STATEMENT OF WORK
WORK REQUEST # C104567

DESIGN/BUILD SERVICES for BUILDING 49 – SWITCHGEAR REPLACEMENT AND GENERATOR UPGRADES

1.0 BACKGROUND

1.1 PROJECT BACKGROUND

NIH's building 49 is a 274,500 square foot rectangular building consisting of eight stories. Primary use is for office, research, and various use laboratories including a CAF (Central Animal Facility). The building was originally constructed in 1993 with a substantial number of renovations over subsequent years.

The existing emergency electrical system no longer meets NIH performance or readiness standards. Its replacement is vital for ensuring compliant, reliable operation in the various use laboratories including sensitive vivarium operating room suites within the CAF (Central Animal Facility), research laboratory and offices suites throughout building 49.

NIH ORF (Office of Research Facilities) identified the need for the replacement of the existing emergency equipment in electrical vault, which currently contains 1500kW Diesel Generator, Day tanks and switchgear, Switchboard, distribution panels, transfer switch etc. that are outdated and no longer meet present-day standards for capacity, efficiency, and reliability. Due to the age and deteriorating condition of these components, their continued use poses operational and safety concerns. As part of the Design-Build Contractor's proposed design, the existing electrical equipment shall be removed and replaced with new, with similar/higher-capacity equipment.

1. PROJECT CONTACT PERSONS:

A. CONTRACTING OFFICER (CO) - Overall authority in all matters for this project:

Mr. Brian Baek
National Institutes of Health
Office of Acquisition
13 South Drive, MSC
Building 13, Room 2E48
9000 Rockville Pike, Bethesda, MD 20892-5759
Telephone: 301-435-1604
Email Address: brian.baek@nih.gov

B. PROJECT OFFICER (PO) - Project management and the CO's Representative (COR):

Mr. Earl Johnson
Division of Design & Construction Management Branch (DDCM)
Office of Research Facilities, National Institutes of Health (NIH)
Building 13, Room 275

Bethesda, Maryland 20892
Telephone: (301) 594-7964

C. In this scope of work, the official Government point of contact will be the CO (Contracting Officer) on all contractual matters and all technical/ RFI (Request for Information) inquiries shall be addressed by the PO/COR. ALL contractual matters/changes shall be addressed in writing to both the CO and the PO/COR, and written responses from the CO are the ONLY authorized changes to the statement of work, price, schedule, or any other contractual matter.

2. PROJECT DESCRIPTION

A. This project shall employ sustainable design features to achieve flexibility, energy efficiency, and quality work environment. The Design/Builder (DCB) team, which is capable of the design services required to successfully and competently develop the drawings and specifications for this type of project, provide construction documents and other instruments as required to fully facilitate the work as described herein:

1. Project Title: Building 49 - SWITCHGEAR REPLACEMENT AND GENERATOR UPGRADES

2. Work Request Number: C104567

3. Location: Building 49

3. SUSTAINABILITY

A. The DCB shall address sustainability in their proposal in accordance with FAR 23.1; see attached Sustainability Plan Form and Sustainable "Green" acquisition guidelines.

4. CODES & STANDARDS

A. This project shall be designed in compliance with applicable codes and industry standards for the location of the facility.

1. Model Building Codes

a. This project shall be designed to meet or exceed the applicable model building code(s) for the location of the facility. The design shall use other appropriate codes and industry standards such as: the Life Safety Code (NFPA 101), Fire Protection for Laboratories Using Chemicals (NFPA 45), Standard for the Installation of Sprinkler Systems (NFPA 13), and Healthcare Facilities (NFPA 99), and Guidelines for Design and Construction of Health Care Facilities, The American Institute of Architects Academy of Architecture for Health with the assistance from the U.S. Department of Health and Human Services (Note: The Department of Health and Human Services (DHHS) as an agency of the Government of the United States of America, derives its authority from the Congress of the United States, and is not subject to laws, ordinances, regulations established by state and local governments or authorities of a lesser jurisdiction).

2. Federal Regulations

a. This project shall be designed and constructed in compliance with all applicable Federal Regulations including but not necessarily limited to the following: Uniformed Federal Accessibility Standards, OSHA 29CFR 1910; The National Environmental Policy Act of 1969 (NEPA); The Endangered Species Act; The National Historic Preservation Act of 1966; The Archeological and Historic Preservation Act; The Wild and Scenic Rivers Act; 40CFR Environmental which includes: Safe Drinking Water Act, Clean Air Act, Clean Water Act, Toxic Substance Control Act, Solid Waste Disposal Act, and RCRA; Executive Order 11990 (Wetlands); Executive Order 11988 (Floodplains); Executive Order 12088 (Compliance with State environmental laws); National

Capital Planning Commission (NCPC) "Master Planning Regulations"; Energy Policy Act of 1992; Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), etc.

3. Agency Design Policies

a. This project shall be designed in compliance with the latest edition of the NIH Design Requirements Manual (DRM). The DRM is available online at:

https://www.orf.od.nih.gov/PoliciesAndGuidelines/BiomedicalandAnimalResearchFacilitiesDesignPoliciesandGuidelines/Documents/2016DesignRequirementsManual/NIH-DRM-Rev.%201.0%20-%20021318%20-%20Secured%20-%20Updated.pdf

b. The Design-Builder (DBC) should refer to the revisions page before each use of the DRM to note any updates that have been made since the last use. The entire DRM will be revised on a three-year cycle.

1. PROJECT GENERAL REQUIREMENTS

A. For the project additional detail SCOPE OF WORK (SOW), **see Appendices.**

B. The services described or specified herein shall not be deemed to be all encompassing, having the effect of excluding services not specifically mentioned but necessary to execute the contract.

C. Design-Build Contractor (DBC/DB) shall have the complete responsibility for the execution of the Project, including provision of all labor, materials, supervision, coordination, equipment, transportation, and other applicable element of cost either direct or indirect, as required for full and complete execution of the work and functional performance testing requirements.

D. The DBC shall use the SOW of the project as a guideline for the minimum work required. The award of this contract shall be based on the approach taken by the DBC to resolve the given deficiency or work, the overall thoughtfulness of the design, and the general impact on the building operation. The contractor shall consider different approaches and innovative design/construction in accomplishing the general intent of the SOW, based on redundancy, reliability, construction phasing and advanced technology available today. The intent is to proceed with the work, in a complete manner, looking on the overall system performance and longevity as it best serves the building and its operation. The DBC's proposed work shall be complete and omissions or wrong assumptions shall not be considered as reasons for Contract Adjustments and/or Change Orders after the award of the contract.

a. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
a. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
b. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.

c. Perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect.
d. DBC Architect shall furnish Construction Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
e. Virtual model of building shall include updating the electronic Revit files throughout the construction period and shall always be in parallel with actual physical construction except for final as-built model.

2. DESIGN-BUILD REQUIREMENTS

A. Project Requirements

1. The Scope of Work (SOW) has been developed as a general guideline, and it is based on the attached appendix.

2. Testing and special inspections as required by NIH Design Requirement Manual (DRM) and applicable codes, shall be performed by an independent testing/inspection firm acquired by the DBC. DBC design must clearly identify all testing and special inspection requirements based on applicable codes and regulations.

3. The DBC shall present in their proposal a team of Architect-Engineers and other necessary professional consultants, building trades, and the major sub-contractors to design and construct this project.

4. This document may be called the Project Requirement Documents (PRD) and/or Program of Requirement (POR) and is intended to provide performance requirements and minimum level of quality expected for this project, but is not construed as conceptual, preliminary, or final design and construction documents. The DBC is expected to prepare conceptual, preliminary, and final design work to 100% level, coordinated and approved by NIH guidelines and requirements. Final NIH approval of the AE sealed and signed Construction Documents is required to complete the Design Phase of this project.

5. The DBC shall submit architectural, structural, mechanical, electrical, plumbing, and any other engineering disciplinary services required. All shop drawings must be reviewed and stamped by the DBC design team.

6. DBC is responsible for all design work at all stages of this contract and shall provide AE sealed and signed Final Construction Documents (Construction Permit Set), submitted for review and approval by NIH for compliance with NIH design requirements and standards. NIH Fire Marshal stamped approval of the Final Construction Documents constitutes the Construction Permit Set that must be always kept at the construction site for NIH inspection.

7. The DBC is responsible for performing all architectural and engineering, code analysis and other professional services normally associated with the execution of this type of project.

8. The DBC shall deliver a project that meets the basis of design and all other narrative and descriptive information provided and referenced as part of this request for proposal for this design/build project. NIH considers all information, standards, guidelines, Design Requirements Manual, applicable codes as reflecting the requirements of this project. The DBC shall complete all design and construction for turn-key delivery of the project.

9. The DBC shall include in their proposal all costs for investigating existing utilities' availability and

must resolve this requirement in the field verification and site investigation phase in order to select and design the proper service and building systems required by the scope of work of this project. The DBC shall incorporate all work in their proposal for all relocation or extending these utilities.

10. The DBC shall carefully study and compare all parts of the Contract Documents with each other and with all information furnished by NIH and shall immediately report any discrepancies, conflicts, or inconsistencies in writing to the PO and CO. The DBC shall not be liable to NIH for any damage resulting from discrepancies, conflicts, or inconsistencies in the Contract Documents unless the DBC recognized, or should have recognized such discrepancies, conflicts, or inconsistencies and failed to report them to the PO and CO.

B. Existing Conduit Demolition and Site Utilities

1. The DBC shall field verify/confirm all provided information and perform all required engineering to deliver a fully functional and operational system(s) and/or work areas based on their own findings and adjustments to these requirements.

2. The required points of connection to existing utilities and services must be coordinated and located by the DBC and approved by the National Institutes of Health (NIH) prior to starting construction and must be included in the DBC design. This may require the DBC to complete measurements and metering of the existing utilities to verify if the DBC design requirements will be obtainable.

C. Operation & Maintenance 'Friendly' Design Requirements

1. The DBC must complete a design that utilizes features and building elements that allow for the most accessible means for service personnel to operate and maintain this facility. To the extent possible, fixtures and accessories shall be commonly and readily available from local vendors catered to existing maintenance stocks for cost consideration and efficiency.

2. Installation of exotic or unusual materials and accessories, difficult to reach fixtures, panels, switches, valves, etc., must be avoided. To the extent possible, all building elements, equipment, and accessories requiring maintenance and periodic cleaning shall be reachable and replaceable utilizing normal stepladders, hand tools, cleaning utensils, etc.

3. CODES, STANDARDS, & REFERENCE GUIDELINES

This project must comply with NIH design guidelines and physical security criteria, Maryland Codes, governing fire safety and applicable codes. These include <u>but are not limited to</u>:

1. Building Codes

The project shall be designed and constructed to meet or exceed the applicable building code(s) for its location. The design shall use other appropriate codes and industry standards such as: the International Building Code (IBC), Life Safety Code (NFPA 101), Standard for the Installation of Sprinkler Systems (NFPA 13), The American Institute of Architects Academy of Architecture for Health with the assistance from the U.S. Department of Health and Human Services (**Note**: The Department of Health and Human Services (DHHS) as an agency of the Government of the United States of America, derives its authority from the Congress of the United States, and is not subject to laws, ordinances, regulations established by state and local governments or authorities of a lesser jurisdiction).

2. Federal Regulations

The project shall be designed and constructed in compliance with all applicable Federal Regulations including but not necessarily limited to the following: Uniformed Federal Accessibility Standards, OSHA 29CFR 1910; The National Environmental Policy Act of 1969 (NEPA); The Endangered Species Act; The National Historic Preservation Act of 1966; The Archeological and Historic Preservation Act; The Wild and Scenic Rivers Act; 40CFR Environmental which includes: Safe Drinking Water Act, Clean Air Act, Clean Water Act, Americans with Disabilities Act, Toxic Substance Control Act, Solid Waste Disposal Act, and RCRA; Executive Order 11990 (Wetlands); Executive Order 11988 (Floodplains); Executive Order 12088 (Compliance with State environmental laws); National Capital Planning Commission (NCPC) "Master Planning Regulations"; Energy Policy Act of 1992; Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management), etc.

3. The National Institutes of Health – Design Requirements Manual (DRM)

a. The project shall be designed in compliance with the latest version of NIH Design Requirements Manual (DRM). The DRM is available online at: http://orf.od.nih.gov/PoliciesAndGuidelines/FacilitiesPoliciesandGuidelines/DesignRequirementsManualPDF.htm

b. The DBC shall refer to the revisions page before each use of the DRM to note any updates that have been made since the last use. The entire DRM is revised on a three-year cycle.

4. The National Institutes of Health - Facility Development Manual (FDM)

a. The FDM is available online at: http://orf.od.nih.gov/PoliciesAndGuidelines/FacilitiesPoliciesandGuidelines/FDM.htm

5. The National Institute of Health Center for Information Technology (CIT)

a. The DBC must comply with the NIH Division of Network Systems and Telecommunications - Telecommunications / LAN Construction Criteria, dated July 26, 2010. See Appendix-G for reference copy

6. The Environmental Protection Agency (EPA) Procurement Guidelines

a. The DBC must comply with the EPA comprehensive procurement guidelines for required materials. Justification for not purchasing EPA designated materials must be provided where applicable. Refer to following Federal Acquisition Regulation (FAR) for additional requirements:

i. FAR 52.223-15 - for efficiency in energy consuming products
ii. FAR 52.222-3 - for procurement of bio-based products
iii. FAR 52.223-4 - recovered material certification
iv. FAR 52.223-17 - procurement of EPA designated items

7. State of Maryland – The Department of the Environment (MDE)

The DBC must obtain a permit approval from the Maryland Department of the Environment for all projects involving soil disturbance. The word "approval" refers to permits, registrations, certifications, licenses, and similar issuances granted by MDE after a complete evaluation and review to implement the requirements of Maryland regulations. All plan submittals to MDE must be made through the NIH Division of Environmental Protection. The MDE permit application process is described on-line at: http://www.mde.state.md.us/Programs/Permits/Pages/index.aspx

8. The National Institutes of Health – The Division of Property Management – Real Property Management Office

The DBC must coordinate with the NIH Grounds Maintenance and Landscaping Section, within the Division of Property Management, and comply with the most recent copy of the NIH Hazard and Preservation Tree Policy (see Appendix-I for reference copy).

9. The National Institutes of Health – The Division of Occupational Health & Safety (DOHS)

The DBC must coordinate with the NIH DOHS to obtain the most recent copy of the Asbestos Abatement Policy, and to notify DOHS immediately if asbestos is found or suspected. Copies of this requirement may be obtained at: http://www.ors.od.nih.gov/sr/dohs/healthandsafety/ih/asbestos/pages/workplaceasbestos.aspx

10. The National Institutes of Health – Office of Research Facilities – Development and Operations

The DBC must prepare and submit detailed Hoisting and Rigging Plans for NIH approval for all proposed lifts on the NIH Bethesda Campus. Plans must be submitted to the PO for coordination and made part of a Site Selection Request for site access and crane use. See Appendix-K for a copy of the Hoisting and Rigging: Lift Planning and Control for Ordinary Lifts Template.

11. The National Institutes of Health - Division of the Fire Marshal

The NIH Fire Marshal is the fire safety "authority having jurisdiction" (AHJ), as well as the project officers will monitor renovation and construction areas for compliance.

a. The NIH AHJ shall approve all completed work for compliance with provisions of the National Fire Codes prior to acceptance and beneficial occupancy of the space

b. The DBC must comply with the NIH Fire Protection Specifications, revised dated May 2005, and the National Institute of Health, Manual 1370, dated March 11, 2008.

c. Daily Inspections:

d. The DBC Project Manager or Superintendent shall monitor compliance with issued Construction Risk Assessment (CRA) guidelines or Interim Life Safety Measures (ILSM) as applicable daily.

e. The DBC shall address CRA and ILSM requirements in their daily reports; electronic copies shall be provided to the Project Officer

f. Non-compliance with the CRA and ILSM checklist is sufficient cause for a "Stop Work Order"

4. PROJECT MANAGER, CONSTRUCTION SUPERINTENDENT, QC MANAGER

This project shall follow Design-Build Methodology. The DBC shall include an AE (Design) entity, and a Construction (Build) entity, providing a continuum of services to the project. The DBC shall have complete responsibilities concerning Project Management as defined herein; carried out by three different people.

A. The DBC must appoint a Project Manager (PM), who shall be the Government's single point of contact, and provide all necessary project representation for the successful accomplishment of this work. The DBC Project Manager shall be thoroughly familiar with all project requirements and schedules. The DBC Project Manager shall be identified in the DBC Cost Proposal for NIH review and approval of qualifications prior to contract award.

B. The DBC shall employ a competent full-time Construction Superintendent and necessary assistants who shall be in attendance at the project site throughout the progress of the Work. The superintendent and assistants shall be satisfactory to NIH, and shall not be changed except with the written consent of the CO. The superintendent shall represent the DBC and have full authority to act on his behalf.

C. The DBC must employ a competent full-time Construction Quality Control Manager assigned to monitor and enforce compliance of the work with the contract requirements and industry standards. The DBC shall develop and implement an appropriate Quality Assurance / Quality Control Program specific to this Project. A detailed description of the program shall be provided to the PO for review prior to submitting the first progress payment application.

5. PERIOD OF PERFORMANCE

A. Contract Time is the period of time, in calendar days, allotted in the Contract Documents for the completion of the Work. A Calendar Day shall be understood to be any day of the year, including weekends and holidays.

B. The date of commencement of the Work is the date established in the Notice to Proceed letter issued by the CO. The Contractor shall begin the Work on the starting date established in the Notice to Proceed letter and shall perform the Work expeditiously with adequate forces and shall complete the Work within the Contract Time.

C. Demolition and other noisy activities shall occur during non-business hours (business hours are defined as 6:30 am to 7:30 pm, Monday -Friday for this project) with prior approval by NIH. The DBC shall request such permission no less than seven (7) Days prior to the requested work.

D. It is expressly understood and agreed that the Contract Time is a reasonable and acceptable time for completion of the Work considering the requirements of the Contract Documents, the type and scope of the Project, and the usual industrial and labor conditions prevailing in the locality of the Project. For Period of performance stipulations and requirements refer to "Scope of Work" appendix A.

E. It is expressly understood and agreed that the Contract Time includes adequate time to account for normal weather. Normal weather considers the climatic conditions in the area of the Project. No adjustments to the Contract Time will be allowed on the account of normal weather. The DBC shall include adequate float or other allowance in the construction schedule to accommodate weather conditions that may be associated with weather dependent work. An extension to the Contract Time

will be considered only in a case where an abnormal or unusual weather delay has directly affected the critical path identified in the approved construction schedule.

F. It is expressly understood and agreed that NIH allows fast-tracking of the project if the DB contractor decides to submit final design for specific portions of work. Construction work may begin on these portions of work after NIH review and clearance of work. Clearance for construction does not mean NIH approval of design and construction, DB contractor is responsible for all design and construction.

G. All requests by the DBC for extensions of the Contract Time due to delays to the Work shall be made in writing to the CO within 7 calendar days after the start of the delay. Each request shall describe in detail the event or events causing the delay, any related causes, and any impact to the Work and the Project. Failure to submit such requests within the stipulated time and with the information required by this paragraph shall constitute a waiver by the DBC of his right to an extension of the Contract Time based upon this event or issue.

H. Extensions to the Contract Time will only be allowed for delays that affect the critical path for completion of the entire Work as identified in the approved construction schedule.

6. DESIGN SUBMITTALS

The DBC shall deliver complete design submissions as follows:

- 65% Construction Documents
- 100% Construction Documents
- Issue for Construction (Final) Documents

However, the Project Officer may decide after the project is awarded to reduce the submittal requirements and use a fast-track approach. The decision to use fast track requires close partnership with NIH stakeholders and mapping of the process by the contractor at the beginning of work and requires the entire team of stakeholders understanding and commitment to the fast-track process.

A. Concept Design

Refer to Concept Design paragraph of this document for the DBC's requirement to facilitate completion and submission of a Concept Design Report.

B. Construction Documents 65% Phase

Construction Documents constituting 65% of design completion consists of but is not necessarily limited to the following, in addition to all items required in the Final Concept Design Report:

1. Building plans showing demolition and new work for each design discipline, elevations, cross, longitudinal and wall sections, interior elevations, reflected ceiling plans drawn to scale, finish and door schedules, major equipment locations for mechanical and electrical systems, equipment schedules with facility numbers, details for each discipline drawn to scale, plumbing raiser diagram, one line electrical diagram, electrical panel schedules, one line diagrams, construction dust control system design, specifications, and quantity takeoff cost-estimate. The specifications shall be the conformed specification indicating the exact manufacturer and equipment that the DBC is going to use on this project.

2. The DB contractor shall provide a complete Revit Model. The Model shall include all existing Electrical /Mechanical systems, and proposed requirements relating to the new

work of this project and as noted in the Requirement Document for the Electrical Repair and Improvement work for the building.

3. See also NIH DRM for detailed requirements for this submittal phase.

C. Construction Documents 100% Phase

1. The 100% Construction Documents incorporating all reconciled review comments from previous reviews representing completion of all design work.

2. All drawings, specifications, calculations and reports shall be incorporated, including all previously accepted and reconciled design review comments. The DBC shall provide electronic copy of all Revit drawings in the latest formats; electronic copy of specifications in Microsoft Word, engineering calculations, studies and reports, and other pertinent information required by contract (see appropriate section for required deliverables)

3. See NIH DRM for detailed requirements for this submittal phase.

C. Construction Documents Final (IFC)

1. The Final AE Sealed and Signed Construction Documents (Permit Set) shall be the 100% Construction Documents incorporating all reconciled review comments, representing completion of all design work.

2. See NIH DRM for detailed requirements for this submittal phase.

7. REQUIRED DELIVERABLES

7.1 ESTIMATED CONSTRUCTION COSTS WITH RESPECT TO DESIGNING WITHIN FUNDING LIMITATIONS

A. The DBC shall provide an updated Estimated Construction Contract Price (ECCP) to the PO with the 65% and 100% construction document review submissions.

B. The DCB shall accomplish the design services required under this contract so as to permit the award of a contract, using standard Federal Acquisition Regulation procedures for the construction of the facilities designed at a price that does not exceed the estimated construction contract price. When proposals for the construction contract are received that exceed the estimated price, the DCB shall perform such redesign effort as required to enable award within the funding limitation. If the unfavorable proposals are the result of conditions beyond the DCB's reasonable control, the DCB shall not be required to perform such additional services without compensation.

C. The DCB shall promptly advise the CO if they find that the project being designed will exceed or is likely to exceed funding limitations and they are unable to design a usable (fully functional) facility within the funding limitations. Upon receipt of such information, the CO will review the DCB's revised estimate of construction cost. The CO may authorize a change in the ECCP. If it is determined that the original ECCP was not sufficient to allow a construction contract award within the amount specified, at the option of the CO, the ECCP may be increased or the scope of work reduced commensurate with available funds. When bids or proposals are not solicited or are unreasonably delayed, the Government shall prepare the ECCP based on the design submitted at the time the project is advertised for construction. This ECCP shall be used in lieu of bids or proposals to determine compliance with the funding limitation.

A. SCHEDULE

Submit the following deliverables in accordance with the project schedule and in compliance with the NIH Design and Policy Guidelines, Requirements/Standards Submission Checklist, with each scheduled design phase.

a. The work shall proceed only after the issuance of the Notice to Proceed (NTP) by the CO for the activities indicated.

b. The period of performance for design phase is 168 calendar days (+/- a week).

SUBMITTALS AND QUANTITIES		ESTIMATED PERFORMANCE TIME (INCLUDES DCB RESPONSE TIME AND REVIEWER BACK CHECK) (CALENDAR DAYS)		
SUBMITTALS	HARD COPIES	TOTAL	DCB	GOV
Submittal #1 (Finish Selections)	3	42	28	14
Submittal #2 – (65% CD's)	12	28	28	
DTR Design Review Comments		14		14
DCB respond to DTR comments		7	7	
DTR Back-check of responses		7		7
Submittal #3 – (100% CD's)	12	21	21	
DTR Design Review Comments		14		14
DCB respond to DTR comments		7	7	
DTR Back-check of responses		7		7
Submittal #4 – Issue for Construction Final (IFC/CD's)	12	21	7	14
		168		

c. The actual performance of the work and the delivery of the required documents shall be in accordance with the following submittal schedule which also indicates the performance time for each review stage.

1. Ten (4) bound copies of the Concept Design Report
2. Ten (4) bound copies of full-size Construction Documents/Drawing sets

3. Ten (4) bound copies of Construction Documents/Specifications
4. Five (3) bound copies of engineering calculations for each discipline
5. Two (2) copies of construction cost estimate (at 65% & IFC submittals)
6. Upload electronic copies of PDF files, containing all submitted documents, including demolition, architectural, structural, landscaping, civil, mechanical, electrical, plumbing, and other drawings (including all engineering calculations compiled into a single PDF file). Drawing files shall be uploaded for each drawing as well as a complete bound PDF set.

B. Two (2) copies (on DVD/Disk/Flash Drive) of the As-Built Drawings (red-line PDF's) and two (2) copies of the AE Revit model shall be provided to the PO at the construction closeout phase.

C. At construction closeout, provide three (3) electronic copies (DVD/CD/Flash Drive) of the O&M Manuals, Final Typed Test & Balance Report, Materials Testing Reports, DBC Daily Reports, Final Requests for Information (RFI's) and Submittals Record, Fire Alarm & Fire Protection Documents, Training Documents, Completed/Reconciled Punch-List, Final Change Request Log, Warranties, and other documents required by the contract.

D. Provide electronic deliverables in the following formats for each submission, using the latest version of standard software.

1. Spreadsheets: Microsoft Excel.
2. Reports and Presentations: Microsoft Word, Microsoft PowerPoint, Adobe PDF, DWF.
3. Drawings & renderings shall utilize latest version of Autodesk Revit for all DCB work and Autodesk Civil 3D for Civil work; PDF files for printing and DWF files for presentation and posting.

E. Cost Estimate Format – The construction cost estimate shall use the applicable standard CSI format for detailed cost estimate format.

F. Any reprinting and resubmission of required deliverables due to required corrections caused by the DBC/AE shall be at no additional cost to the government. Documents exhibiting a lack of quality control or coordination shall be summarily rejected and returned to the DBC without review.

8. POST AWARD MEETINGS

A. Post Award Kickoff Meetings

1. The Post Award Kickoff (PAK) Meeting is made up of Contract Administration, Design Presentation, and Partnering. Within 21-calendar days after contract award, and prior to commencing work, the DBC must coordinate the time and location of the PAK meeting to be scheduled by the CO. The purpose of these meetings is to:

a. Integrate the DBC and client representatives into the project team
b. Achieve consensus from the project team on any issues and concerns with the DBC's technical proposal.
c. Establish and explain policies and procedures for completion of a successful project
d. Establish clear lines of communication and points of contact for government and DBC team members.
e. Obtain an acceptable conceptual design including floor and site plans, signed by the client, DBC and other key stakeholders
f. Establish clear expectations for the Design Workshop (See Section-13 of this

Statement of Work Document)

g. Establish a project design schedule, design submittal packaging, and preliminary construction schedule. Project cannot start without an approved baseline schedule.

2. The following DBC key personnel shall attend the PAK:

a. Project Manager
b. Project Scheduler
c. AE Team – design staff representing each architectural/engineering discipline
d. Major Subcontractors
e. Superintendent
f. Construction Quality Control Manager
g. Design Quality Control Manager

3. Optional attendees include:

a. Principal
b. Assistant Project Manager
c. Subcontractors
d. Specialized Supplemental Quality Control Personnel

4. Contract administration roles and responsibilities will be addressed.

B. Design Quality Assurance Meetings

1. After the government's quality assurance of each Design Submittal has been completed, meet with the government for a one-day conference to discuss review comments for the specific design submittal.

2. Provide consolidated copies of all government comments with annotations of DBC's action beside them. Notify the CO in writing within five (5) days after receipt of government's comments if the DBC disagrees with comments technically or interprets comments to exceed the requirements of the contract.

3. Design Quality Assurance Meeting Attendees shall include:

a. Project Manager
b. Construction Quality Control Manager
c. Design Quality Control Manager
d. AE Team – design staff representing each architectural/engineering discipline

4. Design Quality Assurance Meeting Location shall be at the office of the CO's quality assurance team or may be conducted at other locations or by other electronic means if mutually accepted to all parties.

5. Address all government comments that are unresolved and present clarification or supporting information requested by the CO's quality assurance team during the previous meeting.

C. Preconstruction Meeting

1. Meet with the CO to discuss construction items of concern to the government and the DBC such as outages, storage, trailer location, disposal of construction debris, etc. at a location to be determined by the CO. The Preconstruction Meeting may take place with the PAK Meeting or at

any time prior to mobilization and before any construction work begins.

D. Monthly Reports

The Contractor shall prepare Monthly Progress Reports in the format and frequency required by the Project Officer (PO). Monthly Reports shall be submitted with the application for Payment in 8.5x11 formats. The Contractor shall submit electronic (PDF file) copies of each monthly report to the PO. The contractor shall coordinate with the PO to assure report accuracy. Information to include in Monthly Reports:

(1) Narrative and Earned Value report
(2) Update of the project schedule with analysis
(3) Percentage of work completed, planned and actual for each schedule activity
(4) Summary Budget Status
(5) Daily Progress Report, to include list of deficiencies and omissions
(6) Summary of outstanding problems/issues
(7) Summary of issues resolved, decisions reached, clarifications, instructions, etc.
(8) Summary report on submittals and Requests for Information
(9) Safety Report
(10) Minutes from meetings during the month (safety and trade coordination)
(11) Any approved or potential changes to the Contract. This report shall identify all potential and approved changes to the Contract.
(12) Progress photos, prints

9. CONCEPT DESIGN

A. General

The DBC shall prepare a Concept Design for this project. This process shall examine project functions and requirements, quality and life safety costs, analyze alternate design concepts, expose and resolve project issues, and develop the final conceptual design. Design concepts shall include drawings, sketches, and other graphics as necessary to fully describe the concept. Repeat applicable steps as necessary. The final concept shall include the following:

i. Building Floor Plans: Provide floor plans depicting functional utilization of spaces and furniture and equipment layout. Show room sizes and dimensions.
ii. Mechanical Plans: Provide plans as necessary to show the essential work and intent of the design. Suggestions include equipment layouts, zones, etc.
iii. Electrical Plans: Provide plans as necessary to show the essential work and intent of the design. Suggestions include special light fixture types, locations, switching, power outlets, and panel board locations. Provide electrical distribution single line diagrams.
iv. Cost Estimate: Provide a statement that the concept presented can be constructed within the award amount.
v. Basis of Design: Describe, in layman's terms, the intent of the design by discipline. Address material quality, energy efficiency and life cycle costs.
vi. Supporting Project Documentation: Include data to support the development of the concept design, layout, and special features. Items must include project scope discussion, minutes of meetings, function analysis work sheets, and economic and technical analysis if alternatives are evaluated.

B. Submit to the PO an electronic copy of the Concept Design Report as one file in PDF format (see section -10 Design Submittals for additional requirements).

10. DESIGN REVIEWS

A. The PO will coordinate all required Government reviews and reviews of other Government services.

B. The DBC shall conform to submission schedules and requirements as defined herein. The DBC shall allocate technical manpower and other resources so as to steadily progress toward accepted milestone dates and monitor the work of consultants and subcontractors to insure concurrent steady progress. The DBC shall request information, determinations, and similar direction in sufficient time to permit the Government to deliver the required information without delay to the schedule.

C. The DBC shall endeavor, in the planning of the work, to anticipate requests for information as soon as the need becomes apparent. Insofar as possible, the DBC shall work around areas requiring clarification to minimize delays to the project as a whole. In case of a delay, the DBC shall work closely and cooperatively with the PO to develop and implement methods to recoup this time or to minimize this delay.

D. It is imperative that the DBC, its consultants and subcontractors recognize that the NIH reviews are general in nature and that the detailed checking for technical accuracy, sufficiency, and coordination is the sole responsibility of the DBC. Notwithstanding Government approval, the DBC shall remain liable for all damages resulting from design errors and omissions and negligent performance by the DBC or its consultants and subcontractors.

E. Following each design submittal, the PO will return to the DBC written review comments on the submitted work. The Government may, at the discretion of the PO, use a web-based system to provide comments in which case the DBC shall provide responses using the same system.

F. All NIH review comments shall be incorporated into the work prior to the next submittal, unless the reviewer directs the DBC to disregard the comment. In this event the DBC shall send a notice reporting the directive to the PO and CO.

G. The DBC shall provide a written reply to all NIH comments. If the DBC intends to disregard a comment, the DBC shall provide a written explanation of variance with the comment to the PO within seven (7) calendar days after receipt of the Government review comments.

H. At the option of the Government, the PO may request on-board review of submittals and progress prints to ensure that progress is being sustained.

I. The DBC may request on-board reviews. These reviews shall be at the discretion of the PO.

11. GOVERNMENT FURNISHED ITEMS

A. Legacy drawings (existing MEP floor plans & utilities drawings) are available for most areas of the buildings and can be made available upon DBC request. These documents, if available, are NOT expressly warranted for veracity, accuracy, completeness or currency.

B. It is the DBC's responsibility to verify all existing conditions necessary to complete the contract work.

12. PROJECT LOGISTICS PLAN

Prior to mobilizing for construction, provide a written description of the planned construction with methods, means and processes for accomplishing the major segments of the work. Clearly show that all

segments of the work can be completed within the Project Schedule. At a minimum the plan shall include the following, broken down into phases:

A. Clearly describe material and equipment staging, security, parking, equipment access, lighting, dust and mud control, and plans to eliminate conflict with existing operations

B. Provide sample documents and forms to be used on this Project as they relate to services identified in the Request for Proposal and those services your organization proposes to provide. These documents shall help convey the control systems and the level of detail in the documentation the DBC proposes to provide. Provide an index for Project record keeping system.

C. Identify any major areas of potential problems/challenges and possible solutions or proposed plan of action to mitigate them.

D. Proposed phasing of design and construction to maximize market resources enhancing early occupancy, controlled disruption to existing operations, improving construction quality and reducing costs.

E. Explain methods for controlling costs and maintaining the schedule, avoiding/minimizing material/labor/equipment shortages, labor problems, and other potential delays.

F. Discuss potential requirements for and or benefits of off-hours work, including cost trade-offs.

G. Discuss quality control procedures (DBC's inspection and internal approval process) to be applied to this project and list most recent project where these procedures were used. Describe the quality control organization reflecting authority and responsibility for key personnel. Include a plan for the newly constructed areas of work and/or systems which addresses component testing, systems testing, and documentation, training of operators, and operations and maintenance manuals to be provided as required in the guideline specifications

H. Discuss the issue of job safety for both workmen and occupants, identify personnel responsible. Provide a safety plan from a similar project or for this Project

I. Address issues, which may be of concern such as security, health, safety, deliverables, visitors, and cleanliness, etc.

J. Provide a plan for use of the site during construction dealing with issues of access, material storage, mud removal, temporary lighting, security, parking, refuse, etc.

K. Provide information regarding inspections, testing, etc.

L. Address the aspects of dispute resolution, contractor claims, interpretation of construction documents, weather delays, change orders/proposals, Request for Information, submittals, and any other factors which your organization deems important as part of this evaluation process

M. Provide a list of any items which will be required to be provided by NIH

13. FACILITY NUMBERS FOR EQUIPMENT & ROOM NUMBERS

A. Inventory control of equipment maintained by the Office of Research Facilities is tracked via Facility Numbers. The Division of Property Management will issue the Facility Numbers for all

new equipment. The DBC must coordinate this requirement and request Facility Numbers for all new mechanical, plumbing, and electrical equipment from the Division of Property Management via the PO.

B. On the demolition plan, the DCB shall indicate the designated facility number for all equipment removed where applicable. Coordinate with NIH regarding proposed reuse of existing equipment in the project, or government salvage of existing equipment for use elsewhere. The DBC is responsible for the removal and disposal of all non-reuse or non-salvageable equipment determined by the government.

C. The Facility Numbers and labeling requirements shall be incorporated into the 100% Construction Documents.

D. The DBC must coordinate proposed Project Room Numbers for approval by the Division of Facilities Planning; final coordinated and accepted Room Numbers must be incorporated by the DBC into the 65% Construction Documents.

14. CONTRACTOR HEALTH AND SAFETY REQUIREMENTS

A. Refer to the ORF Contractor Health Safety Provisions for guidance on preparing the required DBC Site Specific Accident Prevention Plan for this project. This plan must be submitted to NIH for review and approval 28-working days prior to the commencement of construction activities. The DBC may obtain a current copy of the NIH Contractor Health and Safety Requirements from the PO.

B. The DBC shall designate a responsible member of his organization at the site whose duty shall be supervision of a safety program and the prevention of accidents. This person shall be the DBC's Construction Superintendent unless otherwise designated in writing by the DBC to the CO.

C. The DBC shall develop and implement an effective safety and health program in accordance with OSHA Regulations and the US Army Corps of Engineers Manual 385-1-1 (EM 385-1-1).

D. Each DBC employee is responsible for complying with applicable safety and occupational health requirements, wearing prescribed safety and health equipment, reporting unsafe conditions/activities, preventing avoidable accidents, and working in a safe manner.

E. The DBC Shall not begin work authorized under this contract, except for authorized preliminary activities (i.e. mobilization), without first submitting for review a Site Specific Accident Prevention Plan to the NIH Project Officer and ORF Safety Officer (safety@nih.gov) that meets the requirements of EM 385-1-1.

F. In case of an emergency which threatens loss or damage to property, personal injury, or life safety, the DBC shall immediately take all feasible actions to prevent or mitigate such loss, damage, injury or death, without awaiting instructions from NIH. The DBC shall notify the PO and CO in writing of such emergency at the first feasible opportunity.

15. PROJECT SCHEDULE

A. Within 15-days after issuance of the Notice to Proceed or Intent to Award letter by the CO, whichever is issued first, and prior to issuing any progress payment application, the DBC shall submit a Design and Construction Schedule to the PO and CO for review. The schedule(s) shall not exceed the agreed upon Contract Time established at the award of the project, shall be revised at appropriate intervals as required by the progress and conditions of the Work, and shall provide

for performance and completion of the Project in accordance with the Contract Documents.

B. The DBC shall coordinate and attend a Schedule Coordination Meeting. The meeting shall include appropriate representatives from the DBC and NIH and shall include review and discussion of all scheduling requirements and/or concerns. The Schedule Coordination Meeting shall take place as soon as possible after the Notice to Proceed is issued.

C. The Construction Schedule shall be organized to show progress for each trade and operation. As a minimum, the schedule shall show the order in which the DBC proposes to perform the Work, with the proposed starting and completion dates, and with available float for each activity of the Work. Activities which constitute critical path portions of the Work shall be clearly identified as such. The schedule shall include line items for submittal preparation, submittal review, re-submittal preparation, re-submittal review, and procurement, fabrication, and delivery of materials and equipment. The schedule shall allow for reasonable and orderly issuance of all required submittals to the AE and PO. The schedule shall be promptly updated as necessary to reflect the work required to implement each change order and/or change in the Work.

D. The construction schedule shall include each of the scheduling line items in the Mechanical Systems specification.

E. The DBC shall utilize Primavera Software (latest version), for projects under $5M Contractor may use latest version of Microsoft Project, to create and manage the construction schedule. Submitted schedules and associated data shall be provided in both hard copy and electronic file format. Upon written request by the PO, the DBC shall provide prompt responses to any questions regarding reasons or causes for changes to the construction schedule.

F. The DBC shall submit a current/updated construction schedule with each monthly Progress Payment Application. Failure by the DBC to provide a current construction schedule shall be justification for the CO to withhold approval or reduce the amount of the payment due the DBC. DBC shall provide their Price Proposal Monthly Anticipated Invoice Amount along with Monthly Milestones of work, to be used as project Baseline.

G. In the event of any failure to adhere to the construction schedule the DBC shall, within 7 days of written notice from the CO, provide a recovery schedule for review by the PO and CO. The recovery schedule shall identify how the DBC proposes, at his sole expense, to overcome the associated delays and complete the Work within the Contract Time. Such notice from the CO shall not constitute either actual or implied direction for the DBC to accelerate the Work.

16. PROGRESS PHOTOGRAPHS

The DBC shall take not less than twenty progress photographs of the Work each month at a minimum resolution of 640 by 480 pixels. The photographs shall be taken with the intent of providing a clear and complete depiction of overall Project progress. Each photograph is to be clearly marked with the time, date, location/view and other details sufficient to identify the subject. Camera view/locations shall be coordinated with and approved by the PO. Progress photos shall be provided electronically via email to the PO or on a digital video disk (DVD disk) and issued to the PO along with each progress payment application. Refer to Section 21, Schedule of Values, for additional requirements regarding delivery of project photos.

17. REQUIREMENTS FOR AE (Architect/Engineer) PARTICIPATION DURING CONSTRUCTION

A. The DBC shall provide construction phase AE services for the entire period of construction employing qualified personnel with proven knowledge of this type of construction and competence in construction and observation. For the purpose of this contract, the construction phase is defined as

the time of performance between the issuance of the Notice to Proceed with construction and final acceptance by the PO and CO of the completed work (Final Completion). The following construction phase AE services are required but are not necessarily all inclusive.

1. Construction Inspections

a. The AE shall perform on-site construction observation and inspection in conjunction with each Construction Progress Meeting throughout the duration of the construction period to verify conformance with Construction Documents. The AE shall observe and report to the DBC work in place and visible at the time of inspection. The AE shall verify that the Contractor is maintaining up to date as-built mark-ups on site commensurate with the ongoing work.

b. On the basis of such on-site observations, the AE shall keep the DBC informed of progress, quality of work, and deficiencies in the work. A complete log of each inspection shall be maintained throughout the construction period of performance and made electronically available to the PO on a bi-weekly basis. AE inspections during construction, and expenditure of time on matters related to clarification due to inadequacies, errors and/or omissions, shall be performed at no additional cost to the Government.

2. Construction Progress Meetings

a. Construction Progress Meetings shall be held at the project site (in the DBC's Field Office, or location to be determined by the PO) with the DBC, AE representatives, and other NIH officials at least once every two weeks to review the progress of the work and related issues/problems identified during construction. The main purpose is to provide timely resolutions, and to monitor the requirements or intent of the Construction Documents. The AE shall prepare written minutes of all progress meetings and distribute copies to attendees no later than three-days after each meeting.

3. Requests for Information

a. All requests for information (RFI's) by the DBC shall be submitted to the AE for resolution. The AE's interpretation shall be documented in writing; all RFI's shall be uniquely and sequentially numbered. AE responses to RFI's shall be provided in a timely manner to avoid interruptions to the flow of work to prevent project delays.

b. The DBC shall use an information tracking system to ensure that all RFI's and other construction issues are monitored for timely response and brought to closure.

4. Construction Submittal Review

a. The AE shall review and recommend either "reviewed", "reviewed as noted", "revised and resubmit" or disapproval of shop drawings, material samples, manufacturer's clarifications, etc., for which the contract specifications require approval by NIH. Submittals must be looked at from two perspectives: First, which pieces of submittal data are not meeting the scheduled date? This requires a detailed examination of the control log and flagging of late submittals. Second, submittals must meet the intent of the Construction Documents. The AE shall include notes specifically addressing all corrections to be made. Each approved submittal shall be kept in the DBC's office file until the project is completed. Marked-up copies and the AE's recommendations shall be delivered to the DBC within ten working days of their receipt by the AE unless otherwise directed. Simultaneously, the AE shall provide the PO copies and status of returned submittals to the DBC.

b. The DBC shall use an information tracking system to ensure that all submittals are received and processed on time.

5. Change Orders

a. The DBC shall prepare Change Requests and provide supporting documentation and data necessary for the PO and CO evaluation, approval and modification in accordance with the contract requirements.

b. The DBC shall keep track of all proposed and accepted changes, and constantly update the ratios of cost of these changes with respect to the cost of construction.

6. Punch List

a. The DBC shall keep the PO informed of the progress and quality of the work and shall endeavor to advise the PO of defects and deficiencies in the work in writing. The AE shall observe the entire installation work and shall be familiar with the progress and quality of the work throughout the construction period and verify that the work is being performed in a manner that, when completed, will comply with the Construction Documents. Timely corrective measures shall be taken to ensure that problems are not deferred until the punch list is compiled at the end of the project.

b. The AE shall observe the completed work with the DBC prior to the application for Substantial Completion. The DBC shall submit to the PO a punch list of any defects and omissions noted. NIH will perform an independent punch list inspection and compile a list of deficiencies for correction. At an appropriate time, the PO shall conduct a final inspection to verify that the Contractor has adequately corrected all defects, deficiencies and omissions. A Certificate of Substantial Completion (similar to AIA Document G704) with the results shall be forwarded to the PO.

18. REIMBURSING GOVERNMENT CONTRACTOR FOR ITEMS PURCHASED AND STORED

A. Payment for items purchased and stored are discouraged. Occasionally, and only to the extent it is deemed to be in the government's best interest to make payment for stored materials, payment will be considered. The DBC shall accompany the PO for inspection and validity of stored material for payment consideration. All stored materials and equipment must be protected from the weather and must be located in a licensed and bonded (insured) warehouse paid by the DBC and located within 25-miles of the project site. The DBC must identify all such requests for stored materials on its initial Schedule of Values.

B. The DBC shall provide the PO with backup documentation showing the purchase receipts of materials stored, total value of items and equipment stored, bonding capacity of the warehouse facilities, and the expected time of storage until transport and installation in the project. The DBC must also be able to demonstrate beyond a reasonable doubt that the materials are in fact destined for the work under this contract. The DBC shall assume that the government will make a site visit to inspect stored materials.

19. AS-BUILT DOCUMENTS

A. The DBC shall maintain at the Project site one copy of all Contract Documents, in good order and marked to show clearly all changes and as-built conditions. The DBC and his Subcontractors shall indicate daily on these documents all as-built conditions and revisions due to substitutions, field changes and Change Orders. The location of all concealed piping, conduit, fixtures, pull-boxes, and similar installations, shall be clearly identified on these documents. Upon completion or termination of the Project, this set of documents shall be delivered to the AE for utilization in preparation of the Revit Model.

B. Copies of the As-Built Drawings (PDF's) & Revit Documents and native language of all control systems such as PLC, SKM, and ETAP and other equipment shall be provided to the PO as part of construction closeout.

20. SUBSTANTIAL COMPLETION

A. Substantial Completion is the stage in the progress of the Work, or a designated portion thereof, when construction is sufficiently complete in accordance with the Contract Documents, so that NIH can occupy and/or utilize the Work (or portion thereof) for its intended use. The Work will not be considered substantially complete if any of the following conditions exist:

1. Incomplete or defective work remains (including work identified in the final punch list) which, in the opinion of NIH, would prevent or interfere with occupancy and/or full use of the facility.

2. The Project's mechanical systems have not been tested, balanced, and accepted as being fully complete.

3. The Project's electrical and life safety systems have not been tested and accepted as being fully complete.

4. A Certificate of Occupancy has not been issued by the NIH Fire Marshal (either a Temporary/Conditional or a Final/Unconditional Certificate of Occupancy)

5. Final clean-up is not complete.

B. The following procedure shall be used in establishing Substantial Completion of the Work, unless otherwise agreed to in writing:

When the DBC determines that the Work, or a portion thereof, which NIH agrees to accept separately, is substantially complete, the DBC shall submit written notice thereof to the CO and shall include a punch list of all items which remain to be completed or corrected. Failure to include any items on the list does not alter the DBC's responsibility to complete all work in accordance with the Contract Documents.

a. Inspections for Substantial Completion may be requested by the DBC only after the status of completion has been reviewed and assessed by NIH. Upon such review the PO will issue a list of any observed deficiencies that affect the issuance of a Certificate of Occupancy.

b. If the PO, on the basis of an on-site inspection, agrees that the Work is substantially complete, the PO may provide the DBC with a list of additional corrective items which shall be added to the DBC's punch lists.

c. If the PO, on the basis of an on-site inspection, determines that the Work is not substantially complete, the PO will notify the DBC in writing, and will provide a list of observed deficiencies. The DBC shall remedy the deficiencies and submit another written request for Substantial Completion.

d. When the PO determines that the Work is substantially complete, the NIH Fire Marshal will prepare a Certificate of Occupancy, which establishes the date of Substantial Completion.

e. The Certificate of Occupancy, when signed by the NIH Fire Marshal, shall serve to document the DBC's acceptance of the responsibilities assigned to him in such Certificate.

21. FINAL COMPLETION

A. When the DBC considers the Work fully completed, he shall submit written notice confirming all of the following:

1. The Work has been fully completed in accordance with the Contract Documents and is ready for final inspection.
2. All punch list items have been corrected or completed.
3. All equipment and systems have been tested, adjusted, and balanced and are fully operational.
4. All training required by the Contract Documents has been provided.
5. All operation and maintenance manuals and as-built drawings have been submitted to the Architect in accordance with the Contract Documents and have been accepted as being complete.
6. All surety releases required by the Contract Documents have been submitted to the CO.

B. The PO will perform a final inspection of the Work. If the Work is found to be incomplete or defective, the DBC will be notified in writing and provided with a list of observed deficiencies. The CO may withhold such payment as deemed appropriate to ensure the correction of the deficiencies. Should the DBC fail to promptly correct the deficiencies noted in the final punch list, the CO may, upon written notice to the DBC, hire another Contractor to correct such deficiencies, notify the DBC's Surety, and/or otherwise complete or correct the listed deficiencies, at the DBC's expense.

C. When the Work and all requirements of the Contract Documents are fully and satisfactorily completed, the CO will pay to the DBC a final payment consisting of the remaining unpaid balance of the Contract Sum due the DBC. The acceptance of the final payment by the DBC shall constitute a full and final release and waiver of all DBC claims and rights of claim against the government relating or pertaining to the Work.

D. No payment, nor any use or occupancy of the Project, or any portion thereof, by NIH, shall constitute acceptance of any work that is not completed in accordance with the Contract Documents, nor shall it relieve the BDC of full responsibility for correcting defective work or materials found at any time prior to completion of the entire Project or during the warranty period.

E. The NIH Fire Marshal (DFM) must inspect and accept all work prior to assuming beneficial occupancy.

22. CONSTRUCTION CLOSEOUT

A. At the completion of construction, the DBC shall package all documents related to the project (including submittals) indexed in three-ring binders and submit to the PO for archiving. The project closeout documents shall, at a minimum, consist of the following documents:

1. As-Built Drawings & Specifications
2. Accepted RFI's and Submittals
3. O&M Manuals
4. Final Typed Test & Balance Report
5. Final Materials Testing Reports
6. Daily/Monthly Reports
7. Approved Fire Alarm & Fire Protection Documents
8. Training Documents
9. Consolidated/Completed & Signed-Off Punch Lists
10. Warranties

B. The final As-Built deliverable shall be in Revit format and shall be in accordance and compliance with AIA Level of Detail 400, contractor shall incorporate a plan showing the responsibility of their team members including subcontractors, AE, Trade Contractors. Provide Adobe 3D PDF file of As Built including all documentation required for LEED, Lifecycle, Shop Drawings, Operation and Maintenance Manual and a printable 2D Construction document.

C. The DCB is ultimately responsible to complete the design and construction including correcting any errors in design and construction of any approved design elements.

23. APPENDICES

A. Appendix A –Scope Details

The Scope of this project is to upgrade the following:

DBC shall furnish turnkey operation for:

1. **Replacement of the Existing 1500kW Diesel Generator**

    a. Remove and dispose of the existing diesel generator and associate fuel equipment and piping. Contractor to perform and include all fuel system decommissioning, hazmat testing, and permitting.
    b. Generators shall be able to support Hydrotreated Vegetable Oil (HVO).
    c. Provide and install a new 1500 kW, 480/277V, 3 phase, 4 wire diesel generator with Class H insulation system, by Caterpillar, Cummins Inc, MTU or Kohler.
    d. Engine skid mounted, engine-driven radiator with blower type fan, sized to maintain safe operation at 50 Deg C (122°F) ambient temperature without derating of the unit and minimum of 0.75 inches of water column static restriction.
    e. Diesel generator meeting current NFPA 110 Level 1 standards
    f. Generators shall be equipped with redundant seal lead-acid storage battery, redundant battery charger and starter.
    g. Install new day tank (similar capacity as existing) with fuel piping, leak detection, level sensors, and integration to generator controls. Remove any unused conduit/piping if required.
    h. Modify exhaust, intake louvers, vibration isolation, and structural supports as required.
    i. Generator fuel system and operation status shall be monitored by Local HMI and Campus SCADA.
    j. Perform complete startup and load bank testing.

~~**2. Installation of a New Generator Docking Station**~~

~~a. Provide and install new 3000A, 480V, 3 phase, 4 wire, dual purpose docking station with breakers, interlocks, concrete housekeeping pad and weatherproof housing (NEMA 4X) for both load banking and portable generator.~~
~~b. The docking station shall accommodate a portable generator (with battery charger, block heater receptacles, start signal for temp generator) for emergency backup during power outages or scheduled maintenance.~~
~~c. Connect the docking station to the emergency switchboard.~~

~~d. Provide labeling and operating instructions. The contractor must closely coordinate the location of the new generator docking station in the field.~~

3. **Replacement of the Existing Transfer Switch Replacements**

   a. Replace 2000A Automatic Transfer Switch (ATS)
      i. Remove and replace existing one (1) 2000A and one (1) 600A ATS with new one (1) 2000A and one (1) 800A ATS. Transfer switch shall be compatible with generator controls with Power Quality Analysis PQA by ASCO, Russelectric, or approved equal. Basis of design – ASCO 7000 series.
      ii. New transfer switch shall be 4 pole, 3 phase, 4 wire, 480/277V, with minimum 10 cycles short circuit rating and full size bypass/isolation switch.
      iii. Install new feeders, controls, monitoring, and communications.
      iv. Perform operational testing and acceptance testing complies with NFPA 110.

4. **Replacement of the Existing 3000A Emergency Switchgear**

   a. De-energize and safely remove the existing 3000A switchgear lineup.
   b. Provide and install new 3000A, 480/277V 3 phase, 4 wire Metal Enclosed switchgear with concrete pad, including:
      i. Drawing out power circuit breakers with fully adjustable electronic trip unit, Power Quality metering (NEXUS 1500+ or approved equal), Surge protective devices (SPD) with hinged doors for front and rear.
      ii. Switchgear shall be provided with minimum of 25% spare circuit capacity The spares shall be minimum of 25% spare breakers or one spare breaker per frame size, whichever is greater.
      iii. Switchgear shall have a auto/manual/JC test mode. The Joint Commission (JC) Test Mode – to allow testing of the emergency system and reporting.
      iv. Arc flash mitigation features include the following: arc reduction, Infrared Windows/Thermal Monitoring, remote breaker control operation, remote racking and device.
      v. Industrial grade HMI provided by equipment manufacturer to monitor the emergency system from generator, switchgear, transfer switch with one line diagram, metering, alarm and reporting.
      vi. PLC with UPS backup controls as required to allow testing and reporting.
   c. Provide all required conduits, raceways, structural supports, anchoring systems, and cable management.
   d. Install all new incoming/load feeders from generator, ATS, docking station, etc.
   e. Integrate switchgear controls with generator system, ATS units, and building monitoring platforms. The program responsibilities are provided by the switchgear manufacturer.
   f. Perform full functional testing, breaker trip testing, relay configuration, and protective device coordination verification.
   g. Provide updated one-line diagrams, settings files, PLC source code, and as-built documentation.

5. **Replacement of the Existing 2000A Emergency Switchboard Equipment**

a. Remove the existing 2000A emergency switchboard.
b. Install new 2000A emergency switchboard with new breakers, bus bars, Power Quality metering (NEXUS 1500+ or approved equal), surge protection and concrete pad.
c. Verify proper terminations and update labeling.
d. Install all new incoming feeders from generator, ATS, docking station, etc and splice with existing outgoing feeders.

6. Replacement of the Existing 600A Emergency Distribution Panel

a. Remove existing 600A emergency distribution panel.
b. Install new 800A panelboard with new breakers, bus bars, metering, and surge protection, and updated panel schedules
c. Install all new incoming feeders from generator, ATS, docking station, etc and splice with existing outgoing feeders.

7. Temporary equipment and connection

a. Provide temporary wiring and connections from temporary equipment to existing equipment to avoid outages during the switchover.
b. Provide temporary 1500kW generator with sufficient capacity and fuel during the switchover and provide temporary switchboard and transfer switch during this switchover and the equipment shall be the similar size to existing.
c. Each equipment shall be switched over at a time with proper coordination with NIH and minimum interruption to the building operation.

8. Miscellaneous Scope

a. Replace Ground Bar Around Room
    i. Remove existing ground bar and provide new copper grounding bus.
    ii. Bond all equipment, conduits, piping, and metallic infrastructure per NEC Article 250.
    iii. Conduct grounding resistance tests.
b. Replace Light Fixtures and unit heater
    i. Remove existing light fixtures and unit heater in the rooms.
    ii. Provide and install new LED industrial-grade fixtures with 90 minimums battery backup.
    iii. Provide new unit heater that matches existing.
    iv. install lighting controls such as switches and verify adequate illumination levels and ensure emergency lighting meets NFPA 101 requirements.
c. Repair existing leaking overhead piping/ductwork.
d. NIH SCADA/NESS Requirement:
    i. Coordinate with NIH SCADA Vendor (DigitaLogic) for communication requirement and include cost for all NESS/SCADA integration work for this project, including the additional following equipment to be monitor by NESS: generator status, fuel system status and alarm, emergency switchgear breakers status and alarms, ATS status and alarms status.
    ii. Contractor shall also include costs for all of the wiring and conduct for this work.

9. Other Requirements:

a. All Commissioning activities shall be the responsibility of the DBC. The DBC shall retain an independent, certified commissioning agent to perform the project commissioning. The proposed commissioning agent, including their qualifications, shall be included in the technical proposal. NIH will review DBC's commissioning plans, reports and will witness installations, start-ups, testing, etc., as necessary to ensure the building systems are properly commissioned.

b. Install control and communication wiring and terminate in a termination cabinet for future local monitoring system tie in that shall include the status of generator, fuel system, automatic transfer switch, emergency switchgear.

c. The project shall be utilizing BIM and DB contractor shall provide a complete Revit Model of the Building. The Model shall include all existing Mechanical/Electrical/Plumbing systems, and proposed requirements relating to the new work of this project

d. Provide on-site training for Owner's personnel covering SCADA operation, routine maintenance, and emergency response.

e. DBC shall include cost of all temporary testing and equipment including not limited to the generator load bank, temporary generator, temporary electrical equipment.

f. The DBC Project Manager shall be thoroughly familiar with all project requirements and schedules. The DBC Project Manager shall be identified in the DBC Cost Proposal for NIH review and approval of qualifications prior to contract award.

g. DBC shall be responsible for installing all network communication systems in accordance with the latest industrial standards. All equipment connections to the NESS shall utilize Ethernet/DNP3 protocols. If Ethernet/DNP3 is unavailable, any alternative communication protocol must be reviewed and approved by NIH. The use of network converters or adapters—such as serial-to-Ethernet converters—to bridge incompatible protocols for device-to-NESS communication will not be accepted.

h. Provide a complete power system studies (Arc-Flash Hazard Analysis, Short-Circuit Analysis, and Protective Device Time-Current Coordination) as result of the changes of this project and shall transfer software database to NIH. The studies shall be reviewed by the Engineering of Record and shall be performed by qualified third party Power System Study Engineer with using SKM software, Etap Software or approved equal.

i. DBC shall make modifications to equipment to ensure compliance with the power system study at no extra cost. Adjust device settings according to the recommendations and install Arc Flash labels on all equipment (front and back of each cubicle at switchgear, panels, ATS, disconnect switches, etc), before energizing the equipment.

j. Provide a Safety Plan and Risk Assessment for work performed during the survey of existing electrical equipment.

k. Provide work plan and safety plan

l. All outages shall be coordinated with NIH DFOM and HVG with written approval. NIH reserves the rights to cancel approval based on campus operation and DBC shall adjusted the schedule accordingly.

m. Update system documentation and records to reflect the new equipment and settings and provide all necessary training NIH DFOM and HVG for the operation and maintenance.

n. Except as otherwise defined in greater detail, the term "provide" used in the Contract Documents shall means the Contractor is responsible for both furnishing and installing the new item. The term "Replace" shall means the Contractor is responsible for Remove and dispose of Existing, furnish and installing the new.

o. DBC shall arrange and pay for all inspections, testing, and reports.
p. Correction of defects. DBC shall correct any work that is found to be not in compliance with the contract documents/code/standard. Within two (2) weeks of receipt of written notice from NIH, the DBC shall take meaningful steps to commence correction of such non-conforming work, including correction, removal, or replacement of such non-conforming work.
q. DBC shall warrant to NIH that the construction, including all materials and equipment furnished as part of the construction, shall be new unless otherwise specified in the contract documents and free of defects in material and workmanship. This warranty shall continue for a period of 2 years from the date of final acceptance
r. Additional commercial manufacturer's standard and any extended warranty shall be transferred to NIH in full.
s. The equipment manufacturer shall provide computer simulation of the switchgear operation and the sequence of operation to the owner's representative and the design engineer to demonstrate the switchgear control and operation meets the intended.
t. The contractor shall be responsible for the system integration with the generator, switchgear, transfer switch as one complete system.