stamp, sign and date original hard copy sheets as Released For Construction, and provide copies for distribution from this set.

3.7.2. Design Analyses

3.7.2.1. The designers of record shall update, finalize and present design analyses with calculations necessary to substantiate and support all design documents submitted.

3.7.2.2. The responsible DOR shall stamp, sign and date the design analysis. Identify the software used where, applicable (name, version, vendor). Generally, provide design analyses, individually, in an original (file copy) and one copy for the assigned government reviewer.

3.7.2.3. All disciplines review the LEED design analysis in conjunction with their discipline-specific design analysis; include a copy of the separable LEED design analysis in all design analysis submittals.

3.7.2.4. Do not combine multi-disciplined volumes of design-analysis, unless multiple copies are provided to facilitate multiple reviewers (one copy per each separate design analysis included in a volume).

3.7.3. Specifications

Specifications shall be 100% complete and in final form.

3.7.4. Submittal Register

Prepare and update the Submittal Register and submit it with the 100% design specifications (see Specification Section 01 33 00, SUBMITTAL PROCEDURES) with each design package. Include the required submittals for each specification section in a design package in the submittal register.

3.7.5. Preparation of DD Form 1354 (Transfer of Real Property)

This form itemizes the types, quantities and costs of various equipment and systems that comprise the project, for the purpose of transferring the new construction project from the Corps Construction Division to the Installation's inventory of real property. The Government will furnish the DB Contractor's design manager a DD Form 1354 checklist to use to produce a draft Form 1354. Submit the completed checklist and prepared draft Form DD 1354 with the 100% design in the Design Analysis. The Corps will use these documents to complete the final DD 1354 upon completion of construction.

3.7.6. Acceptance and Release for Construction

3.7.6.1. At the conclusion of the Final Design Review (after resolutions to the comments have been agreed upon between DOR and Government reviewers), the Contracting Officer or the ACO will accept the Final Design Submission for the design package in writing and allow construction to start for that design package. The Government may withhold acceptance until all major corrections have been made or if the final design submission requires so many corrections, even though minor, that it isn't considered acceptably complete.

3.7.6.2. Government review and acceptance of design submittals is for contract conformance only and shall not relieve the Contractor from responsibility to fully adhere to the requirements of the contract, including the Contractor’s accepted contract proposal, or limit the Contractor’s responsibility of design as prescribed under Special Contract Requirement: “Responsibility of the Contractor for Design” or limit the Government’s rights under the terms of the contract. The Government reserves the right to rescind inadvertent acceptance of design submittals containing contract deviations not separately and expressly identified in the submittal for Government consideration and approval.

3.8. DESIGN COMPLETE CONSTRUCTION DOCUMENT REQUIREMENTS

After the Final Design Submission and Review Conference and after Government acceptance of the Final Design submission, revise the design documents for the design package to incorporate the comments generated and resolved in the final review conference, perform and document a back-check review and submit the final, design complete documents. Label the final design complete documents “FOR CONSTRUCTION” or use similar language. In addition to the final drawings and specifications, the following deliverables are required for distribution and field use. The deliverable includes all documentation and supporting design analysis in final form, as well as the final review comments, disposition and the back-check. As part of the quality assurance process, the Government may perform a back-check of the released for construction documentation. Promptly correct any errors or omissions found during the Government back-check. The Government may withhold retainage from progress payments for work or materials associated with a final design package until this submittal has been received and the Government determines that it is complete.

3.9. SUBMITTAL DISTRIBUTION, MEDIA AND QUANTITIES

3.9.1. Submittal Distribution and Quantities

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section. Provide copies of each design submittal and design substantiation as follows (NOTE: If this is a Single Award or Multiple Award, Indefinite Delivery/Indefinite Quantity Contract, this information will be provided for each task order):

Activity and Address	Drawing Size (Full Size) **22x34** Full Sets/ *Partial Sets	Design Analyses & Specs Full Sets/ *Partial Sets	Drawing Size (Half Size) **11x17** Full Sets/ *Partial Sets	Non-BIM Data CD-ROM or DVD as Necessary (PDF& **.dgn**)	Furniture Submittal (Per Attachment B)	Structural Interior Design Submittal	BIM Data DVD (Per Attach F)
Commander, U.S.Army Engineer District **U.S. Army Corps of Engineers - Omaha District**	0/0	2/0	6/0	1	1	1	1
Commander, U.S.Army Engineer District, Center of Standardization **Fort Worth District**	0/0	0/0	6/0	1	1	1	6
Installation	0/0	3/0	12/0	12	2	2	0
U.S.Army Corps of Engineers Construction Area Office	1/0	3/0	3/0	3	1	2	0
Information Systems Engineering Command (ISEC)	0/0	0/0	0/0	1	*Partial Set (Work Station/System Furniture- IT Details)	N/A	1
Huntsville Engineer & Support Center, Central Furnishings Program	N/A	N/A	N/A	N/A	1 Interim/Refer to attachment B for the final submission Qty	N/A	N/A
Other Offices	0/0	0/0	0/0	0	N/A	0	0

***NOTE: For partial sets of drawings, specifications and design analyses, see paragraph 3.9.3.3, below.**

****NOTE: When specified below in 3.9.2, furnish Installation copies of Drawings as paper copies, in lieu of the option to provide secure web-based submittals.**

3.9.2. Web based Design Submittals

Web based design submittals will be acceptable as an alternative to the paper copies listed in the Table above, provided a single hard-copy PDF based record set is provided to the Contracting Officer for record purposes. Where the contract requires the Contractor to submit documents to permitting authorities, still provide those authorities paper copies (or in an alternate format where required by the authority). Web based design submittal information shall be provided with adequate security and availability to allow unlimited access those specifically authorized to Government reviewers while preventing unauthorized access or modification. File sizes must be of manageable size for reviewers to quickly download or open on their computers. As a minimum, drawings shall be full scale on American National Standards Institute (ANSI) D sheets (34" x 22"). In addition to the optional website, provide the BIM data submission on DVD to each activity and address noted above in paragraph 3.9.1 for each BIM submission required in Attachment F.

3.9.3. Mailing of Design Submittals

3.9.3.1. Mail all design submittals to the Government during design and construction, using an overnight mailing service. The Government will furnish the Contractor addresses where each copy shall be mailed to after award of the contract (or individual task order if this is an indefinite delivery/indefinite quantity, task order contract). Mail the submittals to five (5) different addresses. Assemble drawing sheets, specs, design analyses, etc. into individual sets; do not combine duplicate pages from individual sets so that the government has to assemble a set.

3.9.3.2. Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

3.9.3.3. Provide partial sets of drawings, specifications, design analyses, etc., as designated in the Table in paragraph 3.9.1, to those reviewers who only need to review their applicable portions of the design, such as the various utilities. The details of which office receives what portion of the design documentation will be worked out after award.

3.10. AS-BUILT DOCUMENTS

Provide as-built drawings and specifications in accordance with Section 01 78 02.00 10, CLOSEOUT SUBMITTALS. Update LEED design phase documentation during construction as needed to reflect construction changes and advancing project completion status (example - Commissioning Plan updates during construction phase) and include updated LEED documentation in construction closeout submittal.

ATTACHMENT A
STRUCTURAL INTERIOR DESIGN (SID) REQUIREMENTS

1.0 GENERAL INFORMATION

Structural Interior Design includes all building related elements and components generally part of the building itself, such as wall finishes, ceilings finishes, floor coverings, marker/bulletin boards, blinds, signage and built in casework. Develop the SID in conjunction with the furniture footprint.

2.0 STRUCURAL INTERIOR DESIGN (SID) REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

2.1. FORMAT AND SCHEDULE

Prepare and submit for approval an interior and exterior building finishes scheme for an interim design submittal. The DOR shall meet with and discuss the finish schemes with the appropriate Government officials prior to preparation of the schemes to be presented. Present original sets of the schemes to reviewers at an interim design conference.

At the conclusion of the interim phase, after resolutions to the comments have been agreed upon between DOR and Government reviewers, the Contractor may proceed to final design with the interior finishes scheme presented.

The SID information and samples are to be submitted in 8 ½" x 11" format using three ring binders with pockets on the inside of the cover. When there are numerous pages with thick samples, use more than one binder. Large D-ring binders are preferred to O-ring binders. Use page protectors that are strong enough to keep pages from tearing out. Anchor large or heavy samples with mechanical fasteners, Velcro, or double-faced foam tape rather than rubber cement or glue. Fold out items must have a maximum spread of 25 ½". Provide cover and spine inserts sheets identifying the document as "Structural Interior Design" package. Include the project title and location, project number, Contractor/A/E name and phone number(s), submittal stage and date.

Design submittal requirements include, but are not limited to:

2.1.1. Narrative of the Structural Interior Design Objectives

The SID shall include a narrative that discusses the building related finishes. Include topics that relate to base standards, life safety, sustainable design issues, aesthetics, durability and maintainability, discuss the development and features as they relate to the occupants requirements and the building design.

2.1.2. Interior Color Boards

Identify and key each item item on the color boards to the contract documents to provide a clear indication of how and where each item will be used. Arrange finish samples to the maximum extent possible by room type in order to illustrate room color coordination. Label all samples on the color boards with the manufacturer's name, patterns and colors name and number. Key or code samples to match key code system used on contract drawings.

Material and finish samples shall indicate true pattern, color and texture. Provide photographs or colored photocopies of materials or fabrics to show large overall patterns in conjunction with actual samples to show the actual colors. Finish samples must be large enough to show a complete pattern or design where practical.

Color boards shall include but not be limited to original color samples of the following:

All walls finishes and ceiling finishes, including corner guards, acrylic wainscoting and wall guards/chair rail finishes

All tile information, including tile grout color and tile patterns.

- All flooring finishes, including patterns.
- All door, door frame finishes and door hardware finishes
- All signage, wall base, toilet partitions, locker finishes and operable/folding partitions and trim
- All millwork materials and finishes (cabinets, counter tops, etc.)
- All window frame finishes and window treatments (sills, blinds, etc.)

Color board samples shall reflect all actual finish textures, patterns and colors required as specified. Patterned samples shall be of sufficient size to adequately show pattern and its repeat if a repeat occurs.

2.1.3. Exterior Color Boards

Prepare exterior finishes color boards in similar format as the interior finishes color boards, for presentation to the reviewers during an interim design conference. Provide original color samples of all exterior finishes including but not limited to the following:

- All Roof Finishes
- All Brick and Cast Stone Samples
- All Exterior Insulation and Finish Samples
- All Glass Color Samples
- All Exterior Metals Finishes
- All Window & Door Frame Finishes
- All Specialty Item Finishes, including trim

Identify each item on the exterior finishes color boards and key to the building elevations to provide a clear indication of how and where each item will be used.

2.2. STRUCTURAL INTERIOR DESIGN DOCUMENTS

2.2.1. General

Structural interior design related drawings must indicate the placement of extents of SID material, finishes and colors and must be sufficiently detailed to define all interior work. The following is a list of minimum requirements:

2.2.2. Finish Color Schedule

Provide finish color schedule(s) in the contract documents. Provide a finish code, material type, manufacturer, series, and color designations. Key the finish code to the color board samples and drawings.

2.2.3. Interior Finish Plans

Indicate wall and floor patterns and color placement, material transitions and extents of interior finishes.

2.2.4. Furniture Footprint Plans

Provide furniture footprint plans showing the outline of all freestanding and systems furniture for coordination of all other disciplines.

2.2.5. Interior Signage

Include interior signage plans or schedules showing location and quantities of all interior signage. Key each interior sign to a quantitative list indicating size, quantity of each type and signage text.

2.2.6. Interior Elevations, Sections and Details

Indicate material, color and finish placement.

ATTACHMENT B
FURNITURE, FIXTURES & EQUIPMENT (FF&E) REQUIREMENTS

1.0 FF&E REQUIREMENTS FOR THE INTERIM AND FINAL DESIGN SUBMITTALS

1.1. NOT USED

1.2. NOT USED

1.3. FURNITURE SELECTION

1.3.1. Select furniture from the GSA Schedules. Specify furniture available open market when an item is not available on the GSA Schedules. Provide justification fort items not available on the GSA Schedules.

1.3.2. To the greatest extent possible when specifying furniture work within a manufacturer's family of furniture for selections, example: Steelcase, Turnstone, Brayton International, Metro, and Vecta are all Steelcase companies. Each alternate should also be specified from a manufacturer's family of furniture, example: first set of alternates would be specified from Knoll's family of furniture and the second from Herman Miller family of furniture. It may be necessary to make some selections from other than a manufacturer's family of furniture if costs are not reasonable for particular items, some items are not available or appropriate for the facility or the items are not on GSA Schedule. If this occurs, consider specifying product from an open line that is accessible by numerous dealerships. Select office furniture including case goods, tables, storage, seating, etc. that is compatible in style, finish and color. Select furniture that complies with ANSI/BIFMA and from manufacturer's standard product line as shown in the most recent published price list and/or amendment and not custom product.

1.4. CONSTRUCTION

1.4.1. Provide knee space at workstations and tables that is not obstructed by panels/legs that interfere with knee space of seated person and specificy modesty panels at walls to be of a height or be hinged to allow access to building wall electrical outlets and communication jacks. Provide desks, storage and tables with leveling devices to compensate for uneven floors.

1.4.2. Unless otherwise noted, specify workstations and storage of steel construction. Provide high pressure laminate worksurface tops constructed to prevent warpage (thermallyfused worksurfaces are not acceptable). Provide user friendly features such as radius edges. Do not use sharp edges and exposed connections and ensure the underside of desks, tables and worksurfaces are completely and smoothly finished. Provide abutting worksurfaces that mate closely and are of equal heights when used in side-by-side configurations in order to provide a continuous and level worksurface.

1.4.3. Drawers shall stay securely closed when in the closed position and protect wires from damage during drawer operation. Include a safety catch to prevent accidental removal when fully open

1.4.4. Unless otherwise noted, provide lockable desks and workstations, filing cabinets and storage. Key all locks within a one person office the same; key all one person offices within a building differently. If an office or open office area has more than one workstation, key all the workstations differently, but key all locks within an individual workstation the same. Use tempered glass glazing when glazing is required. Use light-emitting diode (LED)/solid state lighting where task lighting is required in furniture.

1.5. FINISHES AND UPHOLSTERY

1.5.1. Specify neutral colors for casegoods, furniture systems, storage and tables. Specify desk worksurfaces and table tops that are not too light or too dark in color and have a pattern to help hide soiling. Accent colors are allowed in break and lounge areas. Keep placement of furniture systems panel

fabric accent colors to a minimum. All finishes shall be cleanable with ordinary household cleaning solutions.

1.5.2. Use manufacturer's standard fabrics; including textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Customers Own Material (COM) can be used in headquarter buildings in command suites with executive furniture. Coordinate specific locations with Corps of Engineers Interior Designer.

1.5.3. Specify seating upholstery that meets Wyzenbeek Abrasion Test, 55,000 minimum rubs. Specify a soil retardant finish for woven fabrics if Crypton or vinyl upholstery is not provided for seating in dining areas. Use manufacturer's standard fabrics. This includes textile manufacturers fabrics that have been graded into the furniture manufactures fabric grades and are available through their GSA Schedule. Specify upholstery and finish colors and patterns that help hide soiling. Specify finishes that can be cleaned with ordinary household cleaning solutions.

1.6. ACCESSORIES

1.6.1. Specify all accessories required for completely finished furniture installation. Provide filing cabinets and storage for office supplies. Provide tack surfaces at workstations with overhead storage. Provide tackable surfaces at workstations with overhead storage.

1.6.2. Not Used.

1.6.3. Workstations are to be equipped with stable keyboard trays that have height adjustability, tilting capability, including negative tilt, have a mouse pad at same height as the keyboard tray that can accommodate both left and right handed users, and retractable under worksurface.

1.7. MISSION UNIQUE EQUIPMENT

Funding for FF&E furniture items and mission unique equipment (MUE) items are from two different sources. Separate the designs and procurement documentation for FFE items and MUE. MUE includes, but is not limited to, items such as commerical appliances, fitness equipment, IT equipment and supporting carts. The User will purchase and install mission unique equipment items, unless otherwise noted. Identify locations of known MUE items such as commercial appliances, etc. for space planning purposes.

1.8. SUSTAINABILITY

1.8.1. For all designs provided regardless of facility type, make every effort to implement all aspects of sustainability to the greatest extent possible for all the selections made in the FF&E package. This includes but is not limited to the selection of products that consider: **Material Chemistry and Safety of Inputs** (What chemicals are used in the construction of the selections?); **Recyclability** (Do the selections contain recycled content?); **Disassembly** (Can the selections be disassembled at the end of their useful life to recycle their materials?).

1.8.2. Make selections to the greatest extent possible of products that possess current McDonough Braungart Design Chemistry (MBDC) certification or other "third-party" certified Cradle to Cradle program, Forest Stewardship Council (FSC) certification, GREENGAURD certification or similar "third-party" certified products consisting of low-emitting materials.

1.9. FURNITURE SYSTEMS

1.9.1. General.

Where appropriate, design furniture systems in open office areas. Coordinate style and color of furniture systems with other storage, seating, etc. in open office areas. Minimize the number of workstation typicals and the parts and pieces required for the design to assist in future reconfiguration and inventorying.

1.9.2. Connector Systems.

Specify a connector system that allows removal of a single panel or spine wall within a typical workstation configuration without requiring disassembly of the workstation or removal of adjacent panels. Specify connector system with tight connections and continuous visual seals. When Acoustical panels are used, provide connector system with continuous acoustical seals. Specify concealed clips, screws, and other construction elements, where possible.

1.9.3. Panels and Spine Walls

Specify panels and spine walls with hinged or removable covers that permit easy access to the raceway when required but are securely mounted and cannot be accidentally dislodged under normal conditions. Panels shall be capable of structurally supporting more than 1 fully loaded component per panel per side. Raceways are to be an integral part of the panel and must be able to support lay-in cabling and have a large capacity for electrical and IT. Do not thread cables through the frame.

1.9.4. Electrical And Information/Technology (IT)

Design furniture with electrical systems that meets requirements of UL 1286 when powered panels are required and UL approved task lights that meet requirements of NFPA 70. Dependent on user requirements and Section 01 10 00, paragraph 3 requirements, it is recommended that workstation electrical and IT wiring entry come from the building walls to eliminate the use of power poles and access at the floor. Design electrical and IT systems that are easily accessed in the spine wall and panels without having to move return panels and components. Electrical and IT management will be easily accessible by removable wall covers which can be removed while workstation components are still attached. Specify connector system that has continuation of electrical and IT wiring within workstations and workstation to workstation.

1.9.5. Pedestals

Specify pedestals that are interchangeable from left to right, and right to left, and retain pedestal locking system capability.

1.10. EXECUTIVE FURNITURE

1.10.1. Design for executive furniture in command areas, coordinate specific locations with Corps of Engineers Interior Designer. Use upgraded furniture, upholsteries and finishes in command suites. This includes but is not limited to wood casegoods, seating and tables. Select executive furniture casegoods from a single manufacturer and style line, to include workstations, credenzas, filing, and storage, etc.

1.10.2. Specify furniture with wood veneer finish with mitered solid wood edge of same wood type. Other executive office furniture such as seating, tables, executive conference room furniture, etc. shall be compatible in style, finish and color with executive furniture casegoods.

1.11. SEATING

1.11.1. General

Specify appropriate chair casters and glides for the floor finish where the seating is located. All task seating shall support up to a minimum of 250 lbs.

1.11.2. Desk and Guest Seating

Select ergonomic desk chairs with casters, waterfall front, swivel, tilt, variable back lock, adjustable back height or adjustable lumbar support, pneumatic seat height adjustment, and padded, contoured upholstered seat and back. Desk and guest chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Depending on scale of desk chair provide seat pan forward and back adjustment to increase or decrease depth of seat pan. All desk chairs shall have an adjustable seat height range of 4 1/2", range to include 16 1/2-20". Select guest chairs that are compatible in style, finish and color with the desk chairs.

1.11.3. Conference Room Seating

At tables, select ergonomic conference seating with casters, non-upholstered arms, waterfall front, swivel, tilt, pneumatic seat height adjustment, and padded, contoured seat and back, unless otherwise noted. Select arm height and/or design that allows seating to be moved up closely to the table top. Conference chair backs may be other than upholstered such as mesh fabric if it is ergonomically designed, forms to back and is comfortable. Perimeter conference chairs shall be compatible in style, finish and color with conference seating at the tables.

1.11.4. Lounge, Waiting and Reception Area Seating

Select seating with arms and cushioned, upholstered seat and back. In heavy use areas, arms shall be easily cleaned such as non-upholstered arms or upholstered arms with wood arm caps unless otherwise noted.

1.11.5. Break Room Seating

Select stackable seating that is easily cleaned. Seating shall be appropriate for table and counter heights as applicable with non-upholstered arms if arms are required. Chairs shall have metal legs and composite materials for seats.

1.12. FILING AND STORAGE.

Select storage and shelving units that meet customer’s functional load requirements for stored items. Specify counterweights for filing cabinets when required by the manufacturer for stability. File drawers shall allow only one drawer to be opened at a time. Provide heavy duty storage and shelving if information is not available.

1.13. TRAINING TABLES.

raining tables shall be reconfigurable, moveable and storable; lighter weight folding with dollies or castered as necessary. Plastic laminate self edges are unacceptable. Specify power and data requirements and dollies as required.

1.14. FURNITURE WARRANTIES.

Specify manufacturer's performance guarantees or warranties that include parts, labor and transportation as follows:

Furniture System, unless otherwise noted – 10 year minimum
Furniture System Task Lights – 2 year minimum, excluding bulbs
Furniture System Fabric – 3 year minimum
Wood Desks - 10 year minimum

Metal Desks – 12 year minimum
Seating, unless otherwise noted - 10 year minimum
Seating Mechanisms and Pneumatic Cylinders - 10 years
Seating Fabric - 3 years minimum
Wood Filing and Storage - 10 year minimum

Tables, unless otherwise noted - 10 year minimum
Table Mechanisms – 5 year minimum
Table Ganging Device - 1 year minimum
Items not listed above - 1 year minimum

ATTACHMENT C
TRACKING COMMENTS IN DRCHECKS

1.0 General

The Government and DB Contractor shall set up the project in Dr Checks. Throughout the design process, the parties shall enter, track, and back-check comments using the DrChecks system. Government and Contractor reviewers enter design review comments into DrChecks. Designers of Record shall annotate comments timely and specifically to indicate for the review conference exactly what action will be taken or why the action is not required. After the design review conference and prior to the next design submittal for the package, the DOR's will annotate those comments that require DOR action, design revision, etc. to show how and where it has been addressed in the design documents, This shall be part of the required design configuration management plan. Comments considered critical by the conference participants shall be flagged as such.

2.0 DrChecks Review Comments

The Contractor and the Government shall monitor DrChecks to assure all comments are annotated and resolved prior to the next submittal. Print and include the DrChecks comments and responses and included in the design analysis for record in the next design submittal for that package.

2.1. Upon review of comments prior to the design review conference, the DOR(s) shall identify whether they concur, non-concur, mark it "for information only" or mark it "check and resolve". Indicate exactly what action will be taken or why the action is not required.

2.2. Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

2.3. After the conference, the DOR(s) shall formally respond to each applicable comment in DrChecks a second time prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next submittal, reviewers will back-check answers to the comments against the new submittal, in addition to reviewing additional design work.

2.4. Clearly annotate in DrChecks those comments that, in the DB Contractor's opinion, require effort outside the scope of the contract. Do not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

3.0 DrChecks Initial Account Set-Up

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at http://www.projnet.org and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

3.1. Once the office and individuals are registered, the COE's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

4.0 DrChecks Reviewer Role

The Contractor is the technical reviewer and the Government is the compliance reviewer of the DB's design documents. Each reviewer enters their own comments into the Dr Checks system. To enter comments:

4.1. Log into DrChecks.

4.2. Click on the appropriate project.

4.3. Click on the appropriate review conference. An Add comment screen will appear.

4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.

4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.

4.6. Once comments are all entered, exit DrChecks by choosing "My Account" and then Logout.

5.0 DrChecks Comment Evaluation (Step 1 of 2)

The role of the DOR(s) is to evaluate and respond to the comments entered by the Government's and DB Contractor's reviewers. To respond to comments:

5.1. Log into DrChecks.

5.2. Click on the appropriate project.

5.3. Under "Evaluate" click on the number under "Pending".

5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)

5.5. Select the appropriate evaluation radio button (concur, non-concur, for information only, or check and resolve) and respond with a brief explanation in the Discussion field. An explanation other than to say "concur" is not necessary for "Concur", but may be useful for the Design Configuration Management purposes.

5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.

5.7. Once evaluations are all entered, exit DrChecks by choosing "My Account" and then Logout.

6.0 DrChecks Comment Evaluation (Step 2 of 2)

This is where the DOR(s) respond to each applicable comment in DrChecks after the design review conference, prior to the next submittal, clearly indicating what action was taken and what drawing/spec/design analysis changed. Respond to the previous comments, following the same steps as above, adding the narrative in the discussion field.

7.0 DrChecks Back-Check

At the following design conference, (where applicable) or at some other agreed time, Government and Contractor reviewers will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and that all revisions have been completed. Reviewers

shall either enter additional back-check comments, if necessary, or close those where actions are complete.

7.1. Log into DrChecks.

7.2. Click on the appropriate project.

7.3. Under “My Backcheck” click on the number under “Pending”.

7.4. If you agree with the designer’s response select “Close Comment” and add a closing response if desired.

7.5. If you do not agree with the designer’s response or the submittal does not reflect the response given, select “Issue Open”, enter additional information.

7.6. Click on the Add button. The back-check will be added to the database and a fresh screen will appear with the next comment.

7.7. Once back-checks are all entered, exit DrChecks by choosing “My Account” and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.

ATTACHMENT D
SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

Instructions: Use the information outlined in this document to provide the minimum requirement for development of Fire Protection and Life Safety Code submittals for all building projects. Additional and supplemental information may be used to further develop the code review. Insert N/A after criteria, which may be “not applicable”.

1.0 SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW

1.1. Project Name (insert name and location)

1.2. Applicable Codes and Standards

1.2.1. Unified Facilities Criteria (UFC): 3-600-01, Design: Fire Protection Engineering For Facilities

1.2.2. International Building Code (IBC) for fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements, except as modified by UFC 3-600-01.

1.2.3. National Fire Protection Association (NFPA) 101 Life Safety Code (latest edition), for building egress and life safety and applicable criteria in UFC 3-600-01.

1.2.4. ADA and ABA Accessibllity Guidelines. For Buildings and Facilities See Section 01 10 00, Paragraph 3 for facility specific criteria.

1.3. Occupancy Classification
IBC chapters 3 and 4

1.4. Construction Type
IBC chapter 6

1.5. Area Limitations
IBC chapter 5, table 503

1.6. Allowable Floor Areas
IBC section 503, 505

1.7. Allowable area increases
IBC section 506, 507

1.8. Maximum Height of Buildings
IBC section 504

1.9. Fire-resistive substitution

1.10. Occupancy Separations
IBC table 302.3.2

1.11. Fire Resistive Requirements

1.11.1. Exterior Walls - [_____] hour rating, IBC table 601, 602

1.11.2. Interior Bearing walls - [_____] hour rating

1.11.3. Structural frame - [_____] hour rating

1.11.4. Permanent partitions - [_____] hour rating

1.11.5. Shaft enclosures - [_____] hour rating

1.11.6. Floors & Floor-Ceilings - [_____] hour rating

1.11.7. Roofs and Roof Ceilings - [_____] hour rating

1.12. Automatic Sprinklers and others used to determine the need for automatic Extinguishing Equipment, Extinguishing Systems, Foam Systems, Standpipe

1.12.1. UFC 3-600-01, chapters 4 and 6 systems, wet chemical systems, etc. State which systems are required and to what criteria they will be designed.

1.12.2. UFC 3-600-01, Appendix B Occupancy Classification. Note the classification for each room. This may be accomplished by classifying the entire building and noting exceptions for rooms that differ (E.g. The entire building is Light Hazard except boiler room and storage rooms which are [_____], etc.)

1.12.3. UFC 3-600-01, Chapter 3 Sprinkler Design Density, Sprinkler Design Area, Water Demand for Hose Streams (supply pressure and source requirements).

1.12.4. UFC 3-600-01, Chapter 4 Coverage per sprinkler head. Extended coverage sprinkler heads are not permitted.

1.12.5. Available Water Supply. Provide the results of the water flow tests showing the available water supply static pressure and residual pressure at flow. Based on this data and the estimated flow and pressure required for the sprinkler system, determine the need for a fire pump.

1.12.6. NFPA 13, Para. 8.16.4.6.1. Provide backflow preventer valves as required by the local municipality, authority, or water purveyor. Provide a test valve located downstream of the backflow preventer for flow testing the backflow preventer at full system demand flow. Route the discharge to an appropriate location outside the building.

1.13. Kitchen Cooking Exhaust Equipment

Describe when kitchen cooking exhaust equipment is provided for the project. Type of extinguishing systems for the equipment should be provided. per NFPA 96. Show all interlocks with manual release switches, fuel shutoff valves, electrical shunt trips, exhaust fans, and building alarms.

1.14. Portable Fire Extinguishers, fire classification and travel distance. per NFPA 10

1.15. Enclosure Protection and Penetration Requirements. - Opening Protectives and Through Penetrations

1.15.1. IBC Section712, 715 and Table 715.3. Mechanical rooms, exit stairways, storage rooms, janitor [_____] hour rating. IBC Table 302.1.1

1.15.2. Fire Blocks, Draft Stops, Through Penetrations and Opening Protectives

1.16. Fire Dampers. Describe where fire dampers and smoke dampers are to be used (IBC Section 716 and NFPA 90A}. State whether isolation smoke dampers are required at the air handler.

1.17. Detection Alarm and Communication. UFC 3-600-01, (Chapter 5); NFPA 101 para. 3.4 (chapters 12-42); NFPA 72

1.18. Mass Notification. Describe building/facility mass notification system (UFC 4-021-01) type and type of base-wide mass notification/communication system. State whether the visible notification appliances will be combined with the fire alarm system or kept separate. (Note: Navy has taken position to combine visible notification appliances with fire alarm).

1.19. Interior Finishes (classification). NFPA 101.10.2.3 and NFPA 101.7.1.4

1.20. Means of Egress

1.20.1. Separation of Means of Egress, NFPA 101 chapters 7 and 12-42; NFPA101.7.1.3

1.20.2. Occupant Load, NFPA101.7.3.1 and chapters 12-42.

1.20.3. Egress Capacity (stairs, corridors, ramps and doors) NFPA101.7.3.3

1.20.4. Number of Means of Egress, NFPA101.7.4 and chapters 12-42.

1.20.5. Dead end limits and Common Path of Travel, NFPA 101.7.5.1.6 and chapters 12-42.

1.20.6. Accessible Means of Egress (for accessible buildings), NFPA101.7.5.4

1.20.7. Measurement of Travel Distance to Exits, NFPA101.7.6 and chapters 12-42.

1.20.8. Discharge from Exits, NFPA101.7.7.2

1.20.9. Illumination of Means of Egress, NFPA101.7.8

1.20.10. Emergency Lighting, NFPA101.7.9

1.20.11. Marking of Means of Egress, NFPA101.7.10

1.21. Elevators, UFC 3-600-01, Chapter 6; IBC and ASME A17.1 - 2000,(Safety Code for Elevators and Escalators)

1.22. Accessibility Requirements, ADA and ABA Accessibility Guidelines for Buildings and Facilities

1.23. Certification of Fire Protection and Life Safety Code Requirements. (Note: Edit the Fire team membership if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features for this project in accordance with the attached completed form(s).

1.24. Designer of Record. Certification of Fire protection and Life Safety Code Requirements. (Note: Edit the Fire team members if necessary). Preparers of this document certify the accuracy and completeness of the Fire Protection and Life Safety features of this project.

Fire Protection Engineer of Record:

_____

Signature and Stamp

Date

OR

Architect of Record:

_____

Signature and Stamp

Date

Mechanical Engineer of Record:

_____

Signature and Stamp

Date

Electrical Engineer of Record:

_____

Signature/Date

ATTACHMENT E
LEED SUBMITTALS

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC v3 Submittals (OCT09)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
GENERAL							
	GENERAL - All calculations shall be in accordance with LEED 2009 Reference Guide.						
	GENERAL: Obtain excel version of this spreadsheet at http://en.sas.usace.army.mil/enWeb, "Engineering Criteria".						
	GENERAL - For all credits, narrative/comments may be added to describe special circumstances or considerations regarding the project's credit approach.						
	GENERAL - Include all required LEED drawings indicated below in contract drawings with applicable discipline drawings, labeled For Reference Only.						
	NOTE: Each submittal indicated with "**" differs from LEED certified project submittals by either having a different due date or being an added submittal not required by GBCI.						
	NOTE: Projects seeking LEED certification need only submit to GBCI whatever documentation is acceptable to GBCI (for example, licensed professional certifications). This checklist identifies what must be submitted to the Government for internal review purposes. Government review of LEED documentation in no way supercedes or modifies the requirements and rulings of of GBCI for purposes of compliance with project requirement to obtain LEED certifiaction.						
	GENERAL - Audit documentation may include but is not limited to what is indicated in this table.						
			Closeout		List of all Final Design submittals revised after final design to reflect actual closeout conditions. Revised Final Design submittals. - OR - Statement confirming that no changes have been made since final design that effect final design submittal documents.		Proj Engr (PE)
CATEGORY 1 - SUSTAINABLE SITES							
SSPR1		Construction Activity Pollution Prevention (PREREQUISITE)	**Final Design		List of drawings and specifications that address the erosion control, particulate/dust control and sedimentation control measures to be implemented.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design		Narrative that indicates which compliance path was used (NPDES or Local standards) and describes the measures to be implemented on the project. If a local standard was followed, provide specific information to demonstrate that the local standard is equal to or more stringent than the NPDES program.		CIV
SS1		Site Selection	Final Design		Statement confirming that project does not meet any of the prohibited criteria.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design	X	LEED Site plan drawing that shows all proposed development, line depicting boundary of all bodies of water and/or wetlands within 100 feet of project boundary and a line depicting 5' elevation above 100 year flood line that falls within project boundary. Not required if neither condition applies.		CIV
SS2		Development Density & Community Connectivity	Final Design		Option 1: LEED Site vicinity plan showing project site and surrounding development. Show density boundary or note drawing scale.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Table indicating, for project site and all surrounding sites within density radius (keyed to site vicinity plan), site area and building area. Project development density calculation. Density radius calculation. Development density calculation within density radius.		CIV
			Final Design		Option 2: LEED Site vicinity plan showing project site, the 1/2 mile community radius, pedestrian walkways and the locations of the residential development(s) and Basic Services surrounding the project site.		CIV
			Final Design		Option 2: List (including business name and type) of all Basic Services facilities within the 1/2 mile radius, keyed to site vicinity plan.		CIV
SS3		Brownfield Redevelopment	Final Design		Narrative describing contamination and the remediation activities included in project. Include statement indicating how site was determined to be a brownfield.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS4.1		Alternative Transportation: Public Transportation Access	Final Design		Statement indicating which option for compliance applies. State whether public transportation is existing or proposed and, if proposed, cite source of this information.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: LEED Site vicinity plan showing project site, mass transit stops and pedestrian path to them with path distance noted.		CIV
			Final Design		Option 2: LEED Site vicinity plan showing project site, bus stops and pedestrian path to them with path distance noted.		CIV
SS4.2		Alternative Transportation: Bicycle Storage & Changing Rooms	Final Design		FTE calculation. Bicycle storage spaces calculation. Shower/changing facilities calculation.		CIV
			Final Design		List of drawings that show the location(s) of bicycle storage areas. Statement indicating distance from building entrance.		CIV
			Final Design		List of drawings that show the location(s) of shower/changing facilities and, if located outside the buiding, statement indicating distance from building entrance.		ARC

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
SS4.3		Alternative Transportation: Low Emitting & Fuel Efficient Vehicles	Final Design		Statement indicating which option for compliance applies. FTE calculation. Statement indicating total parking capacity of site.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Low-emission & fuel-efficient vehicle calculation.		CIV
			Final Design		Option 1: List of drawings and specification references that show location and number of preferred parking spaces for low-emission & fuel-efficient vehicles and signage.		CIV
			Final Design		Option 1: Statement indicating quantity, make, model and manufacturer of low-emission & fuel-efficient vehicles to be provided. Statement confirming vehicles are zero-emission or indicating ACEEE vehicle scores.		CIV
			Final Design		Option 2: Low-emission & fuel-efficient vehicle parking calculation.		CIV
			Final Design		Option 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design		Option 3: Low-emission & fuel-efficient vehicle refueling station calculation.		CIV
			Final Design		Option 3: List of drawings and specifications indicating location and number of refueling stations, fuel type and fueling capacity for each station for an 8-hour period.		CIV
			Closeout	X	Option 3: Construction product submittals indicating what was provided and confirming compliance with respect to fuel type and fueling capacity for each station for an 8-hour period.		CIV
SS4.4		Alternative Transportation: Parking Capacity	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Preferred parking calculation including number of spaces required, total provided, preferred spaces provided and percentage.		CIV
			Final Design		Option 2: FTE calculation. Preferred parking calculation including number of spaces provided, preferred spaces provided and percentage.		CIV
			Final Design		Options 1 and 2: List of drawings and specification references that show location and number of preferred parking spaces and signage.		CIV
			Final Design		Option 3: Narrative indicating number of spaces required and provided and describing infrastructure and support programs with description of project features to support them.		CIV
SS5.1		Site Development: Protect or Restore Habitat	**Final Design		Option 1: List of drawing and specification references that convey site disturbance limits.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			**Final Design		Option 2: LEED site plan drawing that delineates boundaries of each preserved and restored habitat area with area (sf) noted for each.		CIV
			**Final Design		Option 2: Percentage calculation of restored/preserved habitat to total site area. List of drawings and specification references that convey restoration planting requirements.		CIV
SS5.2		Site Development: Maximize Open Space	Final Design		Option 2: LEED site plan drawing delineating boundary of vegetated open space adjacent to building with areas of building footprint and designated open space noted.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS6.1		Stormwater Design: Quantity Control	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Option 1: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf) -OR - Narrative describing site conditions, measures and controls to be implemented to prevent excessive stream velocities and erosion.		CIV
			Final Design		Option 2: Indicate pre-development and post-development runoff rate(cfs) and runoff quantity (cf). Indicate percent reduction in each.		CIV
SS6.2		Stormwater Design: Quality Control	Final Design		For non-structural controls, list all BMPs used and, for each, describe the function of the BMP and indicate the percent annual rainfall treated. List all structural controls and, for each, describe the pollutant removal and indicate the percent annual rainfall treated.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
SS7.1		Heat Island Effect: Non-Roof	**Final Design		LEED site plan drawing indicating locations and quantities of each paving type, including areas of shaded pavement. Percentage calculation indicating percentage of reflective/shaded/open grid area.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
SS7.2		Heat Island Effect: Roof	Final Design		Option 1: Percentage calculation indicating percentage of SRI compliant roof area. List of drawings and specification references that convey SRI requirements and roof slopes.		ARC
			Final Design		Option 1: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout		Option 1: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X	Option 1: Manufacturer published product data or certification confirming SRI		PE
			Final Design		Option 2: Percentage calculation indicating percentage of vegetated roof area.		ARC
			Final Design		Option 3: Combined reflective and green roof calculation.		ARC
			Final Design		Option 3: List of specified roof materials indicating, for each, type, manufacturer, product name and identification if known, SRI value and roof slope.		ARC
			**Closeout		Option 3: List of installed roof materials indicating, for each, manufacturer, product name and identification, SRI value and roof slope.		PE
			Closeout	X	Option 3: Manufacturer published product data or certification confirming SRI		PE
SS8		Light Pollution Reduction	Final Design		Interior Lighting: List of drawings and specification references that convey interior lighting requirements (location and type of all installed interior lighting, location of non-opaque exterior envelope surfaces, allowing confirmation that maximum candela value from interiorfixtures does not intersect non-opaque building envelope surfaces). - OR - List of drawings and specification references that show automatic lighting controls compliance with credit requirement.		ELEC
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		ELEC
			Final Design		Exterior Lighting: List of drawings and specification references that convey exterior lighting requirements (location and type of all site lighting and building façade/landscape lighting).		ELEC
			Final Design		Exterior Site Lighting Power Density (LPD): Tabulation for exterior site lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all site lighting.		ELEC
			Final Design		Exterior Building Facade/Landscape Lighting Power Density (LPD): Tabulation for exterior building facade/landscape lighting indicating, for each location identification or description, units of measure, area or distance of the location, actual LPD using units consistent with ASHRAE 90.1, and the ASHRAE allowable LPD for that type of location. Percentage calculation of actual versus allowable LPD for all building facade/landscape lighting.		ELEC
			Final Design		Exterior Lighting IESNA Zone: Indicate which IESNA zone is applicable to the project.		ELEC
			Final Design		Exterior Lighting Site Lumen table indicating, for each fixture type, quantity installed, initial lamp lumens per luminaire, initial lamp lumens above 90 degrees from Nadir, total lamp lumens and total lamp lumens above 90 degrees. Percentage of site lamp lumens above 90 degrees from nadir to total lamp lumens.		ELEC
			Final Design		Exterior Lighting Narrative describing analysis used for addressing requirements for light trespass at site boundary and beyond.		ELEC
CATEGORY 2 – WATER EFFICIENCY							
WEPR1		Water Use Reduction: 20% Reduction	Final Design		Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design		Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design		Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			Final Design		Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design		Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Closeout	X	Manufacturer published product data or certification confirming fixture water usage.		PE
WE1.1		Water Efficient Landscaping: Reduce by 50%	Final Design		Statement indicating which option for compliance applies.		CIV
			**Final Design		Delineation and labeling of "LEED Project site boundary" on site plan.		CIV
			Final Design		Calculation indicating, for baseline and design case, total water applied, total potable water applied, total non-potable water applied. Design case percent potable water reduction. If nonpotable water is used, indicate source of nonpotable water.		CIV
			Final Design		List of landscape plan drawings.		CIV
			Final Design		Narrative describing landscaping and irrigation design strategies, including water use calculation methodology used to determine savings and, if non-potable water is used, specific information about source and available quantity.		CIV
WE1.2		Water Efficient Landscaping: No Potable Water Use or No Irrigation	Same as WE1.1		Same as WE1.1		CIV
WE2		Innovative Wastewater Technologies	Final Design		Statement confirming which option for compliance applies.		MEC
			Final Design		Statement confirming which occupancy breakdown applies (default or special). For special occupancy breakdown, indicate source and explanation for ratio.		MEC
			Final Design		Occupancy calculation including male/female numbers for FTEs, visitors, students, customers, residential and other type occupants/users		MEC
			Final Design		Statement indicating percent of male restrooms with urinals. Statement indicating annual days of operation.		MEC
			Final Design		Baseline flush fixture calculation spreadsheet indicating, for each fixture type, gender, flush rate, daily uses per person for each occupant type identified in occupancy calculation and annual baseline flush fixture water usage.		MEC
			Final Design		Design case flush fixture calculation spreadsheet indicating, for each fixture type, gender, fixture manufacturer, fixture model number, flush rate, percent of occupants using this fixture type, daily uses per person for each occupant type identified in occupancy calculation and annual design case flush fixture water usage.		MEC
			Final Design		Option 1: If onsite non-potable water is used, identify source(s), indicate annual quantity from each source and indicate total annual quantity from all onsite non-potable water sources.		MEC
			Final Design		Option 1: Summary calculation indicating baseline annual water consumption, design case annual water consumption, non-potable annual water consumption and total percentage annual water savings.		MEC
			Final Design		Option 2: Statement confirming on-site treatment of all generated wastewater to tertiary standards and all treated wastewater is either infiltrated or used on-site.		MEC
			Final Design		Option 2: List of drawing and specification references that convey design of on-site wastewater treatment features.		CIV
			Final Design		Option 2: On-site water treatment quantity calculation indicating all on-site wastewater source(s), annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from each source and totals for annual quantity treated, annual quantity infiltrated and annual quantity re-used on site from all sources.		CIV
			Final Design		Option 2: Wastewater summary calculation indicating design case annual flush fixture water usage, annual on-site water treatment and percentage sewage convyance reduction.		MEC
			Final Design		Narrative describing project strategy for reduction of potable water use for sewage conveyance, including specific information on reclaimed water usage and treated wastewater usage.		MEC
WE3		Water Use Reduction: 30% - 40% Reduction	Same as WEPR1		Same as WEPR1		MEC
CATEGORY 3 – ENERGY AND ATMOSPHERE							

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC v3 Submittals (OCT09)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
EAPR1		Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	**Final Design		**Owner's Project Requirements document		ALL
			**Final Design		**Basis of Design document for commissioned systems		MEC, ELEC
			**Final Design		**Commissioning Plan		MEC, ELEC
			Closeout		Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout		Commissioning Report		PE
EAPR2		Minimum Energy Performance (PREREQUISITE)	Final Design		Statement listing the mandatory provisions of ASHRAE 90.1 that project meets relative to compliance with this prerequisite and indicating which compliance path was used.		MEC ELEC ARC
			Final Design		Statement indicating which compliance path option applies.		MEC
			Final Design		Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design		Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design		Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design		Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design		Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design		Option 1: Energy type summary lising, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design		Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design		Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design		Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design		Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			Final Design		Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design		Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EAPR3		Fundamental Refrigerant Management (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies.		MEC
			Final Design		Option 2: Narrative describing phase out plan, including specific information on phase out dates and refrigerant quantities.		MEC
EA1		Optimize Energy Performance	Final Design		Statement indicating which compliance path option applies.		MEC
			Final Design		Option 1: Statement confirming simulation software capabilities and confirming assumptions and methodology.		MEC
			Final Design		Option 1: General information including simulation program, principal heating source, percent new construction and renovation, weather file, climate zone and Energy Star Target Finder score.		MEC
			Final Design		Option 1: Space summary listing, for each building use, the conditioned area, unconditioned area and total area and include total area for each category		MEC
			Final Design		Option 1: List of all simulation output advisory message data and show difference between baseline and proposed design		MEC
			Final Design		Option 1: Comparison summary for energy model inputs including description of baseline and design case energy model inputs, showing both by element type		MEC
			Final Design		Option 1: Energy type summary lising, for each energy type, utility rate description, units of energy and units of demand		MEC
			Final Design		Option 1: Statement indicating whether project uses on-site renewable energy. If yes, list all sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, statement describing how exceptional calculation measure cost savings is determined		MEC
			Final Design		Option 1: If analysis includes exceptional calculation methods, for each exceptional calculation method indicate energy types and, for each energy type, annual energy savings, annual cost savings, and brief descriptive narrative		MEC
			Final Design		Option 1: Baseline performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand for all four orientations. For each orientation indicate total annual energy use for each orientation and total annual process energy use.		MEC
			Final Design		Option 1: Baseline energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Proposed Design performance rating compliance report table indicating, for each energy end use, whether it is a process load, energy type, annual and peak energy demand, baseline annual and peak energy demand and percent savings. Indicate total annual energy use and total annual process energy use for both proposed design and baseline and percent savings.		MEC
			Final Design		Option 1: Proposed Design energy cost table indicating, for each energy type, annual cost for all four orientations and building total energy cost.		MEC
			Final Design		Option 1: Energy cost and consumption by energy type report indicating, for each energy type, proposed design and baseline annual use and annual cost, percent savings annual use and annual cost. Indicate for renewable energy annual energy generated and annual cost. Indicate exceptional calculations annual energy savings and annual cost savings. Indicate building total annual energy use, annual energy cost for proposed design and baseline and indicate percent savings annual energy use and annual energy cost.		MEC

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			Final Design		Option 1: Compliance summaries from energy simulation software. If software does not produce compliance summaries provide output summaries and example input summaries for baseline and proposed design supporting data in the tables. Output summaries must include simulated energy consumption by end use and total energy use and cost by energy type. Example input summaries should represent most common systems and must include occupancy, use pattern, assumed envelope component sizes and descriptive features and assumed mechanical equipment types and descriptive features		MEC
			Final Design		Option 1: Energy rate tariff from project energy providers (only if not using LEED Reference Guide default rates)		MEC
EA2.1		On-Site Renewable Energy	Final Design		Statement indicating which compliance path option applies.		ELEC
			Final Design		List all on-site renewable energy sources and indicate, for each source, backup energy type, annual energy generated, rated capacity and renewable energy cost. Indicate total annual energy use (all sources), total annual energy cost (all sources) and percent renewable energy cost.		ELEC MEC
			Final Design		Option 1: Indicate, for renewable energy,proposed design total annual energy generated and annual cost.		ELEC MEC
			Final Design		Option 2: Indicate CBECS building type and building gross area. Provide the following CBECS data: median annual electrical intensity, median annual non-electrical fuel intensity, average electric energy cost, average non-electric fuel cost, annual electric energy use and cost, annual non-electric fuel use and cost.		ELEC MEC
			Final Design		Option 2: Narrative describing renewable systems and explaining calculation method used to estimate annual energy generated, including factors influencing performance.		ELEC MEC
EA2.2		On-Site Renewable Energy	Same as EA2.1		Same as EA2.1		ELEC MEC
EA2.3		On-Site Renewable Energy	Same as EA2.1		Same as EA2.1		ELEC MEC
EA3		Enhanced Commissioning	**Final Design		**Owner's Project Requirements document (OPR)		ALL
			**Final Design		**Basis of Design document for commissioned systems (BOD)		ELEC MEC
			**Final Design		**Commissioning Plan		ELEC MEC
			Closeout		Statement confirming all commissioning requirements have been incorporated into construction documents.		PE
			Closeout		**Commissioning Report		PE
			**Final Design		Statement by CxA confirming Commissioning Design Review		
			Closeout		Statement by CxA confirming review of Contractor submittals for compliance with OPR and BOD		PE
			Closeout		**Systems Manual		PE
			Closeout		Statement by CxA confirming completion of O&M staff and occupant training		PE
			Closeout		**Scope of work for post-occupancy review of building operation, including plan for resolution of outstanding issues		PE
			**Predesign		Statement confirming CxA qualifications and contractual relationships relative to work on this project, demonstrating that CxA is an independent third party.		MEC
EA4		Enhanced Refrigerant Management	Final Design		Refrigerant impact calculation table with all building data and calculation values as shown in LEED 2009 Reference Guide Example Calculations		MEC
			Final Design		Narrative describing any special circumstances or explanatory remarks		
			Closeout	X	Cut sheets highlighting refrigerant data for all HVAC components.		PE
EA5		Measurement & Verification	Closeout		Statement indicating which compliance path option applies.		PE
			Closeout		Measurement and Verification Plan including Corrective Action Plan		PE
			Closeout		**Scope of work for post-occupancy implementation of M&V plan including corrective action plan.		PE
EA6		Green Power	Closeout		Statement indicating which compliance path option applies.		PE
			Closeout		Option 1: Indicate proposed design total annual electric energy usage		PE
			Closeout		Option 2: Indicate actual total annual electric energy usage		PE
			Closeout		Option 3: Calculation indicating building type, total gross area, median electrical intensity and annual electric energy use		PE

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			Closeout		Green power provider summary table indicating, for each purchase type, provider name, annual quantity green power purchased and contract term. Indicate total annual green power use and indicate percent green power		PE
			Closeout		Narrative describing how Green Power or Green Tags are purchased		PE
CATEGORY 4 – MATERIALS AND RESOURCES							
MRPR1		Storage & Collection of Recyclables (PREREQUISITE)	Final Design		Statement confirming that recycling area will accommodate recycling of plastic, metal, paper, cardboard and glass. Narrative indicating any other materials addressed and coordination with pickup.		ARC
MR1.1		Building Reuse: Maintain 55% of Existing Walls, Floors & Roof	**Final Design		If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design		Spreadsheet listing, for each building structural/envelope element, the existing area and reused area. Total percent reused.		ARC
MR1.2		Building Reuse: Maintain 75% of Existing Walls, Floors & Roof	Same as MR1.1		Same as MR1.1		ARC
MR1.3		Building Reuse: Maintain 95% of Existing Walls, Floors & Roof	Same as MR1.1		Same as MR1.1		ARC
MR1.4		Building Reuse: Maintain 50% of Interior Non-Structural Elements	**Final Design		If project includes a building addition, confirm that area of building addition does not exceed 2x the area of the existing building.		ARC
			**Final Design		Spreadsheet listing, for each building interior non-structural element, the existing area and reused area. Total percent reused.		ARC
MR2.1		Construction Waste Management: Divert 50% From Disposal	**Preconstruction		Waste Management Plan		PE
			**Construction Quarterly and Closeout		Spreadsheet calculations indicating material description, disposal/diversion location (or recycling hauler), weight, total waste generated, total waste diverted, diversion percentage		PE
			**Construction Quarterly and Closeout		Receipts/tickets for all items on spreadsheet		PE
MR2.2		Construction Waste Management: Divert 75% From Disposal	Same as MR2.1		Same as MR2.1		PE
MR3.1		Materials Reuse: 5%	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each reused/salvaged material, material description, source or vendor, cost. Total reused/salvaged materials percentage.		PE
MR3.2		Materials Reuse: 10%	Same as MR3.1		Same as MR3.1		PE
MR4.1		Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each recycled content material, material name/description, manufacturer, cost, post-consumer recycled content percent, pre-consumer recycled content percent, source of recycled content data. Total post-consumer content materials cost, total pre-consumer content materials cost, total combined recycled content materials cost, recycled content materials percentage.		PE
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Manufacturer published product data or certification, confirming recycled content percentages in spreadsheet		PE
MR4.2		Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Same as MR4.1		Same as MR4.1		PE
MR5.1		Regional Materials:10% Extracted, Processed & Manufactured Regionally	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each regional material, material name/description, manufacturer, cost, percent compliant, harvest distance, manufacture distance, source of manufacture and harvest location data. Total regional materials cost, regional materials percentage.		PE
			Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Manufacturer published product data or certification confirming regional material percentages in spreadsheet		PE

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
MR5.2		Regional Materials:20% Extracted, Processed & Manufactured Regionally	Same as MR5.1		Same as MR5.1		PE
MR6		Rapidly Renewable Materials	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each rapidly renewable material, material name/description, manufacturer, cost, rapidly renewable content percent, rapidly renewable product value. Total rapidly renewable product value, rapidly renewable materials percentage.		PE
			Final Design		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		ARC
			Closeout	X	Manufacturer published product data or certification confirming rapidly renewable material percentages in spreadsheet		PE
MR7		Certified Wood	Closeout		Statement indicating total materials value and whether default or actual.		PE
			Closeout		Spreadsheet calculations indicating, for each certified wood material, material name/description, vendor, cost, wood component percent, certified wood percent of wood component, FSC chain of custody certificate number. Total certified wood product value, certified wood materials percentage.		PE
			Final Design or NLT Preconstruction		**Purchasing Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.		PE
			Closeout	X	Vendor invoices, FSC chain of custody certificates and anufacturer published product data or certification confirming all certified wood materials percentages in spreadsheet.		PE
INDOOR ENVIRONMENTAL QUALITY							
EQPR1		Minimum IAQ Performance (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about fresh air intake volumes and special considerations.		MEC
EQPR2		Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Final Design		Statement indicating which option for compliance applies, stating applicable criteria/requirement, and confirming that project has been designed to meet the applicable requirements.		ARC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements (signage, exhaust system, room separation details, etc).		ARC
EQ1		Outdoor Air Delivery Monitoring	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design and CO2 monitoring system, including specifics about monitors, operational parameters and setpoints.		MEC
			Closeout	X	Cut sheets for CO2 monitoring system.		PE
EQ2		Increased Ventilation	Final Design		Statement indicating which option for compliance applies and confirming that project has been designed to meet the applicable requirements.		MEC
			Final Design		Narrative describing the project's ventilation design, including specifics about zone fresh air intake volumes and demonstrating compliance.		MEC
			Final Design		Option 2: Narrative describing design method used for determining natural ventilation design, including calculation methodology/model results and demonstrating compliance.		MEC
			Final Design		List of drawing and specification references that convey conformance to applicable requirements.		MEC
EQ3.1		Construction IAQ Management Plan: During Construction	**Preconstruction		Construction IAQ Management Plan		PE
			Closeout		Statement confirming whether air handling units were operated during construction		PE
			Closeout		Dated jobsite photos showing examples of IAQ management plan practices being implemented. Label photos to indicate which practice they demonstrate. Minimum one photo of each practice at each building.		PE

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			Closeout		Spreadsheet indicating, for each filter installed during construction, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy.		PE
EQ3.2		Construction IAQ Management Plan: Before Occupancy	**Preconstruction		Construction IAQ Management Plan		PE
			Closeout		Statement indicating which option for compliance applies and confirming that required activities have occurred that meet the applicable requirements.		PE
			Closeout		Option 1a: Narrative describing the project's flushout process, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout		Option 1b: Narrative describing the project's pre-occupancy and post-occupancy flushout processes, including specifics about temperature, airflow and duration, special considerations (if any) and demonstrating compliance.		PE
			Closeout		Option 2: Narrative describing the project's IAQ testing process, including specifics about contaminants tested for, locations, remaining work at time of test, retest parameters and special considerations (if any).		PE
			Closeout		Option 2: IAQ testing report demonstrating compliance.		PE
EQ4.1		Low Emitting Materials: Adhesives & Sealants	Closeout		Spreadsheet indicating, for each applicable indoor adhesive, sealant and sealant primer used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout		Spreadsheet indicating, for each applicable indoor aerosol adhesive, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor aerosol adhesives were used for the project.		PE
			Closeout	X	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.2		Low Emitting Materials: Paints & Coatings	Closeout		Spreadsheet indicating, for each applicable indoor paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data.		PE
			Closeout		Spreadsheet indicating, for each applicable indoor anti-corrosive/anti-rust paint and coating used, the manufacturer, product name/model number, VOC content, LEED VOC limit, and source of VOC data - OR - Statement confirming no indoor anti-corrosive/anti-rust paints were used for the project .		PE
			Closeout	X	Manufacturer published product data or certification confirming material VOCs in spreadsheet		PE
EQ4.3		Low Emitting Materials: Flooring Systems	Closeout		Spreadsheet indicating, for each indoor flooring system used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data.		PE
			Closeout		Spreadsheet indicating, for each indoor carpet cushion used, the manufacturer, product name/model number, if it meets LEED requirement (yes/no) and source of LEED compliance data - OR - Statement confirming no indoor carpet cushion was used for the project.		PE
			Closeout	X	Manufacturer published product data or certification confirming material compliance label in spreadsheet		PE
EQ4.4		Low Emitting Materials: Composite Wood & Agrifiber Products	Closeout		Spreadsheet indicating, for each indoor composite wood and agrifiber product used, the manufacturer, product name/model number, if it contains added urea formaldehyde (yes/no) and source of LEED compliance data.		PE
			Closeout	X	Manufacturer published product data or certification confirming material urea formaldehyde in spreadsheet		PE
EQ5		Indoor Chemical & Pollutant Source Control	Closeout		Spreadsheet indicating, for each permanent entryway system used, the manufacturer, product name/model number and description of system.		PE
			Final Design		List of drawing and specification references that convey locations and installation methods for entryway systems.		ARC
			Final Design		Spreadsheet indicating, for each chemical use area, the room number, room name, description of room separation features (walls, floor/ceilings, openings) and pressure differential from surrounding spaces with doors closed - OR - Statement confirming that project includes no chemical use areas and that no hazardous cleaning materials are needed for building maintenance.		ARC MEC
			Final Design		If project includes chemical use areas: List of drawing and specification references that convey locations of chemical use areas, room separation features and exhaust system.		ARC MEC

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	LEED-NC v3 Submittals (OCT09)		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
			Final Design		If project includes places where water and chemical concentrate mixing occurs: List of drawing and specification references that convey provisions for containment of hazardous liquid wastes OR - Statement confirming that project includes no places where water and chemical concentrate mixing occurs.		ARC MEC
			Closeout		If project includes chemical use areas: Spreadsheet indicating, for AHUs/mechanical ventilation equipment serving occupied areas, the manufacturer, model number, MERV rating, location installed, and if it was replaced immediately prior to occupancy (yes/no) - OR - Statement confirming that project does not use mechanical equipment for ventilation of occupied areas.		PE
EQ6.1		Controllability of Systems: Lighting	Final Design		Calculation indicating total number of individual workstations, number of workstations with individual lighting controls and the percentage of workstations with individual lighting controls.		ELEC
			Final Design		For each shared multi-occupant space, provide a brief description of lighting controls.		ELEC
			Final Design		Narrative describing lighting control strategy, including type and location of individual controls and type and location of controls in shared multi-occupant spaces.		ELEC
EQ6.2		Controllability of Systems: Thermal Comfort	Final Design		Calculation indicating total number of individual workstations, number of workstations with individual thermal comfort controls and the percentage of workstations with individual thermal comfort controls.		MEC
			Final Design		For each shared multi-occupant space, provide a brief description of thermal comfort controls.		MEC
			Final Design		Narrative describing thermal comfort control strategy, including type and location of individual and shared multi-occupant controls.		MEC
EQ7.1		Thermal Comfort: Design	Final Design		Design criteria spreadsheet indicating, for spring, summer, fall and winter, maximum indoor space design temperature, minimum indoor space design temperature and maximum indoor space design humidity.		MEC
			Final Design		Narrative describing method used to establish thermal comfort control conditions and how systems design addresses the design criteria, including compliance with the referenced standard.		MEC
EQ7.2		Thermal Comfort: Verification	Final Design		Narrative describing the scope of work for the thermal comfort survey, including corrective action plan development		MEC
			Final Design		List of drawing and specification references that convey permanent monitoring system.		MEC
EQ8.1		Daylight & Views: Daylight 75% of Spaces	Final Design		Option 2: Table indicating all regularly occupied spaces with space area and space area with compliant daylight zone. Sum of regularly occupied areas and regularly occupied areas withcompliant daylight zone. Percentage calculation of areas withcompliant daylight zone to total regularly occupied areas.		ARC
			Final Design		Option 1: Simulation model method, software and output data		ELEC
			Final Design		Option 1: Table indicating all regularly occupied spaces with space area, space area with minimum 25 footcandles daylighting illumination, and method of providing glare control. Sum of regularly occupied areas and regularly occupied areas with 25 fc daylighting. Percentage calculation of areas with 25 fc daylighting to total regularly occupied areas.		ELEC
			Final Design		For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design		List of drawing and specification references that convey exterior glazed opening head and sill heights, glazing performance properties and glare control/sunlight redirection devices.		ARC
			Closeout	X	Manufacturer published product data or certification confirming glazing Tvis in spreadsheet		PE
EQ8.2		Daylight & Views: Views for 90% of Spaces	Final Design		Table indicating all regularly occupied spaces with space area and space area with access to views. Sum of regularly occupied areas and regularly occupied areas with access to views. Percentage calculation of areas with views to total regularly occupied areas.		ARC
			Final Design		For all occupied spaces excluded from the calculation, provide narrative indicating reasons for excluding the space.		ARC
			Final Design		LEED Floor plan drawings showing line of sight diagramming of views areas in each regularly occupied space. List of drawing/specification references that convey exterior glazed opening head and sill heights.		ARC
INNOVATION & DESIGN PROCESS							

LEED Credit Paragraph	Contractor Check Here if Credit is Claimed	**LEED-NC v3 Submittals (OCT09)**		Provide for Credit Audit Only		Date Submitted (to be filled in by Contractor)	Government Reviewer's Use
PAR		**FEATURE**	**DUE AT**		**REQUIRED DOCUMENTATION**	**DATE**	**REV**
IDc1.1		Innovation in Design	Final Design		Narrative decribing intent, requirement for credit, project approach to the credit. List of drawings and specification references that convey implementation of credit. All other documentation that validates claimed credit.		
IDc1.2		Innovation in Design	Final Design				
IDc1.3		Innovation in Design	Final Design				
IDc1.4		Innovation in Design	Final Design				
IDc2		LEED Accredited Professional	Final Design		Narrative indicating name of LEED AP, company name of LEED AP, description of LEED AP's role and responsiblilities in the project.		ARC

ATTACHMENT F
Version 05-31-2011

BUILDING INFORMATION MODELING REQUIREMENTS

1.0 Section 1 - General

1.1. Definitions. See Section 7 for definitions of terms used in this document.

1.2. Submittal Format

1.2.1. The Model shall be developed using Building Information Modeling ("BIM") supplemented with Computer Aided Design ("CAD") content as necessary to produce a complete set of Construction Documents. Printed design submittal drawings shall be 22x34 size, suitable for half-size scaled reproduction.

1.2.2. BIM submittals shall conform to the requirements of Sections 3 and 4 below.

1.2.3. For each Center of Standardization (CoS) facility type included in this Project, all Models and associated Facility Data shall be submitted in Bentley BIM v8i. The submittals shall be fully operable, compatible, and editable within the native BIM tools.

2.0 Section 2 – Design Requirements

2.1. Use of BIM for Design. Contractor shall use BIM application(s) and software(s) to develop Project designs consistent with the following requirements.

2.1.1. Baseline Model. The Contractor will not be provided a baseline multi-discipline BIM Project Model.

2.1.2. USACE BIM Workspace. The USACE Bentley BIM Workspace 09Q4b-v8i must be used and can be downloaded from the CAD/BIM Technology Center website, currently https://cadbim.usace.army.mil.

2.1.3. Reference. Refer to ERDC TR-06-10, "U.S. Army Corps of Engineers Building Information Modeling Road Map" from the CAD/BIM Technology Center website for more information on the USACE BIM implementation goals.

2.1.4. Industry Foundation Class (IFC) Support. The Contractor's selected BIM application(s) and software(s) must be consistent with the current IFC property sets. Any deviations from or additions to the IFC property sets for any new spaces, systems, and equipment must be submitted for Government acceptance.

2.1.5. BIM Project Execution Plan.

2.1.5.1. Develop a BIM Project Execution Plan ("Plan" or "PxP") documenting the BIM uses, analysis technologies and workflows.

2.1.5.2. Contractors shall utilize the link for the USACE BIM PROJECT EXECUTION PLAN (USACE PxP) Template located in Attachment H to develop an acceptable Plan.

2.2. BIM Requirements.

2.2.1. Facility Data. Develop the Facility Data to include material definitions and attributes that are necessary for the Project facility design and construction as described in Section 4.0. Additional data in support of Section 6.0 Contractor Electives is encouraged to be added to the Model.

2.2.2. Model Content. The Model and Facility Data shall include, at a minimum, the requirements of Section 4 below.

2.2.3. Model Granularity. Individual elements may vary in level of detail within the Model, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'0") scaled drawing (e.g., at least 1/16th, 1/8th and 1/4th), or on appropriately scaled civil drawings.

2.3. Output. Submitted Drawings (e.g., plans, elevations, sections, schedules, details, etc.) shall be derived (commonly known as extractions, views or sheets) from the Model and Facility Data. Drawings derived from the Model shall remain connected to the Model for the life of the Project and documented in the PxP. Drawings not derived from the Model shall also be documented in the PxP.

2.3.1. Drawings derived from the Model shall be compliant with the A/E/C CAD Standard. Deliver electronic CAD files used for the creation of the Construction Documents per requirements in Section 01 33 16, the criteria of the USACE U.S. Army Corps of Engineers - Omaha District District, and as noted herein.

2.3.2. The CAD file format specified for drawings shall not dictate which application(s) are used for development and execution of the Model and Facility Data. Application(s) used shall be documented in the PxP.

2.4. Quality Control Parameters. Implement quality control ("QC") parameters for the Model, including:

2.4.1. Model Standards Checks. QC validation ensures that the Project Facility Data set has no undefined, incorrectly defined or duplicated elements. Identify and report non-compliant elements and submit a corrective action plan. Provide the Government with detailed justification and request Government acceptance for any non-compliant element that the Contractor proposes to be allowed to remain in the Model.

2.4.2. CAD Standards Checks. QC checking ensures that the fonts, dimensions, line styles, levels and other construction document formatting issues are followed per requirements in Section 01 33 16. Identify and report non-compliant content and submit a corrective action plan.

2.4.3. Other Parameters. Develop such other QC parameters as Contractor deems appropriate for the Project and provide to the Government for acceptance.

2.5. Design and Construction Reviews. Perform design and construction reviews at each submittal stage under Section 3 to test the Model, including:

2.5.1. Visual Checks. Checking to ensure the design intent has been followed and that there are no unintended elements in the Model.

2.5.2. Interference Management Checks. Locate conflicting spatial data in the Model where two elements are occupying the same space. Log hard interferences (e.g., mechanical vs. structural, or mechanical vs. mechanical, overlaps in the same location) and soft interferences, (e.g., conflicts regarding equipment clearance, service access, fireproofing, insulation, code space requirements) in a written report and resolve.

2.5.3. IFC Coordination View. Provide an IFC Coordination View in IFC Express format for all deliverables. Provide exported property set data for all IFC supported named building elements.

2.5.4. Other Parameters. Develop other design and construction review parameters as the Contractor deems appropriate for the Project and provide to the Government for acceptance.

3.0 Section 3 – Submittal Requirements

3.1. General Submittal Requirements.

3.1.1. Provide submittals in compliance with the PxP deliverables at stages as described below.

3.1.2. For each Interim Design Submittal as set forth in Paragraphs 3.3 through 3.6, provide a Contractor-certified written report confirming that consistency checks as identified in Paragraphs 2.4 and 2.5 above have been completed. This report shall be discussed as part of the review process and shall address cross-discipline interferences, if any.

3.1.3. At each Interim Design Submittal as set forth in Paragraphs 3.3 through 3.6, provide the Government with:

3.1.3.1. The Model, Facility Data, Workspace and CAD Data files in the native BIM/CAD format.

3.1.3.2. A copy of the Model in an interactive review format such as Bentley Navigator, Autodesk Navisworks, Adobe 3D PDF 7.0 (or later), Google Earth KMZ or other format per PxP requirements. The format for reviews can change between submittals.

3.1.3.3. A list of all submitted electronic files including a description, directory, and file name for each file submitted. For all CAD printed sheets, include a list of the sheet titles and sheet numbers. Identify which files have been produced from the Model and Facility Data.

3.1.4. The Government shall confirm acceptability of all submittals identified in Section 3 in coordination with the USACE Geographic District BIM Manager.

3.2. Initial Design Conference Submittal.

3.2.1. Submit a digital copy of the PxP where, in addition to Paragraph 3.1.4, the USACE Geographic District BIM Manager will coordinate with the USACE CoS BIM Manager to confirm acceptability of the Plan or advise as to additional processes or activities necessary to be incorporated into the PxP.

3.2.2. Within thirty (30) days after the acceptance of the PxP, conduct a demonstration to review the Plan for clarification, and to verify the functionality of planned Model technology workflow and processes. If modifications are required, the Contractor shall complete the modifications and resubmit the PxP performing a subsequent demonstration for Government acceptance. There will be no payment for design or construction until the PxP is completed and accepted by the Government. The Government may also withhold payment if there is design and construction for unacceptable performance in executing the accepted PxP.

3.3. Interim Design Submittals.

3.3.1. BIM and CAD Data. Submit the Model with Facility Data per the requirements identified in Paragraphs 2.2 and 2.3 as applicable to the Interim Design package(s).

3.4. Final Design Submissions and Design Complete Submittals.

3.4.1. BIM and CAD Data. Submit the Model with Facility Date per the requirements identified in Paragraphs 2.2 and 2.3. Acceptance according to Paragraph 3.1.4 is required before commencement of construction, as described in Paragraph 3.7.6 of Section 01 33 16.

3.5. Construction Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model, including interference management and design change tracking information.

3.6. Final As-Built BIM and CAD Data Submittal. Submit the final Model, Facility Data, and CAD files reflecting as-built construction conditions for Government acceptance, as specified in Section 01 78 02.00 10, PROJECT CLOSEOUT.

4.0 Section 4 – BIM Model Minimum Requirements and Output

4.1. General Provisions. The Model shall be developed to include the systems described below as they would be built, the processes of installing them, and to reflect final as-built construction conditions. The deliverable Model at the Interim Design Stage and at the Final Design Stage ("released for construction") shall be developed to include as many of the systems described below as are necessary and appropriate at that design stage.

4.2. Architectural/Interior Design. The Architectural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Additional minimum Model requirements include:

4.2.1. Spaces. The Model shall include spaces defining actual net square footage and net volume, and holding data to develop the room finish schedule including room names and numbers. Include program information to verify design space against programmed space, using this information to validate area quantities.

4.2.2. Walls and Curtain Walls. Each wall shall be depicted to the exact height, length, width and ratings (thermal, acoustic, fire) to properly reflect wall types. The Model shall include all walls, both interior and exterior, and the necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.2.3. Doors, Windows and Louvers. Doors, windows and louvers shall be depicted to represent their actual size, type and location. Doors and windows shall be modeled with the necessary intelligence to produce accurate window and door schedules.

4.2.4. Roof. The Model shall include the roof configuration, drainage system, penetrations, specialties, and the necessary intelligence to produce accurate plans, building sections and generic wall sections where roof design elements are depicted.

4.2.5. Floors. The floor slab(s) shall be developed in the Structural Model and then referenced by the Architectural Model.

4.2.6. Ceilings. All heights and other dimensions of ceilings, including soffits, ceiling materials, or other special conditions shall be depicted in the Model with the necessary intelligence to produce accurate plans, building sections and wall sections where ceiling design elements are depicted.

4.2.7. Vertical Circulation. All continuous vertical components (i.e., non-structural shafts, architectural stairs, handrails and guardrails) shall be accurately depicted and shall include the necessary intelligence to produce accurate plans, elevations and sections in which such design elements are referenced.

4.2.8. Architectural Specialties. All architectural specialties (i.e., toilet room accessories, toilet partitions, grab bars, lockers, and display cases) and millwork (i.e., cabinetry and counters) shall be accurately depicted with the necessary intelligence to produce accurate plans, elevations, sections and schedules in which such design elements are referenced.

4.2.9. Signage. The Model shall include all signage and the necessary intelligence to produce accurate plans and schedules.

4.2.10. Schedules. Provide door, window, hardware sets using BHMA designations, flooring, wall finish, and signage schedules from the Model, indicating the type, materials and finishes used in the design.

4.3. Furniture. The furniture Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing, and have necessary intelligence to produce accurate plans. Representation of furniture elements is to be 2D. Contractor may provide a minimal number of 3D representations as examples. Examples of furniture include, but are not limited to, desks, furniture systems, seating, tables, and office storage.

4.3.1. Furniture Coordination. Furniture that makes use of electrical, data or other features shall include the necessary intelligence to produce coordinated documents and data.

4.4. Equipment. The Model may vary in level of detail for individual elements. Equipment shall be depicted to meet layout requirements with the necessary intelligence to produce accurate plans and schedules, indicating the configuration, materials, finishes, mechanical, and electrical requirements.. Examples of equipment include but are not limited to copiers, printers, refrigerators, ice machines and microwaves.

4.4.1. Schedules. Provide furniture and equipment schedules from the model indicating the materials, finishes, mechanical, and electrical requirements.

4.5. Structural. The Structural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”) scaled drawing. Additional minimum Model requirements include:

4.5.1. Foundations. All necessary foundation and/or footing elements, with necessary intelligence to produce accurate plans and elevations.

4.5.2. Floor Slabs. Structural floor slabs shall be depicted with all necessary recesses, curbs, pads, closure pours, and major penetrations accurately depicted.

4.5.3. Structural Steel. All steel columns, primary and secondary framing members, and steel bracing for the roof and floor systems (including decks), including all necessary intelligence to produce accurate structural steel framing plans, related building/wall sections, and schedules.

4.5.4. Cast-in-Place Concrete. All walls, columns, beams, including necessary intelligence to produce accurate plans and building/wall sections, depicting cast-in-place concrete elements.

4.5.5. Expansion/Contraction Joints. Joints shall be accurately depicted.

4.5.6. Stairs. All framing members for stair systems, including necessary intelligence to produce accurate plans and building/wall sections depicting stair design elements.

4.5.7. Shafts and Pits. All shafts and pits, including necessary intelligence to produce accurate plans and building/wall sections depicting these design elements.

4.5.8. Openings and Penetrations. All major openings and penetrations that would be included on a quarter inch (1/4”=1’0”) scaled drawing.

4.6. Mechanical. The Mechanical systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4”=1’0”)

scaled drawing. Small diameter (less than 1-1/2" NPS) field-routed piping is not required to be depicted in the Model. Additional minimum Model requirements include:

4.6.1. HVAC. All necessary heating, ventilating, air-conditioning and specialty equipment, including air distribution for supply, return, ventilation and exhaust ducts, control systems, registers, diffusers, grills, and hydronic baseboards with necessary intelligence to produce accurate plans, elevations, building/wall sections and schedules.

4.6.1.1. Mechanical Piping. All necessary piping and fixture layouts, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, and schedules.

4.6.2. Plumbing. All necessary plumbing piping and fixture layouts, floor and area drains, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules.

4.6.3. Equipment Clearances. All Mechanical equipment clearances shall be modeled for use in interference management and maintenance access requirements.

4.6.4. Elevator Equipment. All necessary equipment and control systems, including necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.

4.7. Electrical/Telecommunications. The Electrical and Telecommunications systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Small diameter (less than 1-1/2"Ø) field-routed conduit is not required to be depicted in the Model. Additional minimum Model requirements include:

4.7.1. Interior Electrical Power and Lighting. All necessary interior electrical components (i.e., lighting, receptacles, special and general purpose power receptacles, lighting fixtures, panelboards, cable trays and control systems), including necessary intelligence to produce accurate plans, details and schedules. Lighting and power built into furniture/equipment shall be modeled.

4.7.2. Special Electrical. All necessary special electrical components (i.e., security, mass notification, public address, nurse call and other special electrical occupancy sensors, and control systems), including necessary intelligence to produce accurate plans, details and schedules.

4.7.3. Grounding. All necessary grounding components (i.e., lightning protection systems, static grounding systems, communications grounding systems, and bonding), including necessary intelligence to produce accurate plans, details and schedules.

4.7.4. Telecommunications. All existing and new telecommunications service controls and connections, both above ground and underground, with necessary intelligence to produce accurate plans, details and schedules. Cable tray routing shall be modeled without detail of cable contents.

4.7.5. Exterior Building Lighting. All necessary exterior lighting including all lighting fixtures, relevant existing and proposed support utility lines and equipment with necessary intelligence to produce accurate plans, details and schedules.

4.7.6. Equipment Clearances. All Electrical equipment clearances shall be modeled for use in interference management and maintenance access requirements.

4.8. Fire Protection. The fire protection system Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4"=1'0") scaled drawing. Additional minimum Model requirements include:

4.8.1. Fire Protection System. All relevant fire protection components (i.e., branch piping, sprinkler heads, fittings, drains, pumps, tanks, sensors, control panels) with necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules. All fire protection piping shall be modeled.

4.8.2. Fire Alarms. Fire alarm/mass notification devices and detection system shall be indicated with necessary intelligence to produce accurate plans depicting them.

4.9. Civil. The Civil Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a one inch (1"=100') scaled drawing. Additional minimum Model requirements include:

4.9.1. Terrain (DTM). All relevant site conditions and proposed grading, including necessary intelligence to produce accurate Project site topographical plans and cross sections.

4.9.2. Drainage. All existing and new drainage piping, including upgrades thereto, including necessary intelligence to produce accurate plans and profiles for the Project site.

4.9.3. Storm Water and Sanitary Sewers. All existing and new sewer structures and piping, including upgrades thereto, with necessary connections to mains or other distribution points as appropriate, including necessary intelligence to produce accurate plans and profiles .

4.9.4. Utilities. All necessary new utilities connections from the Project building(s) to the existing or newly-created utilities, and all existing above ground and underground utility conduits, including necessary intelligence to produce accurate plans and site-sections.

4.9.5. Roads and Parking. All necessary roadways, parking lots, and parking structures, including necessary intelligence to produce accurate plans, profiles and cross-sections.

5.0 Section 5 - Ownership and Rights in Data

5.1. Ownership. The Government has ownership of and rights at the date of Closeout Submittal to all CAD files, BIM Model, and Facility Data developed for the Project in accordance with FAR Part 27, clauses incorporated in Section 00 72 00, Contract Clauses and Special Contract Requirement 1.14 GOVERNMENT RE-USE OF DESIGN (Section 00 73 00). The Government may make use of this data following any deliverable.

6.0 Section 6 – Contractor Electives

6.1. Applicable Criteria. If the Contractor elected to include one or more of the following features as an elective in its accepted contract proposal for additional credit, as described in the proposal submission requirements and evaluation criteria, the requirements of paragraphs 6.2 through 6.5 are as applicable for those elective feature(s) that will be included in the project.

6.2. COBIE Compliance. The Model and Facility Data for the Project shall fulfill Construction Operations Building Information Exchange (COBIE) requirements on the Whole Building Design Guide website (www.wbdg.org) , including all requirements for the indexing and submission of Portable Document Format (PDF) and other appropriate records that would otherwise be printed and submitted in compliance with Project operations and maintenance handover requirements.

6.3. Project Scheduling using the Model. In the PxP and during the Initial Design Conference Submittal Demonstration, provide an overview of the use of BIM in the development and support of the Project construction schedule.

6.3.1. Submittal Requirements. During the Stages identified in Paragraphs 3.3 through 3.6, the Contractor shall deliver the construction schedule derived from the Model.

6.3.1.1. Construction Submittals – Over-The-Shoulder Progress Reviews. Periodic quality control meetings or construction progress review meetings shall include quality control reviews on the implementation and use of the Model for Project scheduling.

6.4. Cost Estimating. In the PxP and during the Initial Design Conference Submittal Demonstration, provide an overview of the use of BIM in the development and support of cost estimating, or other costing applications such as comparative cost analysis for proposed changes and estimate validation.

6.4.1. Submittal Requirements. During the Stages identified in Paragraphs 3.3 through 3.6, the Contractor shall deliver cost estimating information derived from the Model.

6.4.2. Project Completion. At Project completion, the Contractor shall provide an Micro Computer Aided Cost Estimating System Generation II ("MII") Cost Estimate that follows the USACE Cost Engineering Military Work Breakdown System ("WBS"), a modified Uniformat, to at least the sub-systems level and uses quantity information supplied directly from Model output to the maximum extent possible, though other "gap" quantity information will be included by the contractor as necessary for a complete and accurate Cost Estimate. (See Paragraph 6.4.2.2).

6.4.2.1. Sub system level extracted quantities from the Model for use within the Estimate shall be provided according to how detailed line items or tasks should be installed/built so that accurate costs can be developed and/or reflected. When developing a Model, the contractor shall be cognizant of construction sequencing at the beginning stages of Model development, such as recognizing tasks performed on the first floor versus the same task on higher floors that will be more labor intensive and, therefore, need to have a separate quantity and be priced differently. Tasks and their extracted quantities from the Model shall be broken down by their location (proximity in the structure) as well as the complexity of installation.

6.4.2.2. At all design Stages it shall be acknowledged that BIM output will not generate all quantities that are necessary in order to develop a complete and accurate cost estimate of the Project based on the design alone. (An example of this would be plumbing that is less than 1.5" diameter and, therefore, not expected to be modeled due to permitted level of design granularity; this information is commonly referred to as "The Gap". Quantities addressing "The Gap" and their associated costs shall be included in the final Project actual Cost Estimates as well even though not derived directly from the Model data).

6.5. Other Analyses and Reports. Structural, energy and efficiency, EPACT 2005 & EISA 2007, lighting design, daylighting, electrical power, psychrometric processing, shading, programming, LEED, fire protection, code compliance, Life Cycle Cost, acoustic, plumbing and other analyses that may be generated from the Model or reports summarizing the data compiled from these analyses shall be submitted in the form established by contractor in its accepted PxP.

7.0 Definitions

7.1. The following definitions apply specifically in the context of this attachment only.

7.2. "Model": An electronic, three-dimensional representation of facility elements with associated intelligent attribute data ("Facility Data").

7.3. "Facility Data": The non-graphical information attached to objects in the Model that defines various characteristics of the object. Facility Data can include properties such as parametric values that drive physical sizes, material definitions and characteristics (e.g. wood, metal), manufacturer data, industry standards (e.g. AISC steel properties), and project identification numbers. Facility Data can also

define supplementary physical entities that are not shown graphically in the Model, such as insulation around a duct, or hardware on a door.

7.4. "Workspace": A collection of content libraries and supporting files that define and embody a BIM standard. A workspace includes BIM libraries such as wall types, standard steel shapes, furniture, HVAC fittings, and sprinkler heads. It also contains sheet libraries such as print/plot configurations, font and text style libraries, and sheet borders and title blocks. The USACE has developed Workspaces specific to USACE BIM standards; these workspaces are dependent on specific versions of the BIM applications they serve. All USACE BIM Workspaces can be downloaded from the CAD/BIM Technology Center (https://cadbim.usace.army.mil). In some cases, there is a specific Workspace for a given CoS Facility Standard Design.

7.5. "IFC": Industry Foundation Class, a standard and file format used for the exchange of BIM data; see www.iai-tech.org. Note: In the context of this attachment, IFC does not mean "Issued For Construction."

ATTACHMENT G
DESIGN SUBMITTAL DIRECTORY AND SUBDIRECTORY FILE ARRANGEMENT

Organize electronic design submittal files in a subdirectory/file structure in accordance with the following table.
The Contractor may suggest a slightly different structure, subject to the discretion of the government.

Design Submittal Directory and Subdirectory File Arrangement.

Directory	Sub-Directory	Sub-Directory or Files	Files
Submittal/Package Name	Narratives	PDF file or files with updated design narrative for each applicable design discipline	
	Drawings	PDF (subdirectory)	Single PDF file with all applicable drawing sheets - bookmarked by sheet number and name
		BIM (subdirectory) See Attachment F.	BIM project folder (with files) per the USACE Workspace. Include an Excel drawing index file with each drawing sheet listed by sheet #, name and corresponding dgn file name (Final Design & Design Complete only)
	Design Analysis & Calculations	Individual PDF files containing design analysis and calculations for each discipline applicable to the submittal	
		PDF file with Fire Protection and Life Safety Code Review checklist	
	LEED	PDF file with updated Leed Check List	
		PDF file or files with LEED Templates for each point with applicable documentation included in each file.	
		LEED SUBMITTALS	
	Energy Analysis	PDF with baseline energy consumption analysis	
		PDF with actual building energy consumption analysis	
	Specifications	Single PDF file with table of contents and all applicable specifications sections.	
		Submittal Register (Final Design & Design Complete submittal only)	
	Design Quality Control	PDF file or files with DQC checklist(s) and/or statements	
	Building Rendering(s)	PDF file of rendering for each building type included in contract (Final Design & Design Complete).	

ATTACHMENT H
USACE BIM Project Execution Plan (PxP) Template Version 1.0

This template is a tool that is provided to assist in the development of a USACE BIM Project Execution Plan as required per contract. The template provides a standard format for organizations to establish their general means and methods for meeting the scope and deliverable requirements in Attachment F. It was adapted from the buildingSMART alliance™ (bSa) Project "BIM Project Execution Planning" as developed by The Computer Integrated Construction (CIC) Research Group of The Pennsylvania State University. The bSa project is sponsored by The Charles Pankow Foundation, Construction Industry Institute (CII), Penn State Office of Physical Plant (OPP), and The Partnership for Achieving Construction Excellence (PACE). The template can be found at the following link:

https://mrsi.usace.army.mil/rfp/Shared%20Documents/USACE_BIM_PXP_TEMPLATE_V1.0.pdf

Please note: Instructions and examples to assist with the completion of this template are currently in grey. The text can and should be modified to suit the needs of the organization filling out the template. If modified, the format of the text should be changed to match the rest of the document. This can be completed, in most cases, by selecting the normal style in the template styles.

SECTION 01 45 01.10
QUALITY CONTROL SYSTEM (QCS)

1.0 GENERAL

1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

1.2. QCS SOFTWARE

1.3. SYSTEM REQUIREMENTS

1.4. RELATED INFORMATION

1.5. CONTRACT DATABASE

1.6. DATABASE MAINTENANCE

1.7. IMPLEMENTATION

1.8. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

1.9. MONTHLY COORDINATION MEETING

1.10. NOTIFICATION OF NONCOMPLIANCE

1.0 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. 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
- Request for Information
- Accident Reporting
- Safety Exposure Manhours

1.1. CORRESPONDENCE AND ELECTRONIC COMMUNICATIONS

For ease and speed of communications, both Government and Contractor will 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.

1.2. OTHER FACTORS

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01 32 01.00 10, PROJECT SCHEDULE, Section 01 33 00, SUBMITTAL PROCEDURES, and Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL, 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.

1.3. QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. 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. Upon specific justification and request by the Contractor, the Government can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.4. SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

(a) 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
- Compact disk (CD) Reader, 8x speed or higher
- SVGA or higher resolution monitor (1024 x 768, 256 colors)
- Mouse or other pointing devise
- Windows compatible printer (Laser printer must have 4+ MB of RAM)
- Connection to the Internet, minimum 56K BPS

(b) Software

- MS Windows 2000 or higher
- MS Word 2000 or newer
- Latest version of : Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher
- Electronic mail (E-mail), MAPI compatible
- Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.5. RELATED INFORMATION

1.5.1. QCS USER GUIDE

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.5.2. 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.

1.6. CONTRACT DATABASE

Prior to the pre-construction conference, the Government will 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 using the government's SFTP repository built into QCS import/export function. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.7. DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government, e.g., daily reports, submittals, RFI's, schedule updates, payment requests, etc. shall be submitted using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, email or CD-ROM may be used instead (see Paragraph DATA SUBMISSION VIA CD-ROM). The QCS database typically shall include current data on the following items:

1.7.1. ADMINISTRATION

1.7.1.1. 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.

1.7.1.2. 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.

1.7.1.3. 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".

All Requests For Information (RFI) shall be exchanged using the Built-in RFI generator and tracker in QCS.

1.7.1.4. 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.

1.7.1.5. 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.

1.7.2. FINANCES

1.7.2.1. Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the design and 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.

1.7.2.2. Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet prompt payment certification, and payment invoice in QCS. 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. The Contractor shall submit the payment request, prompt payment certification, and payment invoice with supporting data by using the government's SFTP repository built into QCS export function. If permitted by the Contracting Officer, E-mail or a CD-ROM may be used. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.7.3. 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. The Contractor shall provide the Government a Contractor

Quality Control (CQC) Plan within the time required in Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a QCS update reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.7.3.1. Daily Contractor Quality Control (CQC) Reports

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, 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 Section 01 45 04.00 10, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government within 24 hours after the date covered by the report. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.7.3.2. 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.

1.7.3.3. QC Requirements

The Contractor shall develop and maintain a complete list of QC testing and required structural and life safety special inspections required by the International Code Council (ICC), 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.

1.7.3.4. Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.7.3.5. Labor and Equipment Hours

The Contractor shall log labor and equipment exposure hours on a daily basis. This data will be rolled up into a monthly exposure report.

1.7.3.6. Accident/Safety Tracking Reporting

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 supplemental entry is not to be considered as a substitute for completion of mandatory notification and reports, e.g., ENG Form 3394 and OSHA Form 300.

1.7.3.7. 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.

1.7.3.8. Hazard Analysis

The Contractor shall use QCS to develop a hazard analysis for each feature of work included in its CQC Plan. The hazard analysis shall address any hazards, or potential hazards, that may be associated with the work

1.7.4. Submittal Management

The Government will provide the submittal register form, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. The Contractor and Designer of Record (DOR) shall develop and maintain a complete list of all submittals, including completion of all data columns and shall manage all submittals. 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. QCS and RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.7.5. Schedule

The Contractor shall develop a design and construction schedule consisting of pay activities, in accordance with Section 01 32 01.00 10, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01 32 01.00 10 PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.7.5.1. 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 from RMS, and schedule data using SDEF.

1.8. 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.

1.9. DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of QCS data is by using the government's SFTP repository built into QCS export function.. Other data should be submitted using E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of CD-ROM for data transfer. Data on CDs shall be exported using the QCS built-in export function. If used, CD-ROMs will be submitted in accordance with the following:

1.9.1. File Medium

The Contractor shall submit required data on CD-ROMs. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.9.2. Disk Or Cd-Rom Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.9.3. File Names

The files will be automatically named by the QCS software. The naming convention established by the QCS software shall not be altered in any way by the Contractor.

1.10. 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.

1.11. 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 01 45 01.10

This page was intentionally left blank for duplex printing.

SECTION 01 45 04.00 10
CONTRACTOR QUALITY CONTROL

1.0 GENERAL

1.1. REFERENCES

1.2. PAYMENT

2.0 PRODUCTS (NOT APPLICABLE)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

3.2. QUALITY CONTROL PLAN

3.3. COORDINATION MEETING

3.4. QUALITY CONTROL ORGANIZATION

3.5. SUBMITTALS AND DELIVERABLES

3.6. CONTROL

3.7. TESTS

3.8. COMPLETION INSPECTION

3.9. DOCUMENTATION

3.10. NOTIFICATION OF NONCOMPLIANCE

1.0 GENERAL

1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Refer to the latest edition, as of the date of the contract solicitation.

- ASTM INTERNATIONAL (ASTM)
- ASTM D 3740 Minimum Requirements for Agencies

  Engaged in the Testing and/or Inspection
  of Soil and Rock as Used in Engineering
  Design and Construction
- ASTM E 329 Agencies Engaged in the Testing

  and/or Inspection of Materials Used in
  Construction
- U.S. ARMY CORPS OF ENGINEERS (USACE)

  ER 1110-1-12 Quality Management

1.2. PAYMENT

There will be no separate payment for providing and maintaining an effective Quality Control program. Include all costs associated therewith in the applicable unit prices or lump-sum prices contained in the Contract Line Item Schedule.

2.0 PRODUCTS (Not Applicable)

3.0 EXECUTION

3.1. GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." 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 design and construction operations, both onsite and offsite, and shall be keyed to the proposed design and construction sequence. The site project superintendent is 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 at the site, responsible for the overall site activities, including but not limited to 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. Different contractors have different names for the on-site overall project supervisor. For clarification, the term “site project superintendent” refers to the Contractor’s senior site representative or “on-site manager”, or other similar title, as those terms are used in contract Clause 52.236-7, “Superintendence by the Contractor” and in the Division 00 Section(s) of the solicitation for this contract or task order,.or elsewhere in the contract. It does not refer to a construction superintendent, unless that person is also the Contractor’s permanently assigned senior site representative in charge of all on-site activities.

3.2. QUALITY CONTROL PLAN

Furnish for Government review, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Design and construction may begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. The Government will not permit work outside of the features of work included in an accepted interim plan to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started. Where the applicable Code issued by the International Code Council calls for an inspection by the Building Official, the Contractor shall include the inspections in the Quality Control Plan and shall perform the inspections. The Designer of Record shall develop a program for any special inspections required by the applicable International Codes and the Contractor shall perform these inspections, using qualified inspectors. Include the special inspection plan in the QC Plan.

3.2.1. Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

3.2.1.1. A description of the quality control organization. Include a chart showing lines of authority and an acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. A CQC System Manager shall report to the project superintendent or someone higher in the contractor's organization.

3.2.1.2. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. Also include those responsible for performing and documenting the inspections required by the International Codes and the special inspection program developed by the designer of record.

3.2.1.3. 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. Furnish copies of these letters.

3.2.1.4. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

3.2.1.5. 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. Use only Government approved Laboratory facilities.

3.2.1.6. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

3.2.1.7. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

3.2.1.8. Reporting procedures, including proposed reporting formats.

3.2.1.9. A list of the definable features of work. A definable feature of work is a task, which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.1.10. A list of all inspections required by the International Codes and the special inspection program required by the code and this contract.

3.2.2. Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) plan:

3.2.2.1. The Contractor's QCP Plan 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-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, competent, independent reviewers identified in the DQC Plan shall review all documents. Use personnel who were not involved in the design effort to produce the design to perform the independent technical review (ITR). The ITR is intended as a quality control check of the design. Include, at least, but not necessarily limited to, a review of the contract requirements (the accepted contract or task order proposal and amended RFP), the basis of design, design calculations, the design configuration management documentation and check the design documents for errors, omissions, and for coordination and design integration. The ITR team is not required to examine, compare or comment concerning alternate design solutions but should concentrate on ensuring that the design meets the contract requirements. Correct errors and deficiencies in the design documents prior to submitting them to the Government.

3.2.2.2. Include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. Submit these completed checklists at each design phase as part of the project documentation.

3.2.2.3. A Design Quality Control Manager, who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated, shall implement the DQC Plan This individual shall be a person who has verifiable engineering or architectural design experience and is a registered professional engineer or architect. Notify the Government, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

3.2.2.4. Develop and maintain effective, acceptable design configuration management (DCM) procedures to control and track all revisions to the design documents after the Interim Design Submission through submission of the As-Built documents. Include the DCM plan as a subset of the DQC Plan. See Section ‘Design After Award’.

3.2.3. Acceptance of Plan

Government acceptance of the Contractor's plan is required prior to the start of design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4. Notification of Changes

After acceptance of the CQC Plan, notify the Government in writing of any proposed change. Proposed changes are subject to Government acceptance.

3.3. COORDINATION MEETING

After the Postaward Conference, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor and the Government shall meet and discuss the Contractor's quality control system. Submit the CQC Plan for review a minimum of 7 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, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. The Government will prepare minutes of the meeting for signature by both parties. . The minutes shall become a part of the contract file. There may be occasions when either party will call for subsequent conferences 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, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure contract compliance. The CQC organization shall also include personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly. 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. Provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Promptly furnish complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation to the CQC organization. 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

Identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of 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 BA/BS graduate of an ACCE accredited construction management college program. The CQC system Manager may alternately be an engineering technician with at least 2 years of college and an ICC certification as a Commercial Building Inspector (Residential Building Inspector certification will be required for Military Family Housing projects). In addition, the CQC system manager shall have a minimum of 5 years construction experience on construction similar to this contract. The CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. Assign the CQC System Manager no other duties (except may also serve as Safety and Health Officer, if qualified and if allowed by Section 00 73 00, or by Section 00 73 10 if this is a task order). Identify an alternate for the CQC System Manager in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager but the alternate may have other duties in addition to serving in a temporary capacity as the acting QC manager.

3.4.3. CQC Personnel

3.4.3.1. In addition to CQC personnel specified elsewhere in the contract provide specialized CQC personnel to assist the CQC System Manager in accordance with paragraph titled Area Qualifications.

3.4.3.2. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; **are not intended to be full time, but must be physically present at the construction site during work on their areas of responsibility**; have the necessary education and/or

experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan. **One person may cover more than one area, provided that they are qualified to perform QC activities for the designated areas below and provided that they have adequate time to perform their duties:**

3.4.4. Experience Matrix

3.4.4.1. Area Qualifications

3.4.4.1.1. Civil - Graduate Civil Engineer or (BA/BS) graduate in construction management with 4 years experience in the type of work being performed on this project or engineering technician with 5 yrs related experience.

3.4.4.1.2. Mechanical - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Mechanical Inspector with 5 yrs related experience.

3.4.4.1.3. Electrical - Graduate Electrical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or engineering technician with an ICC certification as a Commercial Electrical Inspector with 5 yrs related experience.

3.4.4.1.4. Structural - Graduate Structural Engineer or (BA/BS) graduate in construction management with 4 yrs related experience or person with an ICC certification as a Reinforced Concrete Special Inspector and Structural Steel and Bolting Special Inspector (as applicable to the type of construction involved) with 5 yrs related experience.

3.4.4.1.5. Plumbing - Graduate Mechanical Engineer or (BA/BS) graduate in construction management with 4 yrs related experience, or person with an ICC certification as a Commercial Plumbing Inspector with 5 yrs related experience.

3.4.4.1.6. Concrete, Pavements and Soils Materials Technician (present while performing tests) with 2 yrs experience for the appropriate area

3.4.4.1.7. Testing, Adjusting and Balancing Specialist must be a member (TAB) Personnel of AABC or an experienced technician of the firm certified by the NEBB (present while testing, adjusting, balancing).

3.4.4.1.8. Design Quality Control Manager Registered Architect or Professional Engineer (not required on the construction site)

3.4.4.1.9. Registered Fire Protection Engineer with 4 years related experience or engineering technician with 5 yrs related experience (but see requirements for Fire Protection Engineer of Record to witness final testing in Section 01 10 00, paragraph 5.10, Fire Protection).

3.4.4.1.10. QC personnel assigned to the installation of the telecommunication system or any of its components shall be Building Industry Consulting Services International (BICSI) Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification. In lieu of BICSI certification, QC personnel shall have a minimum of 5 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products. QC personnel shall witness and certify the testing of telecommunications cabling and equipment.

3.4.5. 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 at Colorado Springs, CO; POC: 719-556-4184. Inquire of the District or Division sponsoring the course for fees and other expenses involved, if any, for attendance at this course.

3.4.6. Organizational Changes

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

Make submittals as specified in Section 01 33 00 ***SUBMITTAL PROCEDURES***. The CQC organization shall certify 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. The CQC organization shall conduct at least three phases of control for each definable feature of the construction work as follows:

3.6.1. Preparatory Phase

Perform this phase prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

3.6.1.1. A review of each paragraph of applicable specifications, reference codes, and standards. Make a copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field at the preparatory inspection. Maintain these copies in the field, available for use by Government personnel until final acceptance of the work.

3.6.1.2. A review of the contract drawings.

3.6.1.3. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

3.6.1.4. Review of provisions that have been made to provide required control inspection and testing.

3.6.1.5. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

3.6.1.6. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

3.6.1.7. A review of the appropriate activity hazard analysis to assure safety requirements are met.

3.6.1.8. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

3.6.1.9. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

3.6.1.10. Discussion of the initial control phase.

3.6.1.11. Notify the Government at least 24 hours in advance of beginning the preparatory control 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. Document the results of the preparatory phase actions by separate minutes prepared by the CQC System Manager and attached to the daily CQC 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

Accomplish this phase at the beginning of a definable feature of work. Include the following actions:

3.6.2.1. Check work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

3.6.2.2. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

3.6.2.3. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

3.6.2.4. Resolve all differences.

3.6.2.5. Check safety to include compliance with and upgrading of the Accident Prevention plan and activity hazard analysis. Review the activity analysis with each worker.

3.6.2.6. Notify the Government at least 24 hours in advance of beginning the initial phase. The CQC System Manager shall prepare and attach to the daily CQC report separate minutes of this phase. Indicate exact location of initial phase for future reference and comparison with follow-up phases.

3.6.2.7. Repeat the initial phase any time acceptable specified quality standards are not being met.

3.6.3. Follow-up Phase

Perform daily checks to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Conduct final follow-up checks and correct deficiencies prior to the start of additional features of work which may be affected by the deficient work. Do not build upon nor conceal non-conforming work.

3.6.4. Additional Preparatory and Initial Phases

Conduct additional preparatory and initial phases on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite 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

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements and project design documents. Upon request, furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory, or establish an approved testing laboratory at the project

site. The Contractor may elect to use a laboratory certified and accredited by the Concrete and cement Reference Laboratory (CCRL) or by AASHTO Materials Reference Laboratory (AMRL) for testing procedures that those organizations certify. The Contractor shall perform the following activities and record and provide the following data:

3.7.1.1. Verify that testing procedures comply with contract requirements and project design documents.

3.7.1.2. Verify that facilities and testing equipment are available and comply with testing standards.

3.7.1.3. Check test instrument calibration data against certified standards.

3.7.1.4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

3.7.1.5. Include results of all tests taken, both passing and failing tests, recorded on the CQC report for the date taken. Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. Provide an information copy of tests performed by an offsite or commercial test facility 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.

3.7.2. Testing Laboratories

3.7.2.1. Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2. Capability Recheck

If the selected laboratory fails the capability check, the Government will assess the Contractor a charge of $1,375 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3. Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4. Furnishing or Transportation of Samples for Government Quality Assurance Testing

The Contractor is responsible for costs incidental to the transportation of samples or materials. Deliver samples of materials for test verification and acceptance testing by the Government to the Corps of Engineers Laboratory, f.o.b., at the following address:

- For delivery by mail:

  As directed by the Area or Resident Office.

  -

  -

-

- For other deliveries:

  As directed by the Area or Resident Office.

  -

  -

  -

The area or resident office will coordinate, exact delivery location, and dates for each specific test.

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. Prepare a punch list of items which do not conform to the approved drawings and specifications and include 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

As soon as practicable after the notification above, 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. Correct any items noted on the Pre-Final inspection in a timely manner. Accomplish these inspections and any deficiency corrections required by this paragraph 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 attend 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 attend. The Government will formally schedule the final acceptance inspection based upon results of the Pre-Final inspection. Provide notice to the Government at least 14 days prior to the final acceptance inspection and 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

3.9.1. 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 using

government-provided software, QCS (see Section 01 45 01.10). The report includes, as a minimum, the following information:

3.9.1.1. Contractor/subcontractor and their area of responsibility.

3.9.1.2. Operating plant/equipment with hours worked, idle, or down for repair.

3.9.1.3. 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.

3.9.1.4. Test and/or control activities performed with results and references to specifications/drawings requirements. Identify the applicable control phase (Preparatory, Initial, Follow-up). List deficiencies noted, along with corrective action.

3.9.1.5. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

3.9.1.6. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

3.9.1.7. Offsite surveillance activities, including actions taken.

3.9.1.8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

3.9.1.9. Instructions given/received and conflicts in plans and/or specifications.

3.9.1.10. Provide documentation of design quality control activities. For independent design reviews, provide, as a minimum, identity of the ITR team, the ITR review comments, responses and the record of resolution of the comments.

3.9.2. 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. Furnish the original and one copy of these records in report form to the Government daily within 24 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, submit one report for every 7 days of no work and on the last day of a no work period. Account for all calendar days throughout the life of the contract. The first report following a day of no work shall be for that day only. The CQC System Manager shall sign and date reports. The report shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel. The Contractor may submit these forms electronically, in lieu of hard copy.

3.10. 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 01 45 04.00 10

SECTION 01 50 02
TEMPORARY CONSTRUCTION FACILITIES

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

1.5. MAINTENANCE OF CONSTRUCTION SITE

1.0 OVERVIEW

1.1. GENERAL REQUIREMENTS

1.1.1. Site Plan

Prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Also indicate if the use of a supplemental or other staging area is desired.

1.2. AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1. See Section 00 72 00, Contract Clauses and Section 00 73 00, Special Contract Requirements, for Utility Availability requirements.

1.2.2. Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.2.3. Telephone

Make arrangements and pay all costs for desired telephone facilities.

1.3. BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1. Bulletin Board

Immediately upon beginning of onsite work, provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Display legible copies of the aforementioned data until work is completed. Remove the bulletin board from the site upon completion of the project.

1.3.2. Project and Safety Signs

Erect a project sign and a site safety sign with informational details as provided by the Government at the Post award conference, within 15 days prior to any work activity on project site. Update the safety sign data daily, with light colored metallic or non-metallic numerals. Remove the signs from the site upon completion of the project. Engineer Pamphlet EP 310-1-6a contains the standardized layout and construction details for the signs. It can be found through a GOOGLE Search or try the US Army Corps of Engineers Techinfo Website at http://www.hnd.usace.army.mil/techinfo/. Click on Publications then go to Engineer Pamphlets and select EP 310-1-6a.

1.4. PROTECTION AND MAINTENANCE OF TRAFFIC

Provide access and temporary relocated roads as necessary to maintain traffic. Maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Take 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, as required by the State and local authorities having jurisdiction. Protect the traveling public 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 public traffic. Investigate the adequacy of existing roads and the allowable load limit on these roads. Repair any damage to roads caused by construction operations.

1.4.1. Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Construct haul roads with suitable grades and widths. Avoid sharp curves, blind corners, and dangerous cross traffic. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Provide adequate lighting to assure full and clear visibility for full width of haul road and work areas during any night work operations. Remove haul roads designated by the Contracting Officer upon completion of the work and restore those areas.

1.4.2. Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. 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. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.5. MAINTENANCE OF CONSTRUCTION SITE

Mow grass and vegetation located within the boundaries of the construction site for the duration of the project, from NTP to contract completion. Edge or neatly trim grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers from NTP to contract completion.

1.6 GOVERNMENT FIELD OFFICE

1.6.1 Trailer-Type Mobile Office

The Contractor shall provide the Government Restationing Resident Office Complex (RROC), approximately 3,600 square feet in floor area (5 – 12 X 60 Trailers), co-located on the project site with the Contractor's office. The Contractor shall lease all buildings, rent all equipment & furniture, connect all utilities to Fort Carson systems, and make all utility payments (electric, phone, internet and drinking water) excluding long distance phone service. The contractor shall provide space heat, air conditioning, electric light and power, potable water, sewer service, and restrooms. For the duration of the contract, the contractor shall be responsible for all Storm Water Pollution Prevention (SWPP) responsibilities. At the completion of the project or at the direction of the COR, the Contractor shall coordinate and pay for the removal of the trailers and furniture, disconnection of all utilities and restoration of the immediate trailer site. Utilities shall be connected and disconnected in accordance with local codes and to the satisfaction of the Contracting Officer. The Government reserves the right to extend the lease(s) of any and all portions of the RROC as necessary including transfer of leases to a future contract at completion of the CAB Barracks project. The RROC office complex shall be complete and usable within 60 days of NTP.

The contractor shall provide once per week janitorial service for the RROC. Janitorial service shall include trash removal, light dusting, floor vacuuming and/or sweeping and mopping, toilets and sink cleaning. Provided supplies to include hand soap, toilet paper, paper towels, cleaning supplies, trash can liners, tissues and the like throughout. Provide pest control mouse traps, bait and/or similar pest control devices. Provide snow removal for parking areas and walkways between buildings in the RROC. Perform repairs as needed for routine maintenance, weather damage (high winds, hail, water damage, etc.) during the lease period.

Office Space Requirements: Office space shall be provided for 28 total people; 4 of which shall have private offices; all other workspaces may be cubicles. Furniture and equipment sizes are approximate and may be adjusted to fit the workspace. In addition to the requirements listed below, all workspaces are to be provided with one (1) ergonomic and adjustable office chair. Provide additional space as needed for access/egress paths, and connections between adjacent areas. Provide one (1) LAN connection in each workspace and one (1) phone in each workspace. Connect all LAN and phone cables to a patch panel. Provide at least two (2) duplex power outlets in each workspace and at least one outlet (1) per 10 feet of wall space for other government equipment throughout the RROC. Wiring and cables shall not be run in egress paths or on the floor. Provide a wireless internet system capable of supporting the RROC as a backup to the LAN system. All doors shall be lockable and keyed alike. Provide a mail slot in the main entrance door with a drop box on the inside face of the door or a lockable mail box mounted on the surface adjacent to the door. Provide exterior security lighting for all buildings.

The facilities being constructed under this contract and others that are under the oversight of the RROC, are part of a Net Zero Green Campus. It is the government's desire to further promote this Net Zero Green initiative with the RROC facilities. The RROC trailers should be similar or equal to EcoPort EcoWork trailers. Trailer construction should comply with the following features:

- Be provided with passive solar design features, such as, solar shading, natural ventilation and natural lighting.
- Be constructed with recycled materials, i.e. exterior metal cladding, insulation, flooring, framing, etc.
- Be constructed with non-toxic materials, i.e. insulation, glues, interior finishes, etc.
- Be constructed with FSC Certified wood framing.

- Be constructed with low E double pain window units.
- Be constructed with low-voltage high efficiency lighting.
- The trailers shall be connected to the installation electrical power system and shall also be supplied by onsite **renewable** energy source)(s), such as photo voltaic panels, wind generation, etc. The renewable energy source(s) shall be designed and installed such that the RROC meets the requirements of Net Zero energy use. Net metering shall be utilized to connect to the installation electrical power system and record the electrical power consumed and produced by the RROC. Colorado Springs Utilities and Fort Carson net metering connection requirements shall apply (such as automatic shutoff during system outage, disconnects, labeling, etc.)

The five (5) 12 X 60 RROC trailers shall be jointed together (with the exception of the restroom trailer) and sub divided into the below noted spaces. The RROC trailer space as a minimum shall be provided with a main and secondary exit. Construction and installation of the RROC shall comply with all applicable codes and standards.

Provide Resident Engineer Private Offices. Provide Four (4) Private Offices. One (1) Resident Engineer, two (2) Senior Project Engineers, and one (1) Project Manager, 100 SF each. Each office shall include the following, 30SF desk surface and 20 SF shelf surface. As a minimum each desk space shall be provided with two (2) Drawers, one file size drawer and one (1) smaller drawer. Drawers may be integral with desk or stand alone units. Provide one (1) 4 drawer file cabinet for each office.

Provide a Reception / Administration Area. Locate near the main entrance, adjacent to the private offices and near the resource and storage area. The space shall include a reception area and workspaces for the Administrative Assistant and Administrator as noted below.

The reception area shall have circulation space and be provided with a seating area and three (3) chairs.

This area shall include one (1) Administrative Assistant Workspace. This workspace shall be an open 8' X 8' cubicle with a half height counter, 30 SF desk surface and 20 SF shelf surface. As a minimum the desk space shall be provided with two (2) Drawers, one file size drawer and one (1) smaller drawer. Drawers may be integral with desk or stand alone units. Provide one (1) four drawer file cabinet and one (1) lockable metal storage cabinet (5.5'h x 3'w with integral shelves) within the space.

This space shall also include One (1) Office Administrator workspace. This workspace shall be an open office 8' X 8' cubicle with 30 SF desk surface and 25 SF shelf surface. As a minimum the desk space shall be provided with two (2) Drawers, one file size drawer and one (1) smaller drawer. Drawers may be integral with desk or stand alone units. Provide one (1) four drawer file cabinet and one (1) lockable metal storage cabinet (5.5'h x 3'w with integral shelves) within the space.

Provide Office Scheduler Workspace. Locate near the Resource and Storage area. Workspace shall be as noted below.

This area shall have one (1) Office Scheduler workspace. This workspace shall be an open 8'X 8'cubicle with 18 SF desk surface and 20 SF shelf surface. As a minimum the desk space shall be provided with two (2) Drawers, one file size drawer and one (1) smaller drawer. Drawers may be integral with desk or stand alone units. Provide one (1) four drawer file cabinet within the space.

Provide Resource Area and Storage Area. Locate near the Reception / Administration Area and the Office Scheduler Workspace. The space shall include a Resource Area, File Room, Open Storage Area and Break Room or Break Area as noted below.

Resource Area shall be minimum 80 SF and shall be provided with LAN connections and duplex power outlets for color copier, plotter, and digital sender. Provide 25 SF shelf surface and 15 SF of counter

surface 36-inches above finish flooring. Counter surface shall be provided with under counter storage cabinets with an intermediate shelf.

File Room shall be minimum 100 SF and shall be provided with 35 SF shelf surface and six (6) four drawer file cabinets. Provide 2 LAN connections, one each on opposite walls. Outlets shall be provided as noted above.

Open Storage Area shall be minimum 100 SF and shall be provided with 2 LAN connections, one each on opposite walls. Outlets shall be provided as noted above.

Break Room or Break Area shall be provided with one (1) refrigerator, one (1) sink with hot/cold water, 12 SF of counter surface exclusive of the sink and under counter storage cabinets with an intermediate shelf under the sink and counter surface. Sink and counter surface shall be 36-inches above finish flooring.

Project Engineer / Con Rep Workstation(s) Area. This area may be divided as needed to fit within the remaining space. The area shall include workstations (cubicles) for 21 Project Engineer / Con Reps and a Document Work Area as noted below.

Project Engineer / Con Rep Workstations shall be minimum 8'x 8' cubicle with 18 SF desk surface and 20 SF shelf surface. As a minimum the desk space shall be provided with two (2) Drawers, one file size drawer and one (1) smaller drawer. Drawers may be integral with desk or stand alone units. Provide one (1) four drawer file cabinet within the space.

Document Work Area shall be located near the Project Engineer / Con Rep Workstation Area(s). Provide one (1) 3'x12' drawing layout table with working surfaces for full size plans with plan storage compartments underneath. This area shall also include six (6) four drawer file cabinets and 15 SF of shelf surface and 1 LAN connection. Outlets shall be provided as noted above.

Provide Conference Rooms and Toilet Rooms. This area shall be handicapped accessible and although part of the RRCO it is desirable that it be provided with its own exterior entrance with interior closable doorway access to the rest of the RROC. The area shall include one (1) Large Conference Room, two (2) Small Conference Rooms and three (3) Toilet Rooms as noted below.

The Large Conference Room shall be minimum 18' X 28' and shall be provided with a minimum of Six (6) 3' X 6' conference tables and thirty (30) chairs. Provide a digital overhead projector (video/LAN capable) and minimum 6' high X 8' wide screen. Provide a conference phone system with overhead speakers and microphones. Provide 10 LAN connections equally spaced around the room. Provide minimum 12 duplex power outlets.

The two (2) Small Conference Rooms shall be adjacent to the large conference room and shall be minimum 10'x10', with minimum two (2) duplex power outlets, two (2) LAN connections and one (1) phone in each. Provide 18 SF table surface with six (6) chairs in each.

Provide Men's and Women's Restrooms. The Restrooms shall be in one trailer that is separated from the other functional areas via the elevated wood deck. The restrooms shall be ADA compliant. Men's restrooms shall contain two (2) lavatories and two (2) water closets (water closets shall be in stalls for privacy). The women's restroom shall contain one (1) lavatory and one (1) water closet. Each men's and women's restroom shall be provided with one (1) shower with curtain or door. Above grade water and sewer lines shall be provided with heat tape to prevent freezing during winter months. Provide storage for toiletries and paper towel dispenser in each toilet room.

Provide Exterior File Storage. Provide one (1) File Storage Shed, minimum 15' x 20' (Tuff Shed, Conex or similar water tight structure) with lockable door.

Provide Exterior Improvements. Provide a graveled parking lot for 50 vehicles with signage for "COE Only" and "GOV Only" as directed by COR. Provide improved (not gravel or bare earth) 4' walkways

around the perimeter of the RROC trailers. Provide an improved common area in proximity to the RROC trailers sized to accommodate four (4) picnic tables and two (2) gas grills. An elevated wood deck area off the secondary exit of the RROC trailers is preferred.

End of Section 01 50 02

This page was intentionally left blank for duplex printing.

SECTION 01 57 20.00 10
ENVIRONMENTAL PROTECTION

1.0 GENERAL REQUIREMENTS

1.1. SUBCONTRACTORS

1.2. ENVIRONMENTAL PROTECTION PLAN

1.3. PROTECTION FEATURES

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

1.5. NOTIFICATION

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

3.2. WATER RESOURCES

3.3. AIR RESOURCES

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5. RECYCLING AND WASTE MINIMIZATION

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

3.7. BIOLOGICAL RESOURCES

3.8. INTEGRATED PEST MANAGEMENT

3.9. PREVIOUSLY USED EQUIPMENT

3.10. MILITARY MUNITIONS

3.11. TRAINING OF CONTRACTOR PERSONNEL

3.12. POST CONSTRUCTION CLEANUP

1.0 GENERAL REQUIREMENTS

Minimize environmental pollution and damage that may occur as the result of construction operations. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this contract. Comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations

1.1. SUBCONTRACTORS

Ensure compliance with this section by subcontractors.

1.2. ENVIRONMENTAL PROTECTION PLAN

1.2.1. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Define issues of concern within the Environmental Protection Plan as outlined in this section. Address each topic in the plan at a level of detail commensurate with the environmental issue and required construction task(s). Identify and discuss topics or issues which are not identified in this section, but which the Contractor considers necessary, after those items formally identified in this section. Prior to commencing construction activities or delivery of materials to the site, submit the Plan for review and Government approval. The Contractor shall meet with the Government prior to implementation of the Environmental Protection Plan, for the purpose of discussing the implementation of the initial plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. Maintain and keep the Environmental Protection Plan current onsite.

1.2.2. Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.2.3. Contents

The plan shall include, but shall not be limited to, the following:

1.2.3.1. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

1.2.3.2. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable

1.2.3.3. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel

1.2.3.4. Description of the Contractor's environmental protection personnel training program

1.2.3.5. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. Include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

1.2.3.6. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site

1.2.3.7. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

1.2.3.8. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

1.2.3.9. Drawing showing the location of on-installation borrow areas.

1.2.3.10. A spill control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The spill control plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

(a) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Government and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(b) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup

(c) Training requirements for Contractor's personnel and methods of accomplishing the training

(d) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

(e) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency

(f) The methods and procedures to be used for expeditious contaminant cleanup

1.2.3.11. A solid waste management plan identifying waste minimization, collection, and disposals methods, waste streams (type and quantity), and locations for solid waste diversion/disposal including clearing debris and C&D waste that is diverted (salvaged, reused, or recycled). Detail the contractor's actions to comply with, and to participate in, Federal, state, regional, local government, and installation sponsored recycling programs to reduce the volume of solid waste at the source. Identify any subcontractors responsible for the transportation, salvage and disposal of solid waste. Submit licenses or permits for solid waste disposal sites that are not a commercial operating facility. Attach evidence of the facility's ability to accept the solid waste to this plan. A construction and demolition waste management plan, similar to the plan specified in the UFGS 01 74 19 (formerly 01572) may be used as the non-hazardous solid waste management plan. Provide a Non-Hazardous Solid Waste Diversion Report. Submit the report on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and each quarter thereafter (e.g. the first working day of January, April, July, and October) until the end of the project. Additionally, a summary report, with all data fields, is required at the end of the project. The report shall indicate the total type and amount of waste generated, total type and amount of waste diverted, type and amount of waste sent to waste-to-energy facility and alternative daily cover, in tons along with the percent that was diverted. Maintain, track and report construction and demolition waste data in a manner such that the installation can enter the data into the Army SWAR database, which separates data by type of material. A cumulative report in LEED Letter Template format may be used but must be modified to include the date disposed of/diverted and include

the above stated diversion data. NOTE: The Solid Waste Diversion Reports are separate documentation than the LEED documentation.

1.2.3.12. DELETED.

1.2.3.13. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

1.2.3.14. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, include a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time in the contaminant prevention plan. Update the plan as new hazardous materials are brought on site or removed from the site. Reference this plan in the storm water pollution prevention plan, as applicable.

1.2.3.15. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented and any required permits. If surface discharge will be the method of disposal, include a copy of the permit and associated documents as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, include documentation that the waste water treatment plant Operator has approved the flow rate, volume, and type of discharge.

1.2.3.16. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. Include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Government.

1.2.3.17. A pesticide treatment plan, updated, as information becomes available. Include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. Follow AR 200-1, Chapter 5, Pest Management, Section 5-4, “Program Requirements” for data required to be reported to the Installation.

1.3. PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Government shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. Both the Contractor and the Government will

sign this survey, upon mutual agreement as to its accuracy and completeness. The Contractor develop a plan that depicts how it will protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.4. ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Government and may require an extended review, processing, and approval time. The Government reserves the right to disapprove alternate methods, even if they are more cost effective, if the Government determines that the proposed alternate method will have an adverse environmental impact.

1.5. NOTIFICATION

The Government will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Government of the proposed corrective action and take such action when approved by the Government. The Government may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Government may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION

3.1. LAND RESOURCES

Confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. Do not attach or fasten any ropes, cables, or guys to any trees for anchorage unless specifically authorized. Provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Remove all stone, soil, or other materials displaced into uncleared areas..

3.1.1. Work Area Limits

Prior to commencing construction activities, mark the areas that need not be disturbed under this contract. Mark or fence isolated areas within the general work area which are not to be disturbed. Protect monuments and markers before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. Personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.1.2. Landscape

Clearly identify trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved by marking, fencing, or wrapping with boards, or any other approved techniques. Restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.1.3. Erosion and Sediment Controls

Provide erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. Coordinate with approving authorities (federal, state, etc.) for specific requirements to be included in the plan. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. Keep the area of bare soil exposed at any one time by construction operations to a minimum necessary. Construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Remove any temporary measures after the area has been stabilized.

3.1.4. Contractor Facilities and Work Areas

Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated on the drawings or as directed by the Government. Make only approved temporary movement or relocation of Contractor facilities. Provide erosion and sediment controls for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Control temporary excavation and embankments for plant and/or work areas to protect adjacent areas.

3.2. WATER RESOURCES

Monitor construction activities to prevent pollution of surface and ground waters. Do not apply toxic or hazardous chemicals to soil or vegetation unless otherwise indicated. Monitor all water areas affected by construction activities. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by state or federally issued Clean Water Act permits.

3.2.1. Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments or impede state-designated flows.

3.2.2. Wetlands

Do not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.3. AIR RESOURCES

Comply with all Federal and State air emission and performance laws and standards for equipment operation, activities, or processes.

3.3.1. Particulates

Control dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants, including weekends, holidays and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods are permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. Provide sufficient, competent equipment available to accomplish these tasks. Perform particulate control as the work proceeds and whenever a particulate nuisance or hazard occurs. Comply with all State and local visibility regulations.

3.3.2. Odors

Control odors from construction activities at all times. Odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.3.3. Sound Intrusions

Keep construction activities under surveillance and control to minimize environment damage by noise. Comply with the provisions of the state and Installation rules.

3.3.4. Burning

Burning is not allowed on the project site unless specified in other sections of the specifications or by written authorization. Specific times, locations, and manners of burning shall be subject to approval.

3.4. CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.4.1. Solid Wastes

Place solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. Conduct handling, storage, and disposal to prevent contamination. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with solid waste. Transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The minimum acceptable off-site solid waste disposal option is a Subtitle D RCRA permitted landfill. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.4.2. Chemicals and Chemical Wastes

Dispense chemicals, ensuring no spillage to the ground or water. Perform and document periodic inspections of dispensing areas to identify leakage and initiate corrective action. The Government may periodically review this documentation. Collect chemical waste in corrosion resistant, compatible containers. Monitor and remove collection drums to a staging or storage area when contents are within 6 inches of the top. Classify, manage, store, and dispose of wastes in accordance with Federal, State, and local laws and regulations.

3.4.3. Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. At a minimum, manage and store hazardous waste in compliance with 40 CFR 262. Take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. Segregate hazardous waste from other materials and wastes; protect it from the weather by placing it in a safe covered location and take precautionary measures, such as berming or other appropriate measures, against accidental spillage. Store, describe, package, label, mark, and placard hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations. Transport Contractor generated hazardous waste off Government property in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. Dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Immediately report spills of hazardous or toxic materials to the Government and the Facility Environmental Office. Contractor will be responsible for cleanup and cleanup costs due to spills.

Contractor is responsible for the disposition of Contractor generated hazardous waste and excess hazardous materials.

3.4.4. Fuel and Lubricants

Conduct storage, fueling and lubrication of equipment and motor vehicles in a manner that affords the maximum protection against spill and evaporation. Manage and store fuel, lubricants and oil in accordance with all Federal, State, Regional, and local laws and regulations.

3.5. RECYCLING AND WASTE MINIMIZATION

Participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project. Line and berm fueling areas and establish storm water control structures at discharge points for site run-off. Keep a liquid containment clean-up kit available at the fueling area.

3.6. HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. Protect and preserve these resources during the life of the Contract. Temporarily suspend all activities that may damage or alter such resources, if any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found during excavation or other construction activities. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, notify the Government so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. Cease all activities that may result in impact to or the destruction of these resources. Secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.7. BIOLOGICAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitat. Protect threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8. INTEGRATED PEST MANAGEMENT

Coordinate, through the Government, with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application, in order to minimize impacts to existing fauna and flora. Discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC, through the COR, prior to the application of any pesticide associated with these specifications. Give IMPC personnel the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1. Pesticide Delivery and Storage

Deliver pesticides, approved for use on the Installation, to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses.

3.8.2. Qualifications

Use the services of a subcontractor for pesticide application whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3. Pesticide Handling Requirements

Formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions.

3.8.4. Application

A state certified pesticide applicator shall apply pesticides in accordance with EPA label restrictions and recommendations.

3.9. PREVIOUSLY USED EQUIPMENT

Clean all previously used construction equipment prior to bringing it onto the project site. Ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the USDA jurisdictional office for additional cleaning requirements.

3.10. MILITARY MUNITIONS

Immediately stop work in that area and immediately inform the Government, in the event military munitions, as defined in 40 CFR 260, are discovered or uncovered.

3.11. TRAINING OF CONTRACTOR PERSONNEL

Train personnel in all phases of environmental protection and pollution control. Conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Conduct additional meetings for new personnel and when site conditions change. The training and meeting agenda shall include methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.12. POST CONSTRUCTION CLEANUP

Clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". Unless otherwise instructed in writing , obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade, fill and seed the entire disturbed area, unless otherwise indicated.

This page was intentionally left blank for duplex printing.

SECTION 01 62 35
RECYCLED/RECOVERED MATERIAL

1.0 GENERAL

1.1. REFERENCES

1.2. OBJECTIVES

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

1.0 GENERAL

1.1. REFERENCES

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

- U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
- 40 CFR 247 Comprehensive Procurement Guideline for Products Containing Recovered Materials

1.2. OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

1.3. EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials, when incorporated into the work under this contract, shall contain at least the minimum percentage of recycled or recovered materials indicated by EPA unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.4. EPA PROPOSED ITEMS INCORPORATED IN THE WORK

Products other than those designated by EPA are still being researched and are being considered for future Comprehensive Procurement Guideline (CPG) designation. It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials, provided specified requirements are also met.

1.5. EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be use by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials and that these products be recycled when no longer needed.

End of Section 01 62 35

SECTION 01 78 02.00 10
CLOSEOUT SUBMITTALS

1.0 OVERVIEW

1.1. SUBMITTALS

1.2. PROJECT RECORD DOCUMENTS

1.3. EQUIPMENT DATA

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

1.6. OPERATION AND MAINTENANCE MANUALS

1.7. FIELD TRAINING

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

1.9. LEED REVIEW MEETINGS

1.10. RED ZONE MEETING

1.11. FINAL CLEANING

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

EXHIBIT 1 SAMPLE RED ZONE MEETING CHECKLIST

1.0 OVERVIEW

1.1. SUBMITTALS

Government approval is required for any submittals with a "G" designation; submittals not having a "G" designation are for Designer of Record approval or for information only. Submit the following in accordance with Section 01 33 00 submittals*:*

SD-02 Shop Drawings

– As-Built Drawings - G

▪ Drawings showing final as-built conditions of the project. Provide electronic drawing files as specified in Section 01 33 16, 3 sets of blue-line prints and one set of the approved working as-built drawings.

SD-03 Product Data

– As-Built Record of Equipment and Materials

▪ Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

– Construction Warranty Management Plan

▪ Three sets of the construction 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. 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 – G

An as-built drawing is a construction drawing revised to reflect the final as-built conditions of the project as a result of modifications and corrections to the project design required during construction. The final as-built drawings shall not have the appearance of marked up drawings, but that of professionally prepared drawings as if they were the "as designed" drawings.

1.2.2. Maintenance of As-Built Drawings

1.2.2.1. The Configuration Management Plan shall describe how the Contractor will maintain up-to-date drawings, how it will control and designate revisions to the drawings and specifications (In accordance with Special Contract Requirement: ***Deviating from the Accepted Design*** and Section 01 33 16: ***Design after Award***, the Designer of Record's approval is necessary for any revisions to the accepted design).

1.2.2.2. Make timely updates, carefully maintaining a record set of working as-built drawings at the job site, marked in red, of all changes and corrections from the construction drawings. Enter changes and corrections on drawings promptly to reflect "Current Construction". Perform this update no less frequently

than weekly for the blue line drawings and update no less frequently than quarterly for the CADD/CAD and BIM files, which were prepared previously in accordance with Section 01 33 16. Include a confirmation that the as-builts are up to date with the submission of the monthly project schedule.

1.2.2.3. If the DB Contractor fails to maintain the as-built drawings as required herein, the Government will retain from the monthly progress payment, an amount representing the estimated monthly cost of maintaining the as-built drawings. Final payment with respect to separately priced facilities or the contract as a whole will be withheld until the Contractor submits acceptable as-built drawings and the Government approves them.

1.2.2.4. The marked-up set of drawings shall reflect any changes, alterations, adjustments or modifications. Changes must be reflected on all sheets affected by the change. Changes shall include marking the drawings to reflect structural details, foundation layouts, equipment sizes, and other extensions of design.

1.2.2.5. Typically, room numbers shown on the drawings are selected for design convenience and do not represent the actual numbers intended for use by the end user. Final as-built drawings shall reflect actual room numbers adopted by the end user.

1.2.2.6. If there is no separate contract line item (CLIN) for as-built drawings, the Government will withhold the amount of $35,000, or 1% of the present construction value, whichever is the greater, until the final as-built drawing submittal has been approved by the Government.

1.2.3. Underground Utilities

The drawings shall indicate, in addition to all changes and corrections, 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. Locate Valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Record average elevation of the top of each run or underground structure..

1.2.4. Partial Occupancy

For projects where portions of construction are to be occupied or activated before overall project completion, including portions of utility systems, supply as-built drawings for those portions of the facility being occupied or activated at the time the facility is occupied or activated. Show this same as-built information previously furnished on the final set of as-built drawings.

1.2.5. As-Built Conditions That are Different From the construction Drawings

Accurately reflect all as-built conditions that are different, such as dimensions, road alignments and grades, and drainage and elevations, from the construction drawings on each drawing. If the as-built condition is accurately reflected on a shop drawing, then furnish that shop drawing in CADD format. Reference the final as-built construction drawing the shop drawing file that includes the as-built information. In turn, the shop drawing shall reference the applicable construction as-built drawing. Delete any options shown on drawings and not selected clearly reflect options selected on final as-built drawings.

1.2.6. Additional As-Built Information that Exceeds the Detail Shown on the construction Drawings:

These as-built conditions include those that reflect structural details, foundation layouts, equipment, sizes, mechanical and electrical room layouts and other extensions of design, that were not shown in the project design documents because the exact details were not known until after the time of approved shop

drawings. It is recognized that these shop drawing submittals (revised showing as-built conditions) will serve as the as-built record without actual incorporation into the construction drawings, piping, and equipment drawings. Include locations of all explorations, logs of all explorations, and results of all laboratory testing, including those provided by the Government. Furnish all such shop drawings in CADD /CADformat. Include fire protection details, such as wiring, performed for the design of the project.

1.2.7. Final As-Built Drawings

Submit final as-built CADD/CAD and BIM Model(s) and Facility Data files at the time of Beneficial Occupancy of the project or at a designated phase of the project. In the event the Contractor accomplishes additional work after this submittal, which changes the as-built conditions, submit a new DVD with all drawing sheets and three blue-line copies of affected sheets which depict additional changes.

1.2.8. Title Blocks

In accordance with the configuration management plan, clearly mark title blocks to indicate final as-built drawings.

1.2.9. Other As-Built Documents

Provide scans of all other documents such as design analysis, catalog cuts, certification documents that are not available in native electronic format in an organized manner in Adobe.pdf format.

1.2.9.1. LEED Documentation

Update LEED documentation on at least a monthly basis and have it available for review by the Government on the jobsite at all times during construction. Submit the final LEED Project Checklist(s), final LEED submittals checklist and complete project documentation, verifying the final LEED score and establishing the final rating. Provide full support to the validation review process, including credit audits. See also the LEED documentation requirements in Section 01 33 16, DESIGN AFTER AWARD.

1.2.9.2. GIS Documentation

Provide final geo-referenced GIS database of the new building footprint along with any changes made to exterior of the building. The intent of capturing the final building footprint and exterior modifications in a GIS database is to provide the installation with a data set of the comprehensive changes made to the landscape as a result of the construction project. The Government will incorporate this data set into the installations existing GIS MasterPlan or Enterprise GIS system. The GIS database deliverable shall follow a standard template provided to the Contractor by the Government, adhere to detailed specifications outlined in ECB No 2006-15, and be documented using the Federal Geographic Data Committee (FGDC) metadata standard.

1.3. EQUIPMENT DATA

1.3.1. Real Property Equipment

Provide an Equipment-in-Place list of all installed equipment furnished under this contract. Include all information usually listed on manufacturer's name plate. Include the cost of each piece of installed property F.O.B. construction site. For each of the items which is specified herein to be guaranteed for a specified period from the date of acceptance thereof, provide the following information: The name, serial and model number address of equipment supplier, or manufacturer originating the guaranteed item. The Contractor's guarantee to the Government of these items will not be limited by the terms of any manufacturer's guarantee to the Contractor. Furnish the list as one (1) reproducible and three (3) copies

thirty (30) calendar days before completion of any segment of the contract work which has an incremental completion date.

1.3.2. Maintenance and Parts Data

Furnish a brochure, catalog cut, parts list, manufacturer's data sheet or other publication showing detailed parts data on all other equipment subject to repair and maintenance procedures not otherwise required in Operations and Maintenance Manuals specified elsewhere in this contract. Distribution of directives shall follow the same requirements as listed in paragraph above.

1.3.3. Construction Specifications

Furnish permanent electronic files of final as-built construction specifications, including modifications thereto, with the as-built drawings.

1.4. CONSTRUCTION WARRANTY MANAGEMENT

1.4.1. Prior to the end of the one year warranty, the Government may conduct an infrared roof survey on any project involving a membrane roofing system. This survey will be conducted in accordance with ASTM C1153-90, "Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging". The Contractor shall replace all damaged materials and locate and repair sources of moisture penetration.

1.4.2. Management

1.4.2.1. Warranty Management Plan

Develop a warranty management plan containing information relevant to the clause ***Warranty of Construction*** in FAR 52.246-21. Submit the warranty management plan for Government approval at least 30 days before the planned pre-warranty conference. In the event of phased turn-over of the contract, update the Warranty Management Plan as necessary to include latest information required. 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. Submit warranty information made available during the construction phase prior to each monthly pay estimate. Assemble information in a binder and turn 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. The Contractor, Government, including the Customer Representative shall jointly conduct warranty inspections, 4 months and 9 months, after acceptance. The warranty management plan shall include, but shall not be limited to, the following information:

(1) 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.

(2) 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.

(3) A list for each warranted equipment, item, feature of construction or system indicating:

(i) Name of item.

(ii) Model and serial numbers.

(iii) Location where installed.

(iv) Name and phone numbers of manufacturers or suppliers.

(v) Names, addresses and telephone numbers of sources of spare parts.

(vi) Warranties and terms of warranty. Include one-year overall warranty of construction. Indicate those items, which have extended warranties with separate warranty expiration dates.

(vii) Cross-reference to warranty certificates as applicable.

(viii) Starting point and duration of warranty period.

(ix) Summary of maintenance procedures required to continue the warranty in force.

(x) Cross-reference to specific pertinent Operation and Maintenance manuals.

(xi) Organization, names and phone numbers of persons to call for warranty service.

(xii) Typical response time and repair time expected for various warranted equipment.

(4) The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

(5) Procedure and status of tagging of all equipment covered by extended warranties.

(6) Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.4.3. Performance Bond

1.4.3.1. The Contractor's Performance Bond will remain effective throughout the construction warranty period.

1.4.3.2. In the event the Contractor or his designated representative(s) fails to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Government shall have a right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Government shall have the work performed by others, and after completion of the work, may make demand for reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

1.4.3.3. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Government will have the right to recoup expenses from the bonding company.

1.4.3.4. Following oral or written notification of required warranty repair work, the Contractor will respond as dictated by para. 1.4.5. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Government to proceed against the Contractor as outlined in the paragraph 1.4.5.5 and/or above.

1.4.4. Pre-Warranty Conference

Prior to contract completion, or completion of any phase or portion of contract to be turned over, and at a time designated by the Contracting Officer, the Contractor shall meet with the Government to develop a mutual understanding with respect to the requirements of this clause. Communication procedures for Contractor notification of warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Government 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 will furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warrantied construction, will be continuously

available, and will be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of his responsibilities in connection with other portions of this provision.

1.4.5. Contractor's Response to Warranty Service Requirements.

Following Government oral or written notification, which may include authorized installation maintenance personnel, the Contractor shall respond to warranty service requirements in accordance with the "Warranty Service Priority List" and the three categories of priorities listed below. 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 timeframe specified, the Government will perform the work and backcharge the construction warranty payment item established.

1.4.5.1. 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.

1.4.5.2. 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.

1.4.5.3. Third Priority Code 3 All other work to be initiated within 3 work days and work continuously to completion or relief.

1.4.5.4. The "Warranty Service Priority List" is as follows:

- Code 1 - Air Conditioning System

(a) Buildings with computer equipment.

(b) Barracks, mess halls (entire building down).

- Code 2 - Air Conditioning Systems

(a) Recreational support.

(b) Air conditioning leak in part of building, if causing damage.

(c) Air conditioning system not cooling properly

(d) Admin buildings with Automated Data Processing (ADP) equipment not on priority list.

- Code 1 - Doors

(a) Overhead doors not operational.

- Code 1 - Electrical

(a) Power failure (entire area or any building operational after 1600 hours).

(b) Traffic control devices.

(c) Security lights.

(d) Smoke detectors and fire alarm systems

(e) Power or lighting failure to an area, facility, portion of a facility, which may adversely impact health, safety, security, or the installation's mission requirement, or which may result in damage to property.

- Code 2 - Electrical

(a) Power failure (no power) for unoccupied buildings or portions thereof or branch circuits within occupied buildings, not listed as Code 1.

(a) Receptacle and lights, not listed as code 1.

- Code 3 - Electrical

(a) Street, parking area lights

- Code 1 - Gas

(a) Leaks and breaks.

(b) No gas to cantonment area.

- Code 1 - Heat

(a) Area power failure affecting heat.

(b) Heater in unit not working.

- Code 2 Heat

(a) All heating system failures not listed as Code 1.

- Code 3 - Interior

(a) Floor damage

(b) Paint chipping or peeling

- Code 1 - Intrusion Detection Systems - N/A.
- Code 2 - Intrusion Detection Systems other than those listed under Code 1
- Code 1 - Kitchen Equipment

(a) Dishwasher.

(b) All other equipment hampering preparation of a meal.

- Code 2 - Kitchen Equipment

(a) All other equipment not listed under Code 1.

- Code 2 - Plumbing

(a) Flush valves not operating properly

(b) Fixture drain, supply line commode, or water pipe leaking.

(c) Commode leaking at base.

- Code 3 - Plumbing

(a) Leaking faucets

- Code 1 - Refrigeration

(a) Mess Hall.

(b) Medical storage.

- Code 2 - Refrigeration

(a) Mess hall - other than walk-in refrigerators and freezers.

- Code 1 - Roof Leaks

(a) Temporary repairs will be made where major damage to property is occurring.

- Code 2 - Roof Leaks

(a) Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

- Code 1 - Sprinkler System

(a) All sprinkler systems, valves, manholes, deluge systems, and air systems to sprinklers.

- Code 1 - Tank Wash Racks (Bird Baths)

(a) All systems which prevent tank wash.

- Code 1 - Water (Exterior)

(a) Normal operation of water pump station.

- Code 2 - Water (Exterior)

(a) No water to facility.

- Code 1 - Water, Hot (and Steam)

(a) Barracks (entire building).

- Code 2 - Water, Hot

(a) No hot water in portion of building listed under Code 1

1.4.5.5. Should parts be required to complete the work and the parts are not immediately available, the Contractor shall have a maximum of 12 hours after arrival at the job site to provide the Government, with firm written proposals for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractors proposals shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair. The Government will evaluate the proposed alternatives and negotiate the alternative considered to be in the best interest of the Government to reduce the impact of the emergency condition. Alternatives considered by the Government will include the alternative for the Contractor to "Do Nothing" while waiting until the required parts are available to perform permanent warranty repair. Negotiating a proposal which will require Government participation and the expenditure of Government funds shall constitute a separate procurement action by the using service.

1.4.6. Equipment Warranty Identification Tags

1.4.6.1. Provide warranty identification tags at the time of installation and prior to substantial completion shall provide warranty identification tags on all Contractor and Government furnished equipment which the Contractor has installed.

(a) The tags shall be suitable for interior and exterior locations, resistant to solvents, abrasion, and to fading caused by sunlight, precipitation, etc. These tags shall have a permanent pressure-sensitive adhesive back, and they shall be installed in a position that is easily (or most easily) noticeable. Tag each component of contractor furnished equipment that has differing warranties on its components.

(b) Submit sample tags, representing how the other tags will look, for Government review and approval.

(c) Tags for Warrantied Equipment: The tag for this equipment shall be similar to the following: Exact format and size will be as approved.

EQUIPMENT WARRANTY - CONTRACTOR FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

CONTRACTOR NAME

CONTRACTOR WARRANTY EXPIRES

MFG WARRANTY(IES) EXPIRE

EQUIPMENT WARRANTY - GOVERNMENT FURNISHED EQUIPMENT

MFG NAME MODEL NO.

SERIAL NO.

CONTRACT NO.

DATE EQUIP PLACED IN SERVICE

MFG WARRANTY(IES) EXPIRE

(d) If the manufacturer's name (MFG), model number and serial number are on the manufacturer's equipment data plate and this data plate is easily found and fully legible, this information need not be duplicated on the equipment warranty tag

1.4.6.2. Execution: Complete the required information on each tag and install these tags on the equipment by the time of and as a condition of final acceptance of the equipment.

1.5. MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Submit; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems prior to final inspection and transfer of the completed facility for approval, as specified in applicable technical specification sections.

1.6. OPERATION AND MAINTENANCE MANUALS

1.6.1. General Requirements

1.6.1.1. Inasmuch as the operations and maintenance manuals are required to operate and maintain the facility, the operations and maintenance (O&M) manuals will be considered a requirement prior to substantial completion of any facility to be turned over to the Government. Beneficial occupancy of all or portions of a facility prior to substantial completion will not relieve the Contractor of liquidated damages, if substantial completion exceeds the required completion date.

1.6.1.2. Provide one permanent electronic copy on CD-ROM and 2 hard copies of the Equipment Operating, Maintenance, and Repair Manuals. Provide separate manuals for each utility system as defined hereinafter. Submit Operations and Maintenance manuals for approval before field training or 90 days before substantial completion (whichever occurs earlier). If there is no separate CLIN for O&M Manuals, the Government will withhold an amount representing $20,000, as non-progressed work, until submittal and approval of all O&M manuals are complete.

1.6.2. Definitions

1.6.2.1. Equipment

A single piece of equipment operating alone or in conjunction with other equipment to accomplish a system function.

1.6.2.2. System

A combination of one or more pieces of equipment which function together to accomplish an intended purpose (i.e. HVAC system is composed of many individual pieces of equipment such as fans, motors, compressors, valves, sensors, relays, etc.)

1.6.3. Hard Cover Binders

The manuals shall be hard cover with posts, or 3-ring binders, so sheets may be easily substituted. Print the following identification on the cover: the words "EQUIPMENT OPERATING, MAINTENANCE, AND REPAIR MANUALS," the project name, building number, and an indication of utility or systems covered, the name of the Contractor, and the Contract number. Manuals shall be approximately 8-1/2 by 11-inches with large sheets folded in and capable of being easily pulled out for reference. All manuals for the project must be similar in appearance, and be of professional quality.

1.6.4. Warning Page

Provide a warning page to warn of potential dangers (if they exist, such as high voltage, toxic chemicals, flammable liquids, explosive materials, carcinogens, high pressures, etc.). Place the warning page inside the front cover and in front of the title page. Include any necessary Material Safety Data Sheets (MDSD) here.

1.6.5. Title Page

The title page shall include the same information shown on the cover and show the name of the preparing firm and the date of publication.

1.6.6. Table of Contents

Each volume of the set of manuals for this project shall include a table of contents, for the entire set, broken down by volume.

1.6.7. GENERAL

Organize manuals according to the following format, and include information for each item of equipment Submit a draft outline and table of contents for approval at 50% contract completion.

TABLE OF CONTENTS

PART I: Introduction

- Equipment Description
- Functional Description
- Installation Description

PART II: Operating Principles

PART III: Safety

PART IV: Preventive Maintenance

- Preventive Maintenance Checklist, Lubrication
- Charts and Diagrams

PART V: Spare Parts Lists

- Troubleshooting Guide
- Adjustments
- Common Repairs and Parts Replacement

PART VI: Illustrations

1.6.7.1. Part I-Introduction

Part I shall provide an introduction, equipment or system description, functional description and theory of operation, and installation instructions for each piece of equipment. Include complete instructions for uncrating, assembly, connection to the power source and pre-operating lubrication in the installation instructions as applicable. Illustrations, including wiring and cabling diagrams, are required as appropriate in this section. Include halftone pictures of the equipment in the introduction and equipment description, as well as system layout drawings with each item of equipment located and marked. Do not use copies of previously submitted shop drawings in these manuals.

1.6.7.2. Part II-Operating Principles

Part II shall provide complete instructions for operating the system, and each piece of equipment. Illustrations, halftone pictures, tables, charts, procedures, and diagrams are required when applicable. This will include step-by-step procedures for start-up and shutdown of both the system and each component piece of equipments, as well as adjustments required to obtain optimum equipment performance, and corrective actions for malfunctions. Show performance sheets and graphs showing capacity data, efficiencies, electrical characteristics, pressure drops, and flow rates here, also. Marked-up catalogs or catalog pages do not satisfy this requirement. Present performance information as concisely as possible with only data pertaining to equipment actually installed. Include actual test data collected for Contractor performance here.

1.6.7.3. Part III-Safety

Part III shall contain the general and specific safety requirements peculiar to each item of equipment. Repeat safety information as notes cautions and warnings in other sections where appropriate to operations described.

1.6.7.4. Part IV-Preventive Maintenance

Part IV shall contain a troubleshooting guide, including detailed instructions for all common adjustments and alignment procedures, including a detailed maintenance schedule. Also include a diagnostic chart showing symptoms and solutions to problems. Include test hookups to determine the cause, special tools and test equipment, and methods for returning the equipment to operating conditions. Information may be in chart form or in tabular format with appropriate headings. Include instructions for the removal, disassembly, repair, reassembly, and replacement of parts and assemblies where applicable and the task is not obvious.

1.6.7.5. Part V-Spare Parts List

Part V shall contain a tabulation of description data and parts location illustrations for all mechanical and electrical parts. The heading of the parts list shall clearly identify the supplier, purchase order number, and equipment. Include the unit price for each part. List parts by major assemblies, and arrange the listing in columnar form. Include names and addresses of the nearest manufacturer's representatives, as well as any special warranty information. Provide a list of spare parts that are recommended to be kept in stock by the Government installation.

1.6.7.6. Part VI-Illustrations

Part VI shall contain assembly drawings for the complete equipment or system and for all major components. Include complete wiring diagrams and schematics. Other illustrations, such as exploded views, block diagrams, and cutaway drawings, are required as appropriate.

1.6.8. Framed Instructions

Post framed instructions are required for substantial completion. Post framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, including equipment, ductwork, piping valves, dampers, and control sequence at a location near the equipment described. Prepare condensed operating instructions explaining preventive maintenance procedures methods of checking the system for normal safe operation, valve schedule and procedures for safely starting and stopping the system in type form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. Submit proposed diagrams, instructions, and other sheets prior to posting. Post the framed instructions before field training.

1.6.9. (Reserved. See 1.7 for Field Training)

1.6.10. System/Equipment Requirements

1.6.10.1. Facility Heating System

Provide information on the following equipment: boilers, water treatment, chemical feed pumps and tanks, converters, heat exchangers, pumps, unit heaters, fin-tube radiation, air handling units (both heating only and heating and cooling), and valves (associated with heating systems).

1.6.10.2. Air-Conditioning Systems

Provide information in chillers, packaged air-conditioning equipment, towers, water treatment, chemical feed pumps and tanks, air-cooled condensers, pumps, compressors, air handling units, and valves (associated with air-conditioning systems).

1.6.10.3. Temperature Control and HVAC Distribution Systems

Provide all information described for the following equipment: valves, fans, air handling units, pumps, boilers, converters and heat exchangers, chillers, water cooled condensers, cooling towers, and fin-tube radiation, control air compressors, control components (sensors, controllers, adapters and actuators), and flow measuring equipment.

1.6.10.4. Central Heating Plants

Provide the information described for the following equipment: boilers, converters, heat exchangers, pumps, fans, steam traps, pollution control equipment, chemical feed equipment, control systems, fuel handling equipment, de-aerators, tanks (flash, expansion, return waters, etc.), water softeners, and valves.

1.6.10.5. Heating Distribution Systems

Provide the information described for the following equipment: valves, fans, pumps, converters and heat exchangers, steam traps, tanks (expansion, flash, etc.), and piping systems.

1.6.10.6. Exterior Electrical Systems

Provide information on the following equipment: power transformers, relays, reclosers, breakers, and capacitor bank controls.

1.6.10.7. Interior Electrical Systems

Provide information on the following equipment: relays, motor control centers, switchgear, solid state circuit breakers, motor controller, EPS lighting systems, wiring diagrams and troubleshooting flow chart on control systems, and special grounding systems.

1.6.10.8. Energy Monitoring and Control Systems

The maintenance manual shall include descriptions of maintenance for all equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components.

1.6.10.9. Domestic Water Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentation, laboratory test equipment, chemical feeders, valves, switching gear, and automatic controls.

1.6.10.10. Wastewater Treatment Systems

Provide the identified information on the following equipment: tanks, unit process equipment, pumps, motors, control and monitoring instrumentations, laboratory test equipment chemical feeders, valves, scrapers, skimmers, comminutors, blowers, switching gear, and automatic controls.

1.6.10.11. Fire Protection Systems

Provide information on the following equipment: alarm valves, manual valves, regulators, foam and gas storage tanks, piping materials, sprinkler heads, nozzles, pumps, and pump drivers.

1.6.10.12. Fire Alarm and Detection Systems

(1) The maintenance manual shall include description of maintenance for all equipment, including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

(2) Provide all software; database with complete identification of programmable portions of system equipment and devices, and all other system programming data on all modes of the system; connecting cables; and proprietary equipment necessary for the operation, maintenance, testing, repair and programming, etc. of the system and that may be required for implementation of future changes to the fire system (additional and/or relocated initiating devices, notification devices, etc.

(3) Provide all system and equipment technical data and computer software with the requisite rights to Government use, in accordance with the applicable contract clauses.

(4) Training shall include software and programming required for the effective operation, maintenance, testing, diagnostics and expansion of the system.

1.6.10.13. Plumbing Systems

Provide information on the following equipment: water heaters, valves, pressure regulators backflow preventors, piping materials, and plumbing fixtures.

1.6.10.14. Liquid Fuels Systems

Provide information on the following equipment: tanks, automatic valves manual valves, filter separators, pumps, mechanical loading arms, nozzles, meters, electronic controls, electrical switch gear, and fluidic controls.

1.6.10.15. Cathodic Protection Systems

Provide information on the following material and equipment: rectifiers, meters, anodes, anode backfill, anode lead wire, insulation material and wire size, automatic controls (if any), rheostats, switches, fuses and circuit breakers, type and size of rectifying elements, type of oil in oil-immersed rectifiers, and rating of shunts.

1.6.10.16. Generator Installations

Provide information on the following equipment: generator sets, automatic transfer panels, governors, exciters, regulators starting systems, switchgear, and protective devices.

1.6.10.17. Miscellaneous Systems

Provide information on the following: communication and ADP systems, security and intrusion alarm, elevators, material handling, active solar, photovoltaic, nurse call, paging, intercom, closed circuit TV, irrigation, sound and material delivery systems, kitchen, refrigeration, disposal, ice making equipment, and other similar type special systems not otherwise specified.

1.6.10.18. Laboratory, Environmental and Pollution Control Systems

Provide information on the following equipment: wet scrubbers, quench chambers, scrub tanks, liquid oil separators, and fume hoods.

1.7. FIELD TRAINING

Field Training is a requirement for substantial completion. Conduct a training course for the operating staff for each particular system. Conduct the training is to be conducted during hours of normal working time after the system is functionally complete. The field instructions shall cover all of the items contained in the Equipment Operating, Maintenance and Repair Manuals. The training will include both classroom and "hands-on" training. Submit a lesson plan outlining the information to be discussed during training periods. Submit this lesson plan for approval 90 days before contract completion before the field training occurs. Record training on DVD and furnish to the Government within ten (10) days following training. Document all training and furnish a list of all attendees.

1.8. PRICING OF CONTRACTOR-FURNISHED AND INSTALLED PROPERTY AND GOVERNMENT-FURNISHED CONTRACTOR-INSTALLED PROPERTY

Promptly furnish and require any sub-contractor or supplier to furnish, in like manner, unit prices and descriptive data required by the Government for Property Record purposes of fixtures and equipment furnished and/or installed by the Contractor or sub-contractor, except prices do not need to be provided for Government-Furnished Property.

1.9. LEED REVIEW MEETINGS

1.9.1. Pre-Closeout Meeting. Approximately 30 days before submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the documentation, determine which, if any, credits will be audited and identify any corrections/missing items prior to the closeout LEED documentation submittal.

1.9.2. Approximately 14 days after submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including Installation representative) will meet to review the LEED closeout documentation. The review conference will include discussion of and resolution of all review comments to ensure consensus on achievement of credits and satisfactory documentation. At the review conference a final score will be determined and endorsed in writing by all parties.

1.10. RED ZONE MEETING

At approximately 80% of contract completion or 60 days before the anticipated Beneficial Occupancy Date (BOD), whichever occurs first, the Contractor and the Government's project delivery team will conduct what is known as the Red Zone Meeting to discuss the close-out process, to schedule the events and review responsibilities for actions necessary to produce a timely physical, as well as fiscal, project close-out. The Red Zone meeting derives its name from the football term used to describe the team effort to move the ball the last 20 yards into the end zone. The close-out of a construction project sometimes can be equally as hard and most definitely requires the whole team’s efforts. The ACO will chair the meeting. If not already provided, shortly before the meeting, the Contractor shall provide an electronic copy or access to the CADD as-built drawings, completed commensurate with the amount of work completed at the time of the Red Zone Meeting, as an indicator of the Contractors’ understanding of and ability to meet the USACE CADD Standards and to ensure that the Contractor is making progress with CADD As-Built requirements. EXHIBIT 1 is a generic meeting checklist.

1.11. FINAL CLEANING

Clean the premises in accordance with FAR clause 52.236-12 and additional requirements stated here. Remove stains, foreign substances, and temporary labels from surfaces. Vacuum carpet and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or replace filters of operating equipment if cleaning isn't possible or practicable. Remove debris from roofs, drainage systems, gutters, and downspouts. Sweep paved areas and rake clean landscaped areas. Remove waste, surplus materials, and rubbish from the site. Remove all temporary structures, barricades, project signs, fences and construction facilities. Submit a list of completed clean-up items on the day of final inspection.

1.12. INTERIM FORM DD1354 "TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Near the completion of Project, but a minimum of 60 days prior to final acceptance of the work, complete, update draft provided with the final design package(s) (see Section 01 33 16, paragraph 3.7.5) and submit an accounting of all installed property on Interim Form DD1354 "Transfer and Acceptance of Military Real Property." Include any additional assets/improvements/alterations and cost updates from the Draft DD Form 1354. Contact the COR for any project specific information necessary to complete the DD Form 1354. This form will be a topic for the Red Zone Meeting discussed above. For information purposes, a blank DD Form 1354 (fill-able) in ADOBE (PDF) may be obtained at the following web site: http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1354.pdf Submit the completed Checklist for Form DD1354 of Government-Furnished and Contractor-Furnished/Contractor Installed items. Attach this list to the updated DD Form 1354. Instructions for completing the form may be obtained through the US Army Corps of Engineers TECHINFO Website at http://www.hnd.usace.army.mil/techinfo/ under publications, in Unified Facilities Criteria UFC 1-300-08.

EXHIBIT 1

SAMPLE

Red Zone Meeting Checklist

Date:_____

Contract No.	
Description / Location	
Contractor	
Contracting Officer	

Action	**Completion Milestone**	√
Inspections		
Fire		
Safety		
Pre-final		
Mechanical Test & Balance		
Commissioning		
Landscaping Complete		
Erosion Control		
Beneficial Occupancy Date (BOD)		
Furniture Installation		
Comm Installation		
As-Built Drawings		
Provide all O&M manuals, tools, shop drawings, spare parts, etc. to customer		
Training of O&M Personnel		
Provide Warranty documents to Customer		
Contract completion		
Final Inspection		

User move-in		
DD Form 1354, Transfer of Real Property completed & signed		
Ribbon cutting		
Payroll Clearances		
DD Form 2626 - Construction Contractor Performance Evaluation		
DD Form 2631 – A-E Performance Rated after Construction		
Status of Pending Mods and REA's/Claims		
Final Payment Completed		
Release of Claims		
Return of Unobligated Funds		
Move Project from CIP to General Ledger		
Financial completion		

End of Section 01 78 02.00 10

APPENDIX L

LEED Project Credit Guidance (DEC 10)

This spreadsheet indicates Army required credits, Army preferred credits, project-specific ranking of individual point preferences, assumptions guidance for individual credits, and references to related language in the RFP for individual credits.

LEED Credit Paragraph	LEED Project Credit Guidance	**Army Guidance:** Required - Preferred - Avoid	**Project Preference Ranking**: (1=most preferred, blank=no preference, X=preference not applicable to this credit, Rqd=required)	
PAR	**FEATURE**			**REMARKS**
SUSTAINABLE SITES				
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
SS1	Site Selection		X	See paragraph LEED CREDITS COORDINATION.

SS2	Development Density & Community Connectivity - OPTION 1 DENSITY		X	See paragraph LEED CREDITS COORDINATION.
	Development Density & Community Connectivity - OPTION 2 CONNECTIVITY		X	See paragraph LEED CREDITS COORDINATION.
SS3	Brownfield Redevelopment		X	See paragraph LEED CREDITS COORDINATION.
SS4.1	Alternative Transportation: Public Transportation Access		X	See paragraph LEED CREDITS COORDINATION.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	Pref	1	Assume that non-transient building occupants are NOT housed on Post unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 1			Requires provision of vehicles, which cannot be purchased with construction funds. Assume Government will not provide vehicles unless indicated otherwise. Assume that 50% of GOV fleet is NOT alternative fuel vehicles unless indicated otherwise.
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 2	Pref	1	
SS4.3	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles - OPTION 3			Requires provision of vehicle refueling stations. Installation must support type of fuel and commit to maintaining/supporting refueling stations.
SS4.4	Alternative Transportation: Parking Capacity	Pref		

SS5.1	Site Development: Protect or Restore Habitat			
SS5.2	Site Development: Maximize Open Space	Pref	1	Assume AGMBC option for aggregated open space at another location on the installation is not available to the project unless indicated otherwise.
SS6.1	Stormwater Design: Quantity Control	Pref	1	See paragraph STORMWATER MANAGEMENT.
SS6.2	Stormwater Design: Quality Control	Pref		See paragraph STORMWATER MANAGEMENT.
SS7.1	Heat Island Effect: Non-Roof	Pref.	1	
SS7.2	Heat Island Effect: Roof	Pref		Coordinate with nearby airfield requirements, which may preclude this credit.
SS8	Light Pollution Reduction	Pref		
WATER EFFICIENCY				
WEPR1	Water Use Reduction (Version 3 only)	Rqd	Rqd	All LEED prerequisites are required to be met.
WE1.1	Water Efficient Landscaping: Reduce by 50%	Pref	1	See paragraph IRRIGATION. Project must include landscaping to be eligible for this credit.
WE1.2	Water Efficient Landscaping: No Potable Water Use or No Irrigation	Avoid		Project must include landscaping to be eligible for this credit.
WE2	Innovative Wastewater Technologies - OPTION 1			
WE2	Innovative Wastewater Technologies - OPTION 2			
WE3	Water Use Reduction	Pref		See paragraph BUILDING WATER USE REDUCTION.

ENERGY AND ATMOSPHERE				
EAPR1	Fundamental Commissioning of the Building Energy Systems (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR2	Minimum Energy Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EAPR3	Fundamental Refrigerant Management (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EA1	Optimize Energy Performance	Rqd	Rqd	Earning of LEED EA1 points as indicated in paragraph ENERGY CONSERVATION, as a minimum, is required.
EA2.1	On-Site Renewable Energy	Pref		See paragraph ENERGY CONSERVATION.
EA3	Enhanced Commissioning	Rqd	Rqd	See paragraph COMMISSIONING. The Commissioning Authority may be provided through the Design-Build Contractor only if in accordance with USGBC Credit Interpretation Ruling (CIR) dated 9/15/06. Commissioning Authority activities begin during design phase and continue well beyond beneficial occupancy. Assume Government will not provide CxA post-occupancy activities unless indicated otherwise.
EA4	Enhanced Refrigerant Management	Pref	X	
EA5	Measurement & Verification	Rqd	Rqd	Assume Government will not provide post-occupancy activities unless indicated otherwise.
EA6	Green Power		X	See paragraph LEED CREDITS COORDINATION.

MATERIALS AND RESOURCES				
MRPR1	Storage & Collection of Recyclables (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Coordinate with Installation during design development on collection service and receptacles.
MR1	Building Reuse		X	
MR2.1	Construction Waste Management: Divert 50% From Disposal	Pref	1	See paragraph CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT.
MR2.2	Construction Waste Management: Divert 75% From Disposal	Pref		
MR3	Materials Reuse		X	
MR4.1	Recycled Content: 10% (post-consumer + 1/2 pre-consumer)	Pref		See paragraph RECYCLED CONTENT.
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	Pref	1	
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally	Pref		
MR5.2	Regional Materials:20% Extracted, Processed & Manufactured Regionally	Pref	1	

MR6	Rapidly Renewable Materials	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS and paragraph FEDERAL BIOBASED PRODUCTS PREFERRED PROCUREMENT PROGRAM.
MR7	Certified Wood	Pref		See paragraph BIOBASED AND ENVIRONMENTALLY PREFERABLE MATERIALS.
INDOOR ENVIRONMENTAL QUALITY				
EQPR1	Minimum IAQ Performance (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met.
EQPR2	Environmental Tobacco Smoke (ETS) Control (PREREQUISITE)	Rqd	Rqd	All LEED prerequisites are required to be met. Assume all buildings are smoke free unless indicated otherwise (family housing, barracks and other lodging are facility types where smoking may be permitted in some cases). Except where indicated otherwise, provide an outdoor designated smoking area (with signage but no structure) which will be at least 50 feet from common points of ingress/egress, building air intakes and operable windows. Designated smoking area will not be located in an area that is commonly used by nonsmokers.
EQ1	Outdoor Air Delivery Monitoring	Pref		
EQ2	Increased Ventilation			
EQ3.1	Construction IAQ Management Plan: During Construction	Pref	1	See paragraph CONSTRUCTION IAQ MANAGEMENT.
EQ3.2	Construction IAQ Management Plan: Before Occupancy	Pref	1	See paragraph CONSTRUCTION IAQ MANAGEMENT.

EQ4.1	Low Emitting Materials: Adhesives & Sealants	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.2	Low Emitting Materials: Paints & Coatings	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.3	Low Emitting Materials: Carpet/Flooring Systems	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ4.4	Low Emitting Materials: Composite Wood & Agrifiber Products	Pref		See paragraph LOW-EMITTING MATERIALS.
EQ5	Indoor Chemical & Pollutant Source Control	Pref		System requiring weekly cleaning to earn this credit is not a permitted option unless indicated otherwise.
EQ6.1	Controllability of Systems: Lighting			
EQ6.2	Controllability of Systems: Thermal Comfort			
EQ7.1	Thermal Comfort: Design	Rqd		See paragraph HEATING, VENTILATING AND AIR CONDITIONING.
EQ7.2	Thermal Comfort: Verification		X	Project must earn credit EQ7.1 to be eligible for this credit. Assume Government will not provide post-occupancy activities unless indicated otherwise.
EQ8.1	Daylight & Views: Daylight 75% of Spaces	Pref		See paragraph DAYLIGHTING.
EQ8.2	Daylight & Views: Views for 90% of Spaces	Pref		
INNOVATION & DESIGN PROCESS				
IDc1.1	Innovation in Design			See paragraph INNOVATION AND DESIGN CREDITS. Assume Government will not provide any activities associated with ID credits.
IDc1.2	Innovation in Design			
IDc1.3	Innovation in Design			
IDc1.4	Innovation in Design			
IDc2	LEED Accredited Professional	Rqd	Rqd	LEED AP during design

				and construction is required.
REGIONAL PRIORITY CREDITS (Version 3 only)		Pref.		See paragraph LEED CREDITS COORDINATION.

Owner's Project Requirements Document for LEED Fundamental Commissioning

Project: UEPH / Barracks Facilities

Approved: _____ _____ _____
Name Owner's Representative Date

_____ _____ _____
Name Design Agent's Representative Date

Overview and Instructions

The purpose of this document is to provide clear and concise documentation of the Owner's goals, expectations and requirements for commissioned systems, and shall be utilized throughout the project delivery and commissioning process to provide an informed baseline and focus for design development and for validating systems' energy and environmental performance.

The Owner's Project Requirements Document is a required document for LEED Version 3.0 EA Prerequisite 1, Fundamental Commissioning of the Building Energy Systems. It shall be completed by the Corps District/Design Agent based on coordination with the Installation/User/Proponent and shall be approved by the Installation/User/Proponent representative.

Use of this template is not required, nor are there any restrictions on editing of it. It is provided simply as a tool to assist project teams in meeting the documentation requirements for LEED Fundamental Commissioning. The intent of the Owner's Project Requirements Document, per the LEED v3.0 Reference Guide, is to detail the functional requirements of a project and the expectations of the building's use and operation as it relates to commissioned systems. This template contains the basic recommended components indicated in the LEED v3.0 Reference Guide. It should be adapted as needed to suit the project, remaining reflective of the LEED intent.

The Owner's Project Requirements Document should ideally be completed before the start of design and furnished to the design team. It must be completed prior to the approval of Contractor submittals of any commissioned equipment or systems to meet LEED requirements.

Updates to the Owner's Project Requirements Document throughout the course of project delivery shall be made by the Corps District/Design Agent based on decisions and agreements coordinated with and agreed to by the Installation/User/Proponent.

The Owner's Project Requirements Document shall be included in the project's LEED documentation file under EA PR1, Fundamental Commissioning of the Building Energy Systems.

Owner's Project Requirements Document for LEED Fundamental Commissioning

Table of Contents

1. Owner and User Requirements
   - Primary Purpose, Program and Use
   - Project History
   - Broad Goals
2. Environmental and Sustainability Goals
   - Energy Efficiency Goals
   - General
   - Siting
   - Building Façade
   - Building Fenestration
   - Building Envelope
   - Roof
   - Other
3. Indoor Environmental Quality Requirements
   - Intended Use
   - Occupancy Schedule
   - Accommodations for After-Hours Use
   - Lighting, Temperature, Humidity, Air Quality, Ventilation, Filtration
   - Acoustics
   - Occupant Ability to Adjust System Controls
   - Types of Lighting
4. Equipment and Systems Expectations
   - Space Heating
   - Ventilation
   - Air Conditioning
   - Refrigeration
   - HVAC Controls
   - Domestic Hot Water
   - Lighting Controls
   - Daylighting Controls
   - Emergency Power
   - Other
5. Building Occupant and O&M Personnel Requirements
   - Facility Operation
   - EMCS
   - Occupant Training and Orientation
   - O&M Staff Training and Orientation

TABLE 1

1. *Owner and User Requirements*

What is the primary purpose, program and use of this project? (example: office building with data center)

The 13th CAB Barracks project will provide Unaccompanied Enlisted Personnel Housing (UEPH) facilities for soldiers assigned to the 13th CAB at Ft Carson. These facilities will house single soldiers and is intended to be similar both functionally and technically to similar type housing in the private sector community surrounding the installation.

Describe pertinent project history. (example: standard design development)

Current standard was developed for an entire battalion complex including barracks, office, classroom, dining and outdoor training spaces in 2000 with mandatory floor plans and site plans. Minor changes were made in 2005 and in 2006 it was revised to delete many mandatory features to reduce project cost. Barracks floor plan remains mandatory. All complexes are sized for one battalion.

Broad Goals

What are the broad goals relative to program needs?

To provide economical, standardized facilities that meet the basic functional needs of units.

What are the broad goals relative to future expansion?

Due to the every changing military requirements the facilities shall be designed and constructed with future reconfiguration and expansion of the typical barracks module in mind.

What are the broad goals relative to flexibility?

Open, flexible structural design for module bays. With ability to subdivide sleeping bays to accommodate unit or gender ratio variations.

What are the broad goals relative to quality of materials?

Barracks spaces receive very heavy use. Common area interior spaces, receive a good deal of muddy boot traffic, abuse and need to be easy to keep clean. Maximum durability within budget.

What are the broad goals relative to construction costs?

Facility must meet budget.

What are the broad goals relative to operational costs?

Meet EPACT 05 (reduced water, energy consumption). Minimize operating costs as much as possible within first cost budget.

Other broad goals: *(Insert as applicable)*

To provide essentially the same functional facility at all locations (site-adapt) to the extent possible to facilitate unit mobility and to reduce repetitive design costs.

To reduce construction time to 18 months.

2. Environmental and Sustainability Goals

What are the project goals relative to sustainability and environmental issues? (example: LEED Silver rating)

LEED Silver rating.

What are the project goals relative to energy efficiency? (example:)

What are the project goals and requirements for building siting that will impact energy use?

Facilities may be site-adapted nationwide. Consistent building orientation cannot be expected. Variations in availability of fuel sources. Special local requirements are indicated in Paragraph 6 of Section 01 10 00.

What are the project goals and requirements for building facade that will impact energy use?

Facilities may be site-adapted nationwide. Exterior appearance will vary to be compatible with adjoining environment's architectural theme and availability of materials. Special local requirements are indicated in Paragraph 6 of Section 01 10 00.

What are the project goals and requirements for building fenestration that will impact energy use?

Facilities may be site-adapted nationwide. Fenestration will vary to be compatible with adjoining environment's architectural theme. Consistent building orientation cannot be expected. Antiterrorism/Force Protection criteria (UFC 4-010-01) requires laminated glass and heavy duty frame.

What are the project goals and requirements for building envelope that will impact energy use?

As indicated in SOW section 01 10 00. Antiterrorism/Force Protection criteria (UFC 4-010-01) are required. Special local requirements are indicated in Paragraph 6 of Section 01 10 00.

What are the project goals and requirements for building roof that will impact energy use?

Special local requirements are indicated in Paragraph 6 of Section 01 10 00.

Other: *(Insert as applicable)*

_____

_____

_____

3. Indoor Environmental Quality Requirements

What is the intended use for all spaces? For all spaces that have an intended use that is not readily apparent from the space name, provide this information in Table 1.

_____

_____

_____

What is the anticipated occupancy schedule (numbers of occupants and time frames) for all occupied spaces? Indicate the default occupancy schedule below and for all spaces that have an occupancy schedule that differs from the default, provide this information in Table 1.

Occupancy and facility usage schedule is as indicated in Section 01 10 00 Functional Requirements.

What accommodations for after-hours use are required? (example: access control, lighting controls, HVAC controls) Indicate general accommodations required below and for all spaces that have special requirements, provide this information in Table 1.

Supervised monitoring of building. Lights manually controlled in barracks areas. Common use areas have automatic lighting controls with manual override as necessary.

What are the lighting, temperature, humidity, air quality, ventilation and filtration requirements for all spaces? Indicate the default requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

Lighting: IESNA Lighting Handbook, ASHRAE 90.1 (ASHRAE 90.1 does not apply to residential). See section 6.12 of paragraph 6.

Temperature: See Table 5-1 in Section 01 10 00 of RFP.

Humidity: 50%

Air Quality: ASHRAE 62.1

Ventilation: ASHRAE 62.1

Filtration: _____

What are the acoustical requirements for all spaces? Indicate the default acoustical requirements below and for all spaces that have a requirement that differs from the default, provide this information in Table 1.

As indicated in Section 01 10 00 of RFP.

What is the desired level of occupant ability to adjust systems controls? Indicate the default desired levels below and for all spaces that have a desired level that differs from the default, provide this information in Table 1.

Lighting: On/off control in sleeping bays. Automatic controls elsewhere. Dimming as indicated in Section 01 10 00 of RFP.

Temperature: No occupant adjustment.

Humidity: No occupant adjustment.

Air Quality: No occupant adjustment.

Ventilation: No occupant adjustment.

What, if any, specific types of lighting are desired? (example: fluorescent in 2x2 grid, accent lighting, particular lamps)

None

4. Equipment and System Expectations

(Complete for each category as applicable or indicate "none identified" or "N/A". Add desired features information for other anticipated commissioned systems as applicable)

Indicate desired features for the following commissioned system: Space Heating.

Desired Type: None Identified

Quality: _____

Preferred Manufacturer: N/A

Reliability: _____

Automation: Automatically controlled through Building Automation System (BAS).

Flexibility:

Maintenance Requirements: _____

Efficiency Target: Comply with ASHRAE 90.1

Desired Technologies: _____

Indicate desired features for the following commissioned system: Ventilation

Desired Type: None identified.

Quality: Comply with ASHRAE 62.1.

Preferred Manufacturer: N/A.

Reliability: _____

Automation: Automatically controlled through Building Automation System (BAS).

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: Energy Recovery

Indicate desired features for the following commissioned system: Air Conditioning.

Desired Type: None identified.

Quality: _____

Preferred Manufacturer: N/A

Reliability: _____

Automation: Automatically controlled through Building Automation System (BAS).

Flexibility: See Section 01 10 00 regarding split bays.

Maintenance Requirements: _____

Efficiency Target: Comply with ASHRAE 90.1.

Desired Technologies: Economizer cycle.

Indicate desired features for the following commissioned system: Refrigeration.

Desired Type: None identified.

Quality: _____

Preferred Manufacturer: _____

Reliability: Total building cooling load split between two units if a central system is utilized.

Automation: Automatically controlled through Building Automation System (BAS).

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: Comply with ASHRAE 90.1

Desired Technologies: None identified.

Indicate desired features for the following commissioned system: HVAC Controls.

Desired Type: LonWorks Technology.

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Domestic Hot Water.

Desired Type: None identified.

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: Standard Manufacturer's Controls, Return Water Recirculation.

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: Compliant with ASHRAE 90.1.

Desired Technologies: _____

Indicate desired features for the following commissioned system: Lighting Controls.

Desired Type: As indicated in Section 01 10 00.

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Desired Technologies: As indicated in Section 01 10 00.

Indicate desired features for the following commissioned system: Daylighting Controls.

Desired Type: Not required.

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Emergency Power.

Desired Type: Not required.

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: _____

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

Indicate desired features for the following commissioned system: Other – Plumbing.

Desired Type: _____

Quality: _____

Preferred Manufacturer: _____

Reliability: _____

Automation: _____

Flexibility: Tempering valves to handle wide demand fluctuations.

Maintenance Requirements: _____

Efficiency Target: _____

Desired Technologies: _____

5. Building Occupant and O&M Personnel Requirements

How will the facility be operated? Who will operate the facility? By DPW contractor.

Will the facility be connected to an EMCS? If so, what are the interface requirements? (example: monitoring points, control points, scheduling) As indicated in Section 01 10 00

What is the desired level of training and orientation for building occupants to understand and use the building systems? Minimal for occupants.

What is the desired level of training and orientation for O&M staff to understand and maintain the building systems? As indicated in Section 01 78 02.00 10.

APPENDIX N
LEED Requirements for Multiple Contractor Combined Projects

Not Used

This page was intentionally left blank for duplex printing.

APPENDIX O
LEED Strategy Tables

Not Used

This page was intentionally left blank for duplex printing.

APPENDIX T
FUNCTIONAL AREA LIGHTING CONTROL STRATEGY (FALCS)

A. GENERAL LIGHTING CONTROL SYSTEM ENERGY MANAGEMENT STRATEGIES

SUMMARY: This appendix describes various lighting energy management strategies to utilize across functional areas. These strategies are intended to supplement and NOT supersede the requirements of ASHRAE 90.1.

1. Consider LIGHT LEVEL TUNING to maintain the appropriate light level for a given space. Initial light levels are set high to compensate for light depreciation over time. Where dimming ballasts or dimmable LED drivers are used, they shall be digital and addressable in nature (where available) that can provide individual fixture light level tuning and reconfigurability that dims the light level to the target level, saving the energy that otherwise would be used to compensate for future light depreciation. Provide a life-cycle cost-benefit analysis (LCCBA) of light level tuning for all spaces where the general lighting luminaires are equipped with digital addressable dimming ballasts or LED drivers. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide light level tuning where the LCCBA shows it to be economical.

2. Use OCCUPANCY/VACANCY SENSORS to automatically turn off lighting a specified time after all occupants leave the space. The off time shall be adjustable settable to 1, 5, 15, or 30 minutes. Select the type (single or dual technology, wired or wireless) based on the use and configuration of the space. Lighting control system shall have the capability to manage both hard-wired and wireless sensors where applicable. Single technology solutions shall incorporate signal processing technology that distinguishes between background noise and actual motion without automatically changing their sensitivity threshold. To maximize energy savings potential, all occupancy sensors shall be either MANUAL ON – AUTOMATIC OFF (vacancy sensor) or AUTOMATIC ON (to a specified light level of 50% or less) – AUTOMATIC OFF to maximize energy savings. Occupancy/Vacancy sensors properly located in the space and set appropriately can offer typical lighting energy savings of 15% or more.

3. Use DAYLIGHT HARVESTING to control lighting in areas within at least two window head heights (head height is the distance from the floor to the top of the glazing) adjacent to exterior view windows. Typical daylight penetrates three times the window head height into the space. To maximize energy savings, daylight dimming strategies need to penetrate beyond the first row of luminaires (first daylight zone). When daylighting installed fluorescent or LED luminaires, accomplish daylight harvesting by digitally addressable dimming ballasts or drivers. As the natural light in the space increases, the artificial light level should dim gradually to maintain a uniform light level and prevent disruption to the occupants. One daylight sensor must be able to control multiple daylighting zones (cross-zoning) without the need of adding more sensors. All controls (daylight sensors, occupancy sensors, wall stations) shall have the capability to connect to the system via hard wire or wireless. Apply the same daylighting strategies to areas where skylights are available (refer to ASHRAE 189.1 daylight zone definitions). Daylighting systems properly tuned and calibrated can offer typical lighting energy savings of 15% or more.

4. Consider AUTOMATED SHADING in spaces utilizing daylight harvesting to maximize the energy savings of the day lighting system. The shades shall be controlled to reduce glare and unwanted heat gain while still allowing natural light to enter the space. When utilizing automated shading consider the following :

   A. For ease of use and space aesthetics, operate the automated shades by common controls, wired or wireless (i.e. same appearance and design) with the lighting control system.
   B. For maximum energy savings the automated shading system shall predictably position the shades based on a combination of time of day, façade direction, and sky conditions.
   C. For maximum design flexibility and ease of installation, shade system should have the capability to address and control each shade individually.
   D. The shading system shall have a manual override that allows the occupant to temporarily adjust the shades to any desired position. The system will revert back to automatic control after a specified period of time.

   Provide a life-cycle cost-benefit analysis (LCCBA) of automated shading for all spaces where daylight harvesting is provided. The LCCBA shall follow the methodology contained in the IESNA Lighting Handbook. Provide automated shading where the LCCBA shows it to be economical.

5. Use SCENE BASED DIMMING in multiple-use areas including auditoriums, conference rooms and classrooms. Also provide scene based dimming in dining rooms and gymnasiums with multiple functions. One button preset touch recall shall allow multiple zones of light within a space to go to the appropriate light levels, known as a scene, for a specific task or use. Scene based control shall allow the integration of AV controls, shading/projection screens and lighting to work seamlessly with one button preset touch (i.e. lights dim, projection screen lowers, and shades go down). If dimming ballasts or LED drivers are used, they shall also be digital and addressable in nature (where available) to take advantage of installation and life-cycle reconfiguration benefits.

6. Provide PERSONAL CONTROL of lighting in spaces to allow the user of the space to vary the general light level based on the task at hand. Personal control can be achieved by wall mounted controls (hard wired or wireless), Infrared or Radio Frequency (RF) wireless devices, or via computer. Digital addressable ballasts and LED drivers allow the control flexibility of personal dimming of installed lighting on the occupant's work area (i.e. dim the luminaire over their cubicle to the appropriate light level).

7. Consider WIRELESS lighting control options for all installations, including retrofit projects (easy installation, lower installed cost, no power packs necessary). Wireless products shall include but not be limited to occupancy / vacancy sensors, daylight sensors, local wall controls, plug in switching and dimming appliance and parasitic load modules. To avoid interference, wireless products should communicate in an FCC frequency band that does not allow continuous transmissions and is free of Wi-Fi devices.

B. FUNCTIONAL TESTING AND MANUFACTURER SUPPORT

SUMMARY: This section describes functional testing to be performed on the lighting control system and the support required from the lighting control manufacturer.

1. Hire an independent agent with no less than three years experience in testing of complex lighting control systems to conduct and certify functional testing of lighting control devices and control systems. The testing agent shall not be directly involved in either the design or construction of the project and shall certify the installed lighting controls meet or exceed all requirements of ASHRAE 90.1 and all documented performance criteria. The lighting control manufacturer's authorized technical representative may serve as the testing agent. Submit qualifications of the testing agent for approval. Submit copies of test results to the Government.

2. LIGHTING CONTROL MANUFACTURER SUPPORT shall include technical phone support located in the United States. The technical phone support shall be available 24 hours a day, 365 days a year.

This page was intentionally left blank for duplex printing.

This document is included in the RFP to provide guidance to the Contractor in providing the required documentation of LEED implementation of the project.

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.

FOREST STEWARDSHIP COUNCIL (FSC)

FSC STD 01 001(2000) Principles and Criteria for Forest Stewardship

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED(2002; R 2009) Leadership in Energy and Environmental Design(tm) Green Building Rating System for New Construction (LEED-NC)

LEED Reference Guide(2007) LEED-NC Reference Guide for New Construction, version 3.0

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 Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

LEED Implementation Plan; G, PO

SD-11 Closeout Submittals

LEED Documentation Notebook; G, PO

1.3 DESCRIPTION

This project has been designed for, and as a minimum, shall be developed for a fully certified sustainable rating of Silver in accordance with LEED Version 3.0. Attached LEED Check List identifies the LEED credit items that are designed into or otherwise required for this project. No variations or substitutions to the LEED credits identified for this contract shall be allowed without written consent from the Contracting Officer. Should there be a case where there is any problem meeting the full requirements of a LEED credit identified for this project in the LEED Check List, the Contractor must bring this to the attention of the Contracting Officer immediately.

1.3.1 Credit Validation

This project has been registered with USGBC for validation of credits earned. Contractor is not responsible for registering the project with USGBC or for paying project registration fees to USGBC. Project LEED OnLine Administrator is Brian Nohr (Omaha District LEED Coordinator)

with the Omaha District. The contractor shall contact Brian to have the Contractor's staff and LEED AP added to the project TEAM. The contractor shall provided a LEED AP to coordinate all Contractor Credit submittals, actives, meetings, and coordination and submission of all (Design and Construction) credits for certification. Format and content of all construction documentation must be in accordance with the LEED Reference Guide requirements for supporting data required for submission to USGBC and in the event of US Army audit of the particular credit or Federal Mandate. The contractor will be responsible for loading all construction documentation into the project directory templates on LEED OnLine. The Design Team will provide all documentation and load the ONLine templates for the Design Credits, but may need additional supporting information/documentation from the contractor, depending on credit. The Contractor is required to coordinate through the Contracting Officer with Government's Administrative Assistant on assuring assembled data is acceptable to USGBC and responding to USGBC requests for additional construction data in the course of seeking project certification. Approximately 90 days after Contract Award, most Design Credits will be ready for submission for approval by GBCI. Design Credits which are not ready will be placed in "deferred" status and will be submitted with the Construction review. The Contractors LEED AP will coordinate with the Design Team, review design credits for submittal compliance/Quality Check, and will submit the Design Credits to GBCI. Fees for the Design Submittal will be the responsibility of the contractor. The Contractor shall submit Construction Credits prior to 90 days after Beneficial Occupancy Date or on a date coordinated through the Contracting Officer and the District LEED Coordinator. The contractor will also be responsible for Construction submittal fees and USGBC/GBCI certification fees.

1.3.2 Contractor Responsibilities

Some LEED credits are inherent in the design provided and require no further submittal or documentation. For these credits, the Contractor shall notify the Contracting Officer in advance of selection of any specified material or use of any permissible construction methods that may result in a deviation from the LEED designer intent. Some LEED credits involve material selection and are generally identified within the technical sections with the notation "LEED," though not specifically identified in all occurrences. Some LEED credits are dependent on construction practices. Contractor shall coordinate and provided shop drawing submittal and other information necessary to complete Design Credits and to accurately update the facilities Energy Model which is managed by the Design Team.

All LEED credits identified in LEED Check List not inherent in the design provided shall be documented by the Contractor. The LEED Check List provides a general summary of applicable credits. Detailed submittal requirements are contained in the LEED Reference Guide and in the technical sections.

In all cases where a material, product, or execution requirement is identified by "LEED" in the contract documents, additional data or certificates shall be submitted with the individual component or process validating the material or component to the respective LEED credit item. These additional data or certificates shall be separable from the other submitted data and a copy shall be included in the LEED Documentation Notebook in addition to the distribution indicated in the submittal register.

1.3.3 Plaques and Certificates

Following the completion of the certification process, the contractor shall provide and install full sized clear sand blasted glass USGBC plaque to be mounted in the main lobby of the facility

with the location coordinated through the Post DPW. The plaque shall indicate the year and the level of certification achieved. The contractor shall order and deliver to the Contracting Officer the original copies of the certificates. Enough copies of the certificates shall be ordered to include a copy for each of the following team members; contractor, DPW, Omaha District Office, and the Area Engineer Office. The Contractor shall also install a framed copy of the certificate alongside the plaque with the contractors name and logo shown at the bottom in the mat border along with the Corps of Engineers Logo.

1.4 LEED IMPLEMENTATION PLAN

LEED Implementation Plan shall be submitted within 30 days after notice to proceed. The plan, when completed, shall provide a detailed description of all activities that relate to accomplishing project LEED requirements, including construction practices, procurement practices, and proposed submittals and documentation for each LEED credit. The plan shall include the project LEED Check List, a LEED narrative on how the contractor intends to implement LEED/Sustainable practices, LEED Schedule with LEED milestones, meetings, and role assignments. Provide names and phone numbers of key players. The plan shall also include the following:

a. Name of individuals on the Contractor's staff responsible for ensuring LEED credits and prerequisites are earned and responsible for assembling documentation. A responsible LEED Accredited Professional shall be identified.

b. Copy of proposed contract with Commissioning Agent.

c. Templates to be used for tracking LEED credits. Listing of documents to be provided for each credit and schedule for their inclusion in LEED Documentation Notebook.

d. List of all plans or sub-plans required in the technical sections for LEED credit. Proposed submittal date for each plan. These shall be added to the LEED Implementation Plan as they are completed. Sub-plans to include, but are not limited to: Waste Management Plan, Materials Purchasing Plan with 500 mile radius Map, Commissioning Plan, IAQ Plan, Erosion, Sedimentation, & Pollution Control Plan (part of the Environmental MGT Plan), and the Air Pollution Control Plan (part of the Environmental MGT Plan).

e. Implementation plan for cumulative materials credits, which shall use applicable template with proposed materials, associated estimated costs, and details necessary for LEED Calculations added in order to determine if the listed materials can be expected to achieve the project goal. Submit cumulative materials implementation plans before materials purchasing begins.

1.5 LEED DOCUMENTATION NOTEBOOK

The Contractor shall prepare a comprehensive notebook documenting compliance for each LEED credit identified in LEED Check List and sustainability/energy Federal Mandates not covered by LEED. LEED Documentation Notebook shall be formatted to match LEED numbering system and tabbed for each credit and prerequisite. LEED documentation in notebook shall contain up to date information through the previous month's work, and at least one set shall be available on the jobsite at all times. The Notebook may be maintained and available for reference electronically if preferred. Completed pages or templates shall be

prevented from being altered. If the Contractor fails to maintain the LEED Documentation Notebook as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the Notebook. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of the Notebook. The original, one copy, and 2 sets of the electronic version on CDs of the notebook/LEED OnLine templates, narratives, checklists, implementation plans, calculations, drawings, photos, federal mandate documentation, energy model, etc shall be submitted at project closeout with the as-builts.

1.5.1 Content

The Notebook shall include LEED Check List, LEED Narrative, completed templates,applicable product data for material selection, final calculations, energy model, certifications for construction practices, procurement data, High Performance Sustainable Building (HPSB) Checklist, cumulative calculations and other items as identified in the approved LEED Implementation Plan. Notebook must contain all required data to support full compliance with the indicated LEED credit and Federal Mandates. LEED credits that are inherent to the design will be documented by the designer of record. Contractor shall provide coordination and current information which is needed to maintain the HPSB Checklist. The Corps Field Representative will maintain the document and will request monthly updates from the contractor on the HPSB list item status. A copy of the project HPSB Checklist is attached.

1.5.2 LEED Calculations

Calculations showing compliance with a required LEED credit identified in LEED Check List or within the LEED Implementation Plan. Calculations shall be current and available for monthly review. Final calculations shall be included in the LEED Documentation Notebook under the appropriate tab. A paper copy and CD of the Final Energy Model shall be included in closeout documents.

1.5.3 Submittals

All "G" designated submittals required for inclusion in the LEED Documentation Notebook shall be separable from other submitted data and shall be included in the LEED Documentation Notebook in addition to the distribution indicated on the submittal register.

1.6 REQUIREMENTS

LEED credits as identified in LEED Check List shall be incorporated and documented as required by the Contract documents and in full compliance with the LEED Reference Guide. LEED credits not identified elsewhere in the Contract documents and those requiring further instruction are specified below. Refer to the LEED Reference Guide for further definitions and requirements.

1.6.1 Materials and Resources Credit 3, Materials Reuse

Project goal is that a minimum of (Contractor's option for the project) percent (by dollar value) of materials and products for the project are salvaged, refurbished, or reused materials and products. The following salvaged, refurbished, and reused materials are specified: Concrete, concrete rubble, and asphalt as tested or evaluated as suitable by the contractor in accordance

with design documents and with approval by contracting officer, see SECTION 01 62 35 RECYCLED / RECOVERED MATERIALS. Contractor shall track cumulative calculations for this credit. For this credit, performance is measured for the entire project.

1.6.2 Materials and Resources Credit 4, Recycled Content
Not withstanding the requirements of Section 01 62 35 RECYCLED/RECOVERED MATERIALS, Contractor shall select materials so that the sum of post-consumer recycled content value plus one-half of post-industrial recycled content value constitutes at least 10 percent of the total materials cost for the project. EPA Comprehensive Procurement Guidelines has a supplier database. California Integrated Waste Management Board (CIWMB) Recycled Content Directory also contains product and supplier data at www.ciwmb.ca.gov/rcp.

1.6.2.1 Calculations

LEED Letter Template forms shall be used for tracking and documentation. Recycled content value of project materials shall be determined by the method described in the LEED Reference Guide. For this credit, performance is measured for the entire project.

1.6.2.2 Substitutions

In the case of conflict between this requirement and individual technical section requirements, Contractor may submit for Government approval proposed alternative products or systems that provide equivalent performance and appearance and have greater contribution to project recycled content requirements. All such proposed substitutions shall be submitted with the LEED Implementation Plan accompanied by product data that demonstrates equivalence.

1.6.3 Materials and Resources Credit 5, Regional Materials
The contractor shall select materials so that a minimum of 40 percent (by dollar value) of materials and products for the project are extracted, harvested, or recovered, as well as manufactured, regionally within a 500 mile radius of the project site.

1.6.3.1 Calculations

LEED Letter Template forms shall be used for tracking and documentation. Amount of regional project materials shall be determined by the method described in the LEED Reference Guide. For this credit, performance is measured for the entire project.

1.6.4 Materials and Resources Credit 6, Rapidly Renewable Materials

A minimum of (as required to meet credit) percent (by dollar value) of materials and products for the project shall be rapidly renewable. This credit has been marked as "maybe" on the credit checklist and may be possible at contractor's option. Rapidly renewable materials are made from plants with a 10-year or shorter harvest cycle. Contractor shall track cumulative calculations for this credit. For this credit, performance is measured for the entire project.

1.6.5 Materials and Resources Credit 7, Certified Wood
The contractor shall select materials so that a minimum of 50 percent (by dollar value) of permanently installed wood-based materials and products for the project are certified in accordance with FSC STD 01 001.

1.6.5.1 Calculations

LEED Letter Template forms shall be used for tracking and documentation. Amount of FSC-certified project materials shall be determined by the method described in the LEED Reference Guide. For this credit, performance is measured for the entire project.

1.6.6 Indoor Environmental Quality Credit 4, Low Emitting Materials

Contractor shall select Low Emitting materials in accordance with LEED credit requirements for each material. The contractor shall provide as a minimum, the credits indicated in the project LEED Check List for project specific minimum requirements. The contractor shall coordinate with all sub-contractors and material suppliers the credit requirements and insure correct materials are being installed and documented on the project.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.1 COORDINATION MEETINGS

There will be three onsite coordination meetings. The first will be a preconstruction meeting to review the LEED Implementation Plan. The requirements for this meeting may be fulfilled during the coordination and mutual understanding meeting outlined in Section 01 45 00.00 10 QUALITY CONTROL. The second will be a pre-closeout meeting to review LEED Documentation Notebook for completeness and identify any outstanding issues relating to final score and documentation requirements. The third is a closeout meeting to review the final LEED Documentation Notebook. All meetings shall be attended by Contractor's designated individual responsible for LEED documentation, Government representative and Installation representative. At the closeout meeting a final score for the project will be determined based on submittal of project to USGBC for certification, and review of project performance and documentation for closeout conformance or thru government audit. The contractor shall make a set of contract drawings and specifications available for review at each meeting as well as an updated LEED Documentation Notebook.

3.2 LEED CHECKLIST and HPSB CHECKLIST

LEED credits as identified in the LEED Credit Checklist at the end of this section are contract requirements and shall be incorporated in full compliance with the LEED Reference Guide and the Guiding Principles for High Performance Sustainable Buildings and Major Renovations which implement Executive Order 13423 and EISA 2007 .

APPENDIX CC

Interior Lighting Design Criteria

	Design Criteria			Control Strategies				Technologies				Approach				
				Levels	Automatic Interface											
Space	Target Illuminance at Task [fc] (Design Goal)	Target Lighting Power Density [W/ft^2] (Project Design Goal)	Allowable Lighting Power Density [W/ft^2] (ASHRAE/IESNA Std 90.1-2004/2007)	Switching - (blank) Multi-Level - M Full Dimming - D	V - Vacancy [Manual ON / Auto OFF] O - Occupancy [Auto ON / Auto OFF]	Daylight (e.g. Photosensors)	Schedule (e.g. Astronomical time-clock)	Linear Fluorescent	Compact Fluorescent	Ceramic Metal Halide	Light Emitting Diodes	Overhead General Lighting	Overhead Ambient Lighting	Task Lighting	Wallwash / Perimeter Lighting	Adjustable Accent Lighting
Corridor	10	0.50	0.5		O			✓				•			•	
Living Quarters	5 - 30	0.60	1.1		V		⊙	✓	✓		✓	•	•	•		
Mechanical / Electrical	30	0.70	1.5		V			✓				•				
Restroom / Shower	20	0.80	0.9		V			✓	✓		✓	•			•	
Stair	10	0.50	0.6	M	O			✓				•				
Storage (General)	10	0.50	0.8		V			✓				•				•

Space	Lighting	Controls
Corridor		Occupancy sensors to reduce load to 25%-50% when vacancy is detected. Multi-Level ballasts may be appropriate in many cases
Living Quarters		Vacancy sensors in bathroom, kitchen, and each bedroom. Low-load night lights in bath vanity areas; Sensors also switch off selected plug loads.
Mechanical / Electrical	Locate luminaires relative to working areas and equipment	Dual-technology vacancy sensors with long time out
Restroom / Shower	Lighting over sink and toilet wall will often be enough for entire restroom	Dual-technology vacancy sensor
Stair	Locate luminaires to provide 10 fc at landings	Use bi-level luminaire with integrated occupancy sensor
Storage (General)	Locate and specify luminaires to light vertical surfaces	

BUILDING STRONG!

US Army Corps
of Engineers ®
Omaha District