GENERAL ENGINEERING SUPPORT SERVICES

CLIN 2 ACTIVITY 1

PERFORMANCE WORK STATEMENT (PWS)

1.0 REQUEST INFORMATION

1.1 Period of Performance: TBD
1.2 Type of Activity: The General Engineering Support Services Activity is a firm fixed-price Activity.
1.3 Description: Engineering, Design, Drafting, and Drawing Control
1.4 Location: Albany, OR (ALB); Morgantown, WV (MGN); and Pittsburgh, PA (PGH), Department of Energy (DOE), National Energy Technology Laboratory (NETL) sites.
1.5 Travel: Travel (local and long distance) is anticipated among all three NETL sites.
1.6 Training: Training is anticipated related to maintaining certifications required to perform requirements of this Activity.

2.0 GENERAL REQUIREMENTS

2.1 This Activity is to be performed at the ALB, MGN, and PGH NETL sites. The Activity involves:
2.1.1 Engineering works
2.1.2 Construction inspections
2.1.3 Drafting
2.1.4 Drawing control
2.1.5 General space management services
2.1.6 Infrastructure alteration services
2.1.7 Infrastructure management services
2.1.8 Specialty services

2.2 The Activity does require on-call support based on approval by the Activity Contracting Officer's Representative (ACOR).

2.3 This Activity is covered by the Service Contract Act.

2.4 The contractor shall maintain/renew all drafting/design equipment (plotters etc.) maintenance agreements.

2.5 All design work shall comply with the documents listed on the NETL Focused Standards List. The documents that will be utilized most of the time are:
2.5.1 DOE Order 420.1 Facility Safety,
2.5.2 DOE Order 436.1 Departmental Sustainability,
2.5.3 DOE Standard 1066 Fire Protection,
2.5.4 ASHRAE 90.1 Energy Standard for Buildings Except Low Rise Residential Buildings,
2.5.5 ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality, and
2.5.6 NFPA 101 Life Safety Code.

2.6 Service estimates that do not specify site values are estimates for the three sites combined; general work ratios (unless otherwise specified) are assumed to be 20% ALB/40% MGN/40% PGH.

3.0 SPECIAL INSTRUCTIONS

3.1 The Offeror shall be required to employ personnel that possess the necessary technical skills and certifications to perform work covered herein.

3.2 It is expected that employees working under this Activity will seamlessly and proactively seek out those working on other Activities in order to gain information pertinent to the work being performed as necessary. Examples of such circumstances could be code or standard requirements from safety personnel for development of design basis documents, technical information from site support maintenance technicians, etc.

3.3 Unless otherwise specifically indicated within this PWS, all work under this Activity shall be issued via the CHAMPS work order system and approved by the ACOR.

3.4 Licenses/Certifications: The Contractor is required to provide design engineering services that will require professional licensed engineer(s) in the States of Oregon, Pennsylvania, and West Virginia to approve final design documents. The professional engineer(s) (PE) must be licensed in the state for which the work is being performed. Work performed by non-licensed engineers shall require final design documents to be approved by the licensed PE.

4.0 SCOPE

4.1 The Contractor shall provide general engineering, design, drafting and drawing control support at the ALB, MGN, and PGH NETL sites. The contractor shall provide to NETL all supervision, personnel, and services to satisfactorily perform work in the areas identified in this PWS. The Contractor shall provide all supplies and materials for the performance of the work identified in this PWS unless specifically identified to be provided by the Government within this PWS. All equipment needed to perform this work shall be provided by the Government. All printer-related supplies and other items commonly stocked in the warehouse shall be provided by the Government.

5.0 ENGINEERING DESIGN SUPPORT

5.1 General Engineering Design

5.1.1 Provide engineering design services for alterations or modifications to NETL site infrastructure. The Site Operations Support contractor shall provide up to15 design packages per year (note: design packages will vary in complexity but are typically replacement in-kind, or a design to address a maintenance need). Delivery schedules for design work shall be proposed to, and approved by, the ACOR. All design work produced shall be of similar presentation, appearance and format. Although each specific design project will vary from one to the next, engineering design services shall include the following items:

- 5.1.1.1 Design calculations for civil, mechanical, electrical, plumbing, fire protection, etc.
- 5.1.1.2 Code and standard expertise such that design basis documents can be assembled
- 5.1.1.3 Specification assembly
- 5.1.1.4 Preparation of cost estimates for implementation of designs or rough order of magnitude estimating for future projects that have not yet been designed
- 5.1.1.5 Production of drawings
- 5.1.1.6 Participate in design reviews (15%-30%-60%-90%) with NETL for designs prepared under this section, including tracking comments and providing disposition thereof.

5.1.2 Participate in design reviews and provide comments as requested by NETL for designs performed by outside architectural and engineering firms. On average, NETL has requested participation in 5 design reviews annually.

5.1.3 Provide proposal drawings or sketches that are not part of items above for use by NETL employees. An example of this may be a request for three site layout drawings to be produced showing various options for rearranging parking spaces. On average 150 requests of this nature occur during any given year.

5.1.4 Provide design services in support of other functions under this contract for the Laboratory Operations Center. This could include minor designs in support of the Engineering & Facilities Team and the Environment, Safety & Health Team. These designs are typically smaller in nature than those described in 5.1.1 above. An example would be a project to design code compliant stairs for NETL's main electrical substation switch house as a result of an annual safety inspection. The design product would include appropriate drawing(s) and a brief specification assembly. In these circumstances, the installation could be performed by either the Site Operations Support contractor or an outside vendor. The estimated amount of these types of designs is 5 per site per month.

5.1.5 All design products prepared must be submitted to NETL Federal personnel for signature approval before they can be considered 100% complete. The initial approval process shall be developed and documented by contractor staff in conjunction with the ACOR. The process must then be reviewed annually by contractor staff for effectiveness and improvements and presented to the ACOR for approval.

5.2 Construction Inspection Services

5.2.1 Provide limited construction inspection services (CIS) for construction projects performed by on-site or off-site contractors. The Site Operations Support contractor shall provide limited services up to 0.5 FTE (930 hours) per contract year for all 3 sites.

5.2.2 Inspection services include the following as per the direction of the ACOR:

5.2.2.1 Review of and response to submittals for compliance with specifications and Requests for Information (RFI's) for projects designed by this Activity.

5.2.2.2 Retention and cataloging of project submittal information in a documented filing system for future use by NETL and/or site support personnel (note that some information will be transmitted by NETL to performing organization personnel for retention and cataloging even when inspection services are provided by others).

5.2.2.3 Generation of walk-though reports and photographic construction progress documentation for underground utility projects shall be submitted to the NETL project manager at various intervals (i.e., daily, weekly, monthly, etc.).

5.2.2.4 'As-built' drawing production based on construction contractor provided red-lined drawings.

Note: The need for construction inspection services will be project dependent.

5.3 <u>General Drafting Support</u>

5.3.1 Provide general drafting support for on-site construction and maintenance projects. Drafting support shall include the following disciplines:

5.3.1.1 Architectural
5.3.1.2 Civil
5.3.1.3 Structural
5.3.1.4 Mechanical
5.3.1.5 Electrical
5.3.1.6 Plumbing
5.3.1.7 Fire Protection
5.3.1.8 Communications
5.3.1.9 Piping and Instrumentation Diagrams (P&IDs)
5.3.1.10 Process Flow Diagrams (PFDs)
5.3.1.11 High Pressure Plant Piping

5.3.2 Provide hard copy prints or soft copies of existing drawings to NETL Federal employees when requested. On average, 380 prints are provided per month for all 3 sites; hard copy prints will vary in sheet size depending on the requestor and the drawing being printed. Requests for soft copies could be in support of any NETL function. An example would be a request for soft copies of underground utility drawings by Engineering & Facilities personnel to support their assembly of an excavation permit. Soft copy requests are estimated to be 150 per month.

CHAMPS WORK ORDER NOT REQUIRED (ON-DEMAND SERVICES)

5.3.3 Drawings shall be in Computer Automated Design (CAD) format and may include two or three dimensions depending on the nature of the system being drawn. In addition to CAD, site utility and site layout/plot plan drawings will need to be maintained in ArcGIS software. The status of ArcGIS drawing availability/data bases varies by each site, with the Morgantown site more advanced than the other two sites (see ArcGIS Services below). Utilities to be included in this activity will encompass all utilities, service and waste lines maintained under other performance work statements that are part of this contract. Site layout/plot plan drawings will include those that detail building locations, sidewalks, parking lots, roads, walking paths, and grass areas from a bird's eye view. Note that only the 'official' layout/plot plan drawing for each of the items noted above will be required to be maintained with ArcGIS software.

5.3.4 Drawings shall be numbered in accordance with the current established numbering scheme or as otherwise directed by the ACOR and shall bare an NETL title block. Each drawing shall also bare a revision designation, the date the drawing was revised, and respective signature approvals as required. Symbols, comments, font, general layout, etc., shall be standardized for all drawings produced or updated. Any changes to numbering or drawing procedures must be approved by the ACOR.

5.4 <u>Drawing Control and Management</u>

5.4.1 Drawings must be controlled and managed for accuracy based on the requirements listed below:

5.4.1.1 Facility-related alterations/modifications performed by personnel working on other Activities under this contract shall be updated on the respective drawings within 20 business days of work completion. Historical data on these types of changes are available in maintenance records.

5.4.1.2 Hidden utility location information shall be updated on their respective drawings within 15 business days upon receipt of official locating information regardless of who performs the locating function (see historical data below).

5.4.1.3 Alterations/modifications performed by an outside vendor under a contract directly with NETL or other site support contractor not under this contract shall be updated on the respective drawings within 30 business days of receiving as-built information from NETL or other site support contractor respectively. Depending on the scope of the project, information from as-builts provided by others may warrant updates on other site drawings. Historically, outside vendors perform approximately 25 alterations/modifications to NETL facilities per year, of which nominally five (5) would be considered large and complex. Redline drawings from contractors performing modifications will be made available for use to support drawing alterations.

5.4.1.4 Electrical panel schedules shall be updated for all NETL facilities at least once in any annual period or upon changes made to panel circuitry. Changes made to panel circuitry must be updated within 10 business days of the change. The number of electrical panels can be obtained by reviewing existing maintenance records. (This effort shall be performed in accordance with the approved schedule and does not require an approved work order).

CHAMPS WORK ORDER NOT REQUIRED (ON-DEMAND SERVICES)

5.4.1.5 Arc-flash labeling shall be provided for facility electric panels and switchboards that are replaced or modified in the five-year period between site wide arc-flash assessments. Labels should follow the National Electric Code and NFPA 70E.

5.4.1.6 Space utilization drawings shall be kept up to date based on input from the NETL space planning coordinator. There is an average of 15 employee moves monthly. At the beginning and end of the summer months, NETL gains and loses respectively approximately 150 temporary employees. On average, 10 full-time employees separate from NETL employment each year. During each of these scenarios, space utilization drawings shall be updated along with statistics that are kept for occupied/vacant spaces. Statistics shall also be provided and updated based on the following space information: manager offices available/occupied, employee offices available/occupied, window offices available/occupied, and a count of Federal occupancy vs. non-Federal occupancy per building,

5.4.1.7 All other official drawings under 5.4.1.1 through 5.4.1.5 above shall be updated prior to use that could impact new work such as design, and procurement, etc. Official drawings shall be defined as any drawing showing utilities, services, waste systems, mechanical systems, plumbing systems, electrical systems along with electrical and mechanical equipment; all items mentioned include those within and external to site buildings and structures. Quantity of drawings being updated under this section are estimated to be approximately 100 per year. Updated drawings carry the expectation that once updated, pertinent information shown on the drawing shall reflect actual field conditions.

5.4.1.8 Preparation of drawings and building information for Facility SARS packages in accordance with NETL's posted procedure/manual governing this Activity. This Activity includes compiling building floor plans, building elevation drawings, developing a drawing that shows all utilities entering the building, and writing building system narratives for HVAC systems, life safety systems, communication systems, elevator/hoist/crane systems, and any other major mechanical equipment. Approximately twelve (12) of these packages will be assembled per site per year.

CHAMPS WORK ORDER NOT REQUIRED (SCHEDULED SERVICES)

5.4.2 Document and maintain a drawing control system for all site drawings. As-built drawings provided by others and delivered by NETL shall be part of the document control system (i.e., when received from NETL, drawings may need re-numbered and entered into the system).

5.4.3 Limited ArcGIS Support – ArcGIS is to be utilized to keep site infrastructure data up to date. Site infrastructure informational reports are to be executed using ArcGIS. The Site Operations Support contractor shall provide up

to one FTE (1860 hours) combined for all 3 sites per contract year to build and expand the ArcGIS databases. Site capabilities/databases via ArcGIS differ among the sites, with the MGN site being the most advanced. This effort will be managed as directed by the ACOR to suit the needs of the Facilities Operations Directorates. This shall include adding all utility location data developed/documented during the installation of the new utility lines and boxes. All underground utilities and abandoned utilities including underground contaminated piping located during the new installations shall be added to the ArcGIS data base. All marker balls that have been installed shall be added to the ArcGIS data base. The new underground fire water vaults and the new heated enclosures shall be added to the ArcGIS data base. All isolation valves and shutoffs shall be added to the ArcGIS data base. All newly installed backflow prevention devices shall be added to the ArcGIS database. Detailed information such as pipe size, type of pipe, valve size and type, backflow prevention details, etc., shall be included in the ArcGIS database.

6.0 SPECIALTY ENGINEERING SERVICES

6.1 General Space Management Services

6.1.1 Interface with the NETL space planning coordinator periodically and prepare space utilization drawings and occupied/vacant statistics upon request. Develop space layout options for NETL consideration in accordance with the guidance provided by the NETL space planning coordinator.

6.2 Infrastructure Alteration Support

6.2.1 Assist NETL by researching and providing existing infrastructure information for projects to be performed by external vendors. This information could be intended for developing future construction project needs, reviewing facility integrity, and assisting NETL's A&E firm review of existing conditions. The product developed under this activity could be supplying existing drawings, existing equipment specifications, existing conditions, and information regarding current equipment operating status. Supplying existing drawings and equipment specifications would occur for approximately 20 projects per year. Supplying information on existing conditions and operating status would typically only be required for major renovation projects and would occur for approximately 5 projects per year.

6.3 Infrastructure Management Support

6.3.1 Building management/control system operation which includes the following:

- 6.3.1.1 HVAC control system programming, diagnostics, operations, and quantitative report generation
- 6.3.1.2 Metering system diagnostics, operation and report generation
- 6.3.1.3 Recommend additions/upgrades to or deletions from building management systems identified in this Activity.
- 6.3.1.4 Provide technical assistance to personnel physically adding or deleting equipment from the systems identified in this Activity.
- 6.3.1.5 Development and management of detailed drawings for each of the systems identified above. Details may include and not be limited to the following: System connectivity, device location information, IP addresses, network information, device totals, wiring used (i.e. copper, fiber, etc.), communication protocols, etc.

Approximately 75% of NETL's facilities have some sort of HVAC control system, of which approximately half of the buildings are outfitted sophisticated control systems (e.g., Siemens or Johnson Controls systems that can be controlled remotely from dedicated client workstations) and the remaining half have basic control systems (such as local thermostats that are not controlled remotely by computer workstation).

7.0 UTILITY LOCATING SERVICES

7.1 Assist NETL's mission by providing the following utility locating services on an as needed basis:

7.1.1 Underground utility locating services shall be provided. Services could include various technological methods of scanning an area for existing underground pipe, conduit, or direct burial wires. Services will also include vacuum excavation techniques to precisely locate a utility. On average there has been a need for locating services covering a total of 17,500 ft2 per year. Vacuum excavations have been estimated at 15 per year.

Note: Contractor's proposal shall include separate fixed unit rates for Utility Locating Services in excess of 17,500 sq. ft. per year, and vacuum excavations in excess of 15 per year.

7.1.2 Marking the ground with spray paint or other ACOR-approved method to locate the utilities shall be provided. For vacuum excavations it is expected that steps will be taken to ensure that the found utility can be visually seen at the location after backfilling the area (i.e., pipe installed in the excavated area over utility with a removable cap).

7.1.3 Operation and management of NETL provided utility locating equipment. This specifically includes programming marker devices to be buried next to underground utilities when unearthed by others and locating any previously buried marker devices. The contractor shall maintain a sufficient stock of programming marker devices and may be required to install up to 120 marker devices per year.

8.0 SUPPORTING FUNCTIONS

8.1 Directives Support

8.1.1 The Contractor shall assist with reviewing and revising NETL directives to ensure that they reflect the current site practices, new or changed responsibilities of individuals, DOE orders and regulatory requirements, and quality assurance measures.

8.2 Corrective Action

8.2.1 The Contractor shall implement on-site corrective/preventive actions associated with action plans previously developed, self-assessments, and other types of internal and external reviews.

8.3 Consulting and Assistance

8.3.1 Consulting and assistance with other NETL deliverables. This included but not limited to change in regulations or DOE/Executive Orders, new initiatives, or change in NETL policy.

8.4 International Organization for Standardization (ISO) 14001/OHSAS 18001/ISO 45001 Certification Initiatives and Audits

8.4.1 The Contractor shall support NETL's efforts to maintain ISO 14001 and OHSAS 18001/ISO 45001 certifications as part of the ES&H Management System and shall participate in NETL's internal audits and assessments. Support activities including basic participating in ISO audits (as required). This could include gathering information and/or participating as a subject matter expert.

9.0 QUALITY CONTROL AND QUALITY ASSURANCE

9.1 The contractor shall include a Quality Assurance/Quality Control (QA/QC) Plan as part of the proposed technical approach. The QA/QC Plan shall be specific to the work performed under this Activity. It shall detail the methods and techniques that will be utilized to ensure products and services provided are free from inaccurate information, discrepancies between drawings and specifications, are traceable back to relevant codes or documented requirements, and are submitted/performed within prescribed time limits. The plan shall also detail methods and techniques that will be utilized to ensure each product and service provided is performed in a consistent and dependable manner. The expectation is that 95% of the time the methods and techniques developed are effective at ensuring quality products and services are being provided.

9.1.1 Surveillance of the QA/QC Plan shall include the following:

9.1.1.1 This QA/QC Plan shall include roles and responsibilities of the contractor's management staff as it relates to inspection methods and frequency of inspections for ensuring successful performance of the work. The plan shall also detail the approach to identify deficiencies and implement corrective actions.

9.1.1.2 The contractor shall be responsible for maintaining a QA/QC log to record all methods/techniques used to monitor the performance of this Activity. The QA/QC log shall be kept current and accurate at all times and shall be made available to the ACOR upon request. At a minimum, this log shall include:

9.1.1.2.1 Date, Time, inspector's name, and Location of the inspection

9.1.1.2.2 Product and/or Service being inspected.

9.1.1.2.3 Method of inspection

9.1.1.2.4 Result of inspection
9.1.1.2.5 Corrective Action (if necessary)

10.0 DELIVERABLES

The following table contains the deliverables associated with this Activity. All deliverables shall be submitted to the ACOR.

DELIVERABLE	FORMAT	FREQUENCY
Engineering Summary Report	An excel file to include the following: • Work Order Status • Design Projects • Construction Inspection Activity • As-Built Drawing production • Space utilization drawings • License /maintenance renewals • FSARS Schedule Design project status - Provide the following information for each active design project: 1) name of primary designer; 2) Short description of the work (i.e., 2~3 sentences); 3) planned start and end date; 4) actual start and end date; 5) running total of hours spent per design project; and 6) any comments or notes to explain issues, general progress (on schedule or behind schedule), or hold points. Construction Inspection Activity – Provide a summary of the activities performed, the total number of inspections performed, dates of inspections, and a running total of hours expended per project, per contract year. New and As-built Drawings – Provide numbers of new and as-built drawings created per site. Space utilization drawings – Provide number of space utilization drawings updated each month. FSARS Schedule – Provide a one-year schedule with start and end dates. Any schedule slippages need to be noted on the schedule with reason for slippage.	Available in common folder location providing access to: CO, COR, ACOR, CS
Building HVAC Status Report	This report shall be an e-mail to include a list of all HVAC systems currently under review by engineering for required modifications or proposed system changes. The email shall include the location and area of the HVAC system and the scope of the engineering effort (i.e. a brief description of the issue or proposed change, approved completion date, percent complete).	Weekly – Every Wednesday Submit to: COR and ACOR
Space Utilization Drawings	Annual review and update to ensure accuracy of site space utilization drawings	Provide updated drawing on ACOR-approved schedule.

DELIVERABLE	FORMAT	FREQUENCY
Percentage of Utilities Located Status Report	A written report that shows statistics for each underground utility, underground service, or waste piping regarding percentage located vs. percentage not located. A drawing shall be submitted to display which sections of the underground utility, service, or waste piping have been located and which sections have not.	Within 3 months of the contract start date; then subsequently within 5 business days of completion of work. Submit to: ACOR
Quality Assurance/Quality Control Plan	Written report to be submitted electronically.	With initial proposal, and then any time updates are made. Submit to: CO, CS, COR, ACOR
Quality Assurance Surveillance Report	Written report to be submitted electronically that includes the QA/QC Log and any other pertinent QA/QC information regarding effective performance and delivery of products.	In month eight of the Base contract year. Then every sixth and twelfth month in each option year. Submit to: CO, CS, COR, ACOR
Activity Management & Coordination Meeting	A meeting to be attended by the ACOR and Engineering Activity Manager/Supervisor to set priorities on the workload when the workload exceeds available resource hours. The contractor will be responsible for recording meeting minutes.	Monthly (meeting minutes shall be submitted to the ACOR within five (5) business days after the meeting).