

STATEMENT OF WORK
Architectural-Engineering Services

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1.0 INTRODUCTION

The Agricultural Research Service (ARS) uses two principal documents to establish contract requirements for Architectural-Engineering services for individual projects obtained through the issuance of fixed price task orders. One document is this *Statement of Work for A-E Services* and the other is the *Project Requirements* document.

This *Statement of Work for A-E Services* (SOW), which is typically included in the A-E's basic contract at the time of award, provides detailed information on A-E's responsibilities and standard requirements for document submissions.

The *Project Requirements* (PR) document is developed specifically for each project and is issued by the CO with the request for fee proposal for the ordered task. The PR document specifies specific services requested, provides a schedule for the contract deliverables, relates project budget information, outlines unique project needs, and establishes the distribution list for the submissions.

2.0 SCOPE OF WORK

2.1 General

The A-E shall provide all services necessary for the planning, design and construction of the proposed project. The types of A-E services to be provided under this contract include, but are not limited to, the following. The PR document (Attachment J.2) will identify specific services required by individual projects and obtained through the issuance of fixed price task orders.

- Surveys
- Soil borings
- Investigative reports/studies
- Industrial ventilation (stack emissions) study and prototypes
- Concept studies
- Environmental assessments and/or impact statements
- Physical security risk assessments and design
- Design criteria development
- Designs
- Telecommunication design
- Design Charette workshop
- Value engineering workshops
- Construction drawings

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- Construction specifications
- Cost estimates
- Bid phase services
- Shop drawings review and approval
- Construction monitoring
- Building inspections
- Design reviews
- Hazardous materials and substances abatement services
- Building commissioning

2.2 Working With Other Government Contractors

When the Government employs other contractors by separate contract, such as a construction manager, design reviewer, or other highly specialized consultants, etc., the A-E will be required as part of its contract services to cooperate fully with and assist the other contractors, and to coordinate the A-E's work with theirs. The A-E will also be required to keep the CO advised of design impacts by the other contractors.

2.3 Working With A Construction Manager At Risk (CMAR) -When required by the PR document (Attachment J.2)

The A-E may be required to work with a Construction Manager at Risk (CMAR) beginning at the pre-design phase and continuing through construction of a project, and will agree to accept the relationship of trust and confidence, and covenants with the Government, to furnish the requisite skill and judgment and to cooperate with the CMAR in furthering the interests of the Government.

The CMAR is the contractor selected to assist the Government in reviewing the design and managing the resultant construction project(s) whose emphasis will be on meeting goals relating to schedule, budget, scope and quality. The CMAR provides management, technical, administrative, and quality control services to assist in achieving these goals, as well as providing the construction of the project(s).

The CMAR assists the Government during the design phase by reviewing and evaluating the construction documentation. The CMAR is required to work with the A-E and the Government in a cooperative team effort to develop a quality design. The CMAR is to notify the EPM of all issues brought to the attention of the A-E and the A-E's response to each. The CMAR notifies the EPM if submissions appear inadequate. Most importantly, the CMAR makes the EPM aware of any issues that have the potential to jeopardize the project's goals relating to schedule, cost, quality and scope. The CMAR's principal tasks during the design phase include, but are not limited to the following:

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- Reviewing designs
- Reviewing cost estimates
- Preparing cost estimates
- Controlling schedules
- Keeping records
- Reporting on progress
- Resolving problems
- Conducting VE exercises
- Performing administrative and other services as defined in the CMAR's scope of work

3.0 TERMINOLOGY AND ABBREVIATIONS

A-E	Architectural-Engineering or Architect-Engineer
ARS	Agricultural Research Service
BICSI	Building Industry Consultant Services International
CI	Construction Inspection/Inspector
CMAR	Construction Manager at Risk
CO	Contracting Officer
CSI	Construction Specifications Institute
CVS	Certified Value Specialist
DR	Design Review A-E
EA	Environmental Assessment
ECC	Estimated Cost of Construction
EIS	Environmental Impact Statement
EPM	Engineering Project Manager
FD	Facilities Division
FONSI	Finding of No Significant Impact
HSO	Homeland Security Office, ARS
IT	Information Technology
LAN	Local Area Data Network
LCC	Life-Cycle-Cost
LCCA	Life-Cycle-Cost Analysis
NFGS	Naval Facilities Guide Specification
OCIO	Office of Chief Information Officer, ARS
PDF	Portable Documents Format
P&P	Policies and Procedures
POR	Program of Requirements
PR	Project Requirements
RCDD	Registered Communications Distribution Designer
PSO	Physical Security Officer, ARS
RPR	Research Program Representative
RPMB	Real Property Management Branch
SAVE	Society of American Value Engineers

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SHEMB	Safety, Health & Environmental Management Branch
SIR	Savings-to-Investment Ratio
SOW	Statement of Work
SRA	Security Risk Assessment
TELECOM	Telecommunication Services (i.e., Voice, Data, LAN/WAN, etc.)
UFGS	Unified Facilities Guide Specifications
USDA	United States Department of Agriculture
VE	Value Engineering or Value Engineer
WAN	Wide Area Data Network

4.0 STANDARD A-E SERVICES REQUIREMENTS

4.1 Compliance With Codes And Standards

4.1.1 General

- A. The project design under this contract shall be developed in compliance with the requirements of the *ARS Facilities Design Standards* (P&P 242.1M-ARS), and applicable national, state, or local building codes, standards, and guide specifications. The A-E is responsible for obtaining copies of all applicable codes and standards from the issuing authorities.
- B. In addition to using the applicable national model code as a minimum standard, special requirement directly related to local practices or circumstances, which do not conflict with Agency policy, shall be incorporated into project design.
- C. In accordance with Public Law 100-678 the prevailing code authorities must be offered the opportunity to review ARS projects. In order to comply with this, FD requires that the A-E document their code conformance by submitting to the appropriate code officials for review, all design submittals that are called for in the PR document (Attachment J.2) in accordance with the following procedures.

The A-E shall request Local authority to review the plans and specifications for compliance with local codes, etc.

1. No action from Local Authority. Local Authority does not review plans and specifications for Federal projects. The A-E shall write a memo to the file to document the Government's effort to coordinate with the appropriate authority, but that they (the Local Authority) declined the offer.

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2. Action by Local Authority – No Fee. Local Authority will review/provide comments at no cost to the Government. Comments made by the code officials shall be considered recommendations but if they are required by code, they should be incorporated into the design. Those comments not required by the code are subject to discussion within FD, especially concerning cost and schedule. The A-E shall submit for ARS review all comments made by the code enforcing authority as well as the A-E response.

3. Action by Local Authority – Fee Assessed. Local Authority will review/provide comments as appropriate and that the man-hours required to provide these services shall be reimbursed to the Local Authority.
 - a) Local Authority declines to review the design without payment for the review services. No additional action is taken by the Local Authority and the Government documents to the file of its effort to obtain Local Authority review of its plans and specifications, but that the services could not be obtained because the payment of review services would be in violation of Public Law 100-678.

 - b) Local Authority declines to review design without payment for the review services and a construction permit can not be issued unless the review process is completed. A modification to the A-E's contract will be made to reimburse the Local Authority for their review services.

4.1.2 Conflict Between Codes And ARS Requirements

- A. All conflicts between ARS requirements and either national or state/local codes, shall be resolved by designing for the most stringent requirements.

- B. Any deviations/equivalency=s concepts proposed for use by the A-E must be submitted to the Government for approval no later than the 35 percent design stage through the EPM.

- C. The request must state the deviation/equivalency concept proposed, reasons for the request, and supporting rationale.

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- D. The EPM or AOE will coordinate the request with the appropriate office and provide a response to the A-E

4.2 Project Site Visits

- 4.2.1 The A-E shall make site visits and investigations of existing conditions as necessary to completely familiarize self and ensure accurate representation of existing conditions affecting the scope of the project.
- 4.2.2 Site inspections shall be accomplished by professional architectural and engineering disciplines with related experience appropriate for the project.
- 4.2.3 Site inspections shall be coordinated with the Research Program Representative (RPR) or person designated by the RPR, to ensure adequate and appropriate scheduling.
- 4.2.4 Supplemental to the site inspection performed by the A-E, the Government will make available to the A-E such record drawings of the subject facility as may exist in the files. The A-E may evaluate these drawings and make copies of existing record drawings applicable to the project.

The Government assumes no responsibility for the accuracy of the record drawings. It shall be the responsibility of the A-E to determine, by his site inspection procedures, the reliability and accuracy of the drawings that he selects as his reference. The A-E shall ensure that only accurate and reliable data are shown on the drawings and described in the specifications prepared for the construction of the project.

4.3 Document Requirements

4.3.1 General

- A. Considering the construction period and particular site conditions, the construction drawings and specifications must provide for constructability of the facility. To attain this end, the A-E shall have experienced construction engineers review drawings and specifications during their preparation and provide technical input to the design on an in-progress basis to ensure that constructability is a prime consideration. This input shall be summarized and provided to ARS in the design analysis.
- B. Final documents submitted for archival purposes shall include a copy of the design specifications and design drawings in digital format on a CD-ROM. The design specifications are to be submitted in (Portable Documents Format - PDF), and the design drawings are to be submitted

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in DWG and DWF format.

- C. Construction documents (drawings, specifications, and attachments) submitted for upload to the FEDBIZOPPS web page shall be provided in PDF format on CD-ROM. Drawings converted to PDF shall be at full size, with bookmarks (including drawing number and title) provided to each drawing. Separate files shall be provided for each drawing discipline (ex. Architectural, Mechanical, Electrical, Plumbing, Telecommunication, etc.). Specifications shall be book-marked with section numbers and section title.

4.3.2 Drawings

- A. Drawings shall conform to the drawing standards described in Chapter 1 of the *ARS Facilities Design Standards* (P&P 242.1M-ARS), and the following detailed instructions.
- B. Standard drawing size shall be 24 by 36 inches unless otherwise indicated. ARS will provide sample cover sheets and title block sheets in electronic format. Requests to deviate from standard drawing size shall be submitted to the EPM.
- C. CADD systems shall be utilized for drawing production unless specific approval is granted by the EPM for traditional “pen-and-ink” drafting. Drawing files shall be compatible with the latest release of AutoCAD. Exceptions to the AutoCAD requirement may be granted in order to match the format of existing facility data.
- D. The cover sheet shall include a vicinity map showing the site location in relation to the site or surrounding highways whichever is appropriate. A location map shall be provided, as well, showing the location of the project facility or site. All maps shall show graphic scales, north arrows, and appropriate legends.
- E. Drawings shall be accurately dimensioned, with all work completely noted, and legends provided for all symbols, materials, and abbreviations used on the drawings. Details, sections, elevations, and plans shall be identified and cross-referenced.
- F. Schedules shall be provided on the drawings for doors, windows, finishes, and mechanical, TELECOM and electrical equipment.
- G. Prior to the final turnover, the A-E shall affix his professional seal and signature to the original drawings. This seal shall be that which would be required by the State or district having jurisdiction where the project work

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is to be performed.

4.3.3 Specifications

- A. Specifications shall be printed on 8-1/2 by 11 inch bond papers and bound. Specification organization shall follow the Construction Specifications Institute's (CSI) format. Numbering of sections within the divisions and section format shall follow CSI recommendations.
- B. The *Unified Facilities Guide Specifications* (UFGS) have been adopted as the standard specification for all Agricultural Research Service - Facilities Division administered projects. A-Es may obtain current version of UFGS specifications information online at <http://www.ccb.org/docs/ufgshome/UFGSToc.htm> Use of "SpecsIntact" is strongly recommended. SpecsIntact (Specifications-Kept-Intact) is an automated system for preparing standardized facility construction specifications. SpecsIntact can be accessed online at <http://si.ksc.nasa.gov/specsintact/index.asp>.

UFGS and SpecsIntact can be obtained on CD from:

National Institute of Building Sciences,
ATTN: CCB
1015 15th Street, NW, Suite 700
Washington, DC 20005
(202) 347-5710

Unified Facilities Guide Specifications (UFGS) are a joint effort of the U.S. Army Corps of Engineers (USACE), the Naval Facilities Engineering Command (NAVFAC), and the Air Force Civil Engineer Support Agency (AFCESA). UFGS that cover similar subjects and those that have been identified for later consolidation into a single specification section are identified with an alpha designation ("A" for USACE, "N" for NAVFAC and "F" for AFCESA) following the section number. When preparing specifications for ARS projects, the A-E shall use the UFGS specification section without an alpha designation whenever the applicable section is available. If no UFGS section without an alpha designation is available, the A-E will use, in preferential order, a section with the "N", then the "A", then the "F" designations.

When specification sections are required that do not currently exist in UFGS, or, it is determined that the UFGS section does not adequately address the ARS requirement; the A-E shall prepare a new specification section. The new section shall conform to the three-part CSI format and, where available, utilize other master specifications' systems such as a

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current release of MASTERSPEC. The A-E shall notify the EPM of any deviations or additions to UFGS and shall request formal approval for the deviation.

- C. At the minimum, outline specifications shall be prepared as part of the 35 percent design submittal. Outline specifications shall be organized by CSI divisions and sections, and shall convey the type and quantity of construction, construction materials, and equipment contemplated. Specification submittals up to and including the 50 percent submittal may consist of a marked-up guide specification, with typed supplemental specification as required by the project work. The A-E is cautioned that a poor marked-up technique, which results in illegible specifications, will require re-submission.
- D. An index of all required contractor submittals with reference paragraphs shall be provided at the beginning of the specifications.
- E. The cover shall bear the name of the project, the project number, the name of the A-E firm, and the date of preparation.
- F. Specifications shall reflect sound logic, and shall call for materials and construction methods that ensure full and free competitive bidding among interested contractors, manufacturers, suppliers, specialists, and detailers/erectors.

To ensure comprehensive specifications, the A-E shall specify the salient characteristics and must refer to the Material and Workmanship Clause (FAR 52.365-5) of the solicitation boilerplate.

- G. The A-E shall exercise continuous review procedures to ensure that specifications prepared are applicable to the required work, are free of ambiguous generalities, provide the information required by references on drawings, and are clearly and concisely written to satisfy the requirements of the intended work.

4.3.4 Cost Estimates

- A. Detailed cost estimates shall be included with each design submittal stage. Cost estimates shall follow the CSI specification divisions and shall be itemized by sections within the divisions.
- B. Cost estimates shall reflect direct costs of each item of work by unit cost of material and labor unit cost. Cost estimates at the 15 percent submittal may be cost per square foot broken down by the major elements of work. Lump sum cost estimates will not be accepted.

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- C. The cost estimate shall include a narrative that clearly lists the assumptions used in preparation of the estimate (i.e., the assumed mid-point of construction, the escalation rate, what is included and what is excluded, the design contingency applied etc.)
- D. Overhead and profit shall be shown as added percentages to the subtotals of the direct cost. All insurance fees, bond costs, etc. shall be a part of the estimate as appropriate.
- E. It is incumbent on the A-E to follow cost trends of the work so that any possibility of cost overrun is recognized at the early stages of design. When cost estimates exceed the ECC, the A-E shall immediately notify the EPM and CO in writing of this problem. With such notification, the A-E shall include recommendations for effectively providing the work within the ECC described in narrative form. The Government will act on such proposals according to the evaluations made thereof.
- F. At the 50 percent design submittal stage, the Government will convene an internal Design Review Board (DRB). The DRB is responsible for reviewing the ECC submitted by the ARS Area through the Area Office Engineer, the ECC submitted by the design A-E, and an ECC developed by a design review A-E. If either the design or design review A-E ECC exceeds the project budget, records of the over budget resolution as described in SOW section 4.3.4(E) above shall be made available to the DRB.
- G. While all cost estimates shall follow the CSI format, the 50 percent submittal cost estimate shall include:
 - 1. A proposed bid schedule with base bid and additive bid items described in SOW section 4.3.7 below.
 - 2. The current version of the Davis-Bacon Act wage determination for the construction site
 - 3. Cost estimates, developed in conjunction with life-cycle cost (LCC) analysis, shall be prepared in sufficient detail to facilitate a review and verification of all cost assumptions.

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4.3.5 Energy Conservation/Life-Cycle Cost Analyses

- A. A major concern in the design of the project is energy conservation and the need for all facilities to be energy efficient and low cost to operate. For this reason, the A-E must direct attention to all areas where the greatest impact in energy savings can be made.
- B. Considering the requirements for HVAC on an integrated basis, the A-E shall perform LCC analysis comparing three viable energy efficient HVAC systems. A minimum of two alternative systems in addition to the base system shall be considered. The A-E shall use a 2-speed constant volume HVAC system as a base system and a variable air volume AHU system as one of the two alternate HVAC systems to be considered.
- C. The A-E shall use the life-cycle cost methodologies described in the latest edition of Handbook 135, "*Life-Cycle Costing Manual for the Federal Energy Management Program*," published by the National Institute of Standards and Technology (NIST). The life cycle cost analysis must include investment costs, energy costs, non fuel operation and maintenance costs, repairs and replacement costs, and salvage values.
- D. Analyses of energy-conserving designs shall include all relevant effects of the building envelope, lighting energy input, domestic water heating, efficient use of local ambient weather conditions, building zoning, efficient part load performance of all major HVAC equipment and the ability of involved building automation equipment to automatically adjust for building partial occupancies, optimized start-stop times and systems resets.
- E. A summary of the LCC analysis shall be submitted with the first scheduled submittal. The summary shall include detailed description of the three possible HVAC systems, with the analysis of the cost data, advantages/disadvantages of each, and recommended system, with reasons for selection.

4.3.6 Design Analyses and Calculations

- A. Design analyses and calculations shall be submitted with each submittal of plans and specifications. The degree of completion shall be comparable to that of the plans.
- B. All computations shall be indexed and arranged in an orderly manner, with appropriate sketches, so that any element of the design can be easily identified.

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- C. Final design submission shall include a complete set of checked computations clearly marked as final design calculations.

4.3.7 Bid Schedule Development

- A. The Bid schedule for the project shall be developed containing the following information.
 - 1. Scope of work to be performed
 - 2. Identification of the major items of work
 - 3. A schedule and construction performance time (in calendar days).
- B. The Bid schedule shall be provided no earlier than the 50 percent design submittal stage.
- C. The scope of the base bid shall be developed to provide a complete and operational facility. Additive bid items may be the result of specific instructions from the EPM or may be recommended design additives by the A-E. When additive bid items are used, the A-E shall ensure that such items are clearly indicated on the drawings and in the specifications, cost estimates, bid schedules, and construction performance times. The final cost estimates for the base bid and additive bid items shall not exceed the Estimated Construction Cost (ECC).

In developing the Schedule of Items with additive or option line items, the value of the base line item may be 90 to 95 percent of the ECC with at least one additive or option line item valued at 5 percent of the ECC. Due to construction market uncertainty, it is highly desirable to have the sum of all additive or option line items approach 10 percent of the ECC. In all cases, the base line item and all additive or option items must not exceed 100 percent of the ECC.

4.4 Submittals, Reviews, And Approvals

4.4.1 General

- A. The A-E shall conform to the submittals schedule and requirements as defined herein for the work of this contract.
- B. The A-E shall allocate technical manpower and other necessary resources, so as to steadily progress towards milestone dates and monitor the work of the A-E's consultants to ensure concurrent steady

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progress.

- C. The A-E shall request information, determinations, and similar Government input in sufficient time to permit the Government's development and delivery of the required information without delay to the schedule.
- D. The A-E shall endeavor, in the planning of the work, to anticipate information requirements and request information as soon as the need for it becomes apparent. Insofar as possible, he shall "work around" areas requiring clarification, so as to minimize any delay to the project as a whole. Should delay occur the A-E shall work closely and cooperatively with the EPM to develop and implement methods to regain or minimize lost time.
- E. The A-E shall coordinate all reviews with Federal, local or state agencies, as well as local utilities.
- F. It is imperative that the A-E and its consultants recognize that the ARS reviews are general in nature: that the detailed checking for technical accuracy, sufficiency and coordination is the sole responsibility of the A-E and its consultants; notwithstanding Government approval, the A-E will remain liable for all damages resulting from negligent performance by the A-E or its consultants.

4.4.2 Submission Review Process

- A. Copies of the design documents are submitted by the A-E for government review at various stages of design development as identified in the PR document (Attachment J.2) of the A-E's task order. Generally, each submission will consist of drawings, specifications, A-E checklist, DR checklist, analyses and calculations, and cost estimates. Refer to SOW section 6.2.2 for a description of what is required for each of the submissions.
- B. The submission review process takes about 4 weeks to complete. The first 2 weeks are used to perform a review of the documents and develop written comments. The EPM coordinates the comments received from the various Agency reviewing offices and from the DR and submits them to the A-E. During the third week of the review process, the A-E reviews all comments and prepares a written response either concurring with the comment, taking exception to the comment, or stating that the comment needs further discussion. The A-E shall distribute copies of all comments received along with their responses to all reviewers prior to the design progress meetings described in SOW section 4.4.3 below.

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4.4.3 Design Progress Meetings

- A. The A-E shall conduct design progress meetings. The purpose of these meetings will be to monitor progress, review and approve the design direction, respond to questions and concerns, and approve deviations from the technical requirements.
- B. Design progress meetings shall be held at the project site, unless otherwise indicated in the task order.
- C. Meetings shall begin at the start of the design phase, and shall terminate with the final design approval. The schedule of meetings shall be developed by the A-E and EPM.
- D. The A-E shall provide a written proposed agenda for each design progress meeting at least 7 calendar days prior to the scheduled date of the meeting.
- E. Within 7 calendar days after each meeting, the A-E shall provide written minutes of the meeting to the EPM, RPR, and CO. The minutes shall be in the following format:
 - 1. Project Title
 - 2. Purpose of Meeting
 - 3. Attendees
 - 4. Description of Discussion
 - 5. Actions Required
 - 6. Date Action Required
 - 7. Distribution of Meeting Minutes
- F. The A-E shall ensure that its employees and consultants, present at progress meetings, are qualified and authorized to render technical decisions relating to the design progress.

5.0 PREDESIGN PHASE A-E SERVICES

Below are descriptions of Predesign Phase A-E Services that may be required by task orders issued under this contract. The PR document (Attachment J.2) will identify specific services and schedules required by individual projects.

5.1 Environmental Assessment (EA)

5.1.1 The A-E shall provide all services necessary for the scoping and preparation of an Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 (P.L. 91-190), as amended, Council on Environmental Quality (CEQ) Guideline 40 CFR 1500-1508, and applicable Federal, State, and local regulations.

5.1.2 An individual well qualified and highly experienced in preparing environmental assessment shall perform the EA.

5.1.3 The assessment shall include, but not be limited to: analyses and investigations; determinations substantiated by documents, retrievable facts and other documented records; coordination with Federal, State, and local authorities; and interviews.

5.1.4 The EA report shall conclude that either a Finding of No Significant Impact (FONSI) is justified or an Environmental Impact Statement (EIS) is required. If it is determined by ARS that an EIS is required, based on the findings of the EA, separate competitive solicitation may be issued for the preparation of the EIS.

5.1.5 The EA shall be developed in accordance with the following report outline.

- A. Objective of the proposed action
- B. Alternatives for accomplishing the objectives of the proposed action
- C. Agency favored alternative
- D. Environmental impacts of the proposal and alternatives
- E. Overview of the site and surrounding area
 - 1. Impacts on physical characteristics
 - 2. Impacts on socioeconomic/land use

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- 3. Impacts on historic and cultural elements
 - 4. Impacts on utilities and services (including TELECOM services)
 - 5. Impacts on transportation and parking
 - 6. Other areas of impact
- F. Conclusions and recommendations
- G. Appendix
- H. Agencies or personnel consulted
- 5.1.6 The Government will furnish the following information.
- A. Site Plan (if available)
 - B. Location Map (if available)
 - C. Sample EA.
- 5.1.7 The A-E is responsible for obtaining additional information necessary to complete the EA.
- 5.1.8 The A-E shall submit the EA report for ARS review and approval in accordance with the submittals schedule identified in the PR document (Attachment J.2).
- 5.1.9 The A-E shall assist ARS in evaluating and responding to public inquiries on the completed EA.
- 5.1.10 The A-E shall submit all supporting documentation used in the preparation of the EA.
- 5.2 Investigative Report or Study
- 5.2.1 The A-E shall provide all services necessary to accomplish a complete and comprehensive investigative report/study (i.e., facilities condition study, master plan, energy audits, utility service including TELECOM, etc.)
- 5.2.2 After coordination with the RPR, the A-E shall consult with all appropriate location personnel, facility users and utility service providers, to obtain data and information relevant to the project.

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- 5.2.3 Site investigations shall be accomplished by the professional discipline trained in the area of the related work.
- 5.2.4 The A-E shall maintain a continuing log of all site visits and investigative procedures employed to investigate the work. A copy of this log shall be included with the first submittal of the report.
- 5.2.5 The A-E shall submit the report/study for ARS review and approval in accordance with the submittals schedule identified in the PR document (Attachment J.2).
- 5.2.6 The report/study shall fully and accurately describe:
- A. The objective of the investigation
 - B. The sequence of the work performed to accomplish the objective of the investigation
 - C. The procedures, equipment, and techniques employed in the investigation
 - D. Analyses and test data, with complete descriptions of tests performed
 - E. Existing conditions affecting the scope or procedures of the work performed
 - F. A complete description of the pertinent existing conditions
 - G. Proposed solutions/recommendations with complete description of the work and itemized cost estimates.
 - H. Names and qualifications of the personnel who performed the investigation.
 - I. Names, affiliation, and contact information of the personnel who provided input to the investigation.
- 5.2.7 The report/study shall be typed on 8-1/2 by 11 inch bond papers and bound. Any drawings necessary to supplement the report shall be prepared on 24 by 36 inch Mylar sheets. When supplementary drawings can be adequately illustrated on 8-1/2 by 11 or 11 by 17 inch paper sizes, they may be bound into the report.

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5.2.8 The A-E shall be totally responsible for providing a complete and comprehensive investigation of any and all related works that affects the preparation of a totally reliable and accurate report/study.

5.3 Security Risk Assessment (SRA)

5.3.1 The A-E shall provide all services necessary to accomplish a complete and comprehensive facility Security Risk Assessment (SRA) at ARS locations identified in the PR document (Attachment J.2).

Facility to be assessed will include one or more of the following:

- A. Laboratory areas
- B. Germplasm collection areas
- C. Animal holding areas
- D. Chemical storage areas
- E. Research plots

5.3.2 The SRA shall be done in accordance with the procedures and requirements contained in the following guidance documents. The objective shall be to achieve a responsible and prudent balance between risk and mitigation measures and considering available agency resources to implement every countermeasure.

- A. U.S. Department of Justice's (DOJ) Vulnerability Assessment of Federal Facilities, June 28, 1995
- B. Interagency Security Committee (ISC) Security Design Criteria for Federal Facilities
- C. GSA Security Guidelines and Design
- D. Departmental Regulation, Integrated Physical Security Standards and Procedure Manual (IPSSPM)
- E. USDA Security Policies and Procedures for Biosafety Level -3 Facilities

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5.3.3 Prior to starting the SRA process, the A-E shall submit documentation of the qualification and experience of the consultant that will perform the work to the ARS Homeland Security Office (HSO) for approval.

Due to the sensitive nature of the assessment information, the A-E must obtain or have performed a satisfactory security clearance for each employee working on the task that includes, as a minimum, the following elements:

- A. Finger printing
- B. Arrests and convictions
- C. Credit check.

Appropriate background forms (see table below) must be completed, evaluated, and submitted by the A-E to the ARS HSO within one week of the NTP. If the employee has had a recent security clearance (within 1 year) that includes all of the above elements and is available for submission as required above, it may be used to meet this requirement.

**BACKGROUND CHECKS AND INFORMATION FORMS REQUIRED
FROM APPLICANT**

POSITION SENSITIVITY LEVEL	FORM	PERSONAL IDENTITY BACKGROUND CHECKS
1 - Low	Form 1-9, OMB No. 1115-0136, Employment Eligibility Verification	Authentication of Applicant Identity Source Documents conducted by entity responsible for authorizing PIV card issuance (checking and verifying validity with each Document's Issuer). Law enforcement check (fingerprint).
2 - Moderate	Standard Form 85, OPM Questionnaire for Non-sensitive Positions or equivalent	National Agency Check and Inquiries (NACI)
3 - High	Standard Form 85 P, OPM Questionnaire for Public Trust Positions or equivalent	NACI and Credit Check (NACIC)
4 - Critical (Vital National Asset-Critical Infrastructure)	Standard Form 85 P, OPM Questionnaire for Public Trust Positions or equivalent	Limited Background (LBI) or Background Investigation (BI)

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5.3.4 The SRA includes but shall not be limited to performing site/building surveys, data gathering, and expert evaluation of the facility to provide the appropriate level of security protection as determined by the ARS HSO.

The SRA shall include the following components:

- A. Asset Analysis – identify and evaluate the assets to be protected (i.e., people, operations, information, and property).
- B. Threat Analysis – define the threats identified by individual or group, a history of perceived or past threats to the facility, and evaluate the intent, motivation, and possible tactics of those who may carry them out.
- C. Vulnerability Analysis – identify and evaluate how specific site and building weaknesses may invite and permit the accomplishment of a threat.
 - 1. Evaluate site boundary/access points, site lighting, and vehicular parking/access control.
 - 2. Evaluate building entries/circulation and service entry points.
 - 3. Evaluate the installed HVAC systems and emergency/backup power capabilities
 - 4. Evaluate the installed security systems (access control, alarm system, and intrusion detection)
 - 5. Evaluate the installed telecommunication and Information Technology (IT) system against the requirements of the *ARS Telecommunications Distribution Design Guide (TDDG)* and the Departmental Regulation; *Integrated Physical Security Standards and Procedure Manual (IPSSPM)*". (The ARS TDDG supersedes Section 6.13.1. of the P&P 242.1M -*ARS Facilities Design Standards.*)
 - a) Phone/data service access locations
 - b) Basic routing of inside and outside plant cabling infrastructure
 - c) Network equipment rooms
 - d) LAN and associated servers, workstations, etc.

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- e) Satellite/Microwave communication capabilities.
- f) Firewall issues, LAN or Subnet concerns, etc
- 6. Evaluate chemical, biological, radiological laboratory locations. Assess how biological agents stored at the facility are secured.
- D. Risk Analysis – using the findings from the asset, threat, and vulnerability analyses, examine the consequences of hostile actions against the facility and determine the security measures to effectively counteract potential damage or losses to the assets. Identify who exactly is responsible to respond to the specific location in the event of an emergency (i.e., state, local, county police, Federal Protective Police). Also, identify whether there is a written agreement in place or Memorandum of Understanding.
- E. Security Countermeasure Recommendations. The final report shall include operational impact, and implementation cost per each countermeasure. Include a menu type list of proposed countermeasures to be used to mitigate the risk to the asset and cost estimates (implementation cost and operating cost) based on agreed priority per each countermeasure as determined by the ARS HSO.

5.3.5 Deliverables

- A. The A-E shall submit a draft and final SRA report for ARS review and approval.
- B. The SRA report and other supporting documentations shall be labeled “*Security Sensitive Information – For Official Use Only*” and shall be distributed separate from other A-E submittals. See the PR document (Attachment J.2) for special “need to know” distribution control process.
- C. The SRA report shall include:
 - 1. Trip report summarizing surveyed items, meetings, discussions and issues addressed.
 - 2. Narrative information/documentation supporting the asset, threat, vulnerability and risk analyses described in section 5.3.4 above.
 - 3. Recommendations to mitigate risk to the asset including operational impact and implementation cost per each countermeasure based on agreed priority as determined by the ARS HSO.

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- D. The report/study shall be typed on 8-1/2 by 11 inch bond papers and bound. Any drawings necessary to supplement the report shall be prepared on 24 by 36 inch Mylar sheets. When supplementary drawings can be adequately illustrated on 8-1/2 by 11 or 11 by 17 inch paper sizes, they may be bound into the report.

5.4 Design Charette

- 5.4.1 The objective of a Design Charette is to develop conceptual designs that respond to project scope, budget, technical issues, users' functional requirements, and other requirements through a collaborative process of brainstorming and creative thinking by the A-E's project design team, the Agency's research program and engineering representatives and other interested parties.
- 5.4.2 The A-E shall conduct an on-site Design Charette workshop in accordance with the Design Charette Proceedings of the Society of American Value Engineers (SAVE). For Design Charette requirements, refer to SAVE Proceedings 1995, John B. Sankey. See the PR document (Attachment J.2).
- 5.4.3 The Design Charette shall occur before completion of the POR, preferably before submission of the draft POR. Delivery of preliminary sketches for different concept options shall be made before the Charette workshop, so that the Researchers and EPM can begin generating input towards a decision of the preferred scheme.
- 5.4.4 The A-E shall provide a Charette team leader to facilitate (lead) the team through the Charette process. The Charette team leader shall be a professional registered Architect preferably with value engineering experience.
- 5.4.5 The A-E shall visit the site and gather all necessary site information, review user operations, and discuss user needs. In addition, the A-E shall prepare and include the following data in the formal report:
- A. A written statement of the project goals.
 - B. A comprehensive graphic analysis of the project site, the surrounding context and climatic information.
 - C. An analysis of existing facilities that are directly impacted by the construction of a facility or the deployment of a system.
 - D. A compilation and analysis of all descriptive and statistical data regarding the proposed user-group(s) that addresses function, activities, and major equipment to be accommodated.

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- E. Concepts/ideas' diagrams for implementing the goals and objectives of the project.
- F. Summary statements of the unique aspects of the project design problems.
- G. An action list of required follow-on items that must be pursued in order to produce a complete project definition package.
- H. Budgetary cost estimate.

5.4.6 Formal Report.

Based on the comments from the presentation, final concept design shall be drawn up, documented, and put in the form of a formal Design Charette Report. The Design Charette Report represents the final, confirmed project scope and the preliminary design, which will become the basis for later submittals. The report is developed entirely on-site, distributed and endorsed before the conclusion of the session. The report must be sufficiently detailed such that the A-E designer can proceed to the next phase of design quickly and present no surprises at the next design submission.

Some of the typical report contents include:

- Endorsements
- Executive Summary
- Conceptual Design Drawings
- Abbreviated Basis of Design
- Budget Cost Estimate
- Outstanding Issues and Plan for Resolution
- Relationship/Process and Information Bubble Diagrams
- Contact Directory

5.4.7 Reports are to be submitted on 8-1/2 by 11 inch bond papers and bound. Sketches to be bound may be 8-1/2 by 11 inches, or foldouts. Preferably print both sides, pages to be sequentially numbered. Bindings are to be plastic, permitting full opening and layout. The report is to be properly organized, indexed and tabbed. The VE team leader will be required to sign the report.

5.4.8 Copies of any final report, drawings, specifications, and/or cost estimate resulting from the Design Charette shall be distributed as indicated in the PR document (Attachment J.2).

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5.5 Program Of Requirements (POR) Development

5.5.1 The A-E shall provide all services necessary to develop a complete and comprehensive program of requirements for the project. The RPR prepares and coordinates the project's program requirements with the EPM to formulate a specific statement for the initial POR.

5.5.2 The A-E shall conduct a review of the initial POR for the project with the EPM, RPR, and other appropriate personnel immediately after the award. The purpose of the review and evaluation is to develop a thorough understanding and definition of research program needs and related technical requirements, so that the facility design will be adequate and proper to accomplish the program purpose and functions.

5.5.3 The A-E shall coordinate and conduct all meetings, conferences, interviews, etc., as required for the development of the final "Project POR".

5.5.4 The POR document shall be typed on 8-1/2 by 11 inch bond papers and bound. The POR shall typically comprise of the following features.

A. Executive Summary

B. Investigative Report or Study to include:

1. Detailed description of existing conditions affecting the proposed project.
2. Detailed description of the work to be performed to satisfy all functional and technical requirements of the proposed project.
3. Identification and documentation of any utility services that must be brought or extended to the site at a cost to the project and posing potential budget and/or schedule impacts.

C. Description of research program and location staffing

D. Design Intents. Basis of design for building and systems (Mechanical, Electrical, Plumbing and TELECOM) and list of applicable design criteria. Narrative information to include but not limited to the following.

1. Basic systems type and major components, including system interrelationships and any special features or requirements.
2. Design criteria and assumptions, including equipment sizing and selection criteria.

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3. Intended operation and sequence of control.
 4. Redundancy features
 5. Flow diagrams showing the equipment and piping, ducts, automatic valve and damper positions for each mode of operation.
 6. Noise criteria along with applicable reference(s) (i.e., ASHRAE, etc.)
- E. Individual room data sheets
- F. Description of the scientific program and bio-containment levels. Provide flow diagrams for traffic, people, materials, etc.
- G. Discussion of energy and water conservation measures.
- H. Discussion of physical security requirements.
- I. Discussion of telecommunications and data system requirements
- J. Code analysis to include identification and documentation of applicable codes and their application.
- K. Cost estimate. Estimate of all construction costs, including any required utility service construction costs, reflecting the project scope.
- L. Estimated annual cost for utilities and operation of the facility when occupied.
- M. Space summary. Analysis of space requirements by functional area showing grossing factors. Discuss what is included in net space needs. Provide calculations that show compliance with the USDA administrative space standards.
- N. Meeting minutes
- O. Supporting technical data
- P. Research equipment inventory and utility requirements summary
- 5.5.5 The A-E shall submit the POR document for ARS review and approval in accordance with the submittals schedule identified in the PR document (Attachment J.2).

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5.6 Boundary Survey Services

- 5.6.1 The A-E shall provide all services necessary to survey the boundaries and provide the Government with legal descriptions for the identified site.
- 5.6.2 The A-E shall provide field surveying as necessary to ensure complete and accurate control points, perimeter and/or centerline descriptions. All exterior corners shall be monument and shall be referenced by coordinates to the State's plane coordinate system, and the entire survey will be extended or tied into the existing monuments. Survey work will be of such precision that the error of closure shall not exceed 1:10,000 and all lines shall be balanced, bearing and distances between corners adjusted, and the overall area computed by the doubled meridian method or other appropriate means as agreed to with the COR. All field survey work will be under the direct supervision of a qualified land surveyor, registered in the State where the project is located.
- 5.6.3 The A-E shall be responsible for obtaining the permission of the adjacent property owners as necessary to enter and perform the required work. The current owners shall be contacted prior to the start of any work and be allowed to accompany any survey personnel, as they may so desire.
- 5.6.4 The A-E shall provide complete and accurate survey maps. The maps shall be based on and plotted by coordinates and accurate survey data. All control points, markers, and monuments shall be clearly referenced and described. Survey lines shall be indicated by course and distance. Maps shall be oriented so that true north is to the top or left of the sheet and the map shall be prepared in CADD format on standard size 24 by 36 inch Mylar sheets. Should more than one sheet be required, the first sheet shall include an index drawing of the overall area marked to indicate that portion mapped on each individual sheet. A vicinity map will be provided in the upper right corner to indicate the general location of the land being surveyed. The A-E shall provide a Mylar reproducible real estate summary map of the site. At least one copy of each survey map should be suitable for recording the land records at the County office.
- 5.6.5 The map shall show all easements and other rights affecting the property, including the name of the owner and the recordation information of the instrument. All adjoining landowners must be identified and shown on the map with a last name and address.
- 5.6.6 Property lines for all parcels shall be indicated in heavy lines so as to be the outstanding feature of the map. All symbols used shall be shown in the legend and the graphic scales and the north arrow shall be on each map. Lines, lettering, and symbols shall be clear and accurate and the overall map shall be neat in appearance.

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- 5.6.7 All maps shall be verified correct and contain the signature and seal of a land surveyor registered in the State where the project is located.
- 5.6.8 Legal Description (Metes and Bounds) Preparation. Perimeter and parcel descriptions shall be prepared in a manner to permit their use for planning purposes, in condemnation proceedings and for other purposes. To accomplish this, they will be prepared in a manner to permit reproduction on letter size paper (8-1/2 by 11 inches). They will be reproduced to allow a margin of at least 2-1/2 inches at the top of the paper and sufficient margin on the left side to permit binding as required. A list of the owners of the parcel and adjoining landowners, including the owners of any easements and other rights, and their addresses will be included on all drawings and shall also be supplied on letter size paper (8-1/2 by 11 inches).
- 5.6.9 The contractor will furnish and set all newly established exterior property corners with any of the following types of monuments:
- A. Metal corners shall be galvanized iron pipes no less than 1 inch in diameter.
 - B. Concrete corners shall be no less than 6 inches in diameter or 6 inches square at the top.
 - C. Both metal and concrete monuments being no less than 36 inches in length and set 30 inches in the ground.
 - D. Both metal and concrete corners may be substituted by locally accepted type property corners.
- 5.6.10 Submittal Requirements for Boundary Survey:
- A. Draft Submittals:

Blue line prints of all maps - 2 copies
Legal Description (Metes and Bounds): 2 copies
List of Owners: 2 copies
 - B. Final Submittals:

Mylar reproducible of all maps: 2 copies
Legal Description (Metes and Bounds): 2 copies
List of Owners: 2 copies
Electronic type format of maps, metes and bounds, etc
All originals (or copies of) field notes and office computation sheets

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evidencing closure of traverse and calculation of area.

- C. Copies of the documents resulting from the boundary survey shall be distributed as indicated in the PR document (Attachment J.2).

5.7 Topographic Survey Services

- 5.7.1 The A-E shall provide all services necessary to obtain comprehensive information concerning existing site and landscape conditions affecting the proposed project.
- 5.7.2 When available, ARS will provide the A-E with survey data. The A-E shall determine whether or not any additional survey data is required for the development of the project design.
- 5.7.3 The topographical survey services shall be provided according to the following procedures:
 - A. The A-E shall develop site survey requirements as described in Chapter 2 of the *ARS Facilities Design Standards* (P&P 242.1M-ARS).
 - B. The site survey drawings shall be prepared in CADD format on standard drawing size 24 by 36 inch Mylar sheets. The final original survey drawing shall be submitted to the CO for record purposes.
- 5.7.4 The topographic survey of the site shall be made by field methods (on the ground) or aerial, as appropriate. The survey shall include any underground utilities that can be either identified in the field or identified from as-built records at the location. The horizontal and vertical datum shall be that normally used in the geographic area that is acceptable by the respective building officials. The survey shall portray the location of all existing buildings (with their first floor elevations), parking and other appurtenances, and indicate one-meter contours for all the USDA property. Where appropriate show spot elevations in places where contour lines would not depict the pattern of drainage, high points, low points, etc. All underground drains shall have invert elevations identified at the beginning and end of all straight pipe sections. All existing trees and shrubs shall also be shown. The boundary of the ARS property shall be shown on the topographic surveys and any boundary corner markers that exist shall be shown. Some improvements off the site shall be shown such as the driveway entrance and public road frontage, drainage pipes at the periphery of the property, and any aboveground and underground utilities serving the property. Any easements of record should be shown. The scale of the topographic survey shall be either 1 inch = 30 feet or 1 inch = 40 feet to fit on a single drawing sheet. The topographic survey shall be reproducible at a scale of 1 inch = 20 feet for the development of site plans for each new facility.

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5.8 Geotechnical Engineering Services

5.8.1 The A-E shall provide all services necessary for the technical investigation of soils or rock strengths, stability, settlement characteristics, etc.

5.8.2 New construction sites shall be evaluated for the presence of radon. Where radon is present, design of facilities that will be occupied shall include appropriate measures to keep radon concentration below the EPA recommended action level.

5.8.3 Geotechnical engineering services shall be provided in accordance with Chapter 4 of the *ARS Facilities Design Standards* (P&P 242.1M-ARS).

5.8.4 A subsurface investigation, including soil boring shall be performed for all components, including new building and any pavement areas that require subsurface engineering analysis. The A-E shall prepare a geotechnical report on the subsurface investigation, including the geotechnical consultant's recommendations for type of foundation, allowable soil bearing values based on bearing capacity and settlement analysis, and protection against surface and subsurface water. The geotechnical report shall contain a pro-con evaluation of foundation systems and subsystems, and a cost comparison of each system. The final geotechnical report shall serve as the basis for foundation design.

5.8.5 It is the A-E's responsibility to ensure that the results of the sub-surface investigation are sufficient and proper to provide adequate soils information for the design and construction of the project facility.

5.8.6 A copy of the final results of the sub-surface investigation shall be submitted to the CO for record purposes.

6.0 DESIGN PHASE A-E SERVICES

Below are descriptions of Design Phase A-E Services that may be required by task orders issued under this contract. Design phase services involve development of design concepts and design documents including measured drawings, specifications, cost estimates, design analyses and calculations, and other documentation supporting the design. Services may include providing rendered perspectives. The PR document (Attachment J.2) will identify specific services and schedules required by individual projects.

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6.1 Special Consultant

6.1.1 Fire Safety Consultant

- A. The A-E shall provide a Fire Safety Consultant to assist in incorporating fire protection engineering principles in the design.
- B. Fire safety consultation services shall be provided in accordance with Chapter 7 of the *ARS Facilities Design Standards* (P&P 242.1M-ARS).
- C. It is the A-E's responsibility to assure that the results of the fire safety consultation are sufficient and proper to meet the criteria for the design and construction of the project facility.
- D. A copy of any final report, drawings, specifications, and/or cost estimate provided by the Fire Safety Consultant shall be turned over to the CO for record purposes.

6.1.2 Industrial Ventilation Consultant

- A. The A-E shall provide an Industrial Ventilation Consultant services to assist in the HVAC system design.
- B. Industrial ventilation consultation services shall be provided in accordance with Chapter 7 of the *ARS Facilities Design Standards* (P&P 242.1M-ARS).
- C. It is the A-E's responsibility to assure that the results of the industrial ventilation consultation are sufficient and proper to meet the criteria for the design and construction of the project facility.
- D. A copy of any final report, drawings, specifications, and/or cost estimate provided by the Consultant shall be turned over to the CO for record purposes.

6.1.3 Laboratory Consultant

- A. The A-E shall provide a Laboratory Consultant, to assist in laboratory design and specification.
- B. Laboratory consultation services shall be provided in accordance with Chapter 7 of the *ARS Facilities Design Standards* (P&P 242.1M-ARS)
- C. It is the A-E's responsibility to assure that the results of the laboratory

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consultation are sufficient and proper to meet the criteria for the design and construction of the project facility.

- D. A copy of any final report, drawings, specifications, and/or cost estimate provided by the Laboratory Consultant shall be turned over to the CO for record purposes.

6.1.4 Telecommunications Consultant

- A. The A-E shall provide a Telecommunications Consultant, with appropriate professional certification (e.g. RCDD) and any required state or local trade license to assist in the telecommunications and data network system design.
- B. The telecommunications infrastructure shall be an engineered structured cabling system design conforming to the *ARS Telecommunications Distribution Design Guide* (TDDG). The ARS TDDG supersedes Section 6.13.1 of the *ARS Facilities Design Standards* (P&P 242.1M-ARS).
- C. It is the A-E's responsibility to assure that the results of the Telecommunications network consultation are sufficient and proper to meet the criteria for the design and construction of the project facility and are documented in accordance with the *ARS Telecommunications Distribution Design Guide* (TDDG).
- D. A copy of any final report, drawings, specifications, and/or cost estimate provided by the Telecommunications Consultant shall be turned over to the CO for record purposes.

6.1.5 Physical Security Consultant

- A. Security must be an integral part in the choice and development of new building sites and new or ongoing modernization projects at existing ARS buildings and sites.
- B. The A-E shall provide a Physical Security Consultant to assist in security planning and integrating physical security strategies in the design of ARS new construction and renovation projects.
- C. For physical security design requirements and considerations for ARS facilities, refer to *ARS Facilities Design Standards* (P&P 242.1M-ARS).
- D. It is the A-E's responsibility to assure that the results of the physical security consultation are sufficient and proper to meet the physical security needs of the project.

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- E. A copy of any final report, drawings, specifications, and/or cost estimate provided by the physical security consultant shall be turned over to the CO for record purposes.

6.2 Rendered Perspective

6.2.1 The A-E shall provide all services necessary to develop rendered perspective of the project, in color, approximately 20 inches by 30 inches, and of professional quality suitable for matting and framing.

6.2.2 A draft rendered perspective shall be submitted to the EPM for approval as part of the 50 percent design submittal.

6.2.3 After acceptance of the draft rendered perspective, the A-E shall submit the final rendering at the 95 percent design submittal stage. With this submittal, the A-E shall provide two full size and six 8 by 10 inch color prints (matted finish) of the rendering and a digital photo file (JPEG format – CD-ROM) of sufficient resolution to print additional high-resolution 8 by 10 inch color prints, as required. The full size and three of the 8 by 10 inch prints shall be matted and framed (including glass) for display purposes.

6.3 Design Development

6.3.1 General

A. The A-E shall provide all services necessary to develop design documents including measured drawings, specifications, cost estimates, design analyses and calculations, and other documentation supporting the design.

B. As part of the services included in the contract, the A-E maybe be required to make all necessary presentations of the project to the research program staff and other interest groups.

C. Energy Efficiency and Conservation

1. The project design shall incorporate the use of advanced technologies and practices for energy efficiency, water conservation, and use of solar and other renewable energy. Renewable energy includes photovoltaic, solar thermal, biomass (wood, wood waste, refuse, and agricultural waste), wind, and geothermal and low-impact hydropower technologies.

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2. The project design shall incorporate Best Management Practices (BMP) for water conservation. Details of these BMP's are available at FEMP's Website:
http://www.eere.energy.gov/femp/technologies/water_fedrequire.cfm
3. The project design shall incorporate and apply the sustainable design principles of the internet-based "Whole Building Design Guide" available at the website <http://wbdg.org>
4. The project design shall specify those energy consuming goods or products that are life cycle cost effective. To assist the A-Es in specifying energy efficient products, the Department of Energy (DOE) provides product energy efficiency recommendations and other information at
<http://www.eere.energy.gov/femp/technologies/eeproducts.cfm>
5. The project design shall specify products that are in the upper 25 percent of energy efficiency for all similar products, or products that are at least 10 percent more efficient than the minimum level that meets Federal standards. This requirement shall apply wherever such information is available through either Federal or industry approved testing and rating procedures
6. The A-E shall, to the greatest extent possible, incorporate energy efficient criteria consistent with ENERGY STAR® and other FEMP-designated energy efficiency levels into project specifications developed for new construction and renovation.
7. The A-E shall specify environmentally preferable products. To the extent possible, the A-E shall incorporate biobased products into the project that are competitive in cost, quality and availability.

D. Commissioning Design Task

1. ARS has separated commissioning into design and construction tasks. Refer to SOW section 8.2.7 for the construction task.
2. The A-E will develop the Commissioning Specification as Section 18000 and as described in the following paragraphs. All specific commissioning requirements will be included, not just Commissioning of HVAC systems, which is Section 15995 in the *Unified Facilities Guide Specification*. But will also include all specialty systems, which are identified in the PR document

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(Attachment J.2).

3. Requirements for a Contractor submitted Commissioning Plan shall be incorporated into Section 18000. The most vital component of the plan would be a CPM for pre-performance testing, TAB, start-up, commissioning, substantial completion, etc. This Section should have “suggested” Performance Checklists attached.
4. The A-E will note that the commissioning requirements provided in the PR document (Attachment J.2) are the minimum standards. It is the responsibility of the A-E to develop project specific commissioning requirements for all systems requiring functional testing and not covered by the *Unified Facilities Guide Specifications*.
5. The A-E will define when commissioning will be done and define the team that will perform commissioning. Usually, commissioning begins after all quality control items have been approved, including approval of Testing, Adjust, and Balancing (TAB)/other acceptance tests, and before final inspection. The team is comprised of the Contractor’s Quality Control (QC) Manager, the appropriate Sub-contractor QC Manager(s), the A-E representative (usually the lead engineer as appropriate), and an owner’s representative. The controls’ technician and TAB specialist, both the air-side and water-side technicians, are also part of the team when appropriate.
6. Pre-commissioning is verification of quality control on systems to be commissioned, and is accomplished during construction with the commissioning team as defined in the commissioning plan.
7. Commissioning is defined as the “functional performance tests”; to be accomplished after all quality control items have been approved, including approval of TAB/other acceptance tests, and before final inspection. Refer to the closeout schedule contained in the PR document (Attachment J.2).

6.3.2 Design Submittal Stages

- A. All drawings, specifications, cost estimates, design analyses and calculations, and other required documents shall be submitted at interim stages of development for Government review in accordance with the project submittal schedules identified in the PR document (Attachment J.2). If necessary, resubmittals will be required before submittal stage approval. Submittal requirements are as follows:

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B. 15 Percent Design Submittal Stage

1. General. The 15 percent design submittal stage is required on the more complex projects, and/or where architectural design elements are required to obtain coordinated interior design development, or development of exterior design considerations. This submittal shall completely represent a design concept that accurately reflects the requirements and constraints indicated in the POR, and the technical criteria as expressed in the *ARS Facilities Design Standards* (P&P 242.1M-ARS).
2. Alternate Design Schemes. In the case of major facilities designs and when required by the PR document (Attachment J.2), the A-E shall submit at least three alternate design schemes to include:
 - a) Schematic floor plans indicating spatial relationships and functional arrangements, and elevations.
 - b) Schematic site plans for each alternate indicating building location and orientation, approximate grades, and landscaping.
3. Drawings. Provide drawings accurately dimensioned, including elevations as necessary to describe the work.
4. Cost Estimates. Provide cost estimates that accurately reflect the cost of the intended project. Where alternate schemes are included, the cost of each alternative shall be provided.
5. Life-Cycle-Cost Analyses. In the case of major facilities design, LCC analysis of structural, exterior enclosure, plumbing, HVAC, TELECOM, and/or electrical systems shall be provided.
6. Concept Narrative. Provide a typed narrative description of the concept to supplement the drawings and cost estimate. This narrative to include:
 - a) Building area calculations and efficiency
 - b) Code analysis identifying and documenting applicable codes and their application
 - c) Where alternate schemes are included, a description of the concept of each alternative shall be provided.

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C. 35 Percent Design Submittal Stage

1. General. At this submittal stage, all prior Government review comments shall be incorporated. Documents shall be of sufficient detail to enable a VE workshop to be conducted.
2. Drawings. Submit all sheets of the appropriate construction drawings, fully developed to at least 35 percent complete. Legend, abbreviations list, symbol designations and an outline of appropriate equipment or hardware schedules shall be included. Blank spaces on drawing sheets shall be noted for intended content development.
3. Specifications. Provide outline specifications to include all sections necessary to convey type and quantity of construction, construction materials, and equipment contemplated.
4. Cost Estimates. Provide itemized cost estimates that accurately reflect the cost of the project as described in SOW section 4.3.6 above. Provide a narrative cost estimate evaluation that clearly explains any deviation from previous submissions.
5. Design Analyses and Calculations. Provide design analyses and calculations, fully developed for this submittal, including utility demand requirements for TELECOM, electrical, gas, water, sewage, and chilled water loads, including any utility services construction impacts. Provide calculations that show compliance with the USDA administrative space standards In the case of major facilities design. Provide LCC analysis of structural, exterior enclosure, plumbing, HVAC, TELECOM, and/or electrical systems.
6. Other Documents. With this submittal, the A-E shall include the following documents:
 - a) Test Data. Where tests have been performed for proper design of the work, all test data shall be included with this submittal.
 - b) Design Intent. Provide an updated Design Intent document. The A-E shall keep the Design Intent document created during POR updated throughout the project (see SOW section 5.5.4 (D)).
 - c) A-E Design Checklist. Submit completed A-E design checklist.

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D. 50 Percent Design Submittal Stage

1. General. At this submittal stage, all prior Government review comments including those VE proposals endorsed by ARS shall be incorporated.
2. Drawings. Provide all sheets of the appropriate construction drawings, fully developed to at least 50 percent complete. At this stage of the drawing development, the final building product should be conceivable to the Government reviewing board. No conflicts between mechanical, electrical, TELECOM, structural, architectural, or other disciplines shall exist.
 - a) The drawings shall be adequately dimensioned and noted to reflect intended work.
 - b) When applicable, demolition symbols shall clearly identify areas to be demolished. Drawings shall clearly distinguish between existing and new work.
 - c) All appropriate equipment or hardware schedules required for the work shall be included and developed to 50 percent of completion.
 - d) Sufficient cross sections, elevations, and details shall be shown to provide comprehensive representation of the total work intended. All plans shall be in sufficient detail to show all intended partitions and equipment locations.
 - e) TELECOM technical drawings shall be in sufficient detail at this stage to adequately reflect intended work.
3. Specifications. Provide marked-up guide specifications with typed supplemental specifications included as necessary to provide for all requirements unique to the project.
4. Cost Estimates. Provide itemized cost estimates that accurately reflect the cost of the project as described in SOW section 4.3.6 above. Provide a narrative cost estimate evaluation that clearly explains any deviation from previous submissions.
5. Analyses And Calculations. When appropriate, design and LCC analyses and calculations shall be revised to reflect all prior Government review comments.

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6. Rendered Perspective. Provide draft rendered perspective for approval. (See SOW section 6.2)
7. Other Documents. With this submittal, the A-E shall include the following documents:
 - a) Design Intent. Provide an updated Design Intent document.
 - b) A-E Design Checklist. Submit updated A-E design checklist.
 - c) Coordination Documentation. Documentation describing the coordination with local code authorities and local utility service providers shall be provided
 - d) Submittals Register. Provide preliminary submittal register listing required contractors submittals with reference specification paragraphs.
 - e) Bid Schedule. Provide a bid schedule for the project as described in SOW section 4.3.7 above.
 - f) Construction Time Estimate. Provide initial estimate of the construction time necessary to accomplish the project (in total calendar days) with recognized lead-time identified for items of construction that are anticipated to create delays.
 - g) Safety and Environmental Plans and Permits. Provide draft safety and environmental plans for the construction activity or installation of equipment. Address requirements for Air Permit to discharge for boilers, Storm Water Management and Sediment Control, etc.
- E. Progress Submittal Between 50 and 95 Percent Design Submittal Stages
– When required by the PR document (Attachment J.2)

Beginning after approval of the 50 percent design submittal, and continuing until the pre-final submittal, the A-E shall submit monthly progress prints. This shall include a status printing of all drawings currently in production and major changes or additions to the technical specifications. The purpose of the progress submittal is to monitor design development. The A-E shall continue to advance the project design.

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F. 95 Percent Design Submittal Stage

1. General. At this submittal stage, all prior review comments including those VE proposals endorsed by ARS shall have been resolved and incorporated into the documents.
2. Drawings. Provide completed drawings with all symbols and legends identified, and all schedules. Drawings shall be completely noted and fully dimensioned. All details, elevations, sections, and diagrams shall be included as required to fully develop the proposed work.
3. Specifications. Provide typed specifications in final format with all provisions included.
4. Cost Estimates. Provide final cost estimates. Provide a narrative cost estimate evaluation that clearly explains any deviation from previous submissions. The estimate shall be sufficiently accurate and complete at this stage so that the Government can begin the procurement process.
5. Analyses And Calculations. When appropriate, design and LCC analyses and calculations shall be revised to reflect all prior Government review comments.
6. Rendered Perspective. Provide final rendered perspective and photo copies. (See SOW section 6.2)
7. Other Documents: With this submittal, the A-E shall include the following documents:
 - a) Design Intent. Provide an updated Design Intent document.
 - b) A-E Design Checklist. Submit updated A-E design checklist.
 - c) Submittal Register. Provide a final submittal register listing required contractors submittals with reference specification paragraphs.
 - d) Construction Time Estimate. Provide updated estimate of the construction time necessary to accomplish the project (in total calendar days) with recognized lead-time identified for items of construction that are anticipated to create

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delays.

- e) Safety and Environmental Plans and Permits. Provide an updated safety and environmental plans.

G. 100 Percent Design Submittal Stage

1. General. All prior review comments and VE study proposals shall have been resolved and incorporated into the documents. The 100 percent design submittal shall provide for all drawings, specifications, and cost estimates ready for a contract award. The review shall ensure that the documents are ready to be issued for the construction contract. Any adjustments necessary to these documents will be accomplished by the A-E prior to the final turnover of the contract documents.
2. Drawings. Provide final drawings.
3. Specifications. Provide final specifications.
4. Cost Estimates. Provide final cost estimates.
5. Analyses and Calculations. Provide final design and LCC analyses and calculations.
6. Other Documents: With this submittal, the A-E shall include the following documents:
 - a) Design Intent. Provide final updated Design Intent document.
 - b) A-E Design Checklist. Submit final updated A-E design checklist.
 - c) Safety and Environmental Plans and Permits. Provide final updated safety and environmental plans
 - d) Construction Time Estimate. Provide final updated estimate of the construction time necessary to accomplish the project (in total calendar days) with recognized lead-time identified for items of construction that are anticipated to create delays.

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H. Final Turnover

Upon approval of the 100 percent design submittal documents and completion of the required duplicating, collating, and binding, the A-E shall submit the originals of the final drawings (signed and sealed by the A-E), specifications, and cost estimates to the CO. Final documents shall include a copy of the design specifications and drawings in digital format on a CD-ROM. See SOW section 4.3 for requirements.

7.0 **BID PHASE A-E SERVICES**

The bid phase is the period, between design and construction, during which a construction Contractor is selected. An option may be included in the A-E's contract for bid phase services. This option may be exercised prior to award of the construction contract. Refer to the PR document (Attachment J.2) for specific services and schedules required by individual projects.

7.1 Solicitation Review

- 7.1.1 Prior to the release of the solicitation, the CO will furnish a copy of the solicitation package to the A-E. The A-E shall thoroughly review the solicitation documents (includes specifications and drawings) to identify conflicting information, changes, or items for inclusion in the specifications and drawings. The A-E shall review the front end "boiler plate" contract language document to ensure that there is nothing there that conflicts with any requirements of the specifications (i.e., construction schedules, payments, schedule of values, close out procedures, inspections, submittals, notifications, etc.)
- 7.1.2 Upon completion of the review, the A-E shall forward, to the CO, a statement of review completion, a list of required changes (if any), and a mailing list of not less than 10 potential bidders for the construction project. The A-E shall obtain information from the CO on how the construction project shall be completed prior to assembling the list of potential bidders (i.e., 8(a) competitive, Hubzone set-aside, Service Disabled Veteran Set-Aside, full and open competition, etc...). The list should provide company names, addresses, telephone number, contact person, and E-Mail address.
- 7.1.3 The Government will evaluate the A-E's statement of review completion, incorporate any changes required, and forward the final solicitation with a mailing list to the A-E for distribution.

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7.2 Duplicating, Collating, And Binding Services

7.2.1 The A-E shall provide all duplicating, collating, and binding (stapling, folding, etc.) services necessary to provide the required number of sets of the solicitation and blue prints (see individual task order for required number).

7.2.2 Upon completion of all required duplication of the solicitation documents and after award of construction contract, the A-E shall return the original drawings and specifications to the CO.

7.3 Solicitation Release

7.3.1 The A-E shall distribute a copy of the complete solicitation to all potential bidders included on the Government's mailing list, CO and EPM.

7.3.2 During the solicitation phase, the Government may receive additional requests from potential bidders for the solicitation. These requests will be relayed to the A-E, who shall submit a copy of the solicitation to each interested bidder.

7.3.3 The A-E shall maintain a current listing of potential bidders for each construction solicitation.

7.4 Prebid Conference

7.4.1 The A-E shall conduct a pre-bid conference and site inspection at the project site and at the time, date, and place specified in the solicitation. The purpose of the pre-bid conference is to provide an opportunity for potential bidders to become familiar with the general requirements of the project and the site conditions.

7.4.2 The A-E, in conjunction with the CO, shall prepare a proposed agenda for the pre-bid conference. A copy of this agenda shall be furnished to the CO at least 10 calendar days prior to the actual date of the conference.

7.4.3 During the conference, the A-E shall take minutes of the meeting. Potential bidders are encouraged to submit questions in writing to the CO within 7 calendar days after completion of the conference. Within the next 7 calendar days after receipt of the questions from prospective bidders, the A-E shall respond in writing to the questions and provide the CO his recommendation for items to be included in an amendment to the solicitation.

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7.5 Solicitation Amendments

- 7.5.1 The A-E shall prepare and develop all amendments to the solicitation to address potential bidders' questions; design errors, omissions or inconsistencies. These amendments shall be prepared using Standard Form SF-30 to be furnished by the CO. Copy of the completed SF-30 shall be submitted to the CO for written approval prior to the release to potential bidders. The A-E shall revise the final cost estimate to reflect the cost impact (if any) resulting from the amendment items. Any cost revision must not exceed the ECC.
- 7.5.2 Amendments developed by the Government for wage determinations modifications, bid opening date changes, etc. may be referred to the A-E for mailing to all potential bidders.
- 7.5.3 The A-E shall distribute a copy of the solicitation amendments to all potential bidders included on the Government's mailing list, the CO and the EPM.

7.6 Bid Evaluation

- 7.6.1 The A-E shall review and evaluate bids in terms of reasonableness of bid price(s), the capability and the financial capacity of the apparent low bidder to perform required services.
- 7.6.2 After the bid opening, the Government will provide a copy of the bid abstract and each bid received to the A-E for review.
- 7.6.3 The A-E shall review and evaluate the bid results, and provide his recommendations for the following:
- A. Reasonableness of the price/s of the low bidder
 - B. When the apparent low bid exceeds the ECC, the A-E shall conform to the requirements of the clause entitled "Design within Funding Limitations" (FAR 52.236-22), by redesigning the project to fit the budget at no cost.
 - C. Responsibility of the apparent low bidder in terms of capability to perform the required services, past performance on similar projects, and financial capacity.
- 7.6.4 A written recommendation shall be provided to the CO within 10 calendar days after receipt of the bid results from the Government.

8.0 CONSTRUCTION PHASE A-E SERVICES

For the purpose of this contract, the construction phase shall be defined as the period between issuance of the construction contract award and final unconditional acceptance of the completed construction by the CO. An option may be included in the A-E's contract for construction phase services. This option may be exercised prior to award of the construction contract. Refer to the PR document (Attachment J.2) for specific services and schedules required by individual projects.

8.1 Construction Inspection Services

- 8.1.1 The A-E shall inspect the work performed by the construction contractor to review for conformity with requirements of the contract. In the event any differences arise between the A-E and the construction contractor, the A-E shall immediately inform the CO orally and in writing, giving both the details of pertinent facts and applicable contract provisions and his recommendation as to actions to be taken.
- 8.1.2 The A-E shall monitor and inspect construction as specified in the task order. Such inspections may require a resident construction inspector or periodic monthly visits, etc.
- 8.1.3 The A-E shall provide the EPM and CO a monthly analysis of the construction schedule, as compared to actual construction.
- 8.1.4 When a resident construction inspector is required, the A-E shall provide a qualified resident construction inspector for proper control during all time of the construction monitoring phase. (The inspector's office on the site to be provided by the construction contractor.) Prior to starting the inspection, the A-E shall submit the name and qualifications of the individual that will perform the work to the CO through the EPM for approval.
- 8.1.5 Construction inspection shall begin on the date specified by the CO. The inspection schedule shall be as indicated in the PR document (Attachment J.2).
- 8.1.6 The Construction Inspection (CI) services shall include, but not be limited to, the following:
- A. Before construction is started, verify the mobilization plan lay out by the construction contractor. Important and sensitive activities shall be checked, and the CO or his/her authorized representative appropriately informed through the EPM.

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- B. As soon as excavation is completed, examine the soil where footings are to be placed to ensure that the soil conditions are consistent with the conditions serving as the basis for the footing designs.
- C. Examine completed concrete forms for dimensional accuracy, alignment, rigidity, placement of steel, placement of electrical conduit, and mechanical bucks.
- D. Inspect materials and equipment being built into the construction to ensure conformance to specifications and any required certifications. Maintain records of types and brands of construction materials and equipment, and certify that materials and/or equipment offered conform to Federal and/or other applicable specification requirements.
- E. In conjunction with inspections, any unsafe conditions and/or practices should be noted to the contractor and in the written report to the COR/EPM. However, the responsibility and duty to correct or to require correction of such unsafe conditions and/or practices shall be exclusively that of the contractor and not that of the A-E or USDA.
- F. Maintain a project diary on all construction project inspections, noting progress of construction, discrepancies, and construction delays (if any). Submit completed Form ARS-429. Submit inspection reports to the COR through the EPM, no later than 7 calendar days after the inspection, unless otherwise directed by the COR.
- G. Examine completed TELECOM equipment and construction materials' installation work to ensure compliance to quality control, testing and labeling specifications contained in associated documents and drawings.
- H. Maintain on-the-job a current set of drawings and specifications, concurrently with the construction contractor, noting thereon any deviations made from the originals during construction.
- I. Upon completion of the project, compare the "as-built" data with the contractor's mark-up set of construction contract documents, and resolve any differences with the contractor prior to preparation of record documents.
- J. Make recommendations to the CO or his authorized representative through the EPM about changes, time extensions, and other matters affecting the conduct of construction.
- K. Obtain prior approval of the CO or his authorized representative through the EPM on all proposed actions involving changes in price.

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- L. Advise the CO, COR, EPM, and CM firm of any unusual problems - such as schedule slippages, requests for changes, and nonconformance with contract provisions - which actually or potentially affect fulfillment of the contract requirements.
 - M. Perform random labor interviews to verify compliance with Davis-Bacon Act wage determinations and to ensure the contractor is complying with Labor Standards practices. Form SF-1445 is to be used for interviews and Form SF-1446 provided, as necessary.
 - N. Record the numbers of employees on the job and apparent trade classifications, and make a general comparison of these items against the contractor's weekly payroll submission. Submit daily report and findings to the COR at the end of each week, verify proper payroll certification by both Prime and Subcontractors.
 - O. Monitor contractor safety program and report any hazards immediately to the contractor superintendent and COR. Verify that the hazard has been corrected. Although the responsibility and duty to correct or to require correction of unsafe conditions and/or practices shall be exclusively that of the construction contractor, the CI shall verify that the hazard has been corrected.
- 8.1.7 The A-E shall maintain accurate records of all site visits, including nature of visit, observations, recommendations, and digital photo files (JPEG format on CD ROM) indicating pertinent features and overall construction progress. The A-E shall forward all records of site visits to the EPM within one week of the actual visit.
- 8.1.8 The A-E shall provide general construction administration of the work of the construction contractor through the EPM.
- 8.1.9 The Construction Inspector (CI) shall assist the Government and its' contract CM firm in performing a final inspection for the construction contract.
- 8.1.10 Within 7 calendar days after the final inspection, the A-E shall provide a list of defects and omissions to the CO through the EPM.
- 8.1.11 The A-E shall verify that the construction contractor has corrected all items listed as defects and omissions, and will confirm to the CO through the EPM in writing when the contract is complete.

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8.1.12 Should the Government require site inspections beyond the number of inspections agreed to in the task order; the task order will be modified accordingly.

8.2 Construction Management Services

8.2.1 Preconstruction Conference

- A. The A-E shall, in conjunction with the Government, conduct preconstruction conferences to review and clarify specific requirements of the construction contract and various administrative procedures such as payment submittals and shop drawings approval process. The conference is normally scheduled within 14 days after construction contract award. Authorization to Proceed is usually given at the Pre-Construction Conference, following receipt of performance and payment bonds.
- B. The A-E shall prepare and coordinate a proposed conference agenda with the CO, EPM, Location Monitor, Area Office, and the construction contractor. After approval by the CO, the A-E shall schedule the preconstruction conference with all appropriate parties.
- C. The A-E shall provide a copy of the conference proceedings to the CO within 7 calendar days after the conduct of the conference.

8.2.2 Construction Contractor Submittals Review

- A. The A-E shall perform the following services:
 - 1. Checking and approving, annotating, referring, or rejecting shop drawings, equipment lists and similar data.
 - 2. Reviewing and approving, annotating, referring, or rejecting material samples
 - 3. Reviewing and approving, annotating, referring, or rejecting product certifications, laboratory reports, and test data
- B. The A-E shall review and approve/disapprove all construction contractor submittals in accordance with the following procedures:
 - 1. When the submittal conforms fully to the contract drawings and specifications, the A-E shall approve it.

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2. When the submittal clearly does not conform with the contract drawings and specifications, the A-E shall either disapprove it, or refer it (along with recommendations) to the CO for disapproval or issuance of change order
3. When the submittal has only minor deviations from the contract drawings and specifications, the A-E shall note the deviations and omissions as maybe appropriate and approve the submittal subject to the notations.

In all cases the A-E shall keep the EPM and CO fully informed of all actions taken, sending copies of all pertinent correspondence and documents to the EPM and CO.

- C. The A-E shall develop a list of all required submittals and maintain a detailed log of all submittals showing dates of receipt and current status. The A-E shall advice the EPM, CO and the contractor, in writing on a monthly basis, when the contractor has not submitted required submittals by the time shown in the approved schedules.
- D. Within 14 calendar days after receipt of the contractor submittals or as otherwise required by the contract specifications, the A-E shall provide response to each submittal with a letter or memo indicating approved, approved as noted with comments, or disapproved with reasons for disapproval. A copy of each letter or memo shall be sent to the EPM and CO.
- E. Resubmission shall be made on all disapproved submittals. All resubmissions shall be processed the same as new submittals.
- F. The A-E shall retain two copies of all approved submittals and maintain a file on project submittals. At completion of project construction, the A-E shall give the RPR and CO a package comprised of one copy of each submittal.

8.2.3 Operating and Maintenance Manual

- A. The A-E shall prepare and furnish copies of a complete Operating and Maintenance (O&M) manual for all mechanical and electrical equipment. The manual assembled from data furnished by the construction contractor(s) and it's suppliers shall contain:
 1. Description of systems design intent and proposed operation at various loads. For HVAC, the A-E shall outline operating sequences, number of chillers, boilers, pumps, etc., for heating,

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- cooling, and in-between seasons.
2. Description of the systems.
 3. General operating instructions, including copies of posted specific instructions.
 4. Maintenance instructions followed by tabulated manufacturers' descriptive literature, shop drawings, performance curves and rating data, spare parts lists, and manufacturers' maintenance manuals.
 5. Warranty List (coverage period, general description of coverage, phone number of manufacturer, etc. for each item warranted.)
- B. On or before construction completion, a copy of the O&M manual and an electronic version of the warranty list shall be provided to the CO, RPR, and the facility director/manager.

8.2.4 Construction Contract Changes and Clarifications

- A. Change Bulletins - The A-E shall issue Change Bulletins (clarification type written orders) as necessary. Change Bulletins are defined as any order that does not change the construction contract in terms of price, quality, or performance time.
- B. Clarification of Contract Documents - The A-E shall prepare supplementary, definitive sketches, and/or written clarifications as required to establish design intent. Any site inspections required by the A-E for clarifications of specifications and/or drawings, shall be provided at no additional cost to the Government
- C. Construction Contract Modifications – The A-E shall assist the CO and EPM in the review, negotiation, and award of modifications to the construction contract. Within 3 working days after receipt of any proposed modification suggested by the Government or the construction contractor, the A-E shall review the merits thereof and either reject or recommend approval in writing to the CO through the EPM. For each proposed change order, the A-E shall review applicable plans and specifications, prepare and submit detailed cost estimate, an estimate of additional performance time (if required), and additional sketches or specifications.

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8.2.5 Construction Progress Payment and Payroll Review

- A. The A-E shall review all requests for payment by the construction contractor (Forms ARS-371 and ARS-372, or a cost loaded Network Analysis Schedules NAS).
- B. The A-E shall perform random labor interviews to verify compliance with Davis-Bacon Act wage determinations and to ensure the contractor is complying with Labor Standards practices. Form SF-1445 is to be used for interviews and Form SF-1446 provided, as necessary.
- C. Within 2 working days after receipt of the payment request, the A-E shall submit approval recommendations to the CO through the EPM. To expedite payments to the construction contractor, the A-E may verbally or via email or fax inform the EPM of the recommended approval of payment requests.
- D. The A-E shall review the construction contractor's payrolls and ensure compliance with all wage and labor requirements. The A-E shall immediately notify the construction contractor and the CO through the EPM of delinquent payrolls or errors and omissions found during review.
- E. Record the numbers of employees on the job and apparent trade classifications, and make a general comparison of these items against the contractor's weekly payroll submission. Submit daily report and findings to the COR at the end of each week, verify proper payroll certification by both Prime and Subcontractors.

8.2.6 Reports of Construction Progress

- A. The A-E shall provide a written report to the EPM and CO on a daily, biweekly, or monthly basis (see individual task order for frequency of report.) Progress reports shall be reported on Form ARS-429 or an equivalent A-E form and shall include, at a minimum:
 - 1. Description of contractors' performance to date.
 - 2. Statements of progress in relation to schedule and time available for the project, discrepancies, and construction delays (if any).
 - 3. Weather conditions.
 - 4. Any other unusual conditions encountered, field changes required.

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5. Equipment on site.

6. Photos.

8.2.7 Building Commissioning

A. ARS has separated commissioning into design and construction tasks. Refer to SOW section 6.3.1(D) for the design requirements.

B. The A-E shall designate a representative to lead the commissioning team described in SOW section 6.3.1(D), work closely with the commissioning representative(s) and provide all services necessary to:

1. Ensure a Commissioning Plan is submitted early (before arrival of heavy mechanical and electrical equipment) and meets the project requirements. The Plan should include a CPM Schedule that lays out all of the testing activities: pre-performance testing, TAB, start-up, functional performance testing/commissioning, substantial completion, etc. The commissioning plan should include a list of personnel to commission the building including phone numbers, fax numbers for the representative and their firm/company, and e-mail addresses, and qualifications of the contractor's commissioning representative.
2. Ensure pre-commissioning and commissioning meetings are held, and that these meetings are synopsisized in each of the construction progress meetings.
3. Verify that pre-commissioning (Quality Control) meets design documents. Examples are completion of cleaning, flushing, TAB, controls, and start-up;
4. Coordinate all functional performance tests that are required in specification Section 18000, and insure the systems function to meet design requirements.
5. Recommend corrective action for equipment failing functional performance tests; and ensure additional functional tests (at no additional contract cost) are preformed on these systems;
6. Ensure all pre-commissioning and functional performance tests are recorded and two copies are provided in a binder form. Include other commissioning correspondence in this binder;

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7. Review the final functional performance testing results, recommend acceptance of the systems if appropriate, and submit to the owner.

8.2.8 Record Drawings and Specifications

- A. The A-E shall review and transcribe as-built changes on contract drawings. The A-E shall indicate in the contract documents, that the contractor shall maintain (at the job site) a current set of working drawings and specifications. These items shall be marked up to indicate all actual changes (including revisions, deviations, and additions) to the original construction contract documents. Upon completion of construction, the contractor shall deliver the marked-up set of construction contract documents to the office of the A-E.
- B. The A-E shall review the contractor's as-built drawings and specifications, and question any changes that are not consistent with his knowledge of the project.
- C. The A-E shall then transcribe all changes onto a set of Mylar or sepia reproducible of the contract drawings and a paper set of contract specifications. The A-E shall stamp the term "Record Documents", date, and sign all sheets of the Mylar or sepia drawings and the title page of the specifications. The A-E shall provide two hard copies and electronic type format of the as-built drawings and specifications to the EPM and CO.

9.0 SPECIAL SERVICES – (Design Review and Value Engineering)

9.1 General

9.1.1 The A-E shall provide design review (DR) and value engineering (VE) services including, but are not limited to, the following. The PR document (Attachment J.2) will identify specific services and schedules required by individual projects.

- Review of drawings
- Review of specifications
- Review of cost estimates
- Value engineering
- Review of energy conservation/life-cycle cost analyses
- Review of design analyses and calculations

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- 9.1.2 For the purpose of this contract, the terms "review of drawings", "classification of drawings", and "payment for review of drawings" shall be interpreted to include the technical review of all design submittals associated with, and supporting the contents of, the drawings prepared by the design A-E. This submittal may include, but are not necessarily limited to, drawings, specifications, cost estimates, design analyses, User comments, and supporting documents including conceptual drawings and sketches, design narratives, calculations, and investigative reports and studies. Although value engineering is not one of the Design Review A-E's (DR) tasks, any area where it is evident that significant savings may result should be noted in the comments.
- 9.2 Design Review Services
- 9.2.1 The DR shall provide design review services to review the A-E's work identified in individual task orders and as outlined below. For description of the design submittals review process, see SOW section 4.4.
- 9.2.2 The DR shall verify that all design submittals meet the requirements described in SOW sections 4.0, 5.0 and 6.0.
- 9.2.3 The DR shall actively participate in design review meetings to discuss A-E comment responses which require clarification or additional discussion.
- 9.2.4 The DR shall verify that review comments have been incorporated into subsequent design A-E submissions. The DR shall identify those previous comments that have not been incorporated and resolve any outstanding issues.
- 9.2.5 The drawings, specifications, and other related documents shall be reviewed for completeness, accuracy, technical adequacy, economy, constructability, compliance with the POR, and other factors listed below:
- A. Design Approach - consider aesthetics, proper use of materials, spatial layout, and civil, structural, mechanical, electrical and TELECOM engineering design with respect to energy efficiency, functional efficiency, life safety, and economics.
 - B. Construction Documents - consider plans with respect to adequacy of sections and details, drafting legibility, adequacy of finish and component schedules, and sufficient notation to explain intentions. Consider specifications with respect to completeness of materials, equipment, and labor necessary to implement the plans and adequate descriptions to ensure quality control during construction.

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- C. Design Analysis - consider analyses with respect to identification of design assumptions, clarity and completeness of calculations, proper indexing, and proper analysis of selected equipment. Additionally, consider adequacy of any existing utility systems (including TELECOM services), the basis for any proposed increases in capacities, foundation and structural system calculations, and geotechnical investigations and/or reports.
- D. Interface of Disciplines - consider all documents with respect to conflicts between components and parts of the civil, architectural, structural, mechanical, electrical, TELECOM/IT and any other required systems.
- E. Cross References - consider all documents with respect to the accuracy and inclusion of drawings and information indicated in one place as occurring or to be found in another.
- F. Adherence to Criteria - consider the design with respect to its compliance with the scope and requirements of the task order and the *ARS Facilities Design Standards* (P&P 242.1M-ARS).
- G. Economy and Energy Efficiency - consider the design with respect to maximum use made of off-the-shelf items, conventional construction, standard techniques, life-cycle costing, and use of energy efficient systems
- H. Document Conflicts - consider all analyses, plans, specifications, and other supporting documents in terms of complementing rather than conflicting with each other.
- I. Maintainable - consider the design with respect to adequate access to equipment requiring maintenance and removal of parts, inclusion of low or maintenance-free equipment, adequate equipment clearances, and clearly identified locations of access panels.
- J. Previous Comments – ensure that the design A-E has satisfactorily resolved previous comments by either conforming the design documents as per his concurrence or by providing a complete and reasonable explanation for his disagreement.

9.2.6 Review comments shall be prepared in clear unambiguous language. Abbreviations, which may confuse or convey no meaning, shall be avoided.

9.2.7 Comments on all documents shall be typed on the FD Project Review Comments Worksheets.

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- 9.2.8 Comments shall be stated in a professional tone in clear and concise terms.
- 9.2.9 Comments shall be detailed and comprehensive enough to ensure desired final results without requiring the design A-E to perform work outside the scope of the design task order.
- 9.2.10 Comments shall specifically indicate the problem or error and, if appropriate, a desirable solution or correction.
- 9.2.11 Supporting rationale to justify recommended changes shall be provided.
- 9.2.12 FD may request that the results of a technical review be explained in detail to members of the FD technical staff by each of the reviewers from the DR's technical staff.
- 9.2.13 Recommendations that may result in possible savings, if a value engineering study were performed, should be noted.
- 9.3 Value Engineering Services
- 9.3.1 The A-E shall provide Value Engineering (VE) services to analyze projects to achieve the design goals at the lowest life cycle cost (LCC) consistent with the required performance, quality, reliability, quality, or maintainability.
- 9.3.2 The VE review/study will be held in the principal office of the VE firm unless otherwise directed by the CO. The VE team shall have available a fully equipped technical library and ready access to computerized cost data for energy, LCC of building equipment and machinery, and construction.
- 9.3.3 The VE team leader shall be a Certified Value Specialist (CVS) who also holds a current Registered Architect (RA) or Professional Engineers (PE) license. Experience must include having been a team leader for a minimum of three major projects that were comparable to the project under review. The balance of the team must consist of registered engineers or architects, whose discipline and expertise match that required by the specific project.
- 9.3.4 A list of the VE team members, including the team leader, and their respective resumes representing the various disciplines, shall be submitted to the CO for approval at the time of negotiations. Any substitutes after approval will be at the discretion of the CO.
- 9.3.5 Qualified Government representatives of the project being studied may participate as VE team members, as directed by the CO. The design A-E will be invited to monitor the review and respond to VE team inquiries, but cannot serve

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as a VE team member.

- 9.3.6 The VE process shall follow the five-step job plan sanctioned by the Society of American Value Engineers (SAVE). VE shall primarily address major or key items, functions, or components, i.e., "the big ticket items." All less important items may be examined and noted, as time permits.
- 9.3.7 The VE study will be conducted at the completion of the 35 percent design documents, upon notification by the CO or EPM.
- 9.3.8 The VE report shall encompass the entire VE effort and shall include, but not be limited to:
- A. Executive summary
 - B. Summary list of all VE items that were accepted to include:
 - 1. Description of each VE item and resulting quality improvements
 - 2. Initial Capital Cost Savings attributable to each VE item
 - 3. Life Cycle O&M cost avoidance attributable to each VE item.
 - C. LCC reports
 - D. Alternatives
 - E. Cost projections, matrix models, and sketches
 - F. Any and all pertinent data or information that resulted from the study.
- 9.3.9 Reports are to be systematically assembled, must be short and concise, yet informative enough for decision-making.
- 9.3.10 Reports are to be submitted on 8-1/2 by 11 inch bond papers and binds under flexible cover, appropriately identified as a summary report. Sketches to be bound may be 8-1/2 by 11 inches, or foldout. Preferably print both sides, pages to be sequentially numbered. Bindings are to be plastic, permitting full opening and layout. The report is to be properly organized, indexed and tabbed. The VE team leader will be required to sign the report.
- 9.3.11 The determination of function is a requisite for all VE studies. Accordingly, VE studies shall be accomplished using functional analysis-cost-worth approach. To accomplish this analysis, the VE team must develop a cost model in diagrammatic form from the detailed cost estimates. The VE team must then

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create a worth model and use these two tools to identify functions that might benefit from alternative design solutions. Such solutions must perform the required function at a lower total cost considering performance, reliability, quality, and maintainability. All VE proposals by the VE team shall be supported by cost estimates and/or economic analyses as applicable.

- 9.3.12 Copies of any final report, drawings, specifications, and/or cost estimate resulting from the VE shall be distributed as indicated in the PR document (Attachment J.2).

10.0 HAZARDOUS MATERIALS AND HAZARDOUS SUBSTANCES ABATEMENT SERVICES

10.1 General

- 10.1.1 The A-E shall provide hazardous materials and hazardous substances abatement services including, but are not limited to, the following. The PR document (Attachment J.2) will identify specific services and schedules required by individual projects.

Hazardous materials and hazardous substances include, but are not limited to, asbestos containing materials, lead paint and lead containing materials, Polychlorinated Biphenyls (PCBs), mercury, ozone depleting substances, biological and radiological materials, etc. These materials may be found in such places as insulation, building materials, equipment, light fixtures and bulbs, thermostats, fire suppression systems, and others

10.2 Abatement Services – (Identification, Assessment, and Corrective Action Design Phase).

- 10.2.1 The A-E shall provide hazardous materials and hazardous substances identification, assessment, and abatement services including, but not limited to, the following.
- A. Conduct site visit.
 - B. Identify potential hazardous materials and hazardous substances
 - C. Conduct orientation sessions with the building occupants to explain what is being done and answer questions they may have.
 - D. Prepare survey and sampling plans
 - E. Conduct surveys and sampling

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- F. Interpret results of surveys and sampling reports
- G. Assess hazards and regulatory requirements
- H. Prepare hazard abatement plans and specifications for corrective action and worker protection
- I. Prepare regulatory notifications and correspondence
- J. Acquire necessary approvals and permits
- K. Conduct waste characterizations
- L. Properly dispose of waste materials
- M. Give preference to the reuse or recycling of materials when costs in doing so are lower than that of disposal unless otherwise specified
- N. Provide estimated time required for project completion
- O. Provide detailed cost estimates for all work
- P. Provide oversight and monitoring of all contractors associated with this work
- Q. Other services as required

10.2.2 All work will be accomplished in accordance with Federal, State, local, and ARS regulations and guidelines and will be performed by accredited personnel. Where conflicting standards may exist, the most stringent will be adhered to. In the event that no regulatory standard exists, the work will be accomplished in accordance with the most current best management practices and industry standards in concert with regulatory guidance or approval.

10.2.3 The corrective action design services shall be provided in accordance with the requirements of SOW sections 4.0 and 6.0.

10.3 Abatement Services – (Bidding Phase)

If Bidding Phase Services are required for hazardous materials/substance abatement projects, the services shall be provided in accordance with the requirements of SOW section 7.0.

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10.4 Abatement Services – (Construction Phase)

If Construction Phase Services are required for hazardous materials/substance abatement projects, the services shall be provided in accordance with the requirements of SOW section 8.0.