**STATEMENT OF WORK**

**architectural-engineering, (A-e), Procurement & Construction Management for HVAC SYSTEMS**

1. **INTRODUCTION**

The DOE/NNSA has established asset management programs (AMP) to make strategic investments in infrastructure systems to reduce deferred maintenance and to increase sustainability and safety throughout its complex. On December 8, 2015, DOE/NNSA issued a memorandum announcing a partnership between DOE/NNSA, its Office of Infrastructure, Safety and Operations (NA-50), its Livermore Field Office (LFO) and LLNS to implement the Cooling and Heating Asset Management Program (CHAMP).

As the lead Maintenance and Operating (M&O) Contractor responsible for performing the technical and the subcontracting activities for the CHAMP, LLNS is issuing this Master Task Agreement (MTA) to secure the services of a Subcontractor capable of providing Architectural Engineering (A-E) and Construction Management Services for the replacement of Heating, Ventilation, and Air-Conditioning (HVAC) infrastructure complex-wide.

As the A-E, the Subcontractor provides designs for selected projects to replace HVAC Infrastructure across the DOE/NNSA complex as directed under LLNS’ A-E Task Orders. A-E efforts will include such services as Title I-III architectural, structural, mechanical, electrical and civil engineering and other related engineering and professional support services in support of HVAC Replacement / Modernization.

As the Construction Manager (CM), the Subcontractor provides construction management services as directed under LLNS’ Construction Management Task Orders. Construction Management efforts will include such services as scoping, competing and awarding the build efforts; managing, overseeing and administering the resultant subcontracts; and resolving technical clarifications for the Subcontractor’s lower-tier build subcontractors. The Subcontractor shall not self-perform the construction. Instead, the Subcontractor shall compete the construction efforts and subcontract them to qualified lower-tier build subcontractors in accordance with the requirements of the MTA Statement of Work, section III. C. “Procurement Requirements under A-E and Construction Management Task Orders.” The Subcontractor shall then construction-manage its lower-tier build efforts in accordance with the designs delivered under LLNS A-E Task Orders.

If requested by task order, the successor Subcontractor shall adopt earlier Assessment and Design work performed by the predecessor Subcontractor, including estimates and schedules for construction execution.

Through an effective partnership between LLNS, the Subcontractor and the Participating Sites identified in the MTA, LLNS plans to fulfill the following AMP objectives for:

* deferred maintenance reduction;
* modernization of facilities in support of science mission;
* reductions to energy consumption, as verified by installed instrumentation;
* compliance with regulatory requirements; and
* decreased operational costs in buildings important to the scientific missions of the Participating Sites.

This Statement of Work is organized into the following sections:

1. Introduction
2. Definitions
3. Scope
4. Task Order Process Overview
5. Types of Services
6. Meetings, Schedules, Reports & Other Deliverables
7. **DEFINITIONS**

Unless the context otherwise requires, words or phrases defined in this section shall have the following meaning in this document.

“Affiliate” shall mean associated business concerns or individuals if, directly or indirectly (1) either one controls or can control the other, or (2) a third-party controls or can control both.

“Architect-Engineer (A-E)” shall mean professional services of an architectural or engineering nature, as defined by Federal Acquisition Regulation (FAR) 2.101.

“Assessment Services” shall mean A-E services for the assessment of project proposals including assessment of existing site conditions and related field data including field photographs, evaluations of alternatives for design including energy savings calculations, determination of program performance criteria, schedule and cost estimates for design, and; schedule and cost estimates for construction.

“Lower-tier Subcontractor” means a business concern that enters into a subcontract with the Subcontractor to provide goods or services in support of the Task Order. As used herein, lower-tier subcontractor includes any lower-tier build subcontractors.

“Lower-tier Build Subcontractor” means a business concern that enters into a subcontract with the Subcontractor to perform construction build activities pursuant a Task Order.

“Participating Sites” shall mean DOE/NNSA sites where the Subcontractor shall perform services as identified in Article 2 of the MTA.

“Project Management” shall mean A-E services for program and project administration for planning, organization, directing, controlling and reporting on the status of the program and project.

“Title I Services” shall mean A-E services for the preliminary stage (65% completion) of project design including site investigations, studies, interior design, plans, specifications, preliminary drawings and technical calculations.

“Title II Services” shall mean A-E services for the final design (95% completion) of project design activities including restudy and redesign to incorporate changes from the Title I activities and final drawings.

“Title III Services” shall mean A-E services for inspection and/or observation of construction activities, providing clarifications to the lower-tier build subcontractors and incorporation of all design modifications performed during construction into a set of as-built drawings.

1. **SCOPE**

The Subcontractor shall be responsible for the performance of A-E, Procurement and Construction Management services to replace HVAC systems throughout the DOE/NNSA Complex and coordinate work activities with Participating Sites as required. In addition, the Subcontractor shall be responsible for the award, administration and construction and project management of lower-tier build subcontractors as they execute the designed replacements, modifications or upgrades of the following types of systems and components:

A. Dry side systems

* 1. Central HVAC systems (air handler replacements)
  2. Packaged HVAC Systems
  3. Outdoor air makeup, ventilation, exhaust, and return systems

B. Wet side systems

1. Chilled water systems
2. Heating hot water systems
3. Condenser water systems
4. Cooling tower systems
5. Support equipment such as pumps, controls, tanks, receivers, piping and valving

C. Control systems

Instrumentation, software, display and interface, trending for equipment operation, control, reporting, alarms, and measurement and verification.

D. Ancillary systems

Lighting and lighting controls; fire alarms systems and interface to existing site systems; civil systems such as storm drains, sanitary sewer drains; site utilities such as compressed air, nitrogen, condenser water, city/domestic/potable water systems; fire protection systems including wet-pipe, dry-pipe, and chemical-type systems; architectural systems; structural systems, and; material handling and lifting systems.

1. **TASK ORDER PROCESS OVERVIEW**

Under the MTA, LLNS will issue individual firm, fixed price subcontracts referred to as “Task Orders” authorizing specific work scopes mutually agreed to by the parties. Task Orders will be awarded for two distinct types of services: A-E and Construction Management Services.

Once assessments and designs are delivered and approved and construction estimates are established under the A-E Task Orders, LLNS will negotiate separate Task Orders with the Subcontractor to provide construction management services to procure and administer the build effort consistent with this Statement of Work, the designs approved under the A-E order and other applicable requirements. Work will be authorized under the construction management Task Orders in two steps. Initially, the Subcontractor will be funded to execute the solicitation and the source selection of the Lower-tier build Subcontractor. Once the Subcontractor selects the Lower-tier Build Subcontractor and obtains LLNS consent, LLNS will modify the construction management Task Order to incorporate build and construction oversight effort to allow for build work to proceed.

1. **TYPE OF SERVICES**

This scope of work includes the performance of A-E professional design services (Assessments, Title I, II, and III, including reviews and Project Management) and the procurement and management of construction activities which include civil, structural, mechanical, controls, electrical work related to HVAC replacement, including demolition of selected systems and equipment in support of follow-on replacement efforts. Descriptions and requirements for these services are detailed below. LLNS shall define project specific information and requirements within the Task Orders.

1. A-E:

The Subcontractor shall provide professional design services including civil, architectural, structural, mechanical, and electrical services as defined in Task Orders. The required capabilities and deliverables are summarized below.

* + - 1. Summary Descriptions of Discipline Work for A-E
         1. Architectural

Building modifications necessary to remove existing and install new mechanical systems

* + - * 1. Structural

Design of structural supports for mechanical systems and structural modifications necessary to remove existing and install new mechanical systems.

Review of existing structures to ensure feasibility of demolition and installation of new systems.

Fall protection systems required for construction and for permanent installation.

Lifting plans and rigging systems necessary for on-going maintenance and support activities for newly installed systems, for construction, and for demolition and removal of existing systems.

* + - * 1. Mechanical

Design of HVAC systems including piping design; equipment sizing and selection; mechanical system sequence of operation and controls design (pneumatic, direct digital control, and programmable logic control systems); flow diagrams; piping and instrumentation diagrams; sizing and selection of all system appurtenances such as isolation and flow control valves, expansion tanks, pressure relief valves, strainers, and pressure-regulating valves; makeup water systems; makeup air systems; coil sizing and selection; dehumidification and humidification systems; boiler sizing and selection; natural gas and/or fuel-oil system sizing; system sizing for optimal operation such as N+1 redundancy and low-load conditions

Equipment selection to include energy load profiles

Mechanical system design shall include sub-metering, gauges, transmitters, transducers, flow measurement devices, and all other controls and valving necessary to provide for measurement and verification and reporting of estimated and actual energy utilization.

Modelling of mechanical systems and architectural systems (including building envelope) to determine:

Optimal sizing of equipment

Envelope loads, plug loads, outdoor air loads, and all other loads that impact the sizing and operation of the mechanical equipment

Building zone loads and impacts on and optimization of mechanical system operation

Operational sequences for equipment, staging and design loading to meet design requirements.

Estimated energy utilization for individual equipment load profiles and system energy utilization

Estimated design system energy utilization.

Modelling shall be executed using industry-recognized modelling software, approved by LLNS, such as E-Quest, DOE-2, Trane Trace, Energy Plus, or equivalent.

Exhaust systems design

Demolition and removal of systems to support the installation of new HVAC systems and the associated support systems

Mechanical system piping sizing and distribution (sanitary sewage, storm drainage, roof drainage and overflow, domestic water, heating hot water)

* + - * 1. Electrical

1. Building electrical system design including sizing and distribution, arc-flash and short circuit calculations, and breaker coordination studies to support installation of new equipment and demolition of existing systems.
2. Lighting systems design
3. Solar power system design
   * + - 1. Civil
4. Site drainage
5. Site lay-down yard designation
6. Construction traffic support
7. Utility design
   * + 1. General Design Requirements
          1. Design packages shall provide all necessary design detail and data necessary to execute the design intent needed for a complete system and include design construction drawings that illustrate the construction scope of work and support the required AACE estimate class. Where applicable, design packages should include preliminary design criteria, alternative construction solutions available, and recommendations for construction. Design packages should also include relevant performance standards, construction specifications, layouts, drawings, commissioning and other documents that are compliant with Task Order requirements and site-specific design requirements.
          2. Design documents shall indicate design basis for each project. The design basis shall include the system technical performance requirements, commissioning requirements, and alternative construction solutions available.
          3. Design documents shall comply with MTA and Task Order requirements and review recommendations made by LLNS and the Participating Site’s Representative. The Subcontractor shall refer to the CHAMP Special Provisions for additional minimum requirements for the execution of design work, including but not limited to; Codes and Standards, Substitutions, Submittals and Environmental, Safety and Health (E, S &H) specifications.
          4. Equipment selections shall be based on a 20-year minimum performance life.

* + - * 1. Incorporate the most current editions of ASHRAE 90.1, 189.1, 55, 62.1, and the Federal Guiding Principles for High Performance Sustainable Buildings requirements of DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, into design of new systems.
        2. Incorporate the current LEED for New Construction and Major Renovations as a minimum guideline for commissioning, indoor air quality, and refrigerant management.
        3. Deviations from requirements, regulations, codes, standards, and guidelines shall require authorization from LLNS.
        4. Provide a file transfer system for construction drawing review and construction project progress documentation and alternate secure means for distribution of documents identified by LLNS as sensitive.
        5. Design documents shall include the following:

Provisions for measurement and verification of all subsystems to features necessary to monitor, measure, and verify the design basis, operational requirements, and energy-efficiency features of the system. These features will be installed in conjunction with an electronic control system, either previously installed or installed as part of the current project, that will provide for on-going unattended measurement, archiving, and reporting energy consumption, energy efficiency, and performance to design basis;

Final inspection, testing, commissioning and site training plans for a controlled and deliberate approach to achieving normal operations, including:

Acceptance testing of systems and components to performance and design criteria that demonstrates that specifications and safety requirements have been met.

Operational testing, commissioning, and training to validate the design, construction, hardware, programs, and personnel are ready to support safe operations.

Operational readiness reviews to determine that facilities are ready to conduct work;

An operations plan that describes the design and operation of the new system and the initial operating parameters of the new system are understood and documented. The operations plan shall include all technical data, operations manuals, and maintenance information required for normal operations.

* + - * 1. Design Reviews

1. When required by Task Order, Subcontractor shall, at a minimum, review progress with LLNS at 65% and 95% design completion. Subcontractor shall initiate the next phase of work only on LLNS approval.
2. Subcontractor shall revise drawings, specifications, and cost estimates as necessary to incorporate design review comments at each phase of design of the proposed project.
   * + - 1. Waiver of Preliminary Design: LLNS may waive the requirements for preliminary design and direct the A/E to proceed immediately with the final design in certain Task Orders.
         2. Coordination: The Subcontractor shall conduct coordination meetings, prepare coordination matrices, and review progress documents for intra-discipline coordination in the construction documents.
         3. PDF Format: For ease of review, the Subcontractor shall provide PDF copies of all documentation.
3. Assessments
4. Project assessment site visits:

Visit each project site to research site requirements for coordination of construction efforts, perform field investigations, obtain recommendations for prospective bidders and meet with the Participating Site Technical Representatives and their teams.

1. Project assessment:

Critique the existing proposed project scope and recommend revisions or alternative solutions. Revisions or alternative solutions may be incorporated into the design only with LLNS approval. Specific areas that require further evaluation include the following:

Proposed design approach and alternatives

Proposed system and alternatives selection and integration with the applicable facility

Code analysis: provide a code analysis of the proposed system and revise design in accordance with all life safety codes and other applicable code requirements.

Energy conservation analysis: evaluate and select energy conservation measures.

Provide refined cost estimates and schedule for Titles I, II, and III design effort and for construction.

Review project assessment reports to LLNS and Participating Sites. Incorporate LLNS-approved revisions in final report submitted to LLNS within two weeks of review.

1. Title I – Preliminary Design Activities and Deliverables
2. Drawings: Provide preliminary drawings including site plans, floor plans, all elevations, cross sections and other drawings needed to illustrate the size, character, interior arrangements, and quality of work of the projects. Define essentials of structure type, mechanical and electrical and controls systems, and other systems as needed for a complete installation. Drawings shall clearly delineate the scope of work.
3. Calculations and Modelling: Provide preliminary design calculations and modelling to support the preliminary design. Include energy budget estimate and return-on-investment calculations.
4. Commissioning Plan: Provide design basis and system descriptions for mechanical and electrical systems to be commissioned
5. Specifications: The Subcontractor shall provide draft specifications during Title I that comply with the A-E Submittal requirements for Specifications below.
6. Title II – Final Design Activities and Deliverables
   * + - 1. Drawings: Provide final design detailed working drawings and electronic copies of drawings compatible with AutoCAD systems .dwg format. Final issuance of 100% drawings and specifications shall occur upon final signatures by LLNS.
         2. Calculations and Modelling: Final civil, structural, mechanical and electrical design calculations and modelling results.
         3. Commissioning Plan: Provide detailed commissioning plans for mechanical and electrical systems and any required testing and balancing.
         4. Specifications for the Lower-tier Build Subcontractors shall be submitted during the Title II phase in compliance with the A-E Submittal Requirements for Specifications below.
7. Requirements for A-E Submittals, Title III and other A-E Activities
   * + - 1. Energy Modelling: Propose energy modelling software to demonstrate energy utilization of the systems installed and those proposed for installation. The energy modelling software shall permit detailed comparative analysis of building system design and technologies through the use of system energy use simulation. Use approved energy modelling software to provide energy utilization of the systems proposed and installed. Incorporate energy model into building automation systems provided and provide energy utilization reports of energy consumption predicted versus actual for all systems installed.

* + - * 1. Engineering Calculations (For requirements for calculations presented during Construction, refer to CHAMP Special Provisions).

The Subcontractor shall use good form and legible lettering in recording all calculations. Prior to presenting the actual calculations, the Subcontractor shall all state all known parameters first, with all formulas, assumptions, and constants. All calculations shall be made on 8-1/2 x 11-inch computation paper. All computer-generated calculations shall be accompanied by a narrative with clearly stated conclusions noted.

Calculations required shall be prepared by engineers licensed within their respective disciplines and in the state where the construction effort will be performed. Standard, recognized computation techniques shall be used; shortcut methods and rules-of-thumb are not acceptable. Computations shall be presented in well-indexed document form with all assumptions stated and references made to supporting documents and text. Each computation shall be independently checked by a checker having professional credentials equivalent or better than the designer. The names, not initials, of the designer and checker shall appear on the calculations with the date of origin. Test data, where appropriate, may be included as part of the supporting documentation.

* + - * 1. Design Drawings:

For shop drawing specifications, refer to CHAMP Special Provisions.

All drawings shall be computer-aided design/drafting (CADD) system compatible with AutoCAD, latest revision.

The Subcontractor shall provide complete reproducible, scaled drawings which include all information necessary to adequately describe construction requirements. Drawing title blocks shall allow room for LLNS approval signatures and for the application of engineering stamps. All design drawings shall be stamped by licensed professional engineers or architects registered to practice in the state where the construction effort will be performed. When work is complete, the A-E shall provide a record set of “as-built” drawings, of the type specified by LLNS showing construction as actually accomplished.

All notation, dimensioning, and lettering on drawings shall be of a scale to permit legible half-sized reduction. Minimum acceptable sizes are 1/8-inch for handwritten notes and ¼-inch for all major labels. Lower case lettering shall not be used. All drawings shall have a standard graphic scale incorporated into the format.

All plan view drawings shall incorporate a key plan notation to designate the area of work as applicable and consistent use of directional orientation with north indication throughout the package.

Final design drawing submittal shall be electronically distributed, sized for “D” sheet size 30” x 42” inches.

Schematic airflow and piping diagrams for mechanical systems shall include every component related to the controls, maintenance, and operation of the systems. Items such as thermometers, transmitters, gauges, dampers, sensors, access doors, test ports, flexible connectors, Pete’s plugs, thermostats, control panels, and all other appurtenances and control devices shall be included.

* + - * 1. Specifications:

The Subcontractor shall provide draft specifications during Title I that include all general product data and all required data for data for long lead time material procurements. In addition, the Subcontractor should alert LLNS to any recommended equipment that might require a Buy-American Act Waiver.

During the Title II phase, the Subcontractor shall submit complete technical specifications, with Title II drawings. The specification package shall also address requirements for General Conditions, including but not limited to, safety, environmental, work control, quality, security and operations and maintenance data requirements that will become part of the lower-tier build package to be awarded under a Construction Management Task Order.

Submit specifications electronically in Microsoft Word, current version for review.

When preparing the Title II specification package, the Subcontractor shall refer to the minimum requirements in the CHAMP Special Provisions for guidance on how to prepare and supplement its General Conditions. Notwithstanding these CHAMP Special Provisions, the Subcontractor shall comply with all applicable local, state and federal requirements. In the event of a conflict between the requirements under the CHAMP Special Provisions and the requirements of the Participating Site, those of the Participating Site shall govern.

When referring to codes or standards in the construction documents, use recognized industry codes and standards. Refer to Section 01 42 00 Codes and Standards of the CHAMP Special Provisions. Federal standards and military specifications shall not be used unless their content is common knowledge.

References to a specific manufacturer, vendor, or product as a standard of quality shall include a minimum of two manufacturers, followed by “or equal” and shall include manufacturer and model numbers for each manufacturer specified. Catalog numbers, when shown, shall apply to each supplier. When only one supplier, manufacturer, or vendor is known, use “or equal (no known equal).”

* + - * 1. Specification Requirements for Operations and Maintenance Data

The Subcontractor is responsible for providing all available information and data required for proper equipment operation and maintenance.

The Subcontractor shall require in its specifications that the lower-tier build subcontractor provide equipment warranties for all installed equipment. Unless stated otherwise in the Task Order, the warranties shall, at a minimum, comply with warranty requirements stated in LLNS General Provisions.

The Subcontractor shall require in specifications that the lower-tier build subcontractor perform all required start-up tests and procedures, complete all trouble-shooting prior to final acceptance, and train all designated site personnel in the operation and maintenance of all building systems.

The Subcontractor shall require in specifications that plans and procedures to accomplish these tasks shall be submitted for review to LLNS prior to execution.

* + - * 1. Record Documents: The Subcontractor shall furnish as-built drawings and specifications and as-built CADD documents and specifications as directed under the Construction Management Task Orders.

1. Estimating and Task Order Proposals

a) LLNS will establish the design and construction budget for each project. When required by Task Order, the Subcontractor shall:

Prepare designs within the established budgets.

ii. Validate during Assessment Phase independent AACE Class 3 (Budget, Authorization, or Control) estimates furnished by the Participating Sites for design and build efforts are within the budget allocated by LLNS.

Develop independent budgetary construction estimates and final construction estimates. Construction estimates shall meet AACE Class 3 (Budget, Authorization, or Control) requirements at 65% design completion and AACE Class 1 (Check Estimate and/or Bid Tender) requirements at 95% design completion. As the design progresses, the cost estimates shall be kept current, reflecting design changes and up-to-date cost data.

Estimates shall be broken down by phase or bid package, if used, to clearly describe labor assumptions, hours and categories and material assumptions, quantities and types.

Subcontractor shall provide estimates in Microsoft Excel with the ability to sort on schedule descriptors such as the work breakdown structure, resource loading or design and construction phases. Estimate preparation shall be coordinated with the schedule preparation in accordance with Task Order requirements.

Perform construction within the established budget. To support the budget preparation process, LLNS will require submittal of independent estimates prior to the bidding of work to lower-tier build subcontractors.

b) Task Order Proposals: In addition to the above, the Subcontractor shall furnish Task Order proposals for either A-E efforts or Construction Management efforts as outlined in the MTA paragraph entitled “Task Order Proposal Process.”

1. Program Management - Program Administration

Conduct an orientation meeting as soon as agreed with LLNS and DOE NA-522 after MTA award. This one-time meeting will allow both parties to coordinate the CHAMP startup.

Conduct meetings per Section VI.

Direct and coordinate efforts of design team(s), construction management team(s) and lower-tier build subcontractors and their interface with Participating Sites and LLNS Program Management.

Provide cost estimates and schedules for design and construction.

Provide project status reporting (scope, schedule, cost). Use Microsoft Project, version current as of January 2023.

Provide status reporting on a weekly (project) and monthly (program) basis.

Provide risk identification, risk evaluation and assessment, and mitigation strategies for projects. Monitor risk relative to project risk tolerance. Evaluate effectiveness of mitigation approaches used and adapt processes and plans to reduce or adjust risk to acceptable levels.

Provide and track program performance metrics for schedule, cost, safety (first aid incidents, lost time accidents, total recordable incident rate, Dart rate), change costs, field rework cost, performance evaluations and others as identified. Subcontractor shall publish metrics monthly.

Provide and use a configuration management system for drawing, specification, and cost estimate revision to incorporate design review changes, change orders, and field changes and to reflect final approved or as-built status. Review cost estimates and schedules to incorporate approved changes in construction.

Provide Environment, Safety and Health (E,S&H) management services for program safety plan development, implementation, and oversight during all phases of this subcontract including design efforts and flow-down through all lower-tier subcontractors. Develop and execute this program in accordance with the applicate MTA Articles, the *CHAMP Special Provisions, Section 01 35 23 General Safety Provisions* and the General Provisions*.*

1. Construction Management and Field Safety Supervision

During the performance of the A-E Task Orders, the Subcontractor shall have created designs, specifications and estimates in accordance A-E requirements to support follow-on construction management and lower-tier build activities. When required by the Construction Management Task Orders, the Subcontractor shall provide construction management support to complete the work summarized below. Refer to the CHAMP Special Provisions for minimum codes, standards and other requirements to be applied to this work.

* 1. Solicit, negotiate, award and administer lower-tier build subcontracts consistent with the requirements of Section C. below.
  2. Perform constructability reviews; respond to Requests for Information (RFIs).
  3. Lead pre-bid and pre-construction meetings with lower-tier subcontractors to review contract requirements, procedures, and coordination required for a complete understanding of their contractual requirements and responsibilities.
  4. Administer and project-manage all lower-tier build subcontracts such that work moves forward safely, on-time, in compliance with requirements and within budget.
  5. Provide daily construction and safety supervision on a full-time basis on the construction site and oversee and assure compliance with Participating Site E,S&H requirements.
  6. Review lower-tier build subcontractors’ schedules for work progress, equipment and material procurement and delivery, submittals, and values for partial pay purposes, and project cash flow requirements.
  7. Review and accept submittals from lower-tier subcontractors for conformance with design concept and intent of the contract documents.
  8. Issue instructions to the lower-tier build subcontractors.
  9. Prepare change orders and submit proposals to LLNS as required.
  10. Negotiate changes, equitable adjustments and claims of lower-tier build subcontractors.
  11. Conduct bi-monthly construction progress reviews to confirm that each project is meeting contractual requirements. Evaluate progress at the substantially complete stage and at final completion to determine if the project has been completed in accordance with the contractual requirements.
  12. Execute required installation, final testing and commissioning efforts. Also conduct a final inspection and obtain site concurrence (approval by DOE or Program) of project completion.
  13. Monitor lower-tier subcontractors’ requirement to provide documentation of changes made during construction within 60 days of completion of construction.
  14. The Subcontractor shall provide all record documents as required by Task Order, including, but not limited to, as-built drawings and specifications and as-built CADD documents and specifications.

1. Procurement Requirements under A-E and Construction Management Task Orders

The Subcontractor shall perform procurement services to accomplish the work identified in each Task Order in compliance with the general and construction contracting requirements detailed below.

* 1. General Requirements (Procurements under both Types of Task Orders)

The Subcontractor shall develop, implement and maintain formal policies, practices or procedures to be used in the award and administration of lower-tier subcontracts consistent with the MTA and Task Order requirements.

For each construction management Task Order proposal, the Subcontractor shall complete a CHAMP Justification for Award Document that provides the basis for all proposed lower tier subcontracts exceeding $100K. when deemed by LLNS, Subcontractor shall provide the same for A-E Task Orders. See Article 1 of the MTA, Incorporated Documents for a copy of the form.

Prevention of Conflict of Interest

The Subcontractor shall not perform the construction work nor shall it award a lower-tier build subcontract to an affiliate.

The Subcontractor shall not allow the lower-tier build subcontractor or one of the lower-tier build subcontractor’s affiliates to inspect the construction work. The Subcontractor shall assure that the working relationships of the lower-tier construction subcontractor and the independent inspector inspecting its work and the authority of the inspector are clearly defined.

Subcontractor-Affiliated Sources. Equipment, materials, supplies, or non-construction services from a Subcontractor-affiliated source shall be purchased or transferred in accordance with 48 CFR 970.4402-3.

The Subcontractor shall ensure all bidders are treated fairly and afforded equal access to information. Further, the Subcontractor shall ensure all source selection decisions are made free of impaired objectivity due to personal, apparent or organizational conflicts of interest.

Consent Requirement

The Subcontractor shall obtain LLNS consent for the following procurement activities in accordance with FAR 52.244-4 (A-E Services) and FAR 52.244-2 (Construction Services):

1. Any lower-tier A-E subcontract that was not addressed in the MTA or a negotiated Task Order proposal;
2. All lower-tier build subcontracts.

All consent packages shall be submitted to LLNS in accordance with the applicable consent FAR clauses and include the following documents.

1. Justification for Award document,
2. Supporting documentation such as solicitation, price analysis, bid tabs, comparisons to independent estimates or negotiation memoranda required to further elaborate and clarify demonstration of price reasonableness, as necessary. LLNS reserves the right to request copies of proposed Subcontracts.

Subcontractor – Lower-tier Subcontractor Relationship

The obligations of the Subcontractor as detailed herein, including the development of the purchasing system and methods, and purchases made pursuant thereto, shall not relieve the Subcontractor of any obligation under this MTA (including, among other things, the obligation to properly supervise, administer, and coordinate the work of lower-tier subcontractors). Lower-tier subcontracts shall be in the name of the Subcontractor, and shall not bind or purport to bind LLNS, the U.S. Government or any Participating Site.

Interactions with bidders and lower-tier subcontractors

* The Subcontractor shall competitively solicit all lower-tier subcontracts it awards. For lower-tier build subcontracts, it shall make awards to the lowest priced, technically acceptable offeror and it shall not sole source, unless authorized by LLNS to do otherwise.
* The Subcontractor shall conduct pre-bid meetings, kickoff meetings and other reviews necessary with its lower-tier subcontractors to assure work is accomplished safely, on time, within budget and in compliance with MTA and Task Order requirements.

1. Lower-Tier Build Subcontract Requirements (applicable to construction management Task Orders only)
2. Lower-tier build subcontracts shall be fixed priced and awarded and administered compliant with this Statement of Work, the terms and conditions of the Task Order, the CHAMP Special Provisions and the GENERAL PROVISIONS FOR FIXED PRICE CONSTRUCTION AND DESIGN-BUILD SUBCONTRACTS.
3. Using the approved design documents and drawings and estimates from the A-E efforts outlined above, the Subcontractor shall prepare solicitations that include the following:
   * + - Solicitation, with Instructions to bidders, Bid form, Sample Subcontract with applicable flow down requirements and LLNS Change Order Procedures
       - Bond forms, Insurance, as applicable
       - Relevant wage determinations (Preapproved in accordance with MTA Article, “Notice of Applicability of Davis-Bacon Act”)
       - Estimated price range based upon a AACE Class 1 Independent Estimate
       - General conditions
       - Construction specifications
       - Site-specific supplemental and general conditions (that include flow down of applicable LLNS MTA and Task Order requirements)
       - Requirements for project-specific E,S&H documentation consistent with DOE and NNSA site-specific requirements
       - CHAMP Representations and Certifications, applicable to orders > $3,000.00.

In addition to the above, solicitations must adequately describe the work, considerations associated with the work, the location of the work, and special qualifications related to responsibility of a bidder. Solicitations must include information about the site visit, when the bids are due, the basis for award, the performance period in days after notice to proceed, security-related concerns and the amount of liquidated damages, if used, which will apply to the lower-tier build subcontract.

1. Unless authorized by LLNS to do otherwise, the Subcontractor shall competitively solicit all construction efforts to qualified subcontractors. To maximize competition, the Subcontractor may augment the bidder’s list recommended by the Participating Sites for a given project with other general, mechanical, electrical, and controls lower-tier subcontractors. Refer to the CHAMP Prequalification Guidelines for Lower-tier build Subcontractors listed as an incorporated document under the MTA. The Subcontractor should leverage these guidelines to establish technical acceptability.
2. LLNS reserves the right to review and comment on solicitations prior to issuance.
3. After the Subcontractor receives responsive proposals to its solicitations, the Subcontractor shall select recommended lower-tier subcontractors. The Subcontractor shall submit a consent package for the award plus a proposal for its construction management services and any required Title III support. LLNS shall negotiate this package with the Subcontractor and incorporate the necessary funds via modification into the construction management Task Order as appropriate. The Subcontractor shall then be responsible for managing the construction activities at the Participating Site.
4. Change Order Proposals

Proposals for changes shall be submitted to LLNS in compliance with LLNS Change Order Procedures, except markup for Lower-tier Build subcontractors shall be consistent with that stated in the MTA Pricing Schedule.

1. **MEETINGS, SCHEDULES, REPORTS & OTHER DELIVERABLES**
2. Weekly Coordination Meetings

Conduct weekly teleconference meetings with Participating Sites, LLNS and DOE/NNSA through all phases of design and construction to review progress of all ongoing projects. Provide agenda prior to teleconference and meeting minutes no later than two days after meeting.

1. Program meetings

Conduct weekly teleconference meetings with LLNS and DOE/NNSA to review programmatic status (including financial and technical progress and staffing levels) at a summary level for all active work. Provide agenda prior to teleconference and meeting minutes two days after meeting. In addition, conduct one annual meeting for all CHAMP participants.

1. Interim meetings

LLNS reserves the right to require additional meetings as necessary to support Task Order performance.

1. Schedules
2. The Subcontractor shall maintain schedules and track progress through all phases of design and construction against the established baselines on a weekly basis.
3. The Subcontractor shall create its schedules in Microsoft Project and in Critical Path Method (CPM) format and submit them electronically for LLNS review and approval. LLNS will address distribution of schedules in the Task Orders.
4. The following milestones shall be incorporated into each schedule:

|  | **Milestone** | **Notes** |
| --- | --- | --- |
| 1 | Project Start | A project "starts' when the construction management task order for a project is awarded to the subcontractor. |
| 2 | Submit Project Execution Plan | Submitted as a deliverable under the Assessment task order as part of the Assessment report, Subcontractor shall include a 30% design level scope, schedule and estimate. |
| 3 | Design Complete | Project design is 100% complete and all construction documents are ready for procurement/execution. |
| 4 | Project Acquisition Complete | Construction Management Task Orders are awarded; execution and long-lead-equipment (LLE) contracts are awarded. |
| 5 | Project Mobilization Start | Construction materials are delivered/or labor is mobilized at the project site. |
| 6 | Project Execution at 50% Complete | Applies to the build scope for all projects and reflects scope execution progress and is not a calculation of 50% cost and commitment. |
| 7 | Project Complete | Field work is complete and turned over to operations for startup/operation. |
| 8 | Project Closeout | Startup testing is complete, approval for acceptance is complete, all cost codes are closed and there is no further billing. |

1. Unless stated otherwise within the A-E Task Order, within 14 business days of execution, the Subcontractor shall submit a project design and construction schedule. The schedule shall include start and completion of Title I and II efforts and construction. The schedule shall identify design effort by all required disciplines and indicate review points, key decision points, and submittals dates as necessary to accomplish the overall project. The schedule should allow sufficient time for turnaround of submittal review comments.
2. Schedule tasks shall include identified predecessor and successor activities with identified lead and lag times, activities (including outages) with identified durations, review and return durations for all safety and material submittals, and material lead-times. All schedule activities or tasks shall be visibly shown on each submittal; LLNS will not accept schedules with hidden or missing lines.
3. Upon completion of final drawings and specifications, the Subcontractor shall submit an updated schedule that incorporates deliveries for all long-lead procurement items and their impacts and any additional milestones established during the final design.
4. Unless stated otherwise within the Construction Management Task Order, the Subcontractor shall submit the initial schedule for the lower-build subcontract and update it weekly in accordance with CHAMP Special Provisions Section 01 32 00, “Schedules”
5. Weekly Progress Reports
6. The Subcontractor shall provide a consolidated weekly progress report addressing all active Task Orders. Monthly reports shall address percentage of work completed and work forecasted as tracked against baseline schedules.
7. The Subcontractor’s report shall include a document status log capturing progress on approval of engineering, construction and E,S&H submittals and a Change Order Status Log.
8. Interim Reports and Database Requirements

LLNS reserves the right to require additional reports as necessary to support Task Order performance. In addition, the Subcontractor shall, upon request, provide updates concerning programmatic data in the DOE/NNSA G2 and Builder databases.

1. Other Deliverables

In addition to the deliverables listed in Section V., the Subcontractor shall furnish additional deliverables as required by Task Order.