INSTITUTIONAL FACILITIES OPERATIONS, REPAIR & MAINTENANCE CONTRACT, GLENN RESEARCH CENTER, LEWIS FIELD

NASA Glenn Research Center (GRC) plans to issue a Request for Proposal (RFP), for Institutional Facilities Operations, Repair & Maintenance at NASA Glenn Research Center (GRC) Lewis Field (LF), Cleveland, Ohio, in April 2013. A draft of the statement of work (SOW is attached to this advanced announcement. Interested parties may provide comments on this SOW to the point of contact listed below. The Government will not issue formal responses to any submitted comments. However, comments will be considered in the development of the final SOW. Comments are requested on or before February 5, 2013.

Interested parties will note that the SOW contains multiple references to Section J (i.e., "see Section J-C.5.XX"). This section, which contains multiple spreadsheets and documents containing technical information, references, or further requirements, will be issued as part of the draft RFP. Also, Section C.15 has been identified as "RESERVED FOR FUTURE". This section will be issued as part of the draft RFP.

It is anticipated that the final RFP will be issued under a yet to be determined set aside status with a North American Industry Classification System (NAICS) Code 561210 with Small Business Size Standard of $33.5 million in a three-year average annual receipts for determining whether or not a business is small. A FIRM FIXED PRICE (FFP) CONTRACT with an indefinite delivery, indefinite quantity (IDIQ) task order contract line item is contemplated.

This announcement is NOT an RFP. Other than this Draft SOW, NO formal solicitation documents are available. Telephone, written, facsimile, or e-mail requests for the solicitation package will not be honored.

The Internet site, or URL, for the NASA/GRC Business Opportunities page is http://www.fedbizopps.gov/. Potential bidders will be responsible for downloading their own copy of the solicitation and amendments (if any). Any referenced notes can be viewed at the following URL: http://genesis.gsfc.nasa.gov/nasenmote.html The Government will not provide written paper copies of the SOW, as well as, any written paper copies of the amendments.

Technical and Procurement related questions shall be directed to: Mark.A.Rebholz@NASA.Gov. Please put FORM FY13 in the subject line.

National Aeronautics & Space Administration (NASA)
Glenn Research Center (GRC), Lewis Field

Facilities Operations, Repairs & Maintenance Follow-On Contract

DRAFT

Section C – Statement of Work (SOW)

SECTION C
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C.1 INTRODUCTION

The NASA Glenn Research Center (GRC) is comprised of two sites: GRC Lewis Field in Cleveland, Ohio and Plum Brook Station in Sandusky, Ohio. This solicitation presently describes services required for the GRC Lewis Field site only (unless otherwise noted in this document).

GRC Lewis Field is comprised of 342 acres and includes 75 active buildings and 98 structures and systems (electrical substations, cooling towers, underground utilities, etc.). The buildings on the Center, many of which are specialized research and development facilities, enclose a total of 2.4 million square feet of floor area. The largest percentages of this space are devoted to technical areas and laboratories (31%) and offices (24%). Currently, 70% of these facilities are 60 years old or greater.

The intent of this solicitation is to obtain institutional facility operations, maintenance, and repair services for the GRC Lewis Field Campus by means of a combination firm fixed-price and indefinite delivery/indefinite quantity (IDIQ) contract. The following statement of work (SOW) provides comprehensive details on the scope of the required fixed-price and IDIQ services. In general, the fixed-price portion of this solicitation contains a mixture of performance requirements and prescriptive preventative maintenance (PM) instructions for many of the assets within the active buildings, structures, and systems. A GRC goal is to employ a proactive Reliability-Centered Maintenance (RCM) approach to gradually replace the prescriptive preventative maintenance tasks with modern predictive testing and inspection (PT&I) activities that reduce overall costs while not jeopardizing system reliability. In the future, the success of these actions will be measure using data obtained from a robust computerized maintenance management system (CMMS) and trending information from a building automation system (BAS).

Another goal of this solicitation is to implement a practice of recording operations and maintenance expenditures per property. As described in Section B of this solicitation, proposal data for the fixed-price portion shall be provided in a “per property” format. This will enable GRC to monitor operations and maintenance costs per square foot for various types of facilities.

Although the fixed-price work activities are well defined and well known for each of the contract years, the IDIQ work will fluctuate depending on unforeseen repairs and events and changes to overall GRC funding for operations and maintenance. Therefore, GRC seeks innovative approaches to managing a varying workload.

Sections C.1 through C.15 of this SOW provide basic overall guidelines for the required services. These include items such as technical definitions, details on what buildings and equipment will be furnished by the Government and what services and equipment must be furnished by the Contractor, a discussion of Government/Contractor interfaces, a description of recurring and non-recurring work structure, and the requirements for a RCM Program. Sections C.16 through C.30 provide details of the technical requirements of this solicitation. See Section J-C.1.XX for a list of commonly used acronyms used in this SOW.

C.2 SCOPE OF WORK OVERVIEW

1) General. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary for the operations, maintenance, and repair of buildings, structures, systems, equipment, grounds, and paved surfaces at the NASA GRC, Lewis Field Campus. All provided services shall conform to NASA Policy Requirement NPR 8831.2E Facilities Maintenance and Operations Management (see Section J-C.2.XX).

   Section J-C.2.XX describes the buildings, structures and systems to be maintained in this contract (note the tabs on the spreadsheet). The general breakdown of buildings, structures and systems is as follows:

GRC Lewis Field Buildings, Active Use:	75
GRC Lewis Field Buildings, Inactive (minimal PM only):	6
GRC Lewis Field Other Structures & Facilities, Electrical Substations:	12
GRC Lewis Field Other Structures & Facilities, Major Cooling Towers:	5
GRC Lewis Field Other Structures & Facilities, Miscellaneous:	57
GRC Lewis Field Other Structures & Facilities, Utility Systems, Pavement Systems, and Other:	24

   Note: Buildings, Other Structures & Facilities highlighted in yellow on the Section J-C.2.XX spreadsheets require no preventative maintenance.

   The Government makes no representation or guarantee as to the condition of these facilities on the start date of the contract, and no adjustments will be made in contract price relative to facilities condition after award.

2) Firm Fixed-Price Work. Firm fixed-price work includes the following items:

   a) Contract management including the following components:

      i) Business management for all aspects of the contract (fixed-price & IDIQ)
      ii) Work processing management for all aspects of the contract (fixed-price & IDIQ)
      iii) Quality control management for all aspects of the contract (fixed-price & IDIQ)
      iv) Safety and health management
      v) Environmental management
      vi) Information Technology management
      vii) Technical staffing for the fixed-price activities
      viii) Computerized Maintenance Management System (CMMS) database management

   b) RCM Program as defined in Section C.14

   c) Trouble Calls and Minor Service Requests

   d) Recurring Maintenance Work including:

i) Preventative Maintenance
ii) Program Maintenance
iii) Predictive Testing & Inspection
iv) Operations
v) Routine Maintenance

3) IDIQ Work. The IDIQ work includes the following items:

a) Technical staffing for the IDIQ activities

b) Repairs (including Trouble Calls that exceed the threshold limit)

c) Replacement of Obsolete Items

d) Service Requests

e) Non-recurring Support Services

f) Pre-priced Maintenance Tasks

4) Required Technical Services. The specific technical services required by this SOW are outlined in Sections C.16 through C.30. These services are as follows:

Section	Technical Area
C.16	Roads, Surfaced Areas, Signage & Fencing
C.17	Grounds
C.18	Architectural & Structural Systems
C.19	Cranes, Slings & Lifting Devices
C.20	Heating, Ventilating, Air Conditioning (HVAC) and Refrigeration
C.21	Energy Management Control System (EMCS)
C.22	Plumbing & Utility Distribution Systems
C.23	Chemical Treatment of Water Systems
C.24	Sanitary Sewer Lift Stations & Industrial Waste Basins
C.25	Centralized Chilled Water Plants
C.26	Central Steam Plant & Steam Generation & Distribution Systems
C.27	Life Safety & Fire Protection Systems
C.28	High Voltage Electrical Distribution Systems
C.29	Low Voltage Electrical Systems
C.30	Security Systems

C.3 CONTRACT LIMITATIONS

The scope of this contract presently does not include services such as:

1) Maintenance, repairs, and operations of institutional systems at GRC Plum Brook Station.

2) Janitorial, trash collection, and recycling.

3) Campus logistics services such as warehousing, transportation services, and equipment excessing.

4) Maintenance, repairs, and operations of the GRC Lewis Field Central Process Systems (CPS) equipment and distribution systems (Combustion Air System, Altitude Exhaust System, Service Air System, Variable Frequency Electrical System). It should be noted that excavation services in support of repairs to underground Central Process Systems piping will be part of the IDIQ portion of this SOW.

5) Controls and dispatching of CPS services.

6) Maintenance of research equipment such as wind tunnels, engine test facilities, and vacuum facilities.

7) Campus security services (physical and IT).

8) Waste management services (solid or hazardous wastes, etc.).

9) Major work (see definition below). Unless special provisions are made by the Contracting Officer, major work will be accomplished by a separate construction contract. This exclusion does not apply if the work is required to correct damage caused by the Contractor's negligence.

C.4 TECHNICAL DEFINITIONS

As used throughout this contract, the following terms shall have the meaning set forth below.

1) Asset. Typically an item of collateral equipment (see definition below). For this contract, a list of assets is stored in the "Asset Module" of the CMMS.

2) Building. A constructed facility, generally consisting of four walls and a roof, having the basic function to enclose usable space. Buildings with a book value equal to or greater than $100K are considered to be capital investments and are depreciated over a 40-year time period.

3) Computerized Maintenance Management System (CMMS). A CMMS is a set of computer software modules and equipment databases containing facility data with the capability to process the data for facilities maintenance management functions. These functions typically include: facility/equipment inventory and history, work input control, job estimating, work scheduling and tracking, preventive and predictive maintenance, and facility inspection and assessment.

   All references in this document to CMMS refer to NASA GRC's owned and furnished CMMS, which is Maximo Asset Management 7.1.1.7 (IBM, Incorporated).

4) Condition-Based Maintenance (CBM). Facility and equipment maintenance scheduled only when the condition of the facility or equipment requires it. CBM replaces maintenance scheduled at arbitrary time or usage intervals. It usually involves the application of advanced technology to detect and assess the actual condition.

5) Customer. Person listed as the "Originator" of a work request. The customer is also referred to as the Point of Contact (POC) in Maximo.

6) Deferred Maintenance (DM). DM is the total of essential, but unfunded, facilities maintenance work necessary to bring the facilities and collateral equipment to the required acceptable standards. It is the total work that should be accomplished but that cannot be achieved within available resources. It does not include new construction, additions, or modifications. DM does include unfunded maintenance requirements, repairs, ROI, and large capital repair projects.

7) Energy Management Control System (EMCS). The EMCS is a centralized system used for monitoring and controlling building heating, ventilating, and air conditioning (HVAC) systems and centralized utility plants. In addition, the EMCS is used to monitor and control utility consumption (building electrical power, building water usage, building steam usage, and building natural gas usage). EMCS data is logged, and trends become the basis for a proactive RCM Program.

   In this document, the EMCS and the Building Automation System (BAS) shall be considered to be the same system (EMCS and BAS will be used interchangeably).

8) Equipment. Equipment is divided into two categories: collateral equipment and non-collateral equipment. These are defined as follows:

   a) Collateral Equipment. Encompasses building-type equipment, built-in equipment, and large, substantially affixed equipment/property and is normally acquired and installed as part of a facility project. Examples of building-type equipment includes elevators; heating, ventilating, and air conditioning systems; transformers; compressors; and other like items generally accepted as being an inherent part of a building or structure and essential to its utility. Examples of large, substantially affixed equipment include items such that the installation cost, including special foundations or unique utilities service, or the facility restoration work required after its removal is substantial.

   b) Non-collateral Equipment. Includes equipment such that, when acquired and used in a facility, can be severed and removed after construction without substantial loss of value or damage to the facility. Non-collateral equipment includes furniture in an office building, laboratory equipment in a laboratory, test equipment in a test stand, machine tools in a shop facility, computers in a computer facility, etc.

9) Facility. A term used to encompass land, buildings, structures, and other real property improvements including utility systems and collateral equipment (see definition). The term does not include operating materials, supplies, special tooling, special test equipment, and non-capitalized equipment. The term "facility" is used in connection with land, buildings (facilities having the basic function to enclose usable space), structures and systems (facilities having the basic function of a research or operational activity), and other real property improvements.

10) Gross Area. The gross area of a building is the sum of the floor areas included within the outside faces of exterior walls for all stories or areas that have floor surfaces. Gross area includes basements (except unexcavated portions), floored attics, garages, enclosed porches, penthouses and mechanical equipment floors, lobbies, mezzanines, all balconies (inside or outside) utilized for operational functions, and main/common corridors, provided they are within the outside face lines of the building. Roofed loading or shipping platforms are included whether within or outside the exterior face lines of the building.

11) Major Work. Major work is defined as significant alterations, large construction, or large scale building renovation. Major work can also be defined as any individual unit or incident of work with a total estimated cost (labor and direct material) exceeding $300,000.

12) Minor Service Request (MSR). A service request (see definition) of a one-time nature that can be completed for up to $500 total cost. Work orders of this type could include installing a white board or picture in an office or conference room, hanging a projector, painting a wall or room, fixing a window, replacing a defective wall switch or power receptacle, providing support for watch standing duties, etc.

13) Net Usable Area. The net usable area of a building is the sum of all areas on all floors of a building comprising all functional categories (e.g., civil service, contractor) usable by and assignable to an occupant. Net Usable Area includes auditoriums, computer rooms, cafeterias, concessions, conference rooms, credit union offices, garages, health units and first aid rooms, kitchens, loading platforms, telephone operator areas, and telegraph operator rooms. The areas excluded from the Net Usable Area consist of custodial, circulation (hall ways), mechanical, and construction areas. The Net Usable Area is computed by measuring from face-to-face of the walls or partitions enclosing the area.

14) Operations. These are activities associated with the day-to-day operations of equipment, a system, a building or facility, a plant or utility distribution system, or a campus energy management and control system.

    a) General Operations & Maintenance (GOM). This includes those recurring activities required to operate and maintain a system, building or facility so that it can reliably perform its intended function (but does not include PM, PGM, PT&I, or repairs). These activities include periodic site visits and inspections, equipment logging, and freeze/storm protection plan maintenance activities.

       GOM also refers to maintenance activities that are routinely required, but may not have a clearly defined frequency (i.e., cutting grass, grounds maintenance, etc…).

    b) Utility Operations & Maintenance (UOM). UOM includes those recurring activities required to operate and maintain centralized utility plants and distribution systems so that they can reliably perform their intended function (but does not include PM, PGM, PT&I, or repairs). UOM includes the operations and maintenance of centralized steam plants, centralized chilled water plants, sanitary sewer lift stations, and industrial waste basins. The concept is that operators are assigned not only to operate these plants, but to also perform maintenance between various operating tasks. Consequently, it is difficult to segregate between operations and maintenance costs. The costs of the full-time operators (and their materials) are shown in this category. This facilities maintenance element does not include any work outside of the five-foot line of the utility plant or project-type work.

    c) Energy Management & Control System (EMCS) & ALS3 Operations. EMCS & ALS3 operations include those recurring activities required to operate and maintain a site-wide energy management and control system and life safety system via centralized consoles. EMCS/ALS3 Operators initiate work orders for mitigating maintenance problems according to the priority and criticality of alarms and notifications. EMCS/ALS3 operators shall also be active participants of the RCM team.

15) Planned Outage. Any planned activity that removes all or part of a system's capacity to function as designed. Planned outages are often used to facilitate maintenance on a utility system. Typical examples include the de-energizing of electrical sources and the isolation of fluid flows to systems. In some cases, a planned outage may be required on systems near to those being maintained to provide safety to maintenance personnel. At GRC, a planned

outage requires a formal Area Clearance (see Section C.7.11).

16) Predictive Testing and Inspection (PT&I). PT&I is the use of advanced technologies to assess the condition of assets. Examples of PT&I activities include methods to locate thinning of pipe walls, detect roof weaknesses and/or wet insulation, identify equipment wear problems, and locate heat buildup in electrical equipment. Data collected from PT&I actions can be used to schedule PM or repairs, validate other maintenance and repair efforts, verify new installations, determine the overall material condition of assets, or establish equipment operational baselines.

17) Pre-Priced Maintenance Task. A maintenance activity that is routinely required, but is beyond NASA's ability to fund on a regular basis. Typically, this includes additional PM or PGM tasks associated with research test program equipment or systems.

18) Preventive Maintenance (PM). Preventive Maintenance is also known as periodic maintenance, time-based maintenance, meter-based maintenance, run-time based maintenance, or interval-based maintenance. PM is the planned, scheduled periodic inspection, adjustment, cleaning, lubrication, material replacement, and minor repair of equipment and systems. A PM instruction typically consists of many check-point activities that are stored in the CMMS Job Plan Module.

19) Proactive Maintenance. Also referred to as "root-cause analysis," proactive maintenance is the further application of predictive maintenance technologies toward extending machinery life. It seeks to reduce the need for maintenance through better design, better installation, precision balance and alignment, and root-cause failure analysis.

20) Programmed Maintenance (PGM). A preventative maintenance task whose cycle is greater than one year.

21) Property. A facility (see definition) which has been issued a GRC Real Property number. Section J-C.2.XX contains a complete listing of all GRC Lewis Field properties.

22) Reactive Maintenance. Reactive Maintenance refers to Trouble Calls and Repairs and occurs after the failure of an asset to perform its function.

23) Re-Determinable Work. Re-determinable Work is a task where it is not possible to determine or negotiate a fair and reasonable fixed-price prior to task initiation. Re-determinable task will be purchased under the IDIQ portion of the contract.

24) Reliability Centered Maintenance (RCM). RCM is a process used to determine the most effective approach to maintenance. It involves identifying actions that, when taken, will reduce the probability of failure and which are the most cost effective. RCM seeks the optimal mix of PT&I based actions, other time or cycle-based actions, or run-to-failure approaches.

25) Repair. Work required to restore a facility or component thereof, including collateral equipment (see definition), to a condition substantially equivalent to its originally intended and designed capacity, efficiency, or capability.

26) Replacement of Obsolete Items (ROI). There are many components of a facility that should be programmed for replacement because they are becoming obsolete (no longer parts-supportable at the end of service life), do not meet electrical or building codes, or are unsafe but are still operational and would not be construed as broken and needing repair. Examples include electric switchgear, breakers, motor starters, elevators, control systems, boiler and central heating, ventilating, and air conditioning (HVAC) systems and controls, fire detection systems, cranes and hoists, and equipment using chlorofluorocarbon (CFC) or hydro chlorofluorocarbon (HCFC) refrigerants.

27) Service Requests (SRs). SRs are for facilities related work that is new in nature. Service requests are not maintenance or repair items, but are often performed under facilities maintenance contracts. SRs can be initiated by anybody at the Center through the Work Control Office, and logged into the CMMS. Examples include installing a new electrical outlet, minor office renovation, and installing special cabinetry. SRs could involve larger tasks that require minor engineering and are complicated and challenging to implement. Examples could include renovating an auditorium, converting office space to another type of usage, and installing special HVAC systems. The Contractor and the Government shall work together in determining the schedule, negotiating the price and establishing a completion date for a SR.

28) Structures and Systems. Constructed facilities, not classified as a building (see definition above). Structures and systems with a book value equal to or greater than $100K are considered to be capital investments and are depreciated over a 15-year period. Structures and systems include facilities such as power production facilities, substations and distribution systems, research and development facilities other than buildings (engine test stands, wind tunnels, etc.), parking lots, roads, and bridges, and utility distribution systems (underground water pipelines, natural gas pipelines, etc.).

29) Trouble Calls (TCs). Trouble Calls are reactive maintenance work that is generally initiated by Glenn employees and contractors or through Maintenance Contractor discovery to the Work Control Office. TCs are generally of a one-time nature to repair, adjust, calibrate, or replace broken or malfunctioning existing equipment or systems. The scope of a TC is limited to a total cost of $2,000. Once a TC is reported to the Work Control Office, a classification of either Emergency, Urgent, or Routine is assigned.

30) Watch Standing. The assignment of qualified personnel to stations and equipment requiring an operator attendant. Watch standees may also perform required operator maintenance.

C.5 GOVERNMENT-FURNISHED PROPERTY AND SERVICES

1) General. The Government will provide the Contractor the use of certain Government-owned facilities, equipment, materials, and information technology (IT) equipment and services for use only as required for activities associated with this SOW. The use of Government property for other purposes is prohibited. All such facilities, equipment, and materials will be provided at the start of the contract in "as is" condition.

2) Inventory Requirements. The Contractor shall prepare, and schedule with the COTR, an annual inventory audit of all Government-furnished items specified below. Detailed spreadsheets shall be maintained that indicate the items, the location of the items, and the Contractor POC for each item. In addition, the spreadsheet shall indicate if items have become obsolete or unusable so that the COTR can initiate processes to have the items excessed in accordance with Government requirements. At no time shall the Contractor dispose of Government-furnished items.

3) Government-Furnished Facilities (GFF). The Government will furnish or make available to the Contractor the facilities (buildings, structures and systems, etc.) described in Section J-C.5.XX. These facilities include office areas, conference rooms, shop areas, equipment storage areas, and materials storage areas. Should the Contractor choose to use the Government-furnished facilities, adequate precautions shall be taken by the Contractor to prevent fire hazards, odors, and the infestation of vermin. The Contractor shall obtain written approval from the Contracting Officer prior to making any modifications or alterations to GFF. Any such modifications or alterations approved by the Government will be made at the expense of the Contractor. At the completion of the contract, all facilities shall be returned to the Government in the same condition as received, except for reasonable wear and tear, and approved modifications and alterations. The Contractor will be held responsible for the cost of any repairs caused by negligence or abuse on the Contractor's or on the Contractor's employees' part.

   Basic janitorial services will be provided within GFF at no additional cost to the Contractor. These include trash collection, occasional floor cleaning and/or sweeping, and cleaning of restroom facilities. Recycling of office paper, aluminum cans, and plastic bottles will also be provided.

   Some of the GFF contains building cranes and built-in lifting devices. These devices are available for the Contractor's use and routine inspection and certification of these devices will be the financial responsibility of NASA. The Contractor shall ensure that only certified crane operators use this equipment.

4) Government-Furnished Equipment (GFE). The Government will provide the Contractor the use of existing and available Government owned tools and equipment in the performance of the contract. Such Government furnished tools and equipment are listed in Section J-C.5.XX. Upon completion or termination of the contract, all Government-furnished tools and equipment, including specialized PT&I equipment and tools, shall be returned to the Government in the same condition as received, except for normal wear and tear. Tools and

equipment that become worn out due to normal wear and tear shall be returned to the Government and their replacement shall be determined by the COTR. The Contractor will be responsible for the cost of any repairs or replacement caused by negligence or abuse by the Contractor's employees or any subcontractor employees.

The Contractor and the COTR shall conduct a joint inventory before commencing work under this contract to verity the number and serviceability of Government-furnished tools and equipment chosen by the Contractor. The Contractor shall then certify the findings of this inventory, assume accounting responsibility, and subsequently report inventory discrepancies to the COTR on a semi-annual basis. Government-furnished items shall not be removed from GRC Lewis Field unless approved in advance by the COTR.

GRC Lewis Field has an on-site garage and a fueling station that provides unleaded gasoline, ethanol (E85), and biodiesel (B20) fuels. Selected Government-furnished equipment (vehicles, tow motors, backhoes, small snow removal equipment, etc.) will include fuel, periodic servicing, preventative maintenance, and minor repairs provided at no additional cost to the Contractor. Use of the Government-provided fuels and services for Contractor-owned equipment is prohibited. As indicated in Section J-C.5.XX, certain Government-furnished vehicles and equipment cannot be fueled on-site (i.e., use of B20 fuel for large snow plows will void the manufacturer's warranty). In these cases, the Contractor shall use off-site fuel suppliers, and the costs will be addressed in the IDIQ portion of the contract. In addition if any Government-furnished equipment requires significant repairs, the Contractor shall notify the COTR, and the repair work will be addressed under the IDIQ portion of the contract.

5) Government-Furnished Material (GFM). The Government will furnish materials as described in Section J-C.5.XX on a one-time basis. Should the Contractor choose to use the Government-furnished material, a joint inventory shall be conducted with the COTR before commencing work under this contract to determine the exact amount and serviceability of these Government-furnished materials. The Contractor shall then certify the findings of this inventory, assume accounting responsibility for all materials supplied, and shall provide documentation supporting issue and/or use of such material on a semi-annual basis. Upon depletion of this material, the Contractor shall purchase any further required materials on a "just-in-time" basis. If the Contractor determines that certain critical materials need to be stored on-site, the Contractor shall contact the COTR for approval. Upon completion or termination of this contract, a final inventory shall be conducted to verify the quantity of remaining materials.

6) Government-Furnished Utilities (GFU). The Government will furnish the following utility services for the Contractor's use within the GFF at no additional cost to the Contractor (i.e., utilities will not be separately metered within GFF and back-charged to the Contractor):

   a) Low voltage electricity for lighting and power.
   b) Low pressure steam or heating hot water for HVAC (as required).
   c) Natural gas for HVAC and hot water (as required).
   d) Hot & cold potable water.

e) Sanitary and Storm sewage service.
f) Service Air/Shop Air (125 psig) for shop tools.

7) Government-Furnished Information Technology (IT) Services. The Contractor will be provided a selected number of Government-furnished land-line telephones, computer seats, and computer servers as required to ensure proper communications with GRC personnel and to enhance the Contractor's daily business practices.

a) Land-line telephones. A selected number of Contractor employees will be provided with land-line telephones. These devices provide access to on-site GRC employees and contractors (Lewis Field and Plum Brook Station) and include unlimited local and long-distance calling capabilities. Telephone maintenance and repair services are also provided at no additional cost to the Contractor. Use of these land-line phones for non-business purposes is strictly prohibited.

b) Computer Seats. A selected number of Contractor employees will be furnished with computer seats (referred to as ACES seats) and NDC computer domain accounts. The NDC domain will enable Contractor employees to access NASA information systems and personnel within the NASA Active Directory. Computer stations are loaded with Microsoft Office software including Microsoft Outlook for e-mail and calendar services. In addition, these seats can be used to access the world-wide web. ACES seats will be furnished with software and hardware maintenance services and periodic hardware updates. Use of the ACES seats for non-business purposes is strictly prohibited. All ACES seat key strokes are monitored by an on-site surveillance group, and misuse of this equipment will be addressed by GRC IT Security personnel and the COTR.

c) Computer Servers. The Contractor will be furnished with computer servers to store critical GRC documentation that is managed by the Contractor. This includes current lifting device certifications, life safety systems documentation, and PT&I software and data (i.e., thermography data, vibration data, etc.). The Government-furnished computer servers will include maintenance, repair services.

d) Current Quantities. For reference, the following quantities of land-telephones, computer seats, and servers have been allocated to the current Institutional Operations and Maintenance Contractor:

i) Quantity and Location of ACES Seats:

Building No. 12 (Main Steam Plant):	1 seat
Building No. 14 (High Voltage Electrical Crew):	6 seats
Building No. 107 (Main Offices):	7 seats

ii) Quantity and Location of Land-Line Telephones:

Building No. 12:	1 land-line
Building No. 14:	3 land-lines
Building No. 107:	20 land-lines

iii) Quantity and Location of Computer Servers:

Building No. 107:	1 server

C.6 CONTRACTOR-FURNISHED PROPERTY

1) General. In addition to the Government-furnished property and services described in C.5, the Contractor shall provide all additional equipment, materials, and services needed to achieve the requirements of this contract.

2) Parts, Components, Materials, Chemicals and Supplies. The Contractor shall procure new or factory reconditioned parts, components, and materials/supplies as required for the operations, maintenance and repair services described herein. All replacement parts, components and materials/supplies used for PMs, repairs, TCs, and SRs shall be compatible with that existing equipment on which it is to be used and shall be of an equal or higher quality than the original equipment specifications. Parts and components, once installed in the Government facility, become Government property.

   The Contractor shall obtain approval from the GRC Chemical Management organization prior to purchasing any chemicals, cleaning agents, paints, lubricants, glues, etc… Purchased chemicals shall be on-site bar-coded and entered into the GRC Chemical Management Database for tracking and reporting purposes. In addition, the Contractor shall furnish either a hard copy or an electronic PDF version of all Material Safety Data Sheets (MSDS) to the Chemical Management organization for storage in the Chemical Management Database.

3) New Equipment & Manufacturer's Descriptive Data. Any new equipment provided under this contract shall conform to the design requirements furnished by the Government. In instances of ROI, the newly furnished equipment shall be of a quality similar to that of the equipment being replaced. For all new equipment, the Contractor shall provide to the COTR data that includes the name of the manufacturer, model number, serial number, catalog cuts, and other identifying data and information describing the performance, capacity, rating, and application/installation instructions. In addition, the Contractor shall provide operations and maintenance manuals in electronic format (PDF, JPEG, etc.) specific to the equipment being installed. The Government will upload this information into the CMMS (see Section C.9).

4) Vehicles. The Contractor shall provide any vehicles required for the execution of the contract requirements except those vehicles provided as GFE (see Section J-C.5.XX). Fueling, maintenance, and repair of all Contractor-owned vehicles shall be the responsibility of the Contractor. The use of on-site fuel, maintenance and repair services for Contractor-furnished vehicles is strictly prohibited.

C.7 GENERAL REQUIREMENTS, PRACTICES AND PROCEDURES

1) General. The following are general GRC requirements, practices and procedures that apply to all aspects of the work specified in this SOW.

2) Badges. All Contractor and subcontractor employees shall wear Government identification badges at all times while on site at GRC Lewis Field. Security badging for Contractor visitors and subcontractors shall be coordinated by the Contractor through the GRC Security Organization following the policies and procedures outlined in Section I.

3) Driver's License. All Contractor and subcontractor employees shall hold a current State of Ohio driver's license and any other required specialty license prior to operating Government-furnished and/or Contractor-furnished vehicles and equipment on or off the Campus.

4) NASA GRC Standard Working Hours & Holidays. The GRC standard working hours are from 6:00 A.M. to 5:30 P.M. Mondays through Fridays except for Federal Holidays (see below). Some research facilities may also operate during second shift (normally 3:30 PM through 12:00 AM), and third shift (normally 12:00 AM through 8:00 AM). Except as may otherwise be specified, all work shall be performed during NASA GRC's standard working hours. If the Contractor desires to perform work on Saturday, Sunday, holidays, or outside standard working hours, the Contractor must request approval from the COTR.

   The on-site Government personnel observe the following holidays:

   a) New Year's Day
   b) Labor Day
   c) Martin Luther King, Jr. Day
   d) Columbus Day
   e) President's Day
   f) Veterans Day
   g) Memorial Day
   h) Thanksgiving Day
   i) Independence Day
   j) Christmas Day
   k) Any other day designated by Federal statute, Executive order, or the President's proclamation.

   When any holiday falls on a Saturday, the preceding Friday is observed. When any holiday falls on a Sunday, the following Monday is observed. Observance of such days by Government personnel shall not by itself be cause for an additional period of performance or entitlement of compensation except as set forth within the contract (see Section I).

5) Performance. The Contractor's work performance shall comply with the approved and accepted standards of the industry, equipment manufacturers, applicable local, state, federal standards, and all applicable facilities and safety codes. See Section J-C.7.XX for applicable

codes.

a) Workmanship. Corrective repair and replacement work shall be carried to completion and include operational checks and cleanup of the equipment and job site. Replacement work shall match previous work in dimensions, finish, color, and design unless otherwise specified by the Government.

b) Cleanliness. During the execution of work tasks, debris shall not be allowed to accumulate on the jobsite or spread into adjacent areas. At the completion of the job, debris, excess material, and parts shall be cleaned up and removed from the job site. Waste shall be placed in the appropriate containers in compliance with GRC Waste Management standards.

6) Financial Terminology. It is critical that the Contractor's Business Office (see Section C.8.4) understands the basic terminology associated with the Government's financial system. The Federal Government's Office of Management & Budget (OMB) requires NASA to meet strict fiscal performance metrics each year, and many of these metrics are directly associated with contract management and execution. Consequently, much of the criteria used to evaluate the Contractor are associated with the accurate and timely management of contract funding. The basic financial terminology is as follows:

a) Federal Fiscal Year (FY). The Federal Fiscal Year begins on October 1 and ends on September 30.

b) Commitment of Funds. Funding is considered to be "committed" when a Purchase Request (PR) is established for the funding amount in NASA's accounting system (SAP). PRs are generated by the Government, and are not the responsibility of the Contractor.

c) Obligation of Funds. Funding is considered to be "obligated" when a contract mechanism for the funding amount is established by the Government CO. This includes the establishment of an initial contract, a formal contract amendment, or a task order (Form 347 for IDIQ work, etc.).

d) Costing of Funds. The "costed" amount of obligated funding is typically a reflection of the percentage of work that has been completed by the Contractor. "Fully costed" means that the work for a given activity has been 100% completed. Funding for a given task could be "partially costed" based on the work not being fully completed, materials that have been purchased and delivered to GRC but not yet installed, etc.

e) Funds Expended. Funds are considered to be "expended" when a payment has been made to the Contractor. Payments are made only after a Contractor invoice has been received, reviewed, and validated by Government personnel.

7) Green Practices, Sustainability & Energy Savings. GRC is committed to the principles of proactive environmental management and the conservation of energy and natural resources. This is achieved through strict compliance with federal, state and local government

regulations and mandates and alignment with NASA Agency sustainability policies. It is also critical that a close partnership be maintained between the onsite contractors and the GRC Environmental Office.

a) General. In order to help GRC meet their environmental goals, the Contractor shall strive to achieve the following:

   i) Reduce the quantity and toxicity of pollutants released into the environment.
   ii) Reduce the amount of solid waste placed in landfills.
   iii) Conserve resources through reduction of energy and water usage.
   iv) Use environmentally preferable alternatives when selecting materials (if supported by sound life-cycle cost estimates).

b) Environmental Protocol. GRC is considered the owner and operator of record for all environmental activities at the Lewis Field and Plum Brook Station campuses. All activities are subject to Federal, State, and Local environmental agency inspections and reviews. Therefore, the Contractor, in concert with the GRC Environmental Office, shall fully participate and cooperate with any inspections, audits or reviews performed by these agencies.

c) Federal, Agency and Center Policies & Standards. The Contractor shall ensure that all work performed and equipment used to fulfill the requirements stated herein comply with the following Federal, NASA Agency, and GRC policies and standards:

   i) Energy Policy Act of 2005
   ii) Executive Order 13514 Federal Leadership in Environmental, Energy, and Economic Performance
   iii) Federal Acquisition Requirement (FAR) 52.223-2 Affirmative Procurement of Bio-based Products Under Service and Construction Contracts
   iv) FAR 52.223-4 Recovered Material Certification
   v) FAR 52.223-9 Estimate of Percentage of Recovered Material Content for EPA-Designated Items
   i) FAR 52.223-10 Waste Reduction Program
   ii) Environmental Protection Agency (EPA) Clean Air Act Regulations, Title VI
   iii) NPR 8553.1B NASA Environmental Management System
   iv) NPR 8570.1 Energy Efficiency and Water Conservation
   vi) Glenn Procedural Requirement (GLPR) 8553.1 Glenn Environmental Management System (EMS)

d) Environmental Audits. All onsite contractors are subject to audit reviews by NASA personnel. The Contractor shall participate in all audits, provide all necessary data, and respond to all findings.

e) Environmental Liability. The Contractor will be responsible for all damages resulting to GRC property as the result of Contractor employee negligence or noncompliance with Federal, State, Local or Agency Environmental regulations. In addition, the Contractor

will be responsible for payment of any civil fines or penalties assessed by a regulating agency as a result of the violation of any applicable law or regulation. The Contractor shall immediately notify the COTR and the GRC Environmental Office of any Notice of Violation or other notice of noncompliance issued to the Contractor.

f) Affirmative Procurement. Whenever possible, the Contractor shall purchase and utilize environmentally-preferable materials and equipment in accordance with the EPA's Comprehensive Procurement Guideline (CPG) listing (http://www.epa.gov/epaoswer/non-hw/procure/products.htm). This is defined as materials and equipment that conserve resources (energy, water and other non-renewable resources), reduce quantities of toxic pollutants (ozone-depleting substances, air/water pollutants, and hazardous wastes), and are fabricated with recycled materials.

The Contractor shall consider life-cycle costing when making decisions on purchasing equipment and materials. This includes costs for energy and water usage, waste disposal, and regulatory oversight and permitting. When it is life-cycle cost effective, the Contractor shall purchase products that meet the ENERGY STAR specifications (http://www.enegystar.gov) or products that are listed in the upper 25% of energy efficiency as designated by the Federal Energy Management Program (FEMP) products bulletin (http://www.eeere.energy.gov/femp/technologies/eeproducts.cfm).

g) Data Maintenance, Reporting & Deliverables. The Contractor is responsible for maintaining data and issuing reports as follows:

i) The Contractor shall maintain and make available to the COTR all documentation required under applicable EPA laws and regulations to demonstrate environmental compliance. Examples include refrigerant usage and leak rate records, steam plant fuel usage, boiler operations logs, and air permits, chilled water and cooling tower water treatment records, etc.
ii) The Contractor shall submit an annual report that provides data on affirmative procurements, progress made in waste reduction activities, energy efficient product procurements, and reductions in ozone depleting substances.

h) Ozone Depleting Substances (ODS). The Contractor shall comply with Federal procurement regulations concerning the purchasing, handling, reporting, disposal, and elimination of ODS or ODS equipment. In accordance with the Clean Air Act (CAA), the Contractor shall maximize the substitution of safe alternatives to ODS.

i) Recycling Program. The Contractor shall place appropriate unused or discarded materials into GRC recycling and composting bins including scrap metal, batteries (lead, nickel/cadmium, silver, mercury), fluorescent lamps, mixed paper, cardboard, pallets, and aluminum cans.

8) Equipment Under Warranty. New equipment, components, and parts installed by other contractors shall not be removed or replaced or deficiencies corrected while still under warranty of the manufacturer or the installer without prior approval of the COTR. All

defects in material or workmanship, defective parts, or improper installation and adjustments found by the Contractor shall be reported to the COTR so that necessary action may be taken. Available warranty information will be furnished to the Contractor by the COTR or be indicated within the Maximo system (Contracts Module).

9) Configuration Control. Any changes made to GRC infrastructure as a result of work performed through a Maximo work order shall be relayed to the COTR for incorporation into the official Drawing Records, maintained by the Facilities Configuration Control Office. In addition, the Contractor shall conform to the following configuration control requirements:

   a) Facility Change Request (FCR) process. When performing SR or ROI work (see definitions), the Contractor shall follow GRC's FCR process. This includes completion of NASA Form C-29 (see Section J-C.7.XX), which is used to obtain approval for a proposed change or update to a facility, institutional system, or ground test facility or to the drawings and operations and maintenance manuals related to the facility or system. This process ensures that changes to GRC property are properly approved prior to execution, and documented upon completion. The Contractor shall ensure that existing NASA record drawings are red-lined to capture the changes and that any new drawings (if required) are transferred to the Facilities Configuration Control Office.

   b) If new Assets (air conditioning units, unit heaters, electrical power distribution panels, transformers, etc.) are added as a result of SR or ROI work, official Maximo asset numbers must be obtained from the COTR. See Section C.9.5.a for further Asset information requirements.

10) Access To Government Drawings & Records. The Contractor will have accesses to the roughly 120,000 facility record drawings managed by the GRC Configuration Control Office. This includes access to hard-copy stick files (located in Building No. 21) and access to the following database systems:

   a) Adept (Synergis Software, a Division of Synergis Technologies, Inc.). The Contractor will be given read-only access to the GRC Adept system, which is used to help locate, manage, share, and control native AutoCAD documents throughout their lifecycle. Adept integrates with AutoCAD data files and any CAD-related support files. Many Adept folders also contain PDF versions of operations & maintenance manuals, data sheets, and project information. Adept has been active at GRC since 2007, and is the official repository of controlled documents for GRC Lewis Field and Plum Brook Station.

   b) Glenn Drawing Information System (GDIS). The Contractor will be given access to GDIS, which is a web-based database used to track and search for drawings and drawing-related items. Unlike Adept, GDIS cannot display or control native AutoCAD files (DWG files). GDIS can display PDF files of drawings and of stored Facility Change Requests (FCRs).

   c) Glenn Underground Record Drawing System. Although the Contractor will not be given direct electronic access to this system, current underground record drawings can be

obtained from GRC personnel who manage this system.

11) Area Clearance Process. The Contractor shall utilize the GRC Area Clearance process when work (PM/PGM/PT&I, TC, Repair, ROI or SR) requires the interruption of a utility or service. This process ensures that the work can be accomplished in a safe manner and that there is adequate notification of the timing, duration and nature of the impact to building occupants and/or facilities. The Area Clearance Process is provided in Section J-C.7.XX and the Area Clearance Form, NASA Standard Form C-978, is provided in Section J-C.7.XX.

12) Interfaces With Government Personnel and Other Government Contractors. The execution of the SOW will require this Contractor to interface with a wide variety of Government personnel and other Government contractor personnel. These interfaces are as follows:

a) Contracting Officer (CO). The CO is the only Government individual with the authority to enter into, administer, and/or terminate this contract and make related determinations and findings. The CO will be the Contractor's single POC for all invoices for completed work and changes to scope, schedule, or contract value. No other individual has the authority to make decisions on behalf of the Government regarding this contract.

b) Contracting Officer's Technical Representative and Alternate (COTR/ACOTR). The COTR acts as an advisor to the CO regarding technical, schedule, financial, and quality matters associated with the contract. The Contractor's Program Manager and Business Office personnel will have daily interactions with the COTR regarding the status of on-going work and the financial aspects of the contract.

In the absence of the COTR, the ACOTR will assume the above duties. Currently, the ACOTR also acts as the Lead FOS (see definition below).

c) Systems Managers (SMs). The SM is senior-level civil servant engineer who provides management and oversight for operations, maintenance, and for new installations of institutional facility systems and equipment. The SMs and the FOSs (see below) are considered to be subject matter experts of their respective systems. Currently, GRC has an authorized SM for architectural/structural systems, civil and paved surface systems, life safety and security systems, building HVAC and plumbing systems, underground utilities and central steam plant systems, central chilled water plants and cryogenic systems, high voltage electrical systems, low voltage electrical systems, and the various components of the GRC Central Process Systems.

Specifically, the SM is responsible for:

i) Defining equipment and system requirements
ii) Establishing operating policies and procedures
iii) Maintaining the system knowledge on system capability and capacity
iv) Maintaining configuration control

In addition, the SM is responsible for approving Area Clearances for system outages, Facility Change Requests (FCR), Operational Safety Permits, and Dig Permits.

d) Facility Operations Specialist (FOS). GRC's civil servant Operations & Maintenance organizational structure aligns the FOS function with the SM function (i.e., the High Voltage Systems Manager is paired with a High Voltage Facility Operations Specialist, the HVAC Systems Manager is paired with an HVAC FOS, etc.). The Contractor's field technicians will have daily interactions with the FOS.

One FOS has been delegated as the primary POC for the CMMS system, and one FOS has been delegated as the primary point of contract for the RCM Program.

The FOS is responsible for quality assurance and oversight of the Institutional Facility Maintenance Contractor's work. The FOS responsibilities include:

i) Task definition. The FOS will work with the SM to clearly define the scope of work for ROI and SR work as required.
ii) Task tracking. The FOS uses the CMMS to track the status of all ongoing work. Upon request, the FOS can provide pre-established reports on task status for Operations & Maintenance Organization management.
iii) Task evaluation. The FOS will evaluate a percentage of completed PM/PGM/PT&I work, TCs, and SRs.
iv) Task communications. The FOS communicates with the Building Mangers regarding all work on-going within their respective buildings (although the Contractor shall communicate with the Building Mangers as well). The FOS will also be involved in the Area Clearance Process. The FOS communicates with their respective SM regarding all technical matters associated with a given task.

e) Building Managers. The GRC Building Manager is responsible for overseeing and communicating all building related issues which impact building occupants and stakeholders. These responsibilities include capturing and tracking building related issues and facilitating a resolution with the SMs, FOSs, and the Institutional Facilities Maintenance contractor. The goal of a Building Manager is to foster cooperative relationships with building occupants and to ensure that building services are adequately maintained. GRC has assigned a Building Manager for all of the properties at GRC Lewis Field.

f) Safety & Mission Assurance Organization. The GRC Safety and Mission Assurance organization ensures that a safe, healthful, and protective environment is available for all GRC on-site personnel and contractors. This organization includes a Reliability and System Safety group, Occupational Health group (which includes the Chemical Management group), and an Operational Safety group.

The Contractor's Quality Assurance and Safety & Health personnel (see requirements in Section C.8.5) shall interface with the GRC organizations on a regular basis.

g) Authority Having Jurisdiction (AHJ). At GRC, the AHJ is the individual responsible for implementing the fire safety provisions of NPR 8715.3, NASA General Safety Program Requirements. The AHJ has been delegated the authority by the Center Director for approving all life safety and fire protection system installations, procedures, equipment selections, testing, and maintenance at both GRC Lewis Field and Plum Brook Station. In addition, the AHJ is authorized to enforce the provisions of the applicable fire and building codes and shall have the authority to render interpretations of these codes, to adopt policies, to establish procedures and regulations in order to clarify the application of its provisions.

The Contractor shall coordinate all maintenance and SR work associated with Section C.27 "Life Safety & Fire Protection Systems" with the AHJ.

h) Energy & Environmental Management Organization. The GRC Energy & Environmental Management organization provides overall coordination and integration of the Center's energy and environmental efforts. This office is responsible for establishing energy and environmental metrics, in compliance with federal, state and local government regulations and mandates, and in alignment with Agency sustainability policies. The office oversees the planning and implementation of institutional initiatives to ensure synergy, environmental benefits and energy savings.

i) Configuration Control Organization. This organization has the responsibility to provide direction, management and assistance of facility drawings to GRC civil servant and contractor personnel. The GRC Configuration Control organization provides the following services:

i) Facility Drawings Configuration Control
ii) Facility Drawings Reproduction Services
iii) Facility Engineering Drawings Retrieval & Assistance Program (FEDRAP)
iv) Glenn Drawing Information System (GDIS)
v) Facilities Electronic Data Management System (FEDMS)
vi) Facilities Drawing Central Web Site (FDC)

Section C.7.9 identifies the Contractor's configuration control requirements, which shall be coordinated with the GRC Configuration Control organization.

j) Water Intrusion Response Team (WIRT). For instances of water pipeline breaks or incidents of water intrusion into buildings, the Contractor shall coordinate cleanup efforts with a variety of Government personnel and other contractors. This includes the NASA Glenn Safety, Health and Environmental Division, the Building Management group, and points of contact from the Janitorial Contract. In addition, the Contractor shall be responsible for delivering equipment to the affected areas.

k) Emergency Response Team (ERT). For emergency situations that occur during non-standard working hours, weekends, and/or holidays, the Contractor shall coordinate communications to Center Management using the ERT. Events such as heavy snow falls,

water main breaks, and wide-spread power outages have the ability to delay standard Center working hours. Consequently, the progress of repair and/or remediation efforts must be communicated to Center Management in order to determine the impact to Center employees. The ERT consists of key points of contact from Center organizations, the Emergency Dispatch Office, the Security Office, and selected "duty officers" from this contract. The Contractor shall assign duty officers for non-standard working hours including weekends and/or holidays.

l) Waste Management and Disposal Contract. GRC has an existing contract for the disposal of solid, liquid, and hazardous wastes. The Center's general goal is to divert collected recyclables and waste from the waste stream by collecting and redirecting materials to an appropriate recycling facility. Those waste materials that cannot be recycled are segregated and directed to the appropriate landfill. Waste management and disposal services are available from 7:00 a.m. to 4:30 p.m., Monday through Friday.

Solid waste is defined as all municipal waste, compostable, recyclable and non-recyclable, including paper, cardboard, aluminum cans, metal, glass, plastic, landscaping debris, wood, wood pallets, polystyrene, electronic waste, toner cartridges, asphalt (street sweepings) and other miscellaneous debris both inside containers and in the immediate vicinity of the containers. All solid waste, identified by the Government as recyclable, is recycled. All landfills and receivers of material (scrap metal, wood, plastic, and glass) are approved by the Energy and Environmental Management Office at GRC.

The Contractor shall work with the COTR to utilize the existing contract for the disposal of solid, liquid, or hazardous wastes associated with this contract. This includes the handling and disposal of waste materials such as CFC refrigerants, PCBs, asbestos, lead, petroleum-based wastes, storm and sanitary effluent, storm water debris from structures, sediment, hydraulic fluids, and chemicals.

m) Janitorial Contract. GRC has an existing janitorial contract for office trash pickup, restroom cleaning, floor cleaning, and other miscellaneous cleaning services that can be ordered on and IDIQ basis.

The Contractor shall work with the COTR to utilize this existing contract for janitorial services above and beyond the base services (which are provided at no additional cost to this contract).

n) Electrical Power Switching, Scheduling and Outages. For any work involving electrical voltages in excess of 600 V, the Contractor shall coordinate and schedule work with the Government's Power Dispatch Office, located in the Central Control Building No. 143.

o) Central Process Systems Dispatching. For any work involving Service Air, Combustion Air, Altitude Exhaust, or the major Cooling Tower Water systems, the Contractor shall coordinate and schedule work with the Government's Central Air Dispatch Office, located in the Central Control Building No. 143.

p) Construction Management, Inspection, Surveying & Testing Contract (CMIST). GRC's base surveying services are provided under the CMIST contract. Whenever excavation is required under this contract, the Contractor shall coordinate through the COTR to ensure that the CMIST surveying crew is on site to help verify the exact location of existing underground utilities and structures. In addition, if underground pipelines, valves, vaults, catch basins, manholes, duct banks, and other structures are exposed during maintenance or repair activities, the CMIST surveyors shall be present to ensure that appropriate inverts are recorded for future reference.

q) Interfaces With Other Contractors. The Contractor shall cooperate with GRC's CPS maintenance, research test cell maintenance, janitorial, waste disposal, security, logistics, construction, environmental, and all other contractors and avoid conflicts with the other contractors' performance and work schedules. Under no circumstances shall additional work be performed at the request of another contractor without the approval of the COTR. In the event of conflicts with other contractors that cannot be satisfactorily resolved, the matter shall be referred to the COTR for a decision.

Frequently, on-site construction contractors will require utility isolation, high voltage electrical safetyman, or other specialized services from this contract. In these instances, a work order will be generated in the CMMS system (IDIQ request), and the Contractor shall provide a fixed-price, re-determinable estimate for the required services.

13) Emergency Management Plan (EMP). The Contractor shall provide a written Emergency Management Plan (EMP) to the COTR within thirty (30) days after contract award. The plan shall include contact names, responsibilities and phone numbers for contract personnel authorized to respond to off-hour emergency and snow removal work. The Contractor shall update this plan annually (minimum) and ensure that contact names, responsibilities, and phone numbers are up to date and accurate.

The plan shall include the requirements shown in Section J-C.16.XX, which indicates priorities for snow removal.

C.8 CONTRACTOR MANAGEMENT & STAFFING

1) General. The Contractor shall furnish an on-site management, administrative, and technical staff organized to address the requirements of both the firm fixed-price and IDIQ portions of this contract. Since the overall workload will vary significantly, the Contractor shall consider innovative approaches for structuring a flexible organization. Note that the Contractor is given the opportunity to propose changes to the management approach through the application of RCM principles (see Section C.14.7 Annual Work Plan).

2) Program Manager. The Contractor shall furnish a full-time, on-site manager that is dedicated to this contract. The Program Manager shall be authorized to make decisions (financial, schedule, scope, etc.) regarding this contract on behalf of the parent company. This individual shall be the single point-of-contact for all communications with the Government CO and COTR.

3) Reliability-Centered Maintenance (RCM). The Contractor shall provide an RCM Program staffed with individuals with qualifications as described in Section C.14.

4) Business Office. The Contractor shall establish an on-site Business Office to oversee financial management of the contract and ensure that records reconcile with the Government's financial accounting system. This office shall also provide professional cost estimating for IDIQ work (such as repairs, SRs, TCs that exceed the threshold limit, etc.) and procurement services for purchasing parts and equipment. In addition, the Business Office shall oversee and manage the Contractor's payroll and maintain an up-to-date inventory of all Government-furnished and Contractor-owned equipment and materials.

5) Quality Control. The Contractor shall establish, implement, and maintain a proactive quality control program to ensure that the work performed under this contract conforms to all of the requirements specified in this SOW.

   a) Quality Control (QC) Plan. Within thirty (30) days after award, the Contractor shall submit a QC Plan that documents how they intend to incorporate quality processes and management practices to ensure that all requirements specified in this SOW will be monitored and achieved. Upon approval of the initial QC Plan, the Contractor shall update and resubmit this plan on an annual basis.

   b) QC Elements. The Contractor's QC Program shall continuously monitor and address any issues associated with the elements of this SOW indicated below. Many of these QC Elements will be monitored by the Government and used to assess overall contract performance. In addition, many of the Elements below will factor into the Contract Deduction Schedule detailed in Section XX.

      i) Customer Surveys. The Contractor shall monitor all review all Customer surveys that are submitted following the completion of work. The Contractor shall document and investigate all negative reviews and provide a "lessons-learned" report to the

COTR on a quarterly basis.

ii) Contract Work Breakdown Structure. The Contractor shall continuously monitor and maintain the complex work breakdown structure for this contract. This includes maintaining accurate counts of all PM/PGM/PT&I activities at the Center and maintaining accurate tallies of all TC and MSR activities for each contract year. Updates of this information shall be available at the monthly business meeting.

iii) Recurring Maintenance Activities. The Contractor shall continuously monitor and document the completion status of all recurring activities scheduled for a given month and the scheduled status of all recurring maintenance activities for the following month. See Section C.12.4 for requirements for a monthly meeting.

iv) Response Time and Completion Time Assessment. The Contractor shall continuously monitor the response times and completion times for all aspects of this contract in accordance with the requirements specified in this SOW.

v) IDIQ Task Completion. The Contractor shall ensure timely costing and invoicing of all IDIQ tasks. The performance metric is to fully cost all IDIQ tasks funded with a given year's fiscal funding by the end of that fiscal year. However, in many cases, work is not issued to the Contractor until late in the fiscal year, and timely costing is not achievable. In these cases, the Contractor shall cost any tasks that carry over from the previous fiscal year by the end of the first quarter (January 31) of the new fiscal year. As an example, the Contractor shall strive to fully cost all IDIQ tasks funded with FY2013 money by September 30, 2013. However, if IDIQ tasks are initiated in mid-September, 2013 with FY2013 money, the Contractor shall fully cost these tasks by January 31, 2014.

vi) Validity of Quotes. For the IDIQ portion of the contract, the Contractor shall ensure that fixed-price quotes are valid as outlined in Section C.13.

vii) Conformance to Appropriations Law. The Contractor shall ensure that no work is performed without funding being obligated to the contract for that specific work unless directed in writing by the CO.

6) Work Request & Work Control Offices. The Government maintains a Work Request Office (WRO) that directs work to any of a number of potential contracts (i.e., design work, construction work, maintenance work, etc.). This office receives requests from customers, either by telephone, e-mail, or from an on-line website, categorizes the work, assigns the work to the appropriate contract, and logs the tasks into the CMMS.

The Contractor shall maintain a Work Control Office (WCO) to ensure that work directed to this contract is addressed in a timely and efficient manner and that work can be tracked while in progress. In addition, the WCO shall ensure that work is assigned to the proper work group. The status shall be updated daily in the CMMS system.

7) Safety & Health. The Contractor shall utilize proactive and innovative safety practices on a continual basis throughout the contract period. The Contractor's Safety and Health Program shall comply with NASA Agency Safety & Mission Assurance (SMA) Requirements, GRC SMA Requirements, Occupational Safety and Health Administration Regulations, the Glenn Safety Manual, the Glenn Environmental Programs Manual, and the Glenn Occupational Health Programs Manual.

   a) Requirements for Safety Personnel. The Contractor shall have at least one dedicated safety and health professional as part of their Safety & Health staff. A qualified safety and health professional is defined as an individual having at least one of the following industry-recognized safety certifications:

      i) Certified Safety Professional (CSP)
      ii) Certified Industrial Hygienist (CIH)
      iii) Bachelor's degree in safety, industrial hygiene, or engineering with at least five (5) years of full-time safety and health experience.
      iv) Bachelor's degree with 10 years of full-time safety and health experience supporting government contracts.

   b) Safety Inspections & Plans. The Contactor shall conduct and document periodic safety and health inspections of all job sites, tasks, and activities. All findings from these inspections shall be documented and addressed utilizing a closed loop corrective action process and be available to the Government for review.

      The Contractor shall provide a Corporate Health and Safety Plan (HASP) that covers operations, recurring maintenance activities, TCs, and non-recurring maintenance tasks that do not required site-specific HASPs. The Corporate Health and Safety Plan shall comply with all GRC health and safety requirements and the requirements of the Occupational Safety Health Administration (OSHA). Specifically, the plan shall identify the methods and procedures that will be used to ensure a safe and healthful work environment and the methods the Contractor will use to protect both Contractor employees and GRC employees. The Contractor shall require safety responsibilities in all subcontracts and shall monitor their subcontractors' activities to ensure compliance with the approved health and safety plan. A conference shall be scheduled between the Contractor, any subcontractors, and the Government no less than thirty (30) calendar days after contract award to ensure mutual understandings of the Contractor's approved Safety and Health Plan.

      Site-specific HASPs shall be provided for specified non-recurring activities where unique hazards are identified and require mitigation and/or control (not covered under the Corporate HASP). Typical examples of where site-specific HASPs are required are tasks involving hazardous material abatement, tasks requiring special fall protection, or tasks requiring special safety and/or environmental remediation. The Contractor's Health and Safety Professional shall work with the GRC Safety and Environmental personnel to determine when site-specific HASPs are required. Section J-C.8.XX contains the requirements for a typical site-specific HASP. Site-specific HASPs are not required

when Contractor employees are performing an inspection, investigation, or assessment of a workplace condition prior to the actual start of the work or after all the work has been completed (typically covered under the Corporate HASP).

c) Safety Equipment. The Contractor shall provide all safety equipment necessary to meet the requirements of OSHA and all elements of this SOW. Equipment covered under these requirements includes work platforms, trailers, basket trucks, cranes, slings, pressure vessels and hoses, boilers, transformers, switchgear, chillers, generators, and meters. All equipment shall be calibrated as recommended by the manufacturer and inspected before each use by trained and competent employees. Costs for safety equipment and calibration shall be included under the fixed-price portion of the contract.

d) Personal Protective Equipment (PPE). The Contractor shall provide PPE for all personnel assigned to this contract. PPE shall include disposable protective clothing, respiratory protection, hearing protection, eye protection, head protection, face protection, hand protection, high visibility clothing, and electrical safety clothing. Costs for PPE and the associated training for the use of PPE shall be included under the fixed-price portion of this contract.

e) Work Area Access. The Contractor shall coordinate with the COTR all operations that involve safe access to hazardous work areas, shutdowns of mechanical and electrical equipment, shutdown of utilities, and shutdown of all on-going research testing. For hazardous operations, the Contractor shall define hazard areas and exclusion zones that protect participating and non-participating personnel in the event of a mishap. The Contractor shall establish and implement personnel limits in areas where hazardous operations occur. The Contractor shall also control access into these areas during the execution of hazardous operations and shall ensure that only active, essential personnel are in these areas during hazardous operations.

The GRC Safety Manual provides guidance for establishing exclusion zones and requirements for safe operations in hazardous locations.

f) Standard Forms & Procedures. The Contractor shall complete standard GRC forms and comply with established operation procedures as required. These forms and procedures are listed below, and can be found in Section J-C.8.XX:

i) Hot Work Authorization Permit (Standard Form C-7A)
ii) Hot Work Pre-Operations Check (Standard Form C-7B)
iii) Confined Space Entry (Standard Forms C-199, C-199B & C-199C)
iv) Impairment Plan, Fire Protection (Standard Form C-316)
v) Lock-Out Tag-Out Procedures (Standard Form C-787C&D)
vi) GRC Safety Permit (Standard Form C-919)
vii) GRC Safety Permit Request (Standard Form C-923)
viii) Excavation Permit or “Dig Permit” (Standard Form C-927)
ix) Security Forms, Badge Application (Standard Form C-969A)
x) Area Clearance (Standard Form C-978)

xi) Fall Prevention Plan* (Standard Form C-979)

(*Note: NPR 8715.3 requires all contractors wearing fall protection equipment to have a competent person develop the fall prevention plans. The competent person must have fall protection competent person training from an industry recognized source)

g) Support for Safety Audits. The Contractor shall provide qualified and competent personnel to support all regulatory audits, inspections, and assessments for work and tasks identified in this SOW. Typical audits include GRC Office of Safety and Mission Assurance (OSMA) audits and inspections, NASA Institutional Facilities & Operations (IFO) SMA Audits, OSHA Inspections, and Ohio EPA Inspections and Audits. Any specific findings or violations generated from regulatory audits, assessments, or inspections that are identified during work performed or in the management of this SOW shall be addressed and documented utilizing a closed-loop corrective action process. The Contractor shall provide the Government with a monthly status of all corrective actions associated with findings or violations generated through the audits.

h) Safety Reporting. The Contractor shall report all accidents, including near misses, to the COTR using the NASA Incident Reporting and Information System (IRIS) and shall initiate an investigation within twenty-four (24) hours in accordance with the Glenn Safety Manual, Chapter 21, Mishap and Close Call Reporting, Investigating, and Recordkeeping. The Contractor shall provide a monthly Lost-Time Accident and Reportable Incident Report equivalent to the OSHA 300 log (not including names or personal identification information).

8) Environmental. It is anticipated that, in the course of performing the work specified in this SOW, the Contractor's employees will encounter areas of GRC Lewis Field that have asbestos-containing materials (ACM), lead-based paints and sealers, and solid waste/hazardous waste-containing soils. It is therefore necessary that the Contractor include provisions to manage these hazards accordingly. In addition, it is necessary that the Contractor understand the policies and procedures to follow in the event of an accidental spill of a contaminant (fuel, lubricant, hydraulic fluid, cleaning agent, etc.) and the subsequent preventative actions required to keep the spill from entering the storm sewer system.

a) Requirements for Managing ACM. The Contractor shall have at least one dedicated person having current Asbestos Inspector & Management Planner Training and Asbestos Contractor/Supervisor Training and is licensed by the Ohio Department of Health (ODH) as an Asbestos Hazard Evaluation Specialist and an Asbestos Hazard Abatement Specialist. This individual shall be capable of identifying asbestos hazards and be able to provide oversight of an asbestos abatement activity being performed by an asbestos abatement contractor.

The Contractor shall have either an in-house capability or a subcontracted capability with a licensed asbestos abatement firm to perform asbestos abatement for maintenance activities. In addition, all Contractor employees shall have Asbestos Awareness Training

with an annual refresher. At no time shall existing building materials shall be disturbed or impacted without being assessed for asbestos content. All existing materials shall be assumed to be asbestos-containing until proven otherwise by sampling and analysis or by direction of the COTR. Bulk sampling and assessment of building materials shall only be conducted by an Ohio Department of Health (ODH) Asbestos Hazard Evaluation Specialist. The sampling protocol shall follow the Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763. All bulk samples being analyzed for asbestos content shall be sent to a National Voluntary Laboratory Accreditation Program (NVLAP) certified laboratory for analysis by polarized light microscopy (PLM).

Only Ohio Department of Health (ODH) licensed Asbestos Hazard Abatement workers shall handle or remove ACM. In addition, all asbestos abatement work shall be supervised by a competent person licensed by the Ohio Department of Health (ODH) as an Asbestos Hazard Abatement Specialist.

For areas that will be re-occupied upon the completion of an indoor abatement activity, a competent third party firm shall conduct a final clearance visual inspection and collect a minimum of three (3) Phase Contrast Microscopy (PCM) air samples. A competent third party is defined as either an ODH licensed Asbestos Hazard Evaluation Specialist or a CIH. A minimum of 1,800 liters of air shall be sampled. Samples shall be analyzed by a laboratory that is certified by the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program. All samples shall be required to be below 0.01 fibers per cubic centimeter (f/cc) in order to pass the final clearance. No occupancy of the space shall be permitted until the successful final clearance sampling is achieved.

GRC maintains an active database called the Facility Asbestos Survey System (FASS). This database contains ACM sampling data for every property at the Center. The Contractor can access the FASS using the GRC intranet.

i) Federal Regulations. All asbestos abatement work shall be performed in accordance with all applicable Federal Regulations. These regulations are follows:

(1) OSHA 29 CFR 1926.1101
(2) US Environmental Protection Agency (USEPA) National Emissions Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61

ii) State of Ohio Regulations. All asbestos abatement work shall be performed in accordance with all State of Ohio Regulations. These regulations are follows:

(1) Ohio Department of Health (ODH) OAC 3701-34

b) Requirements for Managing Lead-Based Materials. All Contractor employees shall have Lead Awareness Training with an annual refresher. At no time shall paints or sealers be disturbed or impacted without being assessed for lead content. All existing paints and sealers shall be assumed to be lead-containing until proven otherwise by sampling and

analysis or by direction of the COTR.

Only Contractor employees having Resource Conservation & Recovery Act (RCRA) Work Methods Training shall handle, remove, or dispose of lead-based materials. All such work shall be performed in accordance to GRC Local Specification 02 83 00.98 Lead Paint Abatement (see Section J-C.8.XX). Workers removing lead-based materials shall use respiratory protection as required in this specification.

c) Requirements for Managing Hazardous or Solid Waste Soils. At no time shall any soils be disturbed, relocated, or removed from GRC Lewis Field without the soils being assessed for solid or hazardous waste content. Contractor employees, involved in the excavation of soils shall have forty (40) hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training. The requirements for soil excavation include:

   i) Contractor employees shall not stockpile hazardous or solid waste soil. Waste soils shall be placed directly into lined containers for disposal. Any disposal shall be coordinated with the COTR and the GRC Waste Management and Disposal contractor.

   ii) Hazardous or solid waste soils shall never be placed back into an excavation.

   iii) Requirements for the handling of contaminated soils are covered in GRC Local Specification 02 61 00.98 Removal and Disposal of Contaminated Soils (see Section J-C.8.XX).

d) Accidental Spills of Chemical Substances. GRC requires an immediate response to all accidental spills of chemical substances regardless of the volume of the spilled material. In the event of a spill, the Contractor's staff shall call the GRC Dispatch Office at 911 (from an internal phone) or (216)433-8888 (from an external or cell phone). If possible, the caller shall inform the Dispatcher of the identity and volume of the material spilled.

   The Contractor shall maintain a variety of GRC-approved spill kits. These kits shall include provisions for spills in both interior and exterior spaces. In addition, the Contractor's staff will be required to receive Spill Countermeasures and Control Plan (SCCP) training provided by the GRC Training Organization. All spills shall be documented on a Spill Occurrence Report, and provided to the COTR. The Contractor shall also work with the COTR to complete a NASA Incident Reporting Information System (IRIS) Quick Safety Incident Report.

   For small spills of nontoxic, nonflammable materials (one gallon or less), the Contractor's staff shall attempt to contain and clean up the material with the approved spill kit. For large spills of nontoxic, nonflammable materials inside buildings, the Contractor shall take immediate action to contain the spill through the use of absorbent materials and drain covers to stop the flow prior to entering the environment. For spills of this nature in outdoor areas, the Contractor shall use absorbent booms and pads to

prevent the materials from entering storm sewer catch basins or areas containing large amounts of surface water. In all cases, the Contractor's staff shall remain on site until the Emergency Response Team arrives to provide technical information to the incident commander.

If the spilled material is a flammable or toxic substance, the Contractor's staff shall immediately evacuate the area and establish a safe zone around the spill. Cleanup activities of this nature shall be performed only by Emergency Response Team personnel who are trained in the handling of flammable and/or toxic materials.

Upon containment and cleanup of the spill, the Contractor shall work with the COTR to dispose of the saturated absorbent materials through the GRC Waste Management and Disposal Contract.

e) Standard Forms & Procedures. The Contractor shall complete standard GRC forms and comply with established operation procedures. These forms and procedures are listed below, and can be found in Section J-C.8.XX:

i) Soil Determination Checklist (Standard Form C-133)
ii) Waste Disposal Request (Standard Form C-260a)
iii) Soil Relocation and Authorization Form (Standard Form C-9436)
iv) Spill Occurrence Report (available on GRC Intranet)
v) IRIS Quick Safety Incident Report (available on GRC Intranet)

9) Information Technology (IT). The Contractor shall manage and maintain all IT hardware, software, and data storage required for the administration of this contract and shall participate as a shared systems administrator on all applicable servers. The Contractor shall follow all of the Policy Directives and Procedures and Guidelines as set forth by NPD 2810.1D NASA Information Security Policy (see Section J-C.8.XX). Systems administrations tasks shall include managing user accounts, reviewing audit logs, keeping detailed records concerning hardware and software upgrades, performing routine backups of systems databases, and installing upgraded hardware, software, and firmware. The IT personnel shall be responsible for the CMMS requirements defined in Section C.9. In addition, IT personnel shall be responsible for all data management including maintenance work receipt and classification, scheduling, material inventory control, labor scheduling, work completion (to include labor and material roll up), work status, and report generation.

a) Security Incidents. The Contractor shall immediately notify the COTR and the GRC Security Operations Center (SOC) at 1-877-627-2732 in the event of any security incident and await instructions from the Incident Response Team (IRT). The Contractor shall provide a full written report to the COTR within twenty-four (24) hours following the detection of an incident.

b) Disasters and Other Contingencies. The Contractor shall immediately notify the COTR and the SOC in the event of a disaster or other contingency that disrupts the normal operation of the connected system.

c) Material Changes to System Configuration. The Contractor shall report any planned technical changes to the system architecture to the COTR and the GRC Chief Information Security Officer (CISO) before such changes are implemented. If changes are planned, the Contractor shall conduct a risk assessment for implementing the new system architecture. In addition, the Contractor shall modify and re-sign the Memorandum of Understanding (MOU) one (1) month prior to implementation of the new architecture.

d) New Interconnections. The Contractor shall notify the COTR and the GRC CISO at least one (1) month prior to connecting the System application and related infrastructure with any other IT system (including systems that are owned and operated by third parties).

e) Personnel Changes. The Contractor shall notify the COTR and the GRC CISO of any IT personnel changes or POCs. This includes notification of changes to user profiles, including users who resign or change job responsibilities.

f) Hardware and Software Upgrades. The Contractor shall report any hardware and/or software upgrades that occur on the System to the COTR and the GRC CISO. Approval must be obtained from the COTR prior to any changes being implemented.

g) Contingency Planning. The Contractor shall participate in an annual review of the System Contingency Plan with the COTR and the GRC CISO.

h) Continuous Monitoring. The IT System will be continuously monitored following all NASA standards and requirements as documented NPD 2810.1D. The system owner shall be responsible for the documentation of this work in the Agency repository.

i) Authorization and Assessment. Every third year, NASA auditors will perform an IT Authorization and Assessment on all of the National Institute of Standards and Technology (NIST) 800-53 Rev 3 controls. Upon completion of the assessment, GRC will provide the Contractor with a Security Assessment Report (SAR). This report will outline any findings from the assessment as well as any mitigation activities needed to improve the minimum security controls required to protect the GRC data.

10) Technical. The Contractor shall continuously manage and maintain an adequate technical work staff with suitable expertise to assure work is performed, scheduled and completed in accordance with this SOW. Staffing shall account for both recurring work items and non-recurring work items.

The Contractor shall assign Work Group Leads for major trades as identified in Sections C.16 through C.30. Work Group Technicians shall report directly to the Work Group Leads.

The Contractor shall provide personnel who have the appropriate skills for the work required. The degree of skill of individuals shall be commensurate with that required for the work. Those personnel working in technical trades whose performance requires license or certification or both, as specified in Sections C.16 through C.30 or the Glenn Safety Manual

shall be so licensed/certified and copies must be provided to the COTR prior to commencement of work on this contract. Copies of any required licenses, certificates and experience shall be submitted to the COTR prior to contract start date.

All training required by the Contractor's technical staff to maintain licensure or certifications is the financial responsibility of the Contractor.

C.9 COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM (CMMS)

1) General. The Contractor shall utilize the GRC CMMS for all operations, maintenance and repair management functions associated with this contract. This shall include asset inventory management, asset history management, and work control (scheduling, tracking, field observation logging, etc.).

   GRC's CMMS system is Maximo Asset Management 7.1.1.7, a product of IBM, Incorporated. Since the Maximo software used by GRC has been customized from the vendor's standard version, local training will be provided to the Contractor's personnel as required. GRC will also provide controlled access to Maximo, and reserves the right to upgrade the version of Maximo at any time during the life of this contract.

   Wherever the term CMMS is used in this SOW, it refers to GRC's Maximo software. The Contractor is prohibited from using an electronic interface between any other CMMS system and the GRC Maximo system.

2) CMMS Definitions and Processes. Basic definitions and terminology for the GRC Maximo CMMS are listed in Section J-C.9.XX. CMMS process flowcharts are provided in Section J-C.9.XX.

3) CMMS Security Group and Work Group Structures. At GRC, there is a CMMS Security Group and a Work Group Structure that establishes what Maximo users can and cannot do within the database system. By definition, a Security Group identifies which persons can enter specific types of data into Maximo and a Work Group identifies specific crafts and limits persons as to what type of data can be viewed in Maximo.

   a) Security Groups. As indicated in Section C.5.7, a selected number of Contractor employees will be furnished with an ACES computer seat and a NDC domain account. Anyone at GRC with an NDC account can initiate a work order without having a Maximo seat license. However, only licensed users can add or view other data in Maximo.

      Licensed users are divided into two categories: those that need "read-only" access to work orders and other data and those that need the ability to add or change data. Depending on the specific needs, licensed users are assigned to one of twelve (12) Institutional Security Groups as listed in Section J-C.9.XX. Seven (7) Security Groups are reserved for Government employees, and five (5) Security Groups are assigned to Contractor personnel. Those assigned to Contractor personnel are Functional Area Mangers, Read-Only Guests, Work Controllers/Schedulers, Work Group Leads, and Work Group Technicians.

   b) Work Groups. For the GRC Maximo system, there are fifteen (15) Institutional Work Groups as listed in Section J-C.9.XX. Three (3) Work Groups are reserved for Government employees, and twelve (12) Work Groups are assigned to Contractor personnel.

Each Work Group assigned to the Contractor shall have a Work Group Lead (single individual may be assigned to multiple Work Groups). The Lead will have the ability to view, add, or change data only for work orders assigned to their Work Group. In addition, each Work Group assigned to the Contractor shall have Work Group Technicians. The Technician will only be able to view, add, or change data only for work orders to which they are assigned.

c) Other Data Restrictions. The following are other Maximo data restrictions:

i) The Contractor will not be able to view work orders that are in Waiting for Approval (WAPPR), Waiting for Plan (WPLAN), or Plan Complete (PLANCOMP) status until the status is changed by Government personnel.

ii) Work Controllers & Schedulers will not be able to cancel a work order (can only be accomplished by a Functional Area Administrator). However, the Work Controller & Scheduler can place a work order in Rework (REWORK), Waiting For Estimate (WEST), Estimate Complete (ESTCOMP), In Progress (INPRG) or Assigned (ASSGND) status.

4) Mobile Technology. Although GRC has wireless IT capability throughout the Lewis Field Campus, mobile technology is currently not being utilized to support the institutional operations and maintenance contract. Mobile technology is being planned and expected to be used during the life of this contract. The GRC Maximo system is located within the Center's firewall and accessible with a NDC domain account only.

5) Required CMMS Input Information. Both GRC O&M personnel and Contractor personnel have responsibilities to enter data into the GRC Maximo system and to monitor trends and produce reports. The following are the CMMS responsibilities for various types of work.

a) Maximo Assets Module. The addition of new assets and the decommissioning of existing assets in Maximo is the responsibility of the Government. However, the Contractor has responsibilities for providing asset data and/or support to the Government POC.

i) New Building/System Construction and/or Major Rehabilitation. New building or system construction and major rehabilitation of existing buildings will result in the addition and/or decommissioning of multiple assets. In these cases, the construction contractor (not part of this contract) will be required to provide asset information to the Government POC for input into Maximo.

At a point between 60 and 70% construction completion (prior to wall and ceiling installation), an IDIQ SR will be generated to this contract. The Contractor shall provide support to walk the site and physically tag all assets identified by the Government POC.

ii) New Assets Installed Under This Contract. If the Contractor installs a new asset or

removes an existing asset as part of this contract, the following information shall be provided to the Government POC in an electronic format (EXCEL, WORD, etc.) prior to the close-out of the work order:

(1) Description of asset and assignment of the discipline code (i.e., HVAC, PS, LELC, etc.)
(2) Manufacturer
(3) Vendor information
(4) Model Number
(5) Serial Number (must be verified by Contractor Personnel upon delivery)
(6) Acquired date
(7) Installed date
(8) Purchase price (equipment cost)
(9) Operating status (operating, not ready, or decommissioned)
(10) Asset Classification Code
(11) Location of asset (building number, floor, room)
(12) Additional location information (i.e., above ceiling, next to column line, etc.)
(13) Digital picture (JPEG , etc.) of asset in its installed location
(14) Scanned information such as O&M manual, parts list, and consumables (PDF or JPEG)
(15) Run-to-failure status (yes/no)
(16) Reference drawing numbers (if applicable)
(17) Collateral/Non-collateral equipment indication
(18) Parent asset information (if applicable)
(19) NASA Condition Code (numerical value from 1 to 5)
(20) Warranty information

The Contractor will receive an official asset number and tag from the Government POC and shall be responsible for installing the tag in a visible location on the asset. For assets associated with official GRC Pressure Systems, the Contractor will receive a Pressure Systems Database (PSD) system code from the Government POC.

The Contractor shall provide a semi-annual report of all new assets that they install and any existing assets that they decommission under this contract.

b) Maximo Work Order Module, PM/PGM/PT&I Work. Only the Government will have the ability to add, delete, or change PMs, PGMs, or PT&I activities, alter the frequencies, and modify work instructions in Maximo. However, as described in Section C.14 Reliability-Centered Maintenance (RCM) Program, the Contractor is encouraged to recommend changes to the recurring maintenance activities. Once these changes are approved, the Government will make the necessary changes in Maximo.

At GRC, a PM/PGM/PT&I can be assigned to an Asset (specific piece of equipment), a Location (building identifier), or a Route (when numerous assets are bundled together such as smoke detectors, fan coil units, etc.). GRC is working to assign these activities to Locations and Routes in an attempt to minimize the overall number of work orders.

The Contractor shall follow the procedures below for entering Maximo data for PM/PGM/PT&I work:

i) The Contractor's WCO shall run a query in Maximo approximately seven (7) days prior to the end of each month to determine what PMs, PGMs, and PT&Is are scheduled for the following month. Based on this query, the Contractor shall generate the Work Orders accordingly and populate the Work Order Type.

ii) Once the Work Order is generated, the Target Start Date will be automatically populated in Maximo.

iii) The Contractor's WCO, with the Government's approval, shall populate the Target Finish Date, which will account for the allowable time-frame tolerance for finishing the work, in accordance with the requirements specified in the SOW. In addition, the WCO shall populate the financial WBS number and appropriate Work Group to assign the Work Group Lead.

iv) Upon receipt of the Work Order, the Work Group Lead shall enter the Work Group Technicians assigned to the task, the Scheduled Start Date and the Scheduled Finish Date (in accordance with the requirements specified in this SOW).

v) If a site-specific safety plan is required, the Contractor's Safety & Health representative shall check the Job Hazard Analysis (JHA) box, and attach a WORD, PDF, or IFM version of the plan to the Work Order.

vi) Once the Work Order is started, the Work Group Technician, under the Work Order Tab, shall enter the Actual Start Date.

vii) Once the work has started, the Work Group Technician, under the Actuals Tab, shall enter the Labor Hours (regular hours for which only eight hours can be added per day) and the Premium Pay Hours (for any approved overtime hours). The Work Group Technician shall also populate the Work Log Tab with comments including verification of Asset bar code, assessment of task validity and frequency, safety concerns, needs for special tools or manufacturer's information, Asset data corrections, field observations, work that was accomplished, issues that occur, etc.

As mentioned above, GRC plans to implement the use of mobile technology to help facilitate the capturing of field comments at some point during this contract. In the interim, the Contractor shall ensure that field comments are captured and uploaded into Maximo.

viii) The Work Group Technician shall either assign a Facility Condition Index (FCI) or update the FCI of the equipment being maintained (if applicable). This information is entered in the Asset Module, Asset Tab as a numerical value between 1 and 5 (see Section J-C.9.XX for the definitions of these numerical values).

ix) At the completion of the work, the Work Group Technician shall change the Status Field to Work Complete for their individual task in the Actuals Tab.

x) The Work Group Lead or the WCO shall enter the Actual Finish Date and change the status of the overall Work Order to Ready Close.

xi) The GRC FOS will perform surveillance on approximately 10% of the completed PM/PGM/PT&I work orders, and generate an associated evaluation. If the GRC FOS determines that the work is not complete, the status will be changed to Rework, and the Work Group Lead will be notified. If the GRC FOS determines that the work is complete, the Work Order will be closed.

xii) If equipment malfunctions or system issues are identified during the execution of a preventative maintenance activity, the Work Group Lead can issue a TC in accordance with the procedures listed below.

c) Maximo Work Order Module, TC Work. For TCs, Customers will generate a Maximo work request by either calling or e-mailing the WRO or by accessing Maximo directly through the GRC Intranet, Facilities Division Website. TCs can also be generated by the Contractor's Work Control Lead following the identification of a problem during a routine maintenance activity.

i) The Customer will enter the Target Finish Date.

ii) The GRC WRO will determine if the Customer's work request is a TC, populate the Work Order Type, and change the Status to Approved. The WRO will then go to the Request Priority box and select Emergency, Urgent, or Routine from the drop-down menu. Lastly, the WRO will enter the TC financial WBS number, the FOS, the POC (Customer's name), the Work Group (LF-IN-CONT-WKCTRL), and populate the Scheduled Finish Date.

iii) The GRC WRO will send the TC Work Order directly to the Contractor's WCO. The WCO then change the Work Group in accordance with the appropriate trade. This directs the TC to the appropriate Work Group Lead.

iv) Upon receipt of the TC, the Contractor's Work Group Lead shall enter the Work Group Technicians assigned to the task, and the Scheduled Start Date.

v) Upon review of the TC and the associated field conditions, if the Work Group Lead suspects that the cost for the work will exceed the TC cost threshold (see Section C.11.4), the Work Group Lead shall halt the work and follow the procedures outlined in Section C.11.6 to transition the TC Work Order to a Repair.

vi) If a site-specific safety plan is required for the TC, the Contractor's Safety & Health representative shall check the Job Hazard Analysis (JHA) box, and attach a WORD,

PDF, or IFM version of the plan to the Work Order.

vii) Once the Work Order is started, the Work Group Lead, under the Work Order Tab, shall enter the Actual Start Date. The Work Group Technician can enter the Actual Start Date for their assigned portion of the Work Order (not the entire Work Order).

viii) Once the work has started, the Work Group Technician, under the Actuals Tab, shall enter the Labor Hours (regular hours for which only eight hours can be added per day) and the Premium Pay Hours (for any approved overtime hours). The Work Group Technician shall also populate the Work Log Tab with comments including verification of Asset bar code, safety concerns, needs for special tools or manufacturer's information, Asset data corrections, field observations, work that was accomplished, issues that occur, etc.

ix) If an equipment failure is identified during the TC, under the Failure Reporting Tab, the Work Group Technician shall chose the Failure Class from the drop-down menu, a Problems and Causes from the drop-down menu, and provide a Remedy in the free-form text section in the Work Order.

x) The Work Group Technician shall either assign a Facility Condition Index (FCI) or update the FCI of the equipment being maintained (if applicable). This information is entered in the Asset Module, Asset Tab as a numerical value between 1 and 5 (see Section J.C.9.XX for the definitions of these numerical values).

xi) At the completion of the TC work, the Work Group Technician shall change the Status Field to Work Complete for their individual task in the Actuals Tab.

xii) The Work Group Lead or the WCO shall enter the Actual Finish Date and change the status of the overall Work Order to Ready Close.

xiii) The Customer will automatically receive a notice that the TC work has been completed, and receive a survey. If the survey has not been completed after thirty (30) days, the FOS can close out the TC Work Order.

xiv) The GRC FOS will perform surveillance on approximately 10% of the completed TC Work Orders, and generate an associated evaluation. If the GRC FOS determines that the work is not complete, the status will be changed to Rework, and the Work Group Lead will be notified. If the GRC FOS determines that the work is complete, the Work Order will be closed.

d) Maximo Work Order Module, MSR Work. For MSR activities, a Customer will generate a Maximo work request by either calling or e-mailing the WRO or by accessing Maximo directly through the GRC Intranet, Facilities Division Website. This work activity is initially considered to be part of the IDIQ portion of the contract.

The Contractor shall follow the procedures below for entering Maximo data for MSR

work:

i) When the Customer generates the work request, the Reported Date is automatically populated in Maximo. The Customer will also enter the Target Start Date and the Target Finish Date.

ii) The Government's WRO will determine the nature of the work request, and populate the Work Order Type and sends the Work Order to the appropriate FOS. At this point, the work is anticipated to be IDIQ work.

iii) All IDIQ Work Orders are directed to GRC's Work Order Prioritization Meetings, which are currently held twice per week. Work Orders that receive a high priority are forwarded to appropriate GRC FOS for further action.

iv) The GRC FOS will change the Work Order status to Waiting for Estimate (WEST), and reassigns the work to the Contractor's WCO by entering the Work Group (LF-IN-CONT-WKCTRL).

v) The Contractor's WCO shall change the Work Group in accordance with the appropriate trade. This directs the Work Order to the appropriate Work Group Lead.

vi) Upon receipt of the Work Order, the Work Group Lead will perform a field investigation and determine the approximate cost of the work. If the estimate is less than the MSR cost threshold limit, the Work Group Lead will contact he GRC FOS.

vii) The GRC FOS will determine if the Work Order will be changed to an MSR. If so, the FOS will change the SR subtype to Minor, and approve the Work Order to proceed accordingly. The work is now considered to be funded as part of the fixed-price portion of the contract (no longer IDIQ).

viii) The GRC FOS will also enter the Scheduled Start Date and the Scheduled Finish Date. The GRC FOS, the Contractor, and the customer will negotiate the Scheduled Finish Date based on material availability and work access restrictions.

ix) Upon receipt of the Work Order, the Contractor's Work Group Lead shall enter the Work Group Technicians assigned to the task, the Scheduled Start Date and the Scheduled Finish Date (in accordance with the requirements specified in this SOW).

x) If a site-specific safety plan is required, the Contractor's Safety & Health representative shall check the Job Hazard Analysis (JHA) box, and attach a WORD, PDF, or IFM version of the plan to the Work Order.

xi) Once the Work Order is started, the Work Group Technician, under the Work Order Tab, shall enter the Actual Start Date.

xii) Once the work has started, the Work Group Technician, under the Actuals Tab, shall enter the Labor Hours (regular hours for which only eight hours can be added per day) and the Premium Pay Hours (for any approved overtime hours). The Technician shall also populate the Work Log Tab with comments (see examples above).

xiii) At the completion of the work, the Work Group Technician shall change the Status Field to Work Complete for their individual task in the Actuals Tab.

xiv) The Work Group Lead or the WCO shall enter the Actual Finish Date and change the status of the overall Work Order to Ready Close.

xv) The GRC FOS will evaluate the work to determine the completion status. If the GRC FOS determines that the work is not complete, the status will be changed to Rework, and the Work Group Lead will be notified. If the GRC FOS determines that the work is complete, the Work Order will be closed and the FOS/Customer will generate a survey.

e) Maximo Work Order Module, Repair, ROI, and SR Work. For repairs, ROI and SR activities, a Customer will generate a Maximo work request by either calling or e-mailing the WRO or by accessing Maximo directly through the GRC Intranet, Facilities Division Website. These work activities are considered to be part of the IDIQ portion of the contract.

The Contractor shall follow the procedures below for entering Maximo data for repair, ROI, and SR work:

i) When the Customer generates the work request, the Reported Date is automatically populated in Maximo. The Customer will also enter the Target Start Date and the Target Finish Date.

ii) The Government's WRO will determine the nature of the work request, and populate the Work Order Type. The WRO will also enter the financial WBS number, the FOS, and the POC (Customer's name).

iii) All IDIQ Work Orders are directed to GRC's Work Order Prioritization Meetings, which are currently held twice per week. Work Orders that receive a high priority are forwarded to appropriate GRC FOS for further action.

iv) The GRC FOS will change the Work Order status to Waiting for Estimate (WEST), and reassigns the work to the Contractor's WCO by entering the Work Group (LF-IN-CONT-WKCTRL).

v) The Contractor's WCO shall change the Work Group in accordance with the appropriate trade. This directs the Work Order to the appropriate Work Group

Lead.

vi) The Work Group Lead, in conjunction with the Contractor's Business Office, shall create a cost estimate for the work. The Contractor shall populate the work fields in the Work Order Module including checking the Estimate Required Box and populating the fields for Estimated Labor Hours, Estimated Labor Costs, Estimated Material Costs, Estimated Service Costs, and the Estimated Total Cost.

vii) The Contractor's cost estimate will be evaluated by Government personnel in accordance with the procedures described in Section C.13.4.

viii) Once the estimate is approved (now referred to as a fixed-price quote) and funding is obtained, the GRC FOS will change the Work Order status to Approved. The GRC FOS will also enter the Scheduled Start Date (which is the date funding is received) and the Scheduled Finish Date. The GRC FOS, the Contractor, and the customer will negotiate the Scheduled Finish Date based on material availability and work access restrictions.

ix) Upon receipt of the Work Order, the Work Group Lead shall enter the Work Group Technicians assigned to the task, the Scheduled Start Date and the Scheduled Finish Date (in accordance with the requirements specified in this SOW).

x) If a site-specific safety plan is required, the Contractor's Safety & Health representative shall check the Job Hazard Analysis (JHA) box, and attach a WORD, PDF, or IFM version of the plan to the Work Order.

xi) Once the Work Order is started, the Work Group Technician, under the Work Order Tab, shall enter the Actual Start Date.

xii) Once the work has started, the Work Group Technician, under the Actuals Tab, shall enter the Labor Hours (regular hours for which only eight hours can be added per day) and the Premium Pay Hours (for any approved overtime hours). The Technician shall also populate the Work Log Tab with comments (see examples above).

xiii) If an equipment failure is identified, under the Failure Reporting Tab, the Work Group Technician shall chose the Failure Class from the drop-down menu, a Problems and Causes from the drop-down menu, and provide a Remedy in the free-form text section in the Work Order.

xiv) The Work Group Technician shall either assign a Facility Condition Index (FCI) or update the FCI of the equipment being maintained (if applicable).

xv) At the completion of the work, the Work Group Technician shall change the Status Field to Work Complete for their individual task in the Actuals Tab.

xvi) The Work Group Lead or the WCO shall enter the Actual Finish Date and change the status of the overall Work Order to Ready Close.

xvii) The GRC FOS will evaluate the work to determine the completion status. If the GRC FOS determines that the work is not complete, the status will be changed to Rework, and the Work Group Lead will be notified. If the GRC FOS determines that the work is complete, the Work Order will be closed and the FOS/Customer will generate a survey.

6) Routine Reports. The Contractor shall use the CMMS to produce various maintenance reports as set forth in Section J-C.9.XX. The Contractor shall download this information from Maximo and provide this to the Government by electronic means such as EXCEL spreadsheets.

The Contractor shall ensure that all of the data fields described in the above sections are consistently and accurately populated to ensure that reporting is accurate.

C.10 CONTINUITY OF SERVICES

1) General. To ensure continuity of essential services during the period of contract changeover, the Contractor shall be fully prepared to commence work on the start date of this contract. The Contractor shall not assume that the employees of the previous Contractor will be available to guide, direct, or specifically orient Contractor employees. However, during the phase-in period prior to the contract start date, the Government will provide orientation to the Contractor's key management and supervisory personnel performing under the contract.

2) Backlogged TCs. As part of being fully ready to commence work, the Contractor shall be prepared to accept any backlogged TCs on the contract start date. Work must be completed on all of these TCs within thirty (30) calendar days after the contract start date. This work shall be included in the Contractor's proposal.

3) Backlogged Recurring Work. As part of being fully ready to commence work, the Contractor shall be prepared to accept any backlogged PMs, PGM, and PT&I activities on the contract start date. Work must be completed on all of these items within thirty (30) calendar days after the contract start date. This work shall be included in the Contractor's proposal.

4) Backlogged Non-Recurring Work. Completion dates for this work (Repair and Service Requests) will be negotiated for all the backlogged delivery orders within the first thirty (30) calendar days after the start date of the contract. This work shall be included in the Contractor's proposal.

C.11 GENERAL REQUIREMENTS AND PROCEDURES FOR TROUBLE CALL AND MINOR SERVICE REQUEST WORK

1) General. Trouble Calls (TCs) are reactive maintenance work requests that address items in need of repair or replacement, adjustment, or calibration. TCs are reported by GRC employees (civil servants or other contractors) or by the Maintenance Contractor following a field discovery. Minor Service Requests (MSRs) are new work items, typically of a one-time nature, that can be completed for a nominal total cost.

   For this Contract, the Government will establish a fixed number of TCs and MSRs to be purchased in a given year. The Contractor shall establish a fixed-price for an individual TC and a fixed-price for an individual MSR. These fixed-prices shall be multiplied by the respective established numbers of TCs and MSRs to be purchased for a one year time period. This will establish the overall fixed-price for these elements.

   If, for a given contract year, the total number of TCs or MSRs remain within +/-10% of the established fixed numbers, the overall contract value shall not change. If the total number of TCs or MSRs exceed +/-10%, a contract modification will be necessary to establish either a credit to the Government or an amount required to be added to the overall contract value.

2) TC and MSR Task Initiation. TC or MSR work requests can be initiated through telephone, e-mail or intranet web access as describe in Section C.9.5.c. During non-standard working hours, Emergency TCs (see definition below) will be initiated by the GRC Emergency Dispatch Office.

3) TC Classifications. When a TC is received by the WRO and logged into Maximo, a classification will be assigned as follows:

   a) Emergency. TCs that require immediate action to eliminate hazards to personnel or equipment, to prevent loss of or damage to Center property, or to restore essential services that have been disrupted.

   b) Urgent. TCs that involve situations that do not immediately endanger personnel or threaten to damage property or the environment, but would soon inconvenience and affect the health or wellbeing of personnel, disrupt operational missions, or impact projects.

   c) Routine. TCs that involve situations that are not considered emergency or urgent in nature.

4) TC Cost Threshold. For this contact, a TC is defined as an event that is correctable for an actual total dollar value that does not exceed a cost threshold of $2,000 (including parts, materials, labor and overhead).

   A GRC ten-year history on TCs received and their associated work groups, classifications and total actual costs is provided in Section J-C.11.X. Based on this history, the Contractor

shall establish a firm fixed-price estimate for a TC.

5) TC Response Time Requirements. For this contract, the required response times for a TC, based on the assigned classification, are defined below. For purposes of this contract, the word "respond" shall be defined as "assembling at the site of the emergency with an appropriate remediation team."

   a) Emergency TC Response Time Requirement. For an Emergency TC that occurs during standard working hours, the Contractor shall respond within fifteen (15) minutes following notification. The Contractor shall assess the emergency and take immediate action to eliminate the potential hazard, and assure that the emergency will not reoccur.

      For an Emergency TC that occurs during non-standard working hours, on weekends or holidays, the Contractor shall respond back to the originator of the call and the COTR within ten (10) minutes following notification. The Contractor Duty Officer shall assemble a crew qualified to eliminate the deficiency or hazard and shall respond within two (2) hours of the initial call. Once on site, the Contractor shall assess the emergency and take immediate action to eliminate the potential hazard assuring that the emergency will not reoccur.

      As an example, upon notification of an underground pipeline break at 2:00 am, the Contractor shall assemble on-site with excavation equipment, plumbers/pipefitters, and other appropriate personnel on or before 4:00 am. The crew shall perform all procedures necessary to stop the water leak and safe the site. In addition, the Contractor shall work with the Emergency Response Team (if applicable) to communicate the status of remediation efforts to GRC Management.

      Upon remediation of the hazard, the Contractor shall follow the procedures outlined in paragraph C.11.6.b.

   b) Urgent TC Response Time Requirement. Urgent TCs will only be logged during standard working hours. For Urgent TCs, the Contractor shall contact the Customer within four (4) hours following notification to discuss and review the task. If the Contractor verifies that the situation is Urgent according to the definition, the Contractor shall have five (5) working days to complete the work, depending upon accessibility and the availability of materials. If the Contractor deems that the situation is not truly Urgent, the Contractor shall inform the respective FOS, the COTR, and the Customer that the task is to be considered Routine. Upon approval from the associated parties, the GRC FOS shall change the TC status in the Work Order Module of Maximo to reflect the change from Urgent to Routine.

   c) Routine TC Response Time Requirement. Routine TCs will only be logged during standard working hours. For Routine TCs, the Contractor shall contact the requestor, either by phone or e-mail, within two (2) business days following notification to discuss and review the task. Following the task review, the Contractor shall have twenty-two (22) working days to complete the task depending upon accessibility and the availability

of materials. If the work progress is temporarily halted prior to job completion, the Contractor shall provide the GRC FOS with the reason for the delay and the projected date or time the Contractor will return to complete the work. Upon approval from the GRC FOS, the Contractor's Work Group Lead shall change the Scheduled Finish Date in Maximo.

Occasionally, the COTR will establish work priorities, and therefore adjust the Scheduled Finish Date accordingly.

6) TC Process. The Contractor shall follow the process below depending on the classification of the TC.

a) Urgent or Routine TC Process. Upon initial investigation of Urgent or Routine TCs, the Contractor shall make a determination of the approximate total cost to complete the work. If this cost is below the defined TC cost threshold, the Contractor shall complete the work in accordance with the specified response time requirements. If the total cost to complete the work is expected to exceed the cost threshold, the following shall apply:

i) The Contractor shall temporarily halt any further work.
ii) The Contractor shall notify the appropriate GRC FOS and the COTR.
iii) The COTR will make a determination if the work is to proceed. If the decision is to stop the work, the TC will be closed out by the GRC FOS. If the decision is to continue the work, the GRC FOS shall change the work status from TC to Repair in Maximo. In addition, any work hours that have been logged on the task shall be transferred from the TC to the Repair. This event shall not count against the overall yearly TC tally.
iv) The Contractor shall provide a rough order-of-magnitude (ROM) cost estimate to complete the work to the appropriate GRC FOS and the COTR. The Government will then include this work in its prioritization process and determine the importance of this task. If this work is determined to be of a high priority, the COTR will instruct the Contractor to update the ROM estimate to a final quote, and then to proceed with this task.
v) Upon completion of the work, the Contractor will invoice for the quoted amount as a "Repair" task (IDIQ work), and not as a TC.

If the Contractor fails to follow this procedure and Urgent/Routine TC work proceeds and is completed above the TC dollar threshold, the Contractor will be paid the TC fixed-price cost only and not be reimbursed for the additional work.

b) Emergency TC Process. For an Emergency TC, if the total cost to complete the work (remediate the emergency and restore the area to its previous condition) is below the TC threshold, the Contractor shall immediately complete the work. If, upon remediation of the emergency, the total cost to complete the work is expected to be above the TC cost threshold, then the work shall follow the process for a Re-determinable task (see Section J-C.11.XX).

If the Contractor fails to follow this procedure and Emergency TC work proceeds and is completed above the TC dollar threshold, the Contractor will be paid the TC fixed-price cost only and not be reimbursed for the additional work.

7) TC CMMS Documentation. See Section C.9.5.c for TC CMMS requirements.

8) TC Customer Communications Requirements. Regardless of the classification of the TC, the Contractor shall be responsible for communicating the TC status with the Customer and the GRC FOS. The Contractor shall ensure that there is a mutual understanding of each TC work description, schedule, the access requirements, and the desired level of quality.

9) MSR Definition and Cost Threshold. MSRs are new work requests that, when implemented, have a total cost less than $500 to complete. Work requests of this type may include installing a white board in a room, hanging a projector, painting a wall or room, installing a wall switch or power receptacle, etc.

10) MSR Response Time Requirements. Upon receipt of the MSR Work Order by the Contractor's WCO, the Contractor shall have twenty-two (22) business days to complete the work.

11) MSR Process. Refer to Section C.9.5.d. If the Contractor fails to follow this procedure and MSR work proceeds and is completed above the $500 threshold, the Contractor will be paid the MSR fixed-price cost only and not be reimbursed for the additional work.

C.12 GENERAL REQUIREMENTS AND PROCEDURES FOR RECURRING MAINTENANCE WORK

1) General. Recurring work includes all maintenance activities that have a known work instruction and frequency. All recurring work shall be considered to be part of the firm fixed-price portion of this contract and should normally be scheduled during standard working hours. If the recurring work is impacted by access issues or the inability to shut down a service, the Government will instruct the Contractor to perform the work during non-standard hours, and any premium labor hours will be addressed under the IDIQ portion of the contract.

   The Contractor shall furnish a fixed-price for each of the recurring maintenance tasks using the following information:

   a) General requirements and procedures listed below.

   b) Technical information in Sections C.16 through C.30.

   c) GRC historical information on the previous ten (10) years of recurring maintenance (see Section J-C.12.XX).

   d) Pricing format information in Section B.

   The Contractor‘s Recurring Work performance shall conform with the requirements outlined in Section C.7. 5.

2) Recurring Maintenance Work Classifications. The following are the recurring work classifications for this contract:

   a) Preventive Maintenance (PM). See Section C.4.18 for definition. PM work instructions for selected GRC assets and their associated frequencies are listed in Sections C.16 through C.30.

   b) Programmed Maintenance (PGM). See Section C.4.20 for definition. PGM work instructions for selected GRC assets and their associated frequencies are listed in Sections C.16 through C.30.

   c) Predictive Testing & Inspection (PT&I). See Section C.4.16 for definition. PT&I work instructions for selected GRC assets and their associated frequencies are listed in Sections C.16 through C.30.

      PT&I activities are vital to an effective RCM program (see Section C.14). For this contract, PT&I technologies currently being utilized include:

      i) Vibration Analysis
      ii) Lubricant and Wear Particle Analysis

iii) Thermal Imaging and Temperature Measurement
iv) Passive (Airborne) Ultrasonics
v) Electrical Testing and Motor Current Analysis
vi) Flow Measurement and Leak Detection
vii) Valve Operation
viii) Corrosion Monitoring
ix) Process Parameters
x) Visual Observations

d) Operations. See Section C.4.14 for definition. GOM, UOM, and EMCS/ALS3 operations requirements are described in Sections C.16 thru C.30.

3) Recurring Maintenance Work Frequency Requirements. See Sections C.16 through C.30 for listings of all recurring maintenance activities and their associated frequencies.

The following is the terminology for recurring work frequencies:

a) Triennial (T) – Services performed once during each 36-month period.

b) Biennial (B) – Service performed once during each 24-month period.

c) Annual (A) - Services performed once during each 12-month period.

d) Semi-annual (SA) - Services performed twice during each 12-month period at intervals of 160 to 200 calendar days.

e) Quarterly (Q) - Services performed four times during each 12-month period at intervals of 80 to 100 calendar days.

f) Monthly (M) - Services performed 12 times during each 12-month period at intervals of 28 to 31 calendar days.

g) Semi-monthly (SM) - Services performed 24 times during each 12-month period at intervals of 14 to 16 calendar days.

h) Weekly (W) - Services performed 52 times during each 12-month at intervals of six to eight calendar days.

i) Twice weekly (2W) - Services performed twice a week, such as Monday and Thursday or Tuesday and Friday.

j) Three times weekly (3W) - Services performed three times a week, such as Monday, Wednesday and Friday.

k) Daily (D5) - Services performed once each day, Monday through Friday, including holidays unless otherwise noted.

4) Recurring Maintenance Monthly Meeting. Seven (7) working days prior to the end of each month, the Contractor shall coordinate a meeting with the COTR/ACOTR and the GRC FOSs to review the following:

a) The completion status of recurring maintenance activities for the current month and what will be reflected in the monthly payment invoice.

b) If for any reason the scheduled time for recurring maintenance activities for the current month could not be accomplished (i.e., access problem, outage scheduling issue, research schedule conflict, etc.), the Contractor shall document the reason why using the Delay Code and Delay Description fields in Maximo. The Contractor shall subsequently provide a new schedule for the completion of these tasks.

c) The scheduled recurring maintenance activities for the next month. Any recurring maintenance activities that the Contractors desires to schedule during non-standard hours shall be identified.

5) Recurring Maintenance Notification Requirements. Often a PM, PGM, or PT&I activity that requires an outage or impacts the system's operating condition requires notification of personnel prior to initiating the work. When a planned outage is required or when there is a reduction in any system services, the Contractor shall provide at least ten (10) working days advance notice to the Systems Manager, the FOS, the COTR, the Building Manager, and the Dispatchers (Power, Central Air). For these instances, the Contractor shall follow the Area Clearance Procedure outlined in Section J-C.8.XX.

For PM, PGM, or PT&I in restricted areas (i.e., electrical substations, sensitive research areas, secured areas, etc.), the Contractor shall notify the FOS and the appropriate Building Manager at least three (3) working days prior to initiating the work.

6) Recurring Work CMMS Requirements. See Section C.9.5.b for Maximo data entry requirements.

C.13 GENERAL REQUIREMENTS AND PROCEDURES FOR NON-RECURRING INDEFINITE DELIVERY, INDEFINITE QUANTITY (IDIQ) WORK

1) General. Non-recurring Work is defined as repair (above the TC cost threshold) and service request work that cannot be scheduled on a regular basis. Since this work is not planned and cannot be quantified, this contract will account for these activities as Indefinite Delivery, Indefinite Quantity (IDIQ) work.

   On occasion, non-recurring work will require a formal engineering design prior to implementing the task (i.e., drawings, specifications, implementation plans, etc.). For this contract, the Government will provide these engineering services.

2) Non-Recurring Work Classifications. Non-recurring Work, typically included within the IDIQ portion of this contract, includes the following:

   a) Repair. See section C.4.25 for a complete definition. Repairs are equal to or greater than $2,000 in total cost.
   b) TCs That Exceed Cost Threshold Limit. See section C.11.6 TC Process for requirements.

   c) Replacement of Obsolete Items (ROI). See section C.4.26 for a complete definition.

   d) Service Requests (SR). See section C.4.27 for a complete definition.

   e) Re-determinable Work. See section C.4.23 for a complete definition. Typical examples of re-determinable work are as follows:

      i) Emergency repairs.
      ii) High voltage electrical safetyman support for service request work.
      iii) Snow removal labor during non-standard working hours.
      iv) Utility isolation in support of construction projects

   f) Pre-Priced Maintenance Tasks. See section C.4.17 for a complete definition. GRC's intention is to have a variety of pre-priced tasks that can be ordered when funding becomes available.

      NASA has many facilities at the GRC/Lewis Field Campus that are defined as "institutional facilities", and many that are defined as "research or program facilities". Typically, regular funding is provided only to maintain the institutional facilities, and Customer funding is required to maintain the research and program facilities. Pre-Priced Maintenance Tasks will include those work items associated with maintaining research and program facilities.

      Pre-Priced Maintenance Work instructions for various assets are listed in Sections C.16 through C.30.

Some examples of Pre-Priced Maintenance Tasks include:

i) Leak detection of underground natural gas distribution system.
ii) Maintenance of clean room HVAC (example of research or program task)
iii) Maintenance of dry room HVAC (example of research or program task)
iv) Bio-Garden restoration.
v) Cleaning of permeable pavements.

The Contractor shall provide fixed-prices for each of the Pre-Priced Maintenance Tasks, but tasks will be ordered through the IDIQ portion of the contract.

3) Non-Recurring Work Cost Threshold. The cost of any single instance of this type of non-recurring work is limited to a total cost (labor and material) of $300,000, which is the defined threshold for Major Work (and is not part of this contract).

4) Non-Recurring Work Process. All non-recurring work which is received by the GRC WRO and logged into Maximo is reviewed and prioritized by Government personnel. Work Orders that are subsequently forwarded to the Contractor's WCO shall be assigned to the appropriate Work Group Lead for cost estimating and processing.

Within ten (10) days of receipt of a Work Order by the WCO, the Contractor shall prepare a detailed proposal to accomplish the task. The proposal shall include a scope of work, a schedule and a total cost (labor hours and costs, material costs, equipment costs, and markups). The development of these proposals shall be considered to be part of the management overhead for this contract and shall not be included in the cost for the IDIQ task.

The GRC FOS, COTR, and the Customer will review the proposal and negotiate a final price and schedule with the Contractor. Once there is an agreement and funding is identified, a fixed-price Delivery Order (DO) will be initiated for the task.

The Contractor shall ensure that all invoices for completed IDIQ tasks equal the quoted prices unless one or more of the following conditions occur:

a) An unforeseen field condition is encountered during the execution of the work.
b) The work scope of a task changes after receipt of the quote.
c) If the Contractor's quote is based on an engineering design package (drawings, specifications) delivered by the Government, and there is an error in the design.

If any of the above cases occurs, and Contractor shall stop the work, contact the GRC FOS and the COTR, and issue a revised quote to complete the work. If the Contractor does not follow this process and completes the work, the Contractor will be paid only the amount of the original quote.

5) Re-Determinable Work Process. For re-determinable work as defined above, the Contractor shall provide a ROM cost estimate for the task. Upon approval by the Government, the

Contractor shall initiate the work. If, during the implementation of the task, the ROM estimate is expected to be exceeded, the Contractor shall immediately notify the GRC FOS and the COTR. Prior to continuation of the work, a new ROM estimate shall be provided by the Contractor and approved by the Government. Once the task is completed, the Contractor shall furnish a final price, based on actual time and material tallies. The Government will subsequently complete the DO.

6) Non-Recurring Work Customer Communications Requirements. The Contractor shall be responsible for communicating the work status with the Customer and the GRC FOS.

7) Non-Recurring Work CMMS Documentation Requirements. For non-recurring work CMMS requirements, see Section C.9.5.e.

C.14 RELIABILITY-CENTERED MAINTENANCE (RCM) PROGRAM

1) General. RCM (see definition), which is the maintenance management approach endorsed by GRC, is a data driven philosophy which requires that maintenance decisions be based on requirements supported by a sound technical and economic justification. An effective RCM program looks to replace expensive traditional, time-based maintenance activities with modern PT&I and Condition-Based Monitoring (CBM) technologies that are both less expensive and less intrusive. In addition, RCM may include run-to-failure decisions for non-critical equipment. The program requires trained personnel with the ability to carefully analyze PT&I data trends and initiate repair procedures when potential failures are identified. The success or failure of the overall program is determined by comparing the original frequency/magnitude of repair activities with the frequency/magnitude of repairs after the RCM decisions are implemented. Consequently, knowledge of CMMS and EMCS systems is required for RCM program success.

   In 2010, GRC Lewis Field implemented an RCM program within the institutional facilities operations, and repair contract. The proactive/reactive maintenance plans found in Sections C.16 through C.30 reflect the changes that have resulted since the implementation of the program.

   At GRC, the RCM Program is owned by the Systems Management (SM) organization. Consequently, all decisions regarding the addition, modification, or deletion of PM, PGM, and PT&I activities or any decisions to run equipment to failure must be approved by the appropriate SM.

   The Contractor shall provide an RCM team to assist the GRC RCM Program in improving the reliability and availability of buildings, systems and equipment covered under this contract. This shall include developing specific RCM implementation plans for all buildings, systems, and equipment that describe:

   a) How buildings, systems, and equipment are recommended to be operated.
   b) Which regulatory requirements cannot be compromised (i.e., regular preventative maintenance mandated by NFPA, building code, etc.).
   c) Details on what type of RCM techniques are recommended to be used for each piece of equipment.
   d) Which equipment is recommended to be run-to-failure.
   e) Which PMs, PGMs and recurring maintenance tasks are recommended to continue.
   f) Which PMs, PGMs, and recurring maintenance tasks are recommended to be altered (i.e., change of frequency, change of work instruction).
   g) Which PMs, PGMs, and recurring maintenance tasks are recommended to be replaced with PT&I activities.
   h) What CBM approaches are recommended to be implemented.

   The NASA Reliability-Centered Maintenance Guide for Facilities and Collateral Equipment is provided in Section J-C.14.X as a reference.

2) GRC Operations & Maintenance (O&M) Organization. GRC has an organizational structure for O&M that plays a critical role in the overall RCM process. The Contractor must understand the interface points between the GRC O&M staff and the Contractor staff.

   a) GRC Maintenance Program Manager. The Maintenance Program Manager is identified as the GRC primary POC with NASA Headquarters O&M personnel. In addition, the Maintenance Program Manager has responsibilities that span across the four existing GRC O&M contracts (both at Lewis Field and Plum Brook Station). The Program Manager is also designated as the RCM Program Manager, and ensures that RCM principles are applied consistently all Center maintenance contracts.

   b) Institutional Systems Management (SM) Organization. As indicated in Section C.7.12.c. The SMs, and their corresponding Facility Operations Specialist (FOS), are considered to be the subject matter experts for any given system.

   c) Maintenance Engineer. The GRC SM organization also includes a Maintenance Engineer who has the following responsibilities:

      i) Set up the EMCS for data trending.
      ii) Monitor data trends and recommend actions to the SMs.
      iii) Track GRC assets in Maximo.
      iv) Assist SMs with Failure Modes & Effects Analysis (FMEA).

   d) Facilities Operations Specialist (FOS) RCM Point of Contact. GRC has also appointed one of the FOSs as the RCM primary POC for this contract. This individual acts as GRC's quality assurance agent overseeing the Contractor's RCM team. These duties include:

      i) Providing field surveillance on behalf of the Government.
      ii) Acting as the primary liaison between the Contractor's RCM personnel and the GRC SM, FOS, COTR and ACOTR communities.
      iii) Ensuring that GRC Configuration Control databases are updated as the RCM Program matures.
      iv) Facilitates a monthly meeting between the Contractor's RCM team and the GRC Maintenance team.

3) Contractor RCM Qualifications. The Contractor shall identify an RCM team that includes the following minimum functions and qualifications:

   a) RCM Lead. The Contractor's shall designate an RCM Lead as the primary POC for forwarding RCM recommendations, PT&I finds, and required reports. The RCM Lead shall be a senior level engineer with a minimum of fifteen (15) years of experience in the operations and maintenance field and a working knowledge of multiple disciplines. The RCM Lead shall be proficient in the use of Maximo and have experience in the use of EMCS systems.

b) PT&I Technicians. The Contractor shall provide PT&I technicians that are trained and Level II certified (minimum) in accordance with the American Society for Nondestructive Testing (ASNT). The Contractor shall furnish technicians trained in the following technologies: infra-red (IR) thermography, motor circuit analysis, utrasonics, vibration measurement, and laser alignment. The technicians shall be proficient in the use of PT&I equipment, the associated software, and the digital storage and interpretation of the associated data. Note that per Section C.5.4 and Section J-C.5.XX, the Contractor will be furnished with a variety of GFE PT&I equipment and software.

4) Contactor RCM Responsibilities. The following are some general Contractor RCM responsibilities:

a) PT&I. The Contractor shall perform PT&I on the applicable buildings, systems, and equipment listed in Section J-C.14.XX in accordance with the technologies outlined in Section J-C.14.XX. In addition, the Contractor shall complete all repair requirements identified during the performance of a PT&I if the total cost does not exceed the TC limit. Work exceeding the TC limit shall be halted and brought to the attention of the GRC FOS and the COTR.

If specialized software is required in conjunction with the PT&I equipment, the Contractor shall download the software onto the Government-furnished computer server, and log all testing data accordingly. Upon assessment of the data, the Contractor shall provide findings and make recommendations to the Government through the FOS RCM POC.

The Contractor shall continually search for state-of-the-art, commercially-available PT&I technologies that may be of value to the GRC RCM Program. If the Contractor identifies a technology that is of potential benefit to GRC, the Contractor shall provide the COTR with an advocacy document that includes a cost-benefit analysis.

b) Data Analysis. The Contractor shall collect and analyze data from both the Maximo and EMCS systems. This includes failure code trends, FCA trends, TC and Repair trends, etc. The Contractor shall document any findings and recommendations and submit them to the FOS RCM POC.

c) Commissioning of Contractor-Installed Equipment. For all new equipment purchases, the Contractor shall ensure that the installation is performed in accordance with the manufacturer's recommendations. PT&I equipment (vibration monitoring, laser alignment, etc.) shall be used to ensure proper installation and to capture baseline performance data.

d) Preventative Maintenance Analysis. The Contractor's RCM team shall continually analyze prescriptive PM and PGM activities for validity and effectiveness. If frequencies can be adjusted, work instructions streamlined, or activities replaced with PT&I or Condition-Based Maintenance (CBM) activities without consequence to system reliability, the Contractor shall document the recommendations and forward them to the

FOS RCM POC. In addition, the Contractor may use the RCM Decision Logic Tree, located in Section J-C.14.XX to aid in RCM analyses.

5) RCM Recommendation Approval Process. The Contractor's RCM team shall work closely with the FOS RCM POC, the GRC Maintenance Engineer, the SMs and the FOSs. The Contractor shall identify inherent reliability problems, ineffective maintenance, and propose new revised or new work procedures and frequencies. These recommendations shall be forwarded, through the FOS RCM POC, to the Government team. The Government will consider and render an opinion on all proposed recommendations, even those that impact the overall contract cost.

   The Contractor shall obtain COTR approval before altering or eliminating existing PM/PGM tasks or implementing new PT&I tasks. Upon receipt of Government approval, the Contractor shall update the Job Plans within Maximo.

6) Monthly Meeting and Reporting Requirements. The Contractor shall provide the COTR with a monthly report detailing the RCM activities that have occurred during the previous month. This shall include any PT&I finds, analyses of PM/PGM activities, and data trends.

   In addition, the Contractor shall work with the FOS RCM POC to establish a monthly meeting with the GRC Maintenance team. The meeting shall include an overview of the Monthly Report and a discussion of any recommendations for changing the existing recurring maintenance activities.

7) Annual Work Plan. The Contractor shall provide an Annual Work Plan to be used by the Government to budget for maintenance and repairs and to develop a five-year Maintenance Plan. This plan shall be developed using data from a combination of the Maximo and EMCS systems. This plan shall be provided in two parts. Both parts of the plan shall be completed one month prior to the start of each new contract year. The plan shall conform to the requirements of NPR 8831.2E.

   a) Part One. The Contractor shall provide a listing, sorted by property (building or system), that reflects the current contractual requirements for recurring maintenance. Additions and deletions of properties and/or assets during the previous year shall be reflected in this plan. In addition, Part One shall include historical information from both the Maximo and EMCS systems that identifies emerging maintenance and repair trends.

   b) Part Two. The Contractor shall include recommendations based on the implementation of RCM principles as a result of the analysis of the trending results from Part One. The RCM strategy shall include an approach for determining the most effective maintenance mix such as run-to-failure, CBM, and interval based (time, cycles, operating hours) maintenance. The Contractor will identify inherent reliability problems, ineffective maintenance and proposed changes, emerging maintenance issues and proposed approaches.

C.15 ***RESERVED FOR FUTURE***

C.16 ROADS, SURFACED AREAS, AND SIGNAGE & FENCING

1) General. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to maintain and repair roads, parking areas, and other paved surfaced areas, signage, fencing, and gates in accordance with the requirements specified herein. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The work under this section shall include base snow and ice removal, sweeping of surfaced areas, maintenance of signs (street, traffic, etc.), maintenance of perimeter fence lines, gates and guardrails, maintenance of roadway and parking lots, pavement markings, and the trucking of excess snow to specified areas.

   The work under this section shall also include crack filling and sealing, cutout of pavement for utility repairs, excavation and shoring for utility repairs, temporary and permanent patching of sections of bituminous (flexible) and concrete (rigid) pavements. The Contractor shall provide repairs to surfaced areas damaged from excavation as a result of repairing underground utilities under this contract.

   Section J-C.16.XX lists all of the assets to be serviced under the contract including:

   a) Building 154 Departure Sliding Gates
   b) Building 154 Final Denial Barriers
   c) Building 152 Access Control Gates
   d) Building 4 Tarmac Access Control
   e) Motorized Gates
   f) Traffic Signs and Signal Lights
   g) Monument Signs

2) Certifications and Licensing Requirements. All Contractor employees operating large axle (heavy truck) and commercial trucks are required to have a current State of Ohio Commercial Driver's License (CDL). Operators for all equipment shall be fully qualified to operate the equipment. In addition to equipment operation, qualifications shall include a thorough knowledge of station pavement layout including all curbs, guardrails, parking lots, hydrants, traffic signs, and utility access covers.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. See Section J-C.16.XX for The Perimeter Security Fencing and Remotely Operated Security Gate Map and the Paved Surface Maintenance and Snow Plowing Requirements Map. In addition, the following are specific requirements for this section:

a) General Operations Maintenance (GOM). The following are the requirements for GOM:

i) Roadway and Parking Lots Maintenance Report. The Contractor shall continuously monitor roadways and parking lots for minor damage such as potholes, cracks, or breaks. The Contractor shall maintain a status report and provide semi-annual updates to the COTR. Cones shall be placed near any large potholes until repairs are completed.

ii) Sweeping of Pavements. The Contractor shall conduct a quarterly sweep of roadways, streets, and parking lots. The debris generated shall be removed and disposed of the same day. This work shall be scheduled during non-standard hours. The Contractor shall pay special attention to the street sweeping and vacuuming of permeable pavement areas to ensure that the pavement voids remain clean.

iii) Snow and Ice Removal. During standard working hours, the Contractor shall continuously monitor weather conditions and, when warranted, begin road salt applications. Snow removal shall commence upon the accumulation of two (2) inches of snow. Snow shall be removed from all areas including roads, streets, parking areas, walkways, the taxi runway, building entrances (including steps, handicapped ramps and landings leading to all building doors), storm water facilities, and areas around refuse containers. In addition, the Contractor shall provide clear access to all fire hydrants. The locations, quantities and priorities of roads, parking areas, and walkways are specified on the Paved Surface Maintenance and Snow Plowing Map. The Contractor shall also install four foot tall (minimum) reflective markers at all hydrants and other areas for equipment location purposes. If desired, the Contractor can provide and install snow fencing to minimize plowing due to drifting snow.

The Contractor shall be responsible for repairing any damage to Government property resulting from snow and ice removal. Repairs shall be completed at no additional cost to the Government. All damage shall be reported to the COTR.

See Section C.5.4 for Government-furnished equipment and facilities available for snow and ice removal. Road salt and calcium chloride shall be purchased by the Contractor as part of the IDIQ requirements.

b) PM, PGM, and PT&I. The following are the required PM, PGM, and PT&I tasks. See Section J-C.16.XX for the work instructions (minimum scope), and the frequencies for each task. In general the work instructions comply with the asset manufacturer's requirements.

i) Building 154 Departure Sliding Gates PM (with maintenance log)
ii) Building154 Final Denial Barriers PM (with maintenance log)
iii) Building 4 Tarmac Access Control PM
iv) Building 152 Access Control Gates PM (with maintenance log)

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

a) Pre-Price Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR:

i) Pavement Marking. The Contractor shall provide pavement marking for asphalt and concrete surfaces. Paint shall conform to Ohio Department of Transportation (ODOT) Item Number 642. Paint shall be approved by the Government prior to use. The Contractor shall provide the unit cost to install the following striping assuming a minimum of 0.50 mile of striping for unit price basis:

(1) Double Yellow
(2) Solid Line (yellow or white)
(3) Blackout Line
(4) Dashed-Broken (yellow or white)
(5) 12" Stop Bar
(6) Symbols or words (yellow or white) based off 4 letters or one symbol Contractor to request technical guidance from COTR for further striping requirements for small projects.

ii) Cleaning of Permeable Pavement. The Contractor shall provide a cost to pressure wash an area of 3,050 square foot of permeable pavement, located outside of Building 304, with a bio-based soap product and dispose of all debris. This work shall be coordinated with the quarterly street sweeping effort. The bio-based soap product shall be approved by the Government prior to use.

b) IDIQ Work. The following are examples of IDIQ work:

i) Non-Standard Work Hour Snow and Ice Removal. As defined in Section C.7.12.k, the Contractor shall work with the Emergency Response Team and the Emergency Dispatch Office to coordinate response to heavy snow fall events during non-standard working hours. The requirements are the same as the routine maintenance above.

This shall be considered as Re-determinable work as defined in Section C.13.2e. Non-standard work hour snow and ice removal shall be addressed as part of the Emergency Management Plan described in Section C7.13.

ii) Truck Excess Snow to Designated Areas. When required, the Contractor shall move excess snow from roadways and parking lots by loading onto trucks or trailers and transporting snow to areas designated on the maps. This shall be considered as re-determinable work as defined in Section C.13.2e.

iii) Road Surface Repair. The Contractor shall repair large sections of bituminous and concrete pavements, requiring replacement due to excavation and repair of

underground utilities or other structures.

iv) Excavation. The Contractor shall provide excavation services when exposure of underground piping and utilities is required. The Contractor shall provide installation and removal of shoring, as required, to ensure safe working conditions for Contractor personnel. Upon completion of the excavation, the Contractor shall backfill and compact the excavation to the original grade in grass areas. The Contractor shall use LSM 100, Type 2 to fill all voids directly under and within seven (7) feet of pavements. The Contractor shall break-up and remove concrete, asphalt and other debris and dispose of it at an approved disposal site.

v) Sign Maintenance. The Contractor shall provide, install, repair and/or refurbish signs, including posts and sign supports. All posts shall be breakaway posts as approved by Ohio Department of Transportation. Signs shall be fabricated from aluminum high intensity, reflective sheeting and conform to Ohio Manual of Uniform Traffic Control Devices.

vi) Roadway and Parking Lots Maintenance. The Contractor shall maintain roadways and parking lots by repairing minor damage such as potholes, sealing, cracks, or breaks. The Contractor shall receive technical guidance for location of pot holes to be filled from COTR prior to commencing work.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Semi-annual Roads and Pavement Report

C.17 GROUNDS MAINTENANCE

1) General. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary for grounds maintenance in accordance with the requirements specified herein. The firm fixed-price portion of work in this section includes the performance of trouble call work (see Section C.12), and recurring work (see Section C.13) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.14) are included in the non-recurring work portion of this contract.

   The Contractor shall be responsible for routine grounds maintenance that includes grass cutting, maintenance of ornamental landscape areas, maintenance of storm water facilities and culverts, collection and removal of leaves, trash and debris from grounds, window wells, area ways and ditches, maintenance of earthen mounds, trimming and pruning of trees, hedges, and shrubs, animal control, internal and external pest control, and maintenance of the baseball fields, the soccer fields, and the Fitness Trail.

2) Certifications and Licensing Requirements. The Contractor's personnel shall be licensed by the State of Ohio to provide vegetation and pest control in the categories specified in this contract. All work shall be in accordance with federal, state, and local laws and GRC regulations. The Contractor shall take precautions to prevent the entry of pesticides and herbicides into drainage structures, streams, culverts, ditches, and storm sewers.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. See Section J-C.16.XX for Perimeter Security Fencing and Remotely-Operated Security Gates Map and Paved Surface Maintenance and Snow Plowing Requirements Map. See Section J-C.17.XX for Grounds Maintenance Requirements Map (Lawn Mowing and Landscape), Grounds Maintenance Requirements Map (Tree Trimming and Treatment) and Surface Storm Water Control Features Map. In addition, the following are specific requirements for this section:

   a) General Operations and Maintenance (GOM). GOM shall be performed in accordance with the requirements listed below and as specified on the above referenced maps:

      i) Perimeter Fence Line Maintenance. The Contractor shall maintain a minimum area of ten (10) feet inside and outside of the perimeter fence (except where there are steep grades outside the fence line). Grass, weeds, trees, and all other vegetative growth shall be maintained at a maximum height of twelve (12) inches above grade at all times. Debris and trash shall also be removed and disposed of on the same day.

      ii) Substation Grounds Maintenance. Gravel areas within the electrical substation fence line and ten (10) feet outside the fence line shall be maintained vegetation free. See Section C.28 High Voltage Electrical Distribution for specific requirements.

iii) Trash and Debris Removal. The Contractor shall conduct a routine pick-up of any debris throughout the GRC Lewis Field grounds, roadways, streets, and parking lots. The Contractor shall remove paper, trash, cans, bottles, organic material and limbs from grounds, roads, pavements, foundations, window wells and area ways. This includes debris lodged in shrubs, hedges, and fences. Debris shall be disposed of the same day as collected.

iv) Leaf Removal. The Contractor shall remove fallen leaves seasonally and as needed to maintain loading docks, landscape beds, graveled areas, storm drains, window wells and area ways. The Contractor shall remove and dispose of leaves on the same day as collected. The Contractor shall mow/mulch leaves on grass areas.

v) Dock Levelers. The Contractor shall clean recessed areas under dock levelers on a semi-annual basis. This includes removal of leaves and other debris which have accumulated under dock leveler. The following are the dock levelers to be maintained under this contract:

(1) Building 5, Dock 5-C
(2) Building 38, Dock 38-A (Advance Lift)
(3) Building 142, Dock adjacent to Room 179
(4) Building 152, Door 131B (Pentlift)
(5) Building 152, Door 131C (Pentalift)
(6) Building 152, Door 131D (Pentalift)
(7) Building 152, Door 131E (Pentalift)
(8) Building 215, Dock adjacent to Room 102
(9) Building 333, Door 126-A
(10) Building 351, Dock adjacent to Room 114 (Pentalift)

vi) Debris Removal from Open Ditches, Detention Basins, Culverts and Storm Catch Basins. The Contractor shall clean all debris from open ditches, detentions basins, culverts and within the grates of storm catch basins. The Contractor shall inspect and clean areas following severe storms to ensure proper drainage and to prevent flooding. This includes all large culverts/bridge structures. The Contractor shall complete debris removal on a quarterly basis and after rainfall events of two (2) inches or greater within a twenty-four (24) hour period.

vii) Remove Debris from Building 154 Final Denial Barrier Trenches. The Contractor shall inspect and clean the vehicle barrier trenches a minimum of twice per month. This shall include removal of any debris, ice, and/or snow that may hamper drainage. The Contractor shall coordinate this task with GRC Security personnel and perform this work during weekends or non-standard working hours (so barriers can be raised).

viii) Maintain Bio-Gardens. The Contractor shall manually remove all weeds within bio-gardens on a bi-monthly basis from March through September. The use of herbicides is prohibited. From October through February, the Contractor shall

remove any debris that may accumulate within the gardens. The Contractor shall rake the top four (4) inches of the garden every May and install two (2) inches of new ground brown wood mulch.

ix) Animal Control. The Contractor shall provide services to set humane traps for the capture and removal of small nuisance animals such as raccoons, opossums, woodchucks, ground hogs, squirrel, skunks, and birds. Captured animals and birds shall be safely removed from GRC following all City of Brook Park Animal Control regulations. If the Contractor is required to remove an injured, diseased or dead deer, the removal shall be coordinated with the City of Brook Park. The Contractor shall set rodent traps as instructed by the COTR. These traps shall be checked daily. Trapped rodents shall be removed from GRC that same day.

x) Tree Treatment. The Contractor shall treat the following trees: Crab apple trees twice a year for apple scab, Buckeye trees twice a year for fungal disease, and Oak trees twice a year for root zone fertilization.

xi) Maintain Type 1 Areas. The Contractor shall maintain areas defined as Type 1 Areas per the requirements below. The Grounds Maps provide the locations and geographic boundaries of all Mowing Type 1 and Landscaping Type 1 land parcels.

(1) Grass Cutting. Grass in all Mowing Type 1 areas shall be maintained at a maximum height of two and one-half (2.5) inches. The Contractor shall be required to cut the grass within three (3) business days once reaching this height. If any bare ground within the limits of lawn areas becomes vegetated with grass, weeds, or other similar growths through natural spread, the area shall be maintained. Grass cutting is to be accomplished free of scalping, rutting, bruising, and uneven and rough cutting and produce a neat, clean, even cut. After cutting, grass shall have a uniform height. Grass clippings shall be uniformly distributed over the mowed area, and shall not be windrowed or allowed to be deposited in piles or clumps. Grass clippings/trimmings shall be removed from sidewalks and other paved areas the same day the grass is cut and disposed of the same day.

(2) Lawn Care Services (Grass Treatment). The Contractor shall apply pre-emergent weed control with fertilizer in the spring, crab grass control in the late spring, and post-emergent with fertilizer in the late summer as determined by professional lawn care service professionals. The Contractor shall also treat the grass for grubs and other insects annually with a season-long control product.

(3) Grass Trimming. The Contractor shall maintain areas around trees, shrubs, landscape beds, cultivated areas, poles, walls, hydrants, valves, and other similar objects. The work shall be accomplished to match the height and appearance of the surrounding mowed grass. Trimming operations shall not damage trees and shrubs. Trimming with herbicide treatment shall be confined

to an area extending a maximum of twelve (12) inches from the object being trimmed. Grassed areas, trees, or shrubs killed or damaged as a result of the Contractor's work shall be repaired or replaced by the Contractor at no additional cost to the Government. Trimming operations shall be considered a part of grass cutting and shall be accomplished concurrently with grass cutting operations. Grass cutting shall not be considered complete until all trimming operations are accomplished.

(4) Weed Eradication. Weeds and undesirable plant growth shall be eradicated from foundation plantings, landscape islands and beds, vegetated storm water facilities, along perimeter fence lines, graveled electrical substations, storage areas and graveled perimeters and drives. The Contractor shall coordinate the access to restricted and hazard areas with the COTR. The Contractor shall complete work without harm to existing plant species. If Contractor harms existing plants, they shall be replaced at no additional cost to the Government. Prohibited species shall not be disturbed according to the Endangered Species Management Plan, see Section J- C.17.XX.

(5) Edging. All sidewalks, driveways, street edges, curbs, and other paved areas located within Type 1 areas shall be edged. Edged lines shall be neat and clean, and shall be free of scalping, rutting, bruising, and uneven and rough cutting. All edging shall be performed by mechanical (non-herbicidal) means, except where driveway and street pavement edges are not discernible due to grass encroachment. In these cases a straight and even line approximating the pavement edge shall be established and maintained by mechanical means. Herbicides shall not be used to eliminate or reduce normal mechanical edging along discernible straight paved edges such as sidewalks and, curbs. In conjunction with edging, all vegetation shall be removed from expansion joints and cracks, and where vegetation has encroached onto the paved areas. Herbicides can be used to reduce the amount of mechanical work that may otherwise be necessary. Debris generated by edging operations shall be removed from the site and the same day.

(6) Maintain Landscaped Islands and Beds. The Contractor shall inspect and maintain all Landscaping Type 1 areas. Stone, mulch, and gravel shall be raked to a uniform pattern. Landscaped plantings shall be trimmed to a uniform shape. If plants have died, the Contractor shall notify the COTR for technical direction.

(7) Tree Pruning. All tree pruning shall be accomplished by or under the supervision of a person that is trained, experienced, and otherwise qualified in proper tree pruning techniques. Trees shall be pruned according to their natural growth pattern to evenly form and balance the tree, to promote proper health and growth, to respond to damage or dead areas inflicted by natural or human causes, and to prevent interference with pedestrian, fenced area, and vehicular traffic areas and buildings. All clippings and debris shall be removed

and disposed of the same day.

(8) Shrub and Hedge Maintenance. The Contractor shall trim and prune all shrubs and hedges within Landscape Type 1 areas to remove dead, injured, abnormal or otherwise undesirable growth and to reduce size if shrub or bush is causing interference with a structure or pedestrian or vehicular traffic. The Contractor shall establish and maintain the natural form of the shrubs and bushes by removing old and injured canes and allowing development of young and vigorous shoots. Evergreen shrubs shall be pruned between the beginning of May and the end of October. Summer flowering shrubs shall be pruned after flowering is complete and before the end of July.

xii) Maintain Type 2 Areas. The Contractor shall maintain Mowing Type 2 and Landscaping Type 2 areas. The maps provide information on the location and geographic boundaries of the land parcels, which make up the area.

(1) Grass Cutting. The Contractor shall maintain Mowing Type 2 grass areas once per month from May through June and September through October. The grass height shall be mowed to a height of two and one-half (2.5) inches. During all other months, the grass shall not be maintained unless directed by the COTR. The Contractor shall not perform edging, weeding or trimming within these areas. An area of seven (7) feet on each side of the Fitness Trail shall be considered as Mowing Type 2 area.

(2) Weed Eradication. The Contractor shall eradicate and remove all weeds within gravel, pervious, and sand areas as shown in Landscape Type 2 areas on a yearly basis (during the month of June).

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Nonrecurring IDIQ Work. In addition, the following are specific non-recurring work requirements for grounds maintenance:

a) Pre-Priced Maintenance Tasks. The Contractor shall provide a firm fixed-price for the following tasks, which shall be ordered and funded as directed by the COTR:

i) Storm Sewer Drainage Structure Cleaning. The Contractor shall provide a cost to clean out twenty (20) catch basins. The Contractor shall remove all debris that has collected within the drainage structure and sumps and coordinate disposal of this waste with the COTR and the GRC Waste Management and Disposal contractor (see Section C.7.12.l).

ii) Bio-Garden Restoration. The Contractor shall carefully remove all plants within the bio-gardens for re-use. The Contractor shall then remove and dispose of the layers of mulch and six (6) inches of the bio-soil mixture. The Contractor shall then scarify the remaining layer of soil to a depth of four (4) inches, provide and install six (6) inches of new bio-garden soil mixture, replant the saved plants, and install three (3) inches of

new ground brown wood mulch.

The Contractor shall provide a firm fixed-price per garden.

iii) Maintain Fitness Trail. The Fitness Trail shall be raked and rolled to maintain a safe jogging surface. Weeds and grasses shall be removed from all trail surfaces. Ruts and holes shall be filled to maintain an even surface.

iv) Maintain Type 3 Areas. The Contractor shall maintain Mowing Type 3 areas and Type 3 Trees as directed by the COTR. Mowing Type 3 areas are considered as natural areas, and grass shall be restricted to a minimum height of four (4) inches. The Contractor shall mow the edges of the grass in gradual circular corners.

b) IDIQ Tasks. IDIQ tasks will be issued to the Contractor with a scope of work and a request for a firm-fixed price. The following are examples of IDIQ grounds maintenance work:

i) Indoor Chemical Application. The Contractor shall provide services to chemically spray, dust and place bait for the control and eradication of household pests, insects, rodents and other undesirable species. This service shall comply with all federal codes and laws covering chemical applications and the services performed by an exterminator, licensed by the State of Ohio, in this specific category. Specific attention should be given to building entranceways, rest rooms and areas involving food storage or preparation activities.

ii) Maintain Baseball Fields. The Contractor shall maintain the two (2) baseball fields. Foul lines and out of bound markers shall be maintained and marked. Infield surfaces shall be dressed following rainy periods or when compacted. Weeds and grasses shall be eradicated along outfield fence lines. Infields shall be supplied with new soil as required and raked. The fence lines shall be maintained to ensure fields are kept in a safe condition.

iii) Mulching. The Contractor shall provide a cost to purchase and spread mulch per the direction of the COTR.

iv) Earthen Mounds. The Contractor shall trim earthen mounds around the Building 35 Complex to a height of four (4) inches.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Herbicide and Insecticide Report. The Contractor shall provide a detailed pesticide application report upon completion of the work. When applying herbicides, the Contractor shall comply with all Federal, State, local and Glenn safety and health laws and regulations. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), officially cited in USC Title 7, Section 136, 61 Stat. 163 (1947), as amended, is the basis for federal pesticide legislation. The intent of FIFRA is to regulate the manufacture,

transportation, application, storage and disposal of pesticides. The Federal law is administered by the U.S.E.P.A. Chapter 921 of the Ohio Revised Code defines the Ohio Pesticide Law. The Ohio Department of Agriculture enforces it within the State. The Occupational Safety and Health Act (OSHA) Safety and Health Standards pertaining to FIFRA are contained in 29 CFR 1910.

C.18 ARCHITECTURAL AND STRUCTURAL SYSTEMS

1) General. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to operate, maintain, and repair the architectural and structural systems in accordance with the requirements specified herein. The firm fixed-price portion of work in this subsection includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The work under this section shall include the repair of buildings, structures, and related system components with their associated appurtenances including, floors, walls, ceilings, doors, windows, stairs, roofing, exterior, painting, and structural metal work. Work shall also include handicapped doors, lifts, dock levelers and elevators.

   See Section J-C.18.XX for a list of the buildings and structures to be maintained under this contract. See Section J-C.18.XX for a list of assets to be maintained which includes:

   a) Buildings and Structures
   b) Overhead Doors
   c) Handicap Doors & Lifts
   d) Elevators
   e) Dock Levelers

2) Certifications and Licensing Requirements. All work shall be performed by elevator mechanics specifically qualified and trained to work on elevators, and equipment and meet the requirements of Chapter 4105, Title 41 of the Ohio Revised Code and Chapter 301:3-6, Division of Industrial Compliance of the Ohio Administrative Code. Evidence of all required licenses, as well as documentation of the qualifications of personnel, shall be provided to the COTR prior to contract award.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) General Operations and Maintenance (GOM). The following are the GOM requirements:

      i) Elevator Inspections, Testing, and Certification. The Contractor shall provide inspection and testing services as required to support routine and periodic certification requirements of elevators. All inspection and testing shall be performed in accordance with ASME/ANSI 17.1 and 17.2, Chapter 4105, Title 41 of the Ohio Revised Code, Chapter 1301:3-6, Division of Industrial Compliance of the Ohio Administrative Code, and Chapter 4101:5-1 and 5-3 Elevator Code General Provisions of the Ohio Administrative Code. See Section J-C.18.XX for the list of equipment.

ii) Roof Inspections. The Contractor shall perform roof inspections semi-annually, once in the spring after the roof has been exposed to the winter conditions, and once the fall after exposure to the summer conditions. The Contractor shall also examine the roof for damage after severe weather conditions such as hailstorms, heavy rains, high winds, etc. See Section C.8.7 for fall protection and PPE requirements.

Roof inspections shall include:

(1) Removal of any accumulated debris such as leaves, small branches, dirt, rocks, etc.

(2) Removal of any screws or metal fasteners that have been dropped on roof from maintenance of mechanical and plumbing systems.

(3) Clean gutters, down spouts, roof drains and the surrounding area to ensure proper roof drainage.

(4) Examine the roof for any damage (such as metal flashings and valleys). Initiate TC as required for repairs. The Contractor shall notify the COTR of roof repairs so they can be coordinated with roof warranties.

b) PM, PGM, and PT&I. The following are the required PM, PGM, and PT&I tasks. See Section J-C.16.XX for a list of assets to be maintained. See Section J-C.18.XX for the work instructions (minimum scope), and the frequencies for each task.

i) Overhead Doors Biennial PM
ii) B4 Hangar Doors Biennial PM

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Nonrecurring IDIQ Work.

a) Pre-Priced Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks, which shall be ordered and funded as directed by the COTR:

i) Roof Inspections and Report. See Section J-C.18.XX for list of buildings and report information requirements.

ii) Tuck Pointing Inspection. See Section J-C.18.XX for list of buildings and report information requirements.

b) IDIQ Work. All repairs shall be included in the IDIQ work.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Elevator Inspection Reports. The Contractor shall provide reports for elevator inspection, testing, and certifications to the Government as specified in Chapter 1301:3-6-04 Inspections of the Division of Industrial Compliance of the Ohio Administrative Code

and Chapter 4105, Title 41 of the Ohio Revised Code. All reports shall be recorded in Maximo. Reports detailing any deficiencies shall be provided to the Government in a hardcopy form. In addition, the Contractor shall provide certificates in a hardcopy form.

C.19 CRANES, HOISTS AND LIFTING DEVICE EQUIPMENT (LDE)

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to perform inspection, testing, maintenance and repair to all cranes, hoists and lifting device equipment such slings, shackles, turnbuckles, etc. as specified herein. Aerial lift platforms shall also be included in this scope of work. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) for institutional assets as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract. The non-institutional assets will be included as IDIQ pre-priced maintenance work.

   See Section J-C.19.XX for a list of institutional assets to be maintained under the fixed-price portion of the contract. See Section J-C.19.XX for a list of non-institutional equipment to be maintained under the IDIQ Pre-Priced Maintenance portion of this contract. The systems and equipment include:

   a) Cranes
   b) Hoists
   c) Lifting Device Equipment (LDE)
   d) Aerial Lift Platforms

2) Certifications and Licensing Requirements. The Contractor shall establish a Certification and Operator Licensing Program for all cranes, hoists, LDE and aerial lift platforms at the GRC. This program shall meet all requirements per NASA Standard 8719.9 Standard for Lifting Devices and Equipment. Operator licensing of Contractor personnel shall be based on the successfully completion of classroom instruction and testing, hands-on training, the demonstration of proficiency, and the completion of a certified physical examination.

   Contractor personnel performing lifting devices and equipment nondestructive testing (NDT), including visual inspections, shall be qualified and certified in accordance with written practices meeting the requirements contained NASA-STD-8719.9 (with Change 2, May 9, 2002) and American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A, Personnel Qualification and Certification in Nondestructive Testing. Training and licensing of Contractor employees are also part of the fixed-price portion of the contract. Evidence of all required licenses and documentation of the qualifications of Contractor operators and maintenance mechanics shall be provided to the COTR within thirty (30) days after contract award.

   All documentation concerning certification and licensing shall be maintained by the Contractor and provided to the GRC Lifting Device Equipment Manager (LDEM) for inclusion into the Lifting Device Operator License database.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) Inspections, Testing, and Certification. The Contractor shall provide inspection and testing services as required to support routine and periodic certification requirements of cranes, hoists, aerial lift platforms and LDE. All inspection and testing shall be performed in accordance with NASA STD 8719.9 Standard for Lifting Devices and Equipment and the Glenn Safety Manual, Chapter 20, Lifting Devices and Equipment.

      All repair work shall be in accordance with ANSI/AWS D14.1 as specified in NASA-STD 8719.9.

      The Contractor shall maintain an existing database for all equipment indicated above. This database shall be stored on a GFE computer server.

      For cranes, hoists, aerial lift platforms and LDE, the Contractor shall complete the Government inspection forms and store forms on the GFE computer server. See Section J-C.19.XX for required inspection forms.

   b) Tagging. Following periodic load testing, all devices shall be given a permanently-affixed tag which shall be posted on the crane or device as required by the Glenn Safety Manual, Chapter 20, Lifting Devices and Equipment. All testing and maintenance of devices shall be recorded in Maximo. The Government database shall be used to track and record the status of LDE and all other below hook devices.

      Where cranes, hoists, aerial lift platforms and LDE are deemed inactive or out of service, yellow configuration tags shall be placed on the equipment until the required PMs, inspections, or testing can be performed.

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

   a) Pre-Priced Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR:

      i) Inspection, Testing and Certification of non-institutional equipment to be maintained under this section. Requirements are the same as for the Recurring work listed above.

   b) IDIQ Work. Inspection and testing of new equipment and repairs of cranes, hoists, aerial lift platforms and LDE.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

   a) Testing & Inspection Forms. The Contractor shall provide the COTR with all inspection, testing and certification forms upon request.

C.20 HEATING, VENTILATING, AIR CONDITIONING, REFRIGERATION, AND COMPRESSED AIR SYSTEMS

1) General Requirements. The Contractor shall provide all labor, supervision, tools, materials, equipment, and management necessary to operate, maintain, and repair, heating, ventilating, air conditioning (HVAC), refrigeration, compressed air systems, institutional cooling towers, and associated equipment in accordance with the requirements specified herein. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   Section J-C.20.XX lists the HVAC equipment to be maintained in this contract subsection. The system and equipment include the following:

   a) HVAC equipment and systems, including air handling units, fan coil units, ground source heat pumps, unit heaters, package units, split systems, heat exchangers, pumps, ductwork and diffusers.
   b) Institutional cooling towers
   c) Building Heating Hot Water Boilers.
   d) Refrigeration equipment and systems
   e) Compressed air for HVAC controls
   f) Pneumatic, electrical, and electronic controls and systems
   g) Building Chillers

2) Certifications and Licensing Requirements. The degree of skill of individuals shall be commensurate with that required for the work. All apprentices and trainees shall be supervised and shall have all work inspected by the applicable lead mechanic, or technician, for their particular field.

   The Contractor shall provide HVAC technicians that are certified in the handling of refrigerants to the EPA standards for Universal Certification category.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) General Operations and Maintenance (GOM). The following are the required GOM tasks:

      i) Building Inspections. The Contractor shall perform the following inspections:

         (1) Check all mechanical rooms monthly for proper operation of all equipment any report problems.

(2) Walk building during heating season (October through May) to ensure heating units are operational in areas not monitored by the EMCS.

b) PM, PT&I and PGM. The following are the required PM, PGM, and PT&I tasks. See Section J-C.20.XX for a list of assets to be maintained, the work instructions (minimum scope), and the frequencies for each task.

i) Control Air Systems Annual PM
ii) Split System Air Conditioners Annual PM
iii) Condenser Units Annual PM
iv) Package Air Conditioners Annual PM
v) Air Handling Units Semi-Annual PM
vi) Air Handling Units Annual PM
vii) Air Handling Units PT&I
viii) Air Handling Units Glycol Protection Annual PM
ix) Fan Coil Units Annual PM
x) Exhaust Fan Annual PM
xi) Exhaust Fan Annual PT&I
xii) Make-up Air Units Semi-Annual PM
xiii) Infrared Gas Heater Annual PM
xiv) Refrigerators/Food Displays/Freezers Annual PM
xv) Ice Machines Semi-Annual PM
xvi) Glycol AC Systems Annual PM
xvii) Deionized Water System Annual PM
xviii) Pumps Annual PM or PT&I
xix) Building Cooling Towers Annual PM
xx) Steam Trap Annual PT&I
xxi) Hot Water Boilers Annual PM (certify RV)
xxii) Ground Source Heat Pump Annual PM
xxiii) Energy Recovery Units Annual PM
xxiv) Kitchen Exhaust Cleaning Annual PM
xxv) Mobile Refrigerant Reclamation Units Annual PM
xxvi) Building Chillers Annual PM

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

a) Pre-Priced Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR:

i) The Contractor shall provide weekly PM for Bldg. 309 Dry Room. See Section J-C.20.XX.

ii) The Contractor shall provide weekly PM for Bldg. 77 Clean Room chiller. See Section J-C.20.XX.

iii) The Contractor shall provide weekly PM for Bldg. 77 Clean Room AHU. See Section J-C.20.XX.

iv) The Contractor shall provide weekly PM for Bldg. 77 Clean Room Humidifier. See Section J-C.20.XX.

v) The Contractor shall provide weekly PM for Bldg. 77 Clean Room Exhaust Fan. See Section J-C.20.XX.

b) IDIQ Tasks. The following are examples of IDIQ work:

i) The Contractor shall provide Mobile Cooling Towers and support for the annual maintenance shutdown of the cooling tower system.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

C.21 ENERGY MANAGEMENT AND CONTROL SYSTEM (EMCS)

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, and management necessary to operate, maintain, and repair the Energy Management Control System (EMCS) in accordance with the requirements specified in this section. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The GRC EMCS is a computerized building automation system that provides remote equipment control and monitoring of building systems and utilities. The current EMCS is a Siemens System 600 Apogee® Automation System. The operating system is Apogee Insight Software Rev. 3.11 and operates on Microsoft Windows 2008 platform. The system consists of a primary server, a standby server and multiple remote client PC workstations. EMCS has InfoCenter Suite software for managing data (historical performance, reporting, trending, etc…) and application Utility Cost Manager for managing utility data. The EMCS is connected to approximately 123 Apogee control panels in the majority of the GRC buildings. Connected to these panels are various sub-controllers for applications specific controls for HVAC and utility metering. There are approximately 18,000 data points on the EMCS.

   In addition, the Siemens System 600 Apogee® Automation System is the common head-end to the Siemens ALS3® life safety system. See Section C.27 Life Safety and Fire Protection for Siemens ALS3® requirements.

   The EMCS supports the operation of the HVAC, central steam and chilled water plants and provides 24 hour /7 days a week monitoring of critical and non-critical alarms. EMCS also plays an important role in energy management by metering utility consumption and providing trending and data storage of this information.

   Section J-C.21-xx lists the equipment to be maintained in this contract subsection, which include:
   a) Apogee Panels
   b) Servers and Workstations
   c) Utility Meters (LV Electrical, Gas, Water, Sewage, Steam, Chilled Water)

2) Certifications and Licensing Requirements. All personnel involved in the operation, adjustment and maintenance of all EMCS systems must be trained and qualified on the Siemens Systems 600 Apogee®. The Contractor must provide to the COTR or designee documentation of the level of experience, including any certificates of training, for all employees who will be involved in this function.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for

this section:

a) EMCS Operations and Maintenance

i) Network Operations. The Contractor shall maintain 100% operational status of the EMCS network and Siemens System 600 Apogee® Automation System. The EMCS and Life Safety System, ALS3® (See Section C.27) are fully integrated by Siemens 600 Apogee® with Life Safety Option ALS3® on a UL listed fire alarm server. The EMCS and the Life Safety monitoring system shall be maintained and operated as a single system.

The Contractor shall keep operating software current, with release revisions/upgrades to main server computers, InfoCenter and all client workstations. Critical updates shall be installed at a minimum on a monthly basis. All system software shall be fully synchronized quarterly and as required by major expansion to maintain clear system operator screen.

The Contractor shall maintain system integrity**,** including network and database diagnostics; provide complete technical support, servers and client computer workstations and back-ups, data/visual display terminals, MLN (Management Level Network) and BLN (Building Level Network) networks, FLN (Field Level Networks), drivers and terminations, and other associated MLN and BLN and FLN software and hardware.

The Contractor shall ensure that the EMCS is 100% operational except for scheduled or planned outages and within restrictive limits for unplanned situations. For all planned and unplanned outages, the COTR shall be notified. The critical alarm monitoring system shall be 100% operational and the COTR shall be notified if this system is not 100% operational.

The Contractor shall perform related system administrator tasks on EMCS. Systems administrations tasks shall include managing user accounts and licenses, reviewing audit logs, keeping detailed records concerning hardware and software upgrades, performing routine backups and recovery of system databases, and installing upgraded hardware, software, and firmware. Backups shall be made, whenever a software or programming change is made but no less than monthly. Contractor shall also provide input to and implement the requirements of the IT Security Plan for EMCS system.

The Contractor shall provide configuration control documentation of the EMCS system. This includes maintaining and updating EMCS riser diagrams. All changes to these systems shall be documented on GRC drawings, created using the latest version of AutoCad, which reflect the “As-Built” field installation. Once the drawings are created the Contractor shall submit the drawings to the COTR for approval in Adept, the drawing management system. Updates shall be provided at least once a year or when major changes have occurred.

The Contractor shall maintain an inventory of critical parts for the EMCS network and an inventory of recommended spare parts based on volume of parts in system.

ii) EMCS Central Work Station. The Contractor shall staff the Central Work Station during standard working hours to operate and monitor the EMCS system. The staff shall maintain control systems as designed and is responsible for keeping software functioning. The staff shall make required changes to the control systems such as, for emergency response or abnormal conditions, building occupancy schedules, temporary set points adjustments, and in support of field maintenance, construction and repair projects. The staff shall also make control program changes as requested and approved by the COTR. The Contractor shall respond to special EMCS related research and customer requests as approved by COTR. The staff shall also provide updates to graphic displays as requested and approved by the COTR. The staff shall provide troubleshooting and trending for systems that are controlled by EMCS.

The staff shall monitor all EMCS systems, respond to alarm notifications and initiate maintenance response according to priority and criticality of alarms and calls. The EMCS shall be used to determine response to "hot and cold calls".

The Contractor shall provide 24 hour/ 7days a week monitoring of critical and non-critical alarms. Critical alarms (noted as "AL" in the EMCS system) shall be treated as an Emergency Trouble Call. Other alarms shall be treated as Urgent or Routine Trouble Calls. See Section C.11 for Trouble Call requirements. The Contractor shall provide 24 hour/7 day a week response to critical EMCS alarms. There are approximately 300 critical alarms. The Contractor shall continuously maintain the EMCS critical alarm database.

EMCS operators shall also be active participants of the RCM team, which seeks to replace routine preventative maintenance tasks with predictive testing and inspection activities. See Section C.14 for more information on RCM.

iii) Energy Conservation. The Contractor shall operate equipment and systems as energy efficient as possible without compromising service to the building occupants and research. The Contractor shall provide trend logging of each system in the EMCS to detect abnormal conditions (i.e. outside the operating parameters, overrides, failed controls, simultaneously heating and cooling) on a 24 hours per day, 7 days a week basis. Each system on the EMCS shall be trend logged at least once a year and documentation of findings provided to the Government.

The Contractor shall be responsible for notifying the Government if a sequence of operations or its implementation as a control program is not producing the desired results or is resulting in unnecessary energy use.

The Contractor shall also provide information on building energy consumption, historical data, trends, and operating demands. The Contractor shall use available

software tools (InfoCenter and Utility Cost Manager) to diagnose problems and identify operational improvements.

The Contractor shall provide calibration of control sensors at least once a year. This shall be coordinated with other PMs for HVAC equipment.

The Contractor shall provide analysis of EMCS data/points to determine energy efficiency/consumption and any changes that may indicate deterioration of equipment or system condition that requires O&M action.

iv) Utility Monitoring. The Contractor shall record and trend monthly (in InfoCenter) all utility meters that are connected to the EMCS. The Contractor shall provide monthly Energy and Water Consumption Reports to the COTR in an electronic format by the end of the second week of the following month.
These reports shall be per building (i.e., electricity, water, and natural gas, and steam). The Contractor shall also record and trend other utility meters such as sewage, chilled water, hot water and steam condensate. The Contractor shall monitor and analyze the meter data to determine usage patterns, abnormal consumption, leaks, and meter malfunction.

The Contractor shall support Measurement & Verification efforts by providing data and trending systems and utilities as directed by the COTR necessary to allow other Contractors, providing energy saving services to the Government, to complete their work.

v) Other. The Contractor shall provide technical services for the EMCS system as requested by COTR. Technical services shall include services such as consultation on new DDC systems and the interface with the EMCS; input into EMCS Master Planning including identification of scope of work (projects/material) to maintain and upgrade the EMCS network; and technical support with setting up interactive building energy displays.

b) PM, PGM, and PT&I. The following are the required PM, PGM, and PT&I tasks. See Section J-C.16.XX for a list of assets to be maintained, the work instructions (minimum scope), and the frequencies for each task.

i) Utility Meters /Calibration PGM
ii) Apogee Panel Biennial PM

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

b) IDIQ Work. The following are examples of IDIQ work:

i) The Contractor shall support Investment Grade Audit activities initiated by an Energy Savings Contractor (ESCO) in their effort to establish energy and water baseline

consumption as part of an overarching Energy Savings Performance Contract (ESPC) with the Dept. of Energy administered by GRC personnel. This may entail any of the services identified in this section; a Government representative would formally make the requests on behalf of the ESCO.

ii) Installation of new DDC system to replace old control systems.

iii) Upgrades of obsolete panels and network systems.

5) Reports and Deliverables. The Contractor shall furnish the following minimum reports and deliverables on a monthly basis.

a) EMCS Monthly Report. The Contractor shall provide a monthly report that shall include the following information: detailed list of all connected devices or systems that are not at 100% operational status; list of points in Operator Mode, Points that have Failed, and Points in Alarm; all input into the EMCS Logbook (status of work, software upgrades, control changes, etc…) and a list and tally of all trouble calls issued by EMCS. The report shall also detail the number of points added during the previous month including type of points (physical, virtual and total).

b) Systems Reports (Central Steam Plant, Central Chilled Water Plants, HVAC Systems, etc…) as requested by COTR and Systems Managers. The report shall include operational availability, run time of critical equipment and other EMCS data to reflect the operation and status of the systems.

c) Report of Trend Logs completed of each system on the EMCS.

d) Energy and Water Usage Report by building. Report shall include building consumption and any findings of analysis of data. Total power consumption for the fiscal year shall be provided annually.

e) Other Utility Reports as requested by the COTR.

f) Custom Reports from InfoCenter data as request by COTR.

g) Critical Alarm Database. Whenever the database is updated, an electronic copy shall be delivered to the COTR.

h) Configuration Control Documentation.

C.22 PLUMBING AND UTILITY DISTRIBUTION SYSTEMS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to operate, maintain, and repair the plumbing and utility distribution systems in accordance with the requirements specified herein. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The work includes maintaining and repairing all building plumbing systems and all the utility distribution systems.

   Section J-C.22.XX lists the equipment to be maintained in this contract subsection, which includes:

   a) Backflow Preventers
   b) Emergency Shower/Eyewash Stations
   c) Pressure Reliefs on Hot water tanks
   d) Sump Pumps
   e) Building Sewage Ejectors
   f) High Pressure Steam Regulators and Reliefs
   g) High Pressure Condensate Pumps

   The utility distribution systems are underground systems to be maintained under the contract include Domestic Water, Central Chilled Water, High Pressure Steam and Condensate, Natural Gas, Sanitary Sewer, Storm Sewer, Industrial Waste, High Voltage Electrical and Communications. See Section J-C.22.XX for general maps of these systems.

   The Contractor shall complete maintenance excavation work for the above underground utility systems, structures, and GRC Central Process Systems (see Section C.3.4) as needed under the IDIQ portion of this contract as requested by the Government. See Section C.16 Roads and Surfaced Areas section for excavation requirements.

2) Certifications and Licensing Requirements. The Contractor shall provide technicians certified by the State of Ohio for inspection and repair on backflow preventers.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) General Operations and Maintenance (GOM). The following are the requirements for GOM:

i) Oil-Water Separators. The Contractor shall inspect all oil-water separators on a yearly basis and provide a report documenting any deficiencies and condition of the separator to the COTR within one month of the inspection. See Section J C.22XX for example of minimum report requirements. All separators shall be cleaned once per year. Each separator shall be pumped of fluids and emptied of all effluent and debris. For all separators with collacers, the collacers shall be removed and pressure washed then reinstalled. Disposal of this waste shall be coordinated with the COTR and the GRC Waste Management and Disposal Contractor (see Section C.7.12.l). Disposal costs will be covered under the IDIQ portion of this contract.

See Section J-C.22.XX for a map showing the location and information on the oil-water separators.

ii) Water Quality Units Inspection and Cleaning. The Contractor shall inspect all water quality units on a semi-annual basis and provide a report documenting any deficiencies and condition of the unit to the COTR within one month of the inspection. See Section J-C.22.XX for an example of minimum report requirements. The Contractor shall remove sediment, effluent, and any other debris once a year. Disposal of this waste shall be coordinated with the COTR and the GRC Waste Management and Disposal contractor (see Section C.7.12.l). This disposal costs will be covered under the IDIQ portion of this contract.

See Section J-C.22.XX for a map showing the location and information on the water quality units.

iii) Water Quality Testing. The Contractor shall obtain water samples from our domestic water system and test them in accordance with AWWA C651-92, National Primary and Secondary Drinking Water Regulations per Safe Water Drinking Act, Ohio Administrative Code (OAC) 3745-81, and OAC 3745-82. All water samples must be processed and collected by an OEPA certified laboratory OAC 3745-89. The Contractor shall generate a report for the water samples taken and compare against the applicable accepted standards. All data and reports shall be given to COTR when completed.

Sampling shall be completed once a year, if contaminants are found then additional periodic sampling will be required. The Contractor shall sample the following buildings each even year: Building142, Building 21, Building 86, Building 77, Building 5, and Building 60. The Contractor shall sample the following buildings each odd year: Building 6, Building 14, Building 54, Building 49, Building 301, Building 11, and Building 107. The buildings selected are based on occupant density. The Government reserves the right to change the building sampling location each year at no additional cost. The Contractor shall also make provisions to allow for three (3) additional building locations to be tested each year. These test locations will be random and chosen by the COTR. The three additional samples are met to cover the smaller population buildings.

iv) Plumbing Checks for Picnic Grounds. The Contractor shall turn on and turn off and maintain gas grills at Building 342 seasonally for use.

v) Communications Distribution System. The Contractor shall provide maintenance of the Communications Distribution System, which is the network of manholes, handholes, poles, and duct banks that interconnect GRC facilities. The Contractor shall maintain the drains and sump pumps within the manhole system to minimize the back-up of water.

vi) High Pressure Steam Distribution System. The Contractor shall maintain the high pressure steam distribution systems including high pressure steam lines, building regulators stations (regulators, valves, gauges and reliefs), high pressure condensate return pumps, and related equipment. See Steam Distribution Map in Section J-C22.XX. The Contractor shall visually inspect all regulator stations at least once a year and perform annual test of all reliefs on high pressure steam regulator stations. Documentation of the annual relief test shall be provided to the COTR. The Contractor shall visually inspect all steam manholes and expansion joints at least annually and report any anomalies to the COTR. During the annual steam shutdown, the Contractor shall exercise all hand valves located in manholes and report any anomalies to the COTR.

b) PM, PT&I and PGM. The following are the required PM, PGM, and PT&I tasks. See Section J-C.22.XX for a list of assets to be maintained, the work instructions (minimum scope), and the frequencies for each task.

i) Backflow Preventer Annual PM
ii) Pump, Sump Annual PM
iii) Emergency Shower/Eyewash Annual PM
iv) Grease Traps Annual PM
v) Café Dish Conveyors Annual PM
vi) High Pressure Steam Regulators Relief Test

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

a) Pre-Priced Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR:

i) Inspection of DW Distribution Annual PM. See Section J-C.22.XX for details.

ii) Leak Inspection of Natural Gas Distribution System Annual PM. See Section J-C.22.XX for details.

iii) Inspection of Communication System Annual PM. See Section J-C.22.XX for details.

iv) Drinking Fountains Water Filter Replacement Biennial PM. See Section J-C.22.XX for details.

b) IDIQ Work. The following are examples of IDIQ work:

i) Disposal of effluent and debris for water quality units and oil-water separators (as described above).

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Backflow Preventer Certification sheets.

b) Water Quality Reports.

c) Oil-Water Separator Report.

d) Storm Water Quality Unit Report.

C.23 CHEMICAL TREATMENT OF WATER SYSTEMS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to provide chemical treatment of water systems in accordance with the requirements specified in this section. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   Section J-C.23.XX describes the water systems to be maintained in this contract section, which include:

   a) Cooling Towers
   b) Central Chilled Water Systems
   c) Building Closed-Loop Systems
   d) Building Heating Hot Water Boilers
   e) Geothermal Systems
   f) Steam Boiler Feed Water
   g) Storm Water (De-Chloronization)

2) Certifications and Licensing Requirements.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) General Operations and Maintenance (GOM). The following are the requirements for GOM. See Section J-C.23.XX for a copy of the existing water treatment plans.

      All water tests shall be conducted in accordance with ASTM D 596 Standard Guide for Reporting Results of Analysis of Water.

      i) Chemical Treatment of Cooling Tower Systems. The Contractor shall provide chemical treatment of Central Cooling Tower Water Systems and the small building cooling tower systems. Services shall consist of the development of a treatment program for each cooling tower; monitoring and treatment equipment; flushing and cleaning of cooling towers; and testing and treatment of circulating water to prevent accumulation by precipitation of scale, corrosion, biological growths, and other foreign materials. Section J-C.23.XX provides a list of the cooling towers requiring service and their respective operating parameters.

         (1) Treatment Plan. The Contractor shall provide a Water Treatment Operating Plan (WTOP) for each cooling tower listed in Section J-C.23.XX in accordance with the following requirements. The WTOP shall address the MSDS

requirements for all chemicals used, corrosion control, spill control, training, testing procedure, and Legionella control. The Contractor shall submit a Water Treatment Plan (WTOP) for approval within thirty (30) days after award of the contract. Any changes to WTOP must be approved by the COTR before implementation. After approval the program will be continuously monitored and modified by the Contractor as required to meet the treatment standards specified. All proposed changes to the approved program shall be submitted to the COTR for approval.

The WTOP shall comply with the requirements specified in clause (b), treatment and control requirements, below, and shall include:

(a) The amount, type, and methods of feeding and controlling of chemicals to be used. Where applicable, include chemical active ingredient levels in parts per million (ppm).

(b) Installation coupons required for corrosion testing.

(c) Proposed limits for pH, total dissolved solids, corrosion inhibitor, scale inhibitor, and biocide. The concentration ratio to be used as the operating base, as discussed in below.

(d) Proposed chemical shipping, handling, and storage procedures. Include specimen label, product registration number, and application instructions for all proposed algaecides.

(e) Proposed record keeping forms and procedures.

(f) Proposed circulating water, makeup water, and scale and corrosion testing procedures.

(g) Name, address, background, and other pertinent information on proposed independent testing laboratory.

(2) Treatment and Control Requirements. The Contractor's cooling tower water treatment program shall be designed to minimize corrosion, scale, deposition, and microbiological activity and shall be effective over the entire expected temperature range. All chemicals shall be commercially available for use in the treatment of cooling tower water. All chemical additions and treatment methods shall comply with the latest Environmental Protection Agency requirements and recommendations, and bleed-off water and other discharges shall be maintained in compliance with all applicable federal, state, and local laws and regulations. Chromates and other chemicals that are considered potential pollutants shall not be used.

(a) Corrosion Control. Mild steel corrosion rates shall be maintained below 2.5 mils per year (mpy) at all times. Copper and cupro nickel corrosion rates shall be below 0.2 mpy at all times. Chromium is banned by EPA for use in cooling tower water treatment and shall not be used.

(b) Scale Control. Sufficient scale inhibitor/polymer shall be applied to prevent any calcium carbonate or calcium sulfate scale. Control limits for pH shall be designed to prevent such scaling. No acid will be used.

(c) Deposit Control. Specific deposit control agents shall be applied to prevent and minimize suspended solids deposition within exchangers.

(d) Microbiological Control. Bacterial testing shall be performed to determine bacterial levels in the cooling tower. Test results shall be used to indicate when the biocide treatment should be changed or altered. Historical data on results shall be maintained to determine the most effective treatment.

(i) Algae growth shall be minimized and no heavy accumulations of algae shall exist in the system.

(ii) The total lethal dosage rate of biocide used shall never drop below a 25% level.

(iii) No deterioration of wood components shall occur as a result of the treatment program.

(iv) Algaecides used shall be registered with the Environmental Protection Agency under the *Federal Insecticide, Fungicide, and Rodenticide Act*, as amended (7 U.S.C. 136 (et seq.)) specifically for use in cooling towers. The algaecide shall be used in strict conformance with label instructions.

(e) Cycles of Concentration. The dissolved solids concentration in the circulating water shall be controlled within the range of accepted chemical treatment practice and such that the treatment program provided will positively prevent scale and corrosion. The Contractor shall calculate a concentration ratio as the operating base and shall consistently control the concentration ratio of the circulating water within plus or minus one of the operating base. The operating base shall be calculated with regard to the makeup water quality and the maximum concentrations of mineral solids (silica, hardness, and alkalinity) allowable under the chemical treatment program.

(f) Cleaning and Flushing. All cooling towers shall be cleaned and flushed of scale, trash, mud, dirt, algae, slime, and other foreign material within 15 calendar days after the start date of the contract, and prior to

implementation of the Contractor's approved water treatment program. Additional flushing and cleaning shall be performed as necessary to remove excess accumulations of such foreign material.

(3) Test Requirements.

(a) Circulating Water Testing. Circulating water from each cooling tower shall be tested weekly for pH; conductivity; scale and corrosion inhibitor levels; biocide; and bacterial levels. Cycles of concentrations shall be calculated weekly using chlorides. Test results shall be submitted monthly to the COTR. The Contractor shall collect monthly samples of water and deliver them to an independent laboratory for analysis. A copy of the analysis shall be provided to the COTR.

(b) Makeup Water Testing. Makeup water comes from the domestic water system. The Contractor shall obtain an analysis of this water annually in the month of December to check constituent variability, and adjust chemical treatment procedures as required with respect to pH, color, turbidity, P alkalinity, MO alkalinity, total hardness, non-carbonate hardness, carbonate hardness, total dissolved solids, specific conductance, calcium, magnesium, sodium, potassium, hydroxide, bicarbonate, carbonate, sulfate, chloride, nitrate, iron, manganese, silica, fluoride, and chlorine residual. The test results shall be provided to the COTR within fifteen (15) working days after sampling.

(c) Scale and Corrosion Tests. The Contractor shall provide for accurate measurement of corrosion consistent with ASTM D2688 (Coupon Test Method). As a minimum the Contractor shall furnish and install mild steel and copper corrosion coupons in each metal cooling tower system. Coupons shall be installed at the beginning of the contract and replaced every 90 days. Coupon holders shall be repaired or replaced as required to maintain in compliance with ASTM standards. Identifying marks shall be placed on each coupon and complete records shall be kept of installation and removal dates, locations, initial weight, final weight, length, width, thickness, amount of fouling, and exposure time. Scale and corrosion tests shall be conducted by the approved independent testing laboratory in accordance with ASTM D2688, and results provided to the COTR within fifteen (15) working days of each coupon's replacement. Reports shall include a scale analysis or corrosion rate in mils per year, and a written description based on ASTM D2688.

ii) Chemical Treatment of Closed-Loop Chilled & Heating Hot Water Distribution, and Geothermal Systems. The Contractor shall provide chemical treatment of closed-loop chilled & heating hot water systems and geothermal systems. These systems include the GRC Lewis Field Central Chilled Water System, building chilled and heating hot

water systems, and geothermal systems. Some of these systems include glycol. See Section J-C.23.XX for a list of requirements for these closed-loop water systems.

The Contractor shall provide a water treatment program to maintain pH limits of 7.0 to 10.0, and nitrite levels of 500 to 1,000 ppm as $N0_2$. Inspection checks and any required adjustments shall be made at 90 day intervals throughout the term of the contract. The Contractor shall maintain detailed records of the results of all inspection checks and chemical treatments to include: building number and system, date chemicals were applied, description of chemicals used, quantity of chemicals used per system to maintain standards, chemical level readings in system before and after adjustments, date of inspection check and adjustment, and name of person(s) performing the inspections and/or adjustments. This information shall be provided to the COTR in writing within ten (10) working days of each inspection check.

iii) Chemical Treatment of Boiler Feed-Water. The Contractor shall provide chemical treatment of boiler feed-water for all the steam and hot water boilers. See Section J-C.23.XX for a list of all boilers and their operating parameters.

(1) Treatment Plan. Boiler Water Treatment Operation Plan (BWTOP). The Contractor shall provide a BWTOP for each boiler. The plan shall have onsite Material Safety Data Sheets (MSDS) of all chemicals, corrosion control, spill control, and training. The Contractor shall submit the BWTOP for approval thirty (30 days) after award of the contract. Any changes to BWTOP must be approved by the Government before implementing.

(2) Water Testing and Treatment. At least once during each day that the plant is in operation the Contractor shall collect feed water, boiler water, and condensate samples from each operating boiler for testing. The Contractor shall perform, and record log entry results, the necessary tests to meet applicable manufacturer requirements or local requirements on hardness, phosphate, sulfite, causticity (alkalinity as OH), pH, and total dissolved solids.

(3) The Contractor shall collect monthly samples of feed water, boiler water and condensate and send them to an independent laboratory for analysis. A copy of the analysis report shall be provided to the COTR. Changes in the approved water treatment plan must be approved by the COTR. At no additional cost to the Government, the COTR has the option of requiring sampling and testing once per shift, specifying the time(s) the samples are taken, observing the sampling taking, and directing that the samples be analyzed by an independent laboratory.

For the steam boilers and distribution system, the Contractor shall include a plan to measure rates of corrosion in the condensate systems that include the installation of test coupons. The plan shall specify a testing frequency to monitor corrosion rates.

b) PM, PGM and PT&I. The following are the required PM, PT&I and PGMs for this section. See Section J-C.18.XX for a list of equipment and the requirements for the minimum scope and frequency of each task.

4) Requirements for Nonrecurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

a) Pre-Price Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR:

b) IDIQ Work. The following are examples of IDIQ work:

i) De-Chlorinization of Domestic Water when utilized for once-through emergency cooling.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

C.24 SANITARY SEWER LIFT STATIONS & INDUSTRIAL WASTE BASINS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to operate, maintain, and repair the sanitary sewer lift stations and industrial waste basins in accordance with requirements specified in this contract. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The Main Sanitary Lift Station, Building 25 serves the GRC campus and also the Cleveland IX Center and Airport FAA Building. The station has three (3) Gorman-Rupp T8A3-B/WW self-priming pumps rated at 1,000-gpm at 56.8-ft total dynamic head. Pumped flow is measured at the station by a Sitrans FUS1010 flow meter installed in 2012. The Northeast Ohio Regional Sewer District (NEORSD) charges GRC for sewage treatment based on quarterly readings from this meter. The sewage is pumped through a force main to a gravity sewer on Brookpark Road. There is one spare rotating assembly for the pumps at this lift station.

   The West Area Lift Station, Building 425 has two (2) Gorman-Rupp T3A3S-B self-priming pumps rated at 200-gpm at 83.3-ft total dynamic head. This station pumps sewage from the 119 acre West Area of the Center to the Walcott Road gravity sanitary main where it flows to the Main Sanitary Lift Station, Building 25. There is one spare rotating assembly for this lift station. The pumped flow is measured at the station by a Polysonic SX40 Meter.

   The Industrial Waste Basins, Property 103, consists of two (2) one thousand (1,000) gallon storage basins. These basins are used capture the cooling tower water whenever it is necessary for any of the cooling towers to be drained. The water drains from the cooling towers via gravity sewer to the basins. The water is then held and discharged using a pumping system to the Walcott Road sanitary sewer. Discharge of the basins is limited to a slow controlled rate during non-peak hours at the Main Lift Stations, Building 25. In the event of high flow at Building 25, the basin pumps will turn off and become nonoperational until adequate capacity is available in the Walcott Road sanitary main and at the Main Lift Station.

   Section J-C.24 lists equipment to be maintained in this contract section, which include:

   a) IWS Basins Pumps
   b) Sanitary Lift Stations Equipment
   c) Sanitary Meters

2) Certifications and Licensing Requirements. Not applicable.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for

this section:

a) Utility Operations and Maintenance (UOM).

i) Sanitary Lift Stations Operation. The Contractor shall maintain 100% operational status and system integrity of the sanitary sewage pump facilities, Building 25 & Building 425, for continuous operation. Due to the criticality of these stations, the Contractor shall notify the COTR immediately and in writing if deficiencies or repairs are needed to maintain 100% operation. This information shall also be provided in the monthly status report.

The minimum required maintenance for the sewage pumps shall be scheduled and performed at both lift stations in accordance with the manufacturer's recommendations. See Section J-C.24 XXX for manufacturer preventative maintenance.

The Contractor shall operate the Building 425 natural gas engine monthly to ensure operation and proper level of fluids during an emergency loss of power. The Contractor shall operate the Building 25 back-up natural gas generator monthly to ensure operation during an emergency loss of power. See Section C.29 for additional generator requirements.

The Contractor shall lubricate and check air release valves on the sanitary force main from Building 25 to the discharge manhole on Brook Park Road. These valves are located in manholes. The Contractor shall pump and dispose of any effluent that is found within the sanitary manholes. Disposal of this waste shall be coordinated with the COTR and the GRC Waste Management and Disposal Contractor (see Section C.7.12.l). This disposal will be under IDIQ.

The Contractor shall also lubricate and check air release valves on the Building 25 sanitary pump discharge piping. The Contractor shall provide a report to the COTR after completing inspection of all release valves. See Section J-C.24 XX for minimum reporting requirements.

The Contractor shall exercise the three way plug valves at least once a year at Building 25 and Building 425.

The Contractor shall record pump pressures daily to continuously monitor performance of pumps at Building 25 and Building 425. The Contractor shall provide monthly reports to COTR.

The Contractor shall clean screens weekly within wet wells of Building 25 and Building 425.

The Contractor shall keep all exterior vents in wet wells free of debris at Building 25 and Building 425.

The Contractor shall replace V-belts on all pumps every six months in Building 25 and Building 425.

The Contractor shall verify operation of floats and connection to the EMCS system monthly. These floats are critical alarms and are monitored by EMCS 24 hours a day/ 7 days a week.

At Building 25, the Contractor shall provide the provisions necessary to connect to the "George Connection" for emergency pumping operation. The George Connection and valves should be exercised and lubricated once a year to ensure operational status. The Contractor shall provide a report verifying inspection and operational status of this emergency provision. If the Contractor finds that it is not operational the Contractor shall report all deficiencies in writing to the COTR within three (3) days of inspection.

ii) Waste Basin Facility Operation. The Contractor shall maintain 100% operational status and system integrity of the Industrial Waste Basins, Property 103, ensuring proper operation, making necessary adjustments and recording any discrepancies and reporting them to the COTR. The following specific functions shall be performed three times each week:

(a) Inspect oil separator (skimmer) for proper operation.

(b) Check oil level in waste holding tank, arrange for disposal of excessive oil from tank.

(c) Inspect valve inlet pits to ensure they are dry, if contain liquid pump out valve inlet pits.

(d) Check water level in the East Basin, when basin is ¾ full, pump to sanitary sewer until empty. This should not be completed before, during or after any forecasted rainfall event.

(e) Check pumps for proper operation, make necessary adjustments to pumps.

(f) Inspect make sure heat tracing is operational from November to May.

b) PM, PGM and PT&I. The following are the required PM, PGM, and PT&I tasks. See Section J-C.24XXX for a list of assets to be maintained, the work instructions (minimum scope), and the frequencies for each task.

i) PM Waste Basin Pumps
ii) Cleveland IX Center Meter Calibration Semi-annually PM

4) Requirements for Non-Recurring Work (IDIQ). See also Section C.14, General Requirements and Procedures for Non-Recurring Work.

   a) Pre-Priced Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR.

   b) IDIQ Work. The following are examples of IDIQ work:

      i) Disposal of any effluent that is found within the sanitary manholes. The Contractor shall coordinate the disposal of this waste with the COTR and the GRC Waste Management and Disposal contractor (see Section C.7.12.l).
      ii) Refurbishment or replacement of the Sanitary Lift Station Pump Spare Impellers
      iii) Waste Basin Cleaning
      iv) Emergency Response ~ The Contractor shall provide all necessary equipment and personnel to operate the George connection to by-pass the Building 25 sanitary main lift station. The Contractor shall be required to respond to the emergency pumping operation within 3 hours of the sanitary lift station pump failure.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

   a) The Contractor shall provide Sanitary Impellor Monthly Reports.

   b) The Contractor shall provide monthly operational status report for all cleaning, maintenance, or operational issues of Lift Stations to COTR. This shall include but not limited to pump data, wet well maintenance/issues, and EMCS flow data reports.

C.25 CENTRAL CHILLED WATER PLANTS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to operate, maintain, and repair the central chilled water plants and associated distribution systems, facilities, and equipment in accordance with the requirements specified in this contract. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The current building cooling needs of the GRC Lewis Field Main Campus are primarily served by two centralized chilled water plants. The North Central Chilled Water Plant, housed in Building 9, currently has three chillers totaling approximately 2,850 tons of cooling capacity. The South Central Chilled Water Plant, housed in Building 94, currently has four chillers totaling approximately 3,000 tons of cooling capacity. Chilled water is distributed by an underground piping network from these two central plants to most of the buildings on the Central Campus. See Section J-C.25.XX for the Chilled Water System Map.

   Section J-C.25.XX lists all of the equipment to be operated and maintained in this contract section, which includes:

   a) Chillers
   b) Pumps
   c) Mobile Refrigerant Reclaimer Unit
   d) Refrigerant Exhaust Fans

2) Certifications and Licensing Requirements. The Contractor shall provide personnel that are certified in the handling of refrigerants to the EPA standards for Universal Certification category.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) Utility Operations and Maintenance (UOM).

      i) Building 9 and 94 Chilled Water Plants Operation, Maintenance, and Repair. The Contractor shall be responsible for the effective and efficient operation, maintenance, and repair of the Central Chilled Water Systems 24 hours per day, 7 days per week. This system includes the chillers, pumps, controls and associated equipment. It also includes the water treatment equipment and refrigerant detection and purge systems.

         Operation and maintenance of the Central Chilled Water Plants includes the start-up and shutdown of chilled water equipment, maintenance and inspection, and the

efficient and economical production of chilled water to assure its availability to GRC. This work shall include preventative maintenance (PMs, PGMs and PT&I), record keeping of operations and conditions, analysis of records to correct non-optimal practices, water treatment, periodic operation and inspection of idle equipment, preservation, lubrication, and adjustment of plant equipment. The Contractor shall utilize Maximo to schedule and track the maintenance associated with each system.

Failure of the Government to supply utility services (electric, cooling tower water or domestic water) for plant operations will relieve the Contractor of responsibility for operations during the time period. The Contractor shall return the chilled water plants to full operational status within thirty (30) minutes of the resumption of utility services.

The Contractor shall maintain complete control of the Central Chilled Water Plants, Building 9 and Building 94, and their operation by preparation and adherence to written Standard Operation and Maintenance Procedures (SOMP). See Section J.25.XX for the existing SOP to be used as a reference. These SOMPs shall be submitted to the COTR for approval within thirty (30) days after contract award. The approved procedures shall be instituted upon commencement of contract operations. The Contractor shall update and revise all plant operation, distribution, and maintenance procedures on a continuing basis as required by physical or operational changes at no additional cost to the Government.

The SOMP shall, as a minimum, include the following:

(1) The Contractor shall provide daily visual inspection of the Central Chilled Water Plants to check units for proper operation.

(2) The Contractor shall maintain operating logs that will note operator checks and adjustments, and a record file noting normal or abnormal operating conditions, deficiencies or malfunctions, and corrective actions taken. All records and required logs shall be filed chronologically and kept in an area designated by the COTR.

(3) The Contractor shall check the oil level (add if needed) and take oil pressure readings.

(4) The Contractor shall check the purge system and remove any water if required.

(5) The Contractor shall check the refrigerant charge. If the charge is low, the Contractor shall investigate for leaks, repair as required, and add refrigerant or recharge.

(6) The Contractor shall monitor the operating control (set point) and the subsequent operational performance such that chilled water is supplied at a consistent

temperature range from 40 to 45 degree F.

(7) The Contractor shall check and inspect for excessive chiller or pump noise and vibrations.

(8) The Contractor shall check the pressure reducing valve (PRV) motor and linkage.

(9) The Contractor shall inspect piping, valves and pumps for leaks and tighten connections and repair components as required.

(10) The Contractor shall check refrigerant leak detection panels located in Buildings 9 & 94 to ensure proper operations. In the event of a refrigerant leak detection alarm that evacuates a Central Chilled Water facility, the Contractor shall ensure that all required safety precautions, including the wearing of PPE, are exercised before re-entering the facility to take corrective actions.

ii) Central Chilled Water Plant Safety Permit. The Contractor shall submit a Safety Permit Renewal/Change Request in accordance with the Glenn Safety Manual. This request shall be submitted to the GRC Process Systems Safety Committee. The Contractor shall prepare this request for review and approval by the COTR prior to submission to the Committee. See Section J-C.26.XX for the existing Safety Permit.

iii) Refrigerant Control and Certification. The Contractor shall control refrigerants and maintain records in accordance with EPA, and air quality management district standards. The Contractor must take appropriate immediate action and report leaks to the COTR. The Contractor shall maintain and test refrigerant monitors and alarms and purge ventilation systems as part of the maintenance program. Testing shall use appropriate media to test sensors as well as alarm circuitry. Refrigerant control logs shall be updated as required, and a copy sent to the COTR. The Contractor shall also maintain a set of logs onsite and make this set of logs available to Government inspection. All Contractor employees who come into contact with refrigerants in the course of their duties shall be certified to handle such refrigerants. If equipment containing CFC or HCFC refrigerants is removed from operation under this contract, the Contractor shall recover all refrigerant in the equipment, seal it in appropriate storage containers, reclaim and reuse it as directed by the COTR, or dispose of the refrigerants using the GRC Waste Disposal Contractor (see Section C.7.12.l) under the IDIQ portion of this contract.

iv) Water Treatment. See Section C.23 Chemical Treatment of Water Systems for chilled water treatment requirements.

b) PM, PGM and PT&I. All work shall be included in the SOMP as indicated above.

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

a) Pre-Priced Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR:

b) IDIQ Work. The following are examples of IDIQ work:

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Monthly Reports. For each Central Chilled Water Plants, the Contractor shall provide a monthly summary report for each system. The report shall include operational status of the system and highlight any deficiencies in the system.

b) Refrigerant Usage Recording. The Contractor shall detail the types and amounts of refrigerants used on a continuing basis and in accordance with OSHA and EPA guidelines. Contractor shall provide by the 10th of each month all required records. Records shall be filed chronologically and kept in an area designated by the COTR. See Section C.7.7 for further requirements.

C.26 CENTRAL STEAM PLANT & STEAM GENERATION SYSTEMS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to operate, maintain, and repair the Building 12 Main Steam Plant and equipment in accordance with the requirements specified in this section. Also included are the Steam Generation Boilers in outlying Buildings 301, 302, and 333. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The work under this section shall include, operating oil-fired and natural gas power steam boilers; water sampling, testing, analysis and treatment; fuel oil handling and sampling; boiler start-up and shut-down; and minor repair of the boilers, compressed air system and ancillary equipment; annual boiler inspection and certification; and maintaining records and preparing reports in order to provide high/low pressure steam.

   The GRC Lewis Field Steam System consist of the Main Steam Plant, Building 12, the High Pressure Steam Distribution System, and the low pressure steam boilers in Buildings 301, 302, and 333.

   The Building 12 Main Steam Plant contains five (5) high pressure steam boilers in service:

   a) Boiler 1 – 100 psi; 35,000 lb/hr steam output
   b) Boiler 2 – 100 psi; 35,000 lb/hr steam output
   c) Boiler 3 – 100 psi; 35,000 lb/hr steam output
   d) Boiler 4 – 100 psi; 35,000 lb/hr steam output
   e) Boiler 5 – 100 psi; 70,000 lb/hr steam output

   The High Pressure Steam Distribution System consists approximately 13,000 lineal feet of steel piping up to 12 inches in diameter and a parallel condensate return system up to 6 inches in diameter. Most of the piping is located in below-grade concrete trenches with several access covers and manholes.

   The low pressure boilers in buildings 301, 302, and 333 vary in output from 1.5 to 4.2 MM Btu/hr at no more than 15 psi.

   See Section J-C.26.XX for more information for all these boilers. See Section J-C.26.XX lists the equipment to be operated and maintained under this section which includes steam boilers (for all buildings mentioned above), Building12 boiler compressed air system, Building 12 feed water system, condensate return system, fuel systems, control systems, and water softeners.

2) Certifications and Licensing Requirements. The Building 12 Main Steam Plant requires each operator to have a current Boiler Operator's License in accordance with the Ohio Revised Code 4104.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) Utility Operations and Maintenance (UOM).

      i) Plant Operators. The Building 12 Main Steam Plant must have two (2) licensed operators per shift. One of these operators shall perform the inspection of the outlying boilers once per shift.

      ii) Operation of Non-certified Boilers or Unfired Pressure Vessels. The Contractor shall operate the boilers and the distribution system only when the boilers have a current State of Ohio Inspection Certificate, and all boilers and systems have approved Safety Permits, if applicable, from the GRC Process Systems Safety Committee. The COTR shall be notified if unsafe conditions are found, following repair of a pressure part, or after any major modification to boilers, control equipment or auxiliaries. The affected equipment shall not be placed back in operation until written authorization is received from a certified boiler inspector and approval from COTR.

      iii) Building 12 Steam Plant Operation, Maintenance, and Repair. The Contractor shall be responsible for the effective and efficient operation, maintenance, and repair of the central high pressure steam (100 psig) heating system 24 hours per day, 7 days per week. This system includes the boilers, plant, and related equipment including fuel storage and handling, water treatment equipment, associated pumps, components, controls, and the high pressure steam distribution systems including high pressure steam lines, building regulators stations (regulators, valves, gauges and reliefs), high pressure condensate return pumps, and related equipment as identified in the Section J-C.26.XX.

      iv) Steam Plant Utility Failure. If the Natural Gas System fails, the Contractor shall switch the boilers to fuel oil. The electrical power to the building is fed from two (2) sources (sub stations) and will automatically transfer power source on loss of primary source. If all electrical power fails during the heating season (October through May) the Contractor shall install a GFE emergency generator to operate the boilers, and use this generator until main power is restored. The Contractor shall provide fuel as needed to the generator. This shall be addressed as part of the EMP required in Section C.7.13.

      v) Main Steam Plant Operations. Operation of the Main Steam Plant includes the start-up and shutdown of heating equipment, operator maintenance and inspection, and the efficient and economical production of high pressure steam to assure its

availability to tGRC. This work also includes record keeping of operations and conditions, analysis of records to correct non-optimal practices, water treatment, monitoring of warranties, testing operations and capabilities of the central heating plant, periodic operation and inspection of idle equipment, purchasing of supplies other than natural gas, and cleaning, preservation, lubrication, and adjustment of plant equipment.

vi) Steam Plant Safety Permit. The Contractor shall submit a Safety Permit Renewal/Change Request in accordance with the Glenn Safety Manual. This request shall be submitted to the GRC Process Systems Safety Committee. The Contractor shall prepare this request for review and approval by the COTR prior to submission to the Committee. See Section J-C.26.XX for the existing Safety Permit which includes the Safety Permit, the Request, the attached Qualified Operators List, and the attached "…Conditions for Conducting Activity".

vii) Operator Checks. The Contractor shall maintain operating logs on all operating equipment that will note operator checks and adjustments, and a record file noting normal or abnormal operating conditions, deficiencies or malfunctions, and corrective action taken. All recording charts and required logs shall be filed chronologically and kept in the area designated by the COTR.

viii) Standard Operation Procedures (SOP). The Contractor shall maintain complete control of the Main Steam Plant operation by preparation and adherence to written operating and maintenance procedures. These procedures shall be prepared by the Contractor in accordance with the following, in order of precedence: (1) Manufacturer's instructions, (2) Industry standards and national codes (National Fire Protection Association, NFPA, and American Society of Mechanical Engineers, ASME, Sections VI and VII of 1989), (3) Procedures outlined in GRC Heating Plant and Boiler Systems Operations Plan and (4) Federal, State, and Local environmental regulations and all air permit provisions in accordance with the GRC Environmental Programs Manual. See Section J-C.26.XX for the existing GRC Heating Plant and Boiler Systems Operations SOP and Section J-C.26.XX for latest EPA Air Permit.

As a minimum the SOP shall include:

(1) Plant systems (boilers etc.) and equipment operating instructions including start-up, shutdown and a detailed description in correct sequence of the observations and adjustments to be made, the minimum frequency of the observations and adjustments, and who shall perform them.
(2) Plant equipment operating schedule and test records for major equipment
(3) Sample Operator logs.
(4) Trouble shooting procedure for major equipment and systems
(5) Clearly defined duties, responsibilities, and qualifications for all operations and maintenance positions.

(6) Boiler water treatment plan. See Section 23 Chemical Treatment of Water Systems for requirements.
(7) Systems maintenance and inspection.
(8) Emergency and lay-up procedures for steam production/ distribution disruptions.
(9) Safety/accident procedures.
(10) Boiler overhaul.
(11) Records of minutes and hours of the amount of time for periodic testing of using fuel oil to check proper burner operation.

The Contractor's SOP, including all maintenance plans and procedures shall be submitted to the COTR for approval within thirty (30) days after contract award. The approved procedures shall be instituted upon commencement of contract operations. The Contractor shall update and revise all plant operation, distribution, and maintenance procedures on a continuing basis as required by physical or operational changes at no additional cost to the Government.

ix) Fuel Oil Purchasing, Handling, Tank Monitoring, and Sampling. The Contractor shall furnish the fuel oil for boiler operation and odorized propane used for burner ignition. The back-up fuel oil is No. 2 low sulfur oil. The fuel oil shall meet the following requirements: Needs to be of high quality, light distillate oil with a low sulfur content <0.2% by weight, a fuel bound nitrogen content of $\leq$ 0.02% by weight, and negligible Carbon Residue Conradsen (CCR) content. The Contractor must obtain from the fuel supplier certifications and analytical testing of each fuel delivery. The underground storage tank has two compartments with 10,000 gallons capacity for each compartment. The fuel oil level in one compartment shall be full at all times and the fuel oil level in the remaining compartment shall not fall below 2,500 gallons. The fuel system also includes a nominal 1500 gallon day tank that must be maintained full at all times. The fuel oil in these tanks is used as backup fuel for the boilers and for periodic checks of all the oil burners in the Steam Plant. The Contractor shall use the onsite electronic monitoring device (Veeder Root) to maintain an accurate record of the amount of fuel received in each delivery and the amount in all three of the storage tanks; and shall at minimum annually or, when requested by the COTR, obtain and submit fuel samples for verification of type of fuel supplied. The Contractor shall be responsible for any fuel spill cleanup that is related to fueling operations. The Contractor shall maintain all fuel oil handling equipment including storage tanks, pumps, piping, and heaters and shall comply with all federal regulations pertaining to fuel operations. The Contractor shall include in the fuel oil maintenance procedures a provision for the periodic cleaning and draining of any water or residue that may accumulate in the tanks. The Contractor shall perform all calibrations and maintenance for the Building 12 Veeder-Root instrument. See Section J-C.26.XX for Veeder Root Operations and Maintenance information.

x) Bldg. 301, 302, and 333 Boilers Operation. The Contractor shall be responsible for the effective and efficient operation, maintenance, and repair of the Low Pressure Steam (15 psig) System 24 hours per day, 7 days per week. This system includes the

boilers, and related equipment, water treatment equipment, associated pumps, components, controls, and related equipment as identified in the Section J-C.26.XX. Failure of the Government to supply natural gas, water, or electricity for plant operations will relieve the Contractor of responsibility for operations during the time period. The Contractor shall return the boiler(s) on-line within thirty (30) minutes of resumption of utility services.

xi) Boiler Water Treatment. See Section C.23 Chemical Treatment of Water Systems for boiler water treatment requirements. The Contractor shall have a water treatment program for the steam boilers and the steam distribution system. In addition to chemical sampling, the Contractor shall prepare a plan to measure rates of corrosion in the condensate systems that include the installation of test coupons. The plan shall specify a testing frequency to monitor corrosion rates.

b) PM, PGM and PT&I. The following are the required PM, PGM, and PT&I tasks for this section. See Section J-C.26.XX for a list of assets to be maintained, the work instructions (minimum scope), and the frequencies for each task.

i) Building12 Boiler Relief Annual Relief Test PM
ii) Building 12 Boilers Relief Valve Test PM
iii) Feedwater Heater Relief Valve Test
iv) Boiler Annual PM. The annual PM shall include the scheduled shutdown of boiler heating equipment for repair or replacement of malfunctioning equipment detected during operations, PM and inspections that are deferrable due to operational requirements and do not pose a danger to life or property. After shutdown and prior to release for operation, the Contractor shall perform an operational test of the safety relief valves, low water alarms, flame out controls, and other safety devices. The Contractor shall schedule the work so a State of Ohio certified boiler inspector can witnesses the operational test. As a minimum, the Contractor shall perform Annual PM as specified in the procedures in Section J-C.26.XX.

c) Boiler Annual Certification. During the GRC Annual Steam Shutdown, the Contractor shall prepare the boiler for the annual inspection and certification. The boiler certification process consists of four (4) phases: external inspection, internal inspection, hydrostatic pressure testing, and operational and safety testing. The Contractor shall notify the COTR when the boiler is ready for testing, normally simultaneously with performance of Boiler Annual PM. The Contractor shall schedule a State of Ohio certified boiler inspector to perform the inspections. The Contractor schedule and perform the hydrostatic and operational tests. The operational test shall include, as a minimum, the safety relief valves, low water alarms, flame out controls, and other safety devices. The safety relief valve testing is also called the Accumulation Test.

The Government shall witness all tests as appropriate.

After all tests have been completed and the State Inspector has issued a Satisfactory

rating in the inspection report, the Contractor may then request from the Government permission to return the boiler to normal service.

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

5) Reports and Deliverables. The Contractor shall maintain and update records and maintain a history file throughout the term of the contract. Required reports and deliverables include:

   a) Operating Records, Reports, and Logs. The Contractor shall maintain operating records, laboratory records, maintenance records, emergency condition records, fuel tank readings (Veeder Root), and operating cost records daily. The Contractor shall keep copies of all records at the Main Steam Plant, Building 12**.**

   b) Signage. The Contractor shall maintain and post current signs and instructions including no smoking, electrical and chemical hazard warning signs, routine daily instructions, and routine laboratory analyses procedures required by the COTR and Federal, state and local regulations.

   c) Boiler Log. The Contractor shall maintain a log, posted within the Main Steam Plant, Building 12, for each boiler in operation (Buildings 12, 301, 302, 333). The log shall identify the operator's name, date, time, observations made, checks of flame failure and low water cut off devices, meter readings, operational changes and the maintenance performed during each visit.

   d) Chemical Treatment Log. The Contractor shall maintain a daily record of all treatment chemicals used and of all analyses performed.

   e) Boiler Adjustment Log. All adjustments made to boiler instruments and controls to meet all air permit requirements shall be recorded in the permanent boiler log book and shall show the name, title, and affiliation (employer) of the technician, and the specifics of the adjustments.

   f) Report Frequency. Reports required to be given to the COTR and their frequency include:

      i) Monthly Fuel Usage, Building 12 (Monthly)
      ii) Daily Operating Logs (As Required)
      iii) Steam Plant Operations (Monthly)

C.27 LIFE SAFETY AND FIRE PROTECTION SYSTEMS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to provide operations, maintenance and repair services for life safety and fire protection systems in accordance with the requirements specified herein. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   Section J-C.27.XX provides a list of equipment to be operated, repaired, and maintained under this contract section including:

   a) Siemens ALS3 Equipment
   b) Smoke/Heat Detection and Bldg. Evacuation Systems
   c) Combustible Gas, Low Oxygen and Toxic Gas Monitors
   d) Emergency and Exit Lighting Systems
   e) Automatic Sprinkler Systems
   f) Standpipe Systems/Hose Cabinets
   g) CO2 Extinguishing Systems
   h) UL 300 Hood Suppression Systems
   i) Fume Hood Suppressions Systems
   j) Aqueous Film Forming Foam (AFFF) System
   k) Pyro-Chem Suppression Systems
   l) Sapphire Suppression System
   m) Inergen Suppression System
   n) Fire Pumps
   o) Fire Hydrants
   p) Fire Extinguishers ~ Dry Chemical
   q) Fire Extinguishers ~ Other (Halotron, CO2)
   r) VESDA Laser Plus Detector Systems
   s) Overhead Roll Up Fire Doors

2) Certifications and Licensing Requirements. The Contractor shall provide technicians that are certified by the State of Ohio, Department of Commerce, Division of State Fire Marshall, for the servicing, testing, repairing, and installing of life safety and fire protection systems. All work shall be performed by personnel specifically qualified and trained to work on the life safety and fire protection systems and equipment.

   In addition, the Contractor shall provide technicians trained and qualified on the Siemens Systems 600 Apogee® head-end system and on the Siemens ALS3® life safety panels.

   Evidence of all required certifications, as well as documentation of the qualifications of personnel, shall be provided to the COTR within thirty (30) days of contract award.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

a) ALS3 Operations and Maintenance.

i) System 600 Apogee® for ALS3 Network Operations. The Siemens ALS3® life safety system panels and the Siemens Energy Management Control System (EMCS) panels reside on two separate multi-node networks that report to the Siemens System 600 Apogee® common head-end. The System 600 Apogee consists of a primary server, a standby server, and multiple client workstations. The Contractor shall maintain 100% operational status and system integrity, including network and database diagnostics; provide complete technical support for servers, computers, and workstations, the ALS3 networks, drivers, terminations, software and hardware. The ALS3 network is a UL listed fire alarm system. The ALS3 system is considered a critical system to the Center for central station alarm response and dispatch of personnel. All system software shall be revised to keep the system current and upgraded. In addition, the system software shall be fully synchronized quarterly, and as required by any major expansion, to maintain clear system operator screens. The Contractor shall monitor system alarms, make set-point changes, and respond to trouble calls. These functions shall be performed from the EMCS control room in Building 12 during normal working hours, and be remotely performed during off-hours, providing 24 hour, 7 days/week coverage.

The Contractor shall provide configuration control documentation for the ALS3 system. All changes to this system shall be documented on GRC drawings, created using the latest version of AutoCad, which reflect the "As-Built" field installation. Once the drawings are created the Contractor shall submit the drawings to GRC for approval in Adept, the drawing management system. Updates shall be provided at least once a year or when major changes have occurred.

ii) Life Safety Operations. The Contractor shall provide daily operational services, such as taking life safety systems in-and-out-of-service, resetting systems, and re-calibrating systems as directed by Emergency Dispatch in Building 14.

iii) Inspections, Testing, and Maintenance. The Contractor shall inspect, test and maintain each system in accordance with applicable standard as listed below. The Contractor shall utilize Maximo to schedule, track and maintain documentation for each system. All life safety and fire protection systems and equipment shall be kept fully functional at all times, except for limited periods for maintenance or with the AHJ's approval. The inspection, testing, repairs, and maintenance of all life safety and fire protection systems and equipment shall be in accordance with the requirements in the applicable NFPA code or standard as detailed below.

SYSTEM	STANDARD	REPORTING REQUIREMENT
Smoke/Heat Detection and Bldg. Evacuation Systems	NFPA 72 - includes intervals and methods	Figure A.14.6.2.4 of NFPA 72,2010
Siemens ALS3® Systems	NFPA 72 - includes intervals and methods	Figure A.14.6.2.4 of NFPA 72,2010
Combustible Gas/ Low Oxygen and Toxic Gas Monitors	NFPA 72	In accordance with the manufacturers' published instructions
Emergency and Exit Lighting Systems	NFPA 101	As detailed in Section 7.9.3
Automatic Sprinkler Systems	NFPA 25	Chapter 5 and Annex B (NFSA Form or equivalent)
Standpipe Systems/Hose Cabinets	NFPA 25	Chapter 6 and Annex B(NFSA Form or equivalent)
CO2 Extinguishing Systems	NFPA 12	Section 4.8 and 4.4.2.14
UL 300 Hood Suppression Systems	NFPA 96	Section 11.2 and 11.6.15
Fume Hood Suppression	NFPA 17A	As detailed in Chapter 7
Aqueous Film-Forming Foam (AFFF) System	NFPA 11	As detailed in Chapter 12
Pyro-Chem Suppression Systems	NFPA 17	As detailed in Chapter 11
Sapphire Suppression System	NFPA 17A	As detailed in Chapter 7
Inergen Suppression System	NFPA 17A	As detailed in Chapter 7
Fire Pumps	NFPA 25	As detailed in Chapter 8 and Annex B
Fire Hydrants	NFPA 25	As detailed in Chapter 7 and Annex B
Fire Extinguishers - Dry Chem	NFPA 10	As detailed in Chapter 7
Fire Extinguishers - Other, Halotron,CO2	NFPA 10	As detailed in Chapter 7
VESDA Laser PLUS Detector	Per manufacturer's instructions	As detailed in manufacturer's instructions
Overhead Roll Up Fire Doors	NFPA 80	Chapter 5 and Annex B (NFPA Form or equivalent)

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

   a) Pre-Priced Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR.

   b) IDIQ Work. The following are examples of IDIQ work:

      i) The Contractor shall provide internal inspection of fire suppression systems.
      ii) The Contractor shall provide installation of new life safety and fire protection systems.
      iii) The Contractor shall provide configuration control documentation for the life safety and fire protection systems. All changes to these systems shall be documented on NASA drawings, created using the latest version of AutoCad, which reflect the "As-Built" field installation. Once the drawings are created the Contractor shall submit the drawings to NASA for approval in Adept, the drawing management system

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Inspection, Testing, and Maintenance Report. Any abnormality or deficiency observed during the inspection, testing, and maintenance of the fire/life safety systems shall be reported within forty-eight (48) hours of discovery to the COTR. The Contractor shall provide a monthly detailed report of all system deficiencies identified during the inspection, testing, and maintenance of fire/life safety systems per the applicable standard referenced herein. This report shall be provided to the COTR by the 10th of each month.

b) ALS3® Monthly Abnormality Report. The Contractor shall provide a monthly detailed list of all connected devices that are not at 100% operational status. The abnormality report shall be due by the 10th of each month.

c) ALS3® Annual Report. The Contractor shall provide the Annual Report by the end of the first month of each fiscal year (October 30). The report shall detail the number of points added, deleted, and modified during the previous year including type of points (physical, virtual and total).

d) Configuration Control Documentation. The Contractor shall provide configuration control documentation for the ALS3 system.

C.28 HIGH VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment and test equipment, transportation, and management necessary to operate, maintain, and repair the high voltage (above 600 volts) electrical distribution system in accordance with requirements specified in this contract. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   The GRC Lewis Field high voltage (HV) electrical distribution system is a large, complex network with voltages at the 138kV, 34.5kV, 13.8kV, 7.2kV, 4.16kV and 2.4kV levels. The normal utility feed consists of four 138kV overhead lines into the primary substation. This is transformed to 34.5kV and distributed to feed the Center's 34.5kV looped system. There are four large 34.5kV substations for this distribution. In addition to these four (4) substations, there are eight (8) smaller substations that have equipment for distribution purposes throughout the Center.

   The GRC Lewis Field HV electrical distribution system consists primarily of underground duct banks containing cables that are covered with either solid dielectric insulation or paper/lead insulation with pressurized gaseous nitrogen (GN2). The only overhead lines are the four 138kV utility feeds mentioned above and one 34.5kV line in the GRC Lewis Field West Area. There are approximately 160 manholes within this system. See Section J-C.28. XX for Map of Underground Electrical Power Distribution System.

   Section J-C.28 list the HV electrical systems and major equipment to be maintained in this contract section, which includes:

   a) Fourteen 138kV Breakers or Circuit Switchers
   b) Eight 138kV Transformers
   c) 68 34.5kV Breakers
   d) 45 138kV or 34.5kV transformers
   e) Over 100 transformers with primaries at 13.8kV, 7.2kV, 4.16kV, and 2.4kV
   f) Switchgear at 34.5kV, 13.8kV, 4.16kV, and 2.4kV
   g) Protective relays schemes using both electro-mechanical and microprocessor based units
   h) DC systems for protection and control
   i) Underground cable network
   j) Associated auxiliary equipment including disconnect switches, reactors, grounding transformers, grounding resistors, voltage regulators.

2) Certifications and Licensing Requirements. Persons performing electrical maintenance and safety work on the GRC HV System shall meet the following requirements:

a) NETA Certified Level III Electrical Testing Technician
b) NASA Glenn HVEPS-OI-12 *Designated Safety Person* (will include electronic copy)
c) A minimum of five (5) years of hands- on experience working on high voltage electrical power systems.
d) Personnel to be licensed for weed control in the Sub Station yards
e) In addition, the contractor shall have a detailed working knowledge of the latest version of the following electrical standards:

   i) NFPA 70E *Standard for Electrical Safety in the Workplace.*
   ii) NFPA 70B *Recommended Practice for Electrical Equipment Maintenance.* In particular Chapter 30 and Appendix N including application of Chapter 30 - Reliability Centered Maintenance .
   iii) NFPA 70 *National Electrical Code.*
   iv) ANSI/IEEE C2 *National Electrical Safety Code.*
   v) ANSI/NETA MTS *Standard for Maintenance Testing Specifications for Electrical Power Equipment and Systems.*
   vi) ANSI/NETA ATS *Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems.*
   vii) OSHA 1910 Subpart S *Electrical Safety.*
   viii) IEEE 3007.2-2010 Recommended Practice for the Maintenance of Industrial and Commercial Power Systems.

3) Requirements for Recurring Work. See also Section C.13, General Requirements and Procedures for Recurring Work. The Contractor shall perform the following recurring work.

   a) Utility Operations and Maintenance (UOM).
   The Contractor shall check the operation of the Substation GN2 Systems twice per week (Monday and Friday or as needed), to ensure proper pressures and maintain sufficient nitrogen on hand to change bottles as needed. The Contractor shall provide the GN2 for this operation.

   All HV substations shall be maintained free of vegetation.

   b) PM, PGM and PT&I. The following are a list of required PM, PT&I and PGMs. See Section J-C.28. XX for the list of equipment and the requirements for the minimum scope and frequency of each task.

      i) HV Substation Transformer Radiator Cleaning Annual PM
      ii) HV Substation Transformer 5 YEAR PGM
      iii) HV Substation Transformer Oil Sample 2 1/2 YEAR PT & I
      iv) HV 2.4 kV Dry Transformer FIVE YEAR PGM
      v) HV 2.4 kV Dry Transformer 2 1/2 YEAR PT &I (Thermography)
      vi) HV Unit-Sub-Building 2.4 kv Oil Filled Transformer 2 1/2 YEAR PT&I
      vii) HV Oil/SF6 Circuit Breaker BIENNIAL PM
      viii) HV Oil/SF6 Circuit Breaker FOUR YEAR PGM
      ix) HV Air/Vacuum Circuit Breaker Biennial PGM

x) HV Air/Vacuum Circuit Breaker Four Year PGM
xi) HV Substation 138 kv Disconnect Switch FOUR YEAR PGM
xii) HV Substation 34.5 kv Disconnect Switch FOUR YEAR PGM
xiii) HV Substation 2.4 kv Disconnect Switch FIVE YEAR PGM
xiv) HV Substation Battery Quarterly PM
xv) HV Substation Battery and Charger Annual PM
xvi) HV Substation Battery Thermography Quarterly PT&I
xvii) HV Capacitor Annual PT&I
xviii) HV System Protective Electromechanical Relays Substation Triennial PGM
xix) HV System Protective Solid State Relays Substation (verification) Triennial PGM
xx) HV System Protective Solid State Relays Substation (calibration) 6 Years PGM
xxi) HV Sectionalizing Box Annual PM
xxii) HV Substation Quarterly PM
xxiii) HV Substation Annual PT&I
xxiv) HV System Manholes TRIENNIAL PT&I
xxv) HV System Manholes with Sectionalizing Boxes Annual PT&I
xxvi) HV Regulator FIVE YEAR PGM
xxvii) HV Regulator Oil Sample 2 ½ Year PT&I
xxviii) HV Load Tap Changer – 5 Year PGM
xxix) HV Load Tap Changer s 2 1/2 YEAR PT&I
xxx) HV Arrestors/Insulators TEN YEAR PGM
xxxi) HV Grounding Transformers/Resistors FIVE YEAR PGM
xxxii) HV Grounding Transformers/Resistors 2 1/2 YEAR PT&I

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

a) Pre-Price Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR

b) IDIQ Tasks. The following are examples of IDIQ tasks.

i) Calibration of Protective Relays non institutional facilities.
ii) Perform duties of designated electrical safety person.
iii) Replacement/repair of HV equipment.

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Deficiency Reports. The Contractor shall provide Deficiency Reports with recommendations shall be submitted to the COTR and HV Electric Power SM. Where available, previous data including trending, shall be included to assist with evaluation of the problem equipment.

b) Trending Reports. The Contractor shall provide Trending Reports with applicable tests to determine possible degradation of equipment. Refer to NFPA 70B and NETA MTS and ATS standards for further details and application.

c) Other. The Contractor shall provide the following:

i) Any HV PM work shall require switching orders from the Electrical Dispatcher.

ii) The Contractor shall maintain log of entries into each substation.

iii) In addition to local codes, all HV work shall be accomplished in accordance with the high voltage electrical power system operating instructions (HVEPS-OIs). See Section J-C.28.XX for these operating instructions.

(1) HVEPS – OI - 04 *Work in Electric Power Manholes and Cable Tunnels.*
(2) HVEPS – OI – 07 *Place Name Tags on Power Apparatus and Cables.*
(3) HVEPS – OI – 09 *Procedure to Identify and Cut High Voltage Electric Cables.*
(4) HVEPS – OI – 10 *Inverted Fused High Voltage Disconnect Switches.*
(5) HVEPS – OI – 11 *Work On or Near High Voltage Electrical Power Systems.*
(6) HVEPS – OI – 12 *Designated Safety Person.*

C.29 LOW VOLTAGE ELECTRICAL DISTRIBUTION SYSTEMS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, test equipment, transportation, and management necessary to operate, maintain, and repair the low voltage (LV) electrical systems in accordance with the requirements specified herein. For purposes of this contract, LV Electrical is defined as 600 V or less. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   Section J-C.29.XX describes the systems and equipment to be operated and maintained, which include:

   a) LV Switchgear (draw-out breakers and molded-case breakers)
   b) Grounding (building grounding, fueling storage areas, and lightning protection)
   c) LV Distribution (panelboards, switch boards, motor control centers (MCCs), and transformers 100 kVA and larger)
   d) Motors (controllers including variable frequency drives)
   e) Lighting Systems
   f) Automatic Transfer Switches
   g) Institutional Backup Power Systems (UPS, batteries, and generators)
   h) Sound Masking Systems

2) Certifications and Licensing Requirements. The Contractor performing electrical operation, maintenance and repair work on the LV Electrical System shall meet the following requirements:

   a) The Contractor shall provide qualified personnel. A qualified person has skills and knowledge related to the construction, maintenance, and operation of the electrical equipment and installations and has received safety training on the hazards involved. Such persons shall also be familiar with the proper use of the special precautionary techniques, PPE, including arc flash, insulating and shielding materials, and insulated tools and test equipment (see NFPA 70E, Article 110).

   b) The Contractor personnel shall be knowledgeable of the Glenn Safety Manual, specifically Chapter 8 Electrical System Safety and Chapter 9 Lockout/Tag-out.

   c) The Contractor personnel shall be familiar with the various LV Electrical Power System Operating Instructions (LVEPS-OIs). See below for a list of LVEPS-OIs.

   d) The Contractor personnel shall have training and working knowledge of the latest version of the electrical codes, standards and guidelines listed below.

i) NFPA 70E Standard for Electrical Safety in the Workplace.
ii) NFPA 70B Recommended Practice for Electrical Equipment Maintenance. In particular Chapter 30 and Appendix N including application of Chapter 30 - Reliability Centered Maintenance .
iii) NFPA 70 National Electrical Code.
iv) ANSI/IEEE C2 National Electrical Safety Code.
v) ANSI/NETA MTS Standard for Maintenance Testing Specifications for Electrical Power Equipment and Systems.
vi) ANSI/IEEE Standard 81 IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System.
vii) NEMA AB 4 Guidelines for Inspection and Preventive Maintenance of Molded Case Circuit Breakers Used in Commercial and Industrial Applications.
viii) OSHA 1910 Subpart S Electrical Safety.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

a) PM, PGM and PT&I. The following are the required PM, PGM, and PT&I tasks. See Section J-C.29.XX for a list of assets to be maintained, the work instructions (minimum scope), and the frequencies for each task.

i) LV Switchgear (Switchgear with Draw Out and Molded Case Circuit Breakers) FIVE YEAR PGM
ii) Fuel Storage Areas Grounding & Lightning Protection Semi-Annual PM
iii) Building Grounding and Building Lightning Protection FIVE YEAR PGM
iv) LV Switchboards and Panel Boards FIVE YEAR PT&I
v) MCCs FIVE YEAR PT&I
vi) LV 100 kVA and larger Transformers FIVE YEAR PT&I
vii) MCCs FIVE YEAR PGM
viii) 100 kVA and larger Transformers FIVE YEAR PGM
ix) Motors Biennial PM
x) Auto Transfer Switches Biennial PM
xi) Auto Transfer Switches Biennial PT& I
xii) Variable Drive Biennial PT&I
xiii) Variable Drives Biennia PM
xiv) Institutional Generator Semi Annual PM
xv) Institutional Generator Annual PM
xvi) Institutional UPS Battery Semi-annual PM
xvii) Institutional UPS/Battery Annual PT&I
xviii) Institutional UPS Annual PM

4) Requirements for Non-Recurring Work (IDIQ). See also Section C.14, General Requirements and Procedures for Non-Recurring Work.

a) Pre-Price Maintenance Tasks. The Contractor shall provide a fixed-price for the following tasks which shall be ordered and funded as directed by the COTR:

i) Solar Lighting Building 60 PGM 5 YEARS (replace battery)

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

a) Deficiency Report, Test Data, Trending & Recommendations. The Contractor shall furnish a Deficiency with Test Data and Trending and Recommendations as specified under the PM, PT&I and PGM tasks. Deficiency Reports with recommendations shall be submitted to the LV FOS and Low Voltage Electrical System Manager. Where available, previous data and trending information shall be included to assist with the evaluation of the problem equipment.

b) Trending Data. The Contractor shall provide trending of test data with applicable tests to determine the possible degradation of equipment. The Contractor shall refer to NFPA 70B and NETA MTS standards for further details and application.

c) Other. The Contractor shall be familiar with the latest revision of the following Low Voltage Electrical Power System Operating Instructions (LVEPS-OIs):

i) *LVEPDS-OI-001 Naming Conventions for Low Voltage Panels and Low Voltage Apparatus*
ii) *LVEPS-OI 002 Standard for Identification Plates for Low Voltage Equipment Enclosures*
iii) *LVEPS-OI-003 Low Voltage Electrical Metering Standard*
iv) *LVEPS-OI-004 Standards for Conduit Installations*
v) *LVEPS-OI-005 Lighting System Standard*
vi) *LVEPS-OI-006 Occupancy Sensor Requirement*
vii) *LVEPS-OI-007 The Use of Flat Conductor Cable*
viii) *LVEPS-OI-008 Work On or Near Low Voltage Electrical Systems*
ix) *LVEPS-OI-009 Low Voltage Electrical Systems Switching*

C.30 SECURITY SYSTEMS

1) General Requirements. The Contractor shall furnish all labor, supervision, tools, materials, equipment, transportation, and management necessary to, install, remove, maintain, and repair, the security systems in accordance with the requirements specified herein. The firm fixed-price portion of work in this section includes the performance of TC work (see Section C.11), and recurring work (see Section C.12) as described herein.

   Repairs, TCs that exceed the cost threshold limit and other IDIQ work (see Section C.13) are included in the non-recurring work portion of this contract.

   For this section, the scope of work includes the installation of all new security systems at both GRC Lewis Field and GRC Plum Brook Station. Maintenance and repair of existing security systems at GRC Plum Brook are not part of the scope of this contract.

   All security systems and equipment operations will be performed by the Government.

   Repairs exceeding TC limits (See Subsection C.12) and IDIQ (See Subsection C.14) work are included in the non-recurring work portion of the contract.

   Section J-C.30.XX lists the systems and equipment to be maintained in this contract subsection, which include:

   a) Access Control Systems (ACS) (Hirsch™ and Lenel™)
   b) Intrusion Detection Systems (IDS) (Hirsch and Lenel)
   c) Closed Circuit Television Surveillance Systems (CCTV)
   d) Mass Notification System (MNS)

2) Certifications and Licensing Requirements. The Contractor shall provide technicians that are trained and qualified on the Hirsch™ and Lenel™ systems for the servicing, testing, repairing, and installing of access control and intrusion detection systems. All work shall be performed by personnel specifically qualified and trained to work on the security systems and equipment.

   Evidence of all required certifications, as well as documentation of the qualifications of personnel, shall be provided to the COTR within thirty (30) days after contract award.

3) Requirements for Recurring Work. See Section C.12 General Requirements and Procedures for Recurring Maintenance Work. In addition, the following are specific requirements for this section:

   a) PM, PGM, and PT&I. The following are the required PM, PGM, and PT&I tasks. See Section J-C.30.XX for a list of assets to be maintained, the work instructions (minimum scope), and the frequencies for each task.

      i) Mass Notification System Maintenance Annual PM

4) Requirements for Non-Recurring Work (IDIQ). See Section C.13, General Requirements and Procedures for Non-Recurring IDIQ Work.

   a) IDIQ Work. The following are examples of IDIQ work:

      i) Installation of all new security systems at both Lewis Field and Plum Brook Station.

      ii) The Contractor shall provide configuration control documentation for the security systems. All changes to these systems shall be documented on GRC drawings, created using the latest version of AutoCad, which reflect the "As-Built" field installation. Once the drawings are created, the Contractor shall submit the drawings to GRC for approval in Adept (drawing management system).

5) Reports and Deliverables. The Contractor shall furnish the following deliverables:

   a) Security System Deficiency Report. The Contractor shall provide a detailed list of all system deficiencies identified during maintenance of the security systems. A report of all deficiencies, in both an electronic and hard copy format, shall be due by the 10th of each month.