

NNM08AA54C

PERFORMANCE WORK STATEMENT

TABLE OF CONTENTS

- 1.0 GENERAL REQUIREMENTS**
 - 1.1 GENERAL**
 - 1.2 SCOPE OF WORK**
 - 1.3 GENERAL MANAGEMENT REQUIREMENTS**
 - 1.4 GENERAL ADMINISTRATIVE REQUIREMENTS**
 - 1.5 LUMP SUM WORK**
 - 1.6 INDEFINITE DELIVERY/ INDEFINITE QUANTITY WORK**
 - 1.7 AVAILABLE GOVERNMENT PROPERTY, MATERIALS, AND SERVICES**
 - 1.8 CONTRACTOR FURNISHED ITEMS**
- 2.0 DEFINITIONS AND ACRONYMS**
- 3.0 DOCUMENTATION, WORK CONTROL, AND RELIABILITY CENTERED MAINTENANCE**
 - 3.1 GENERAL**
 - 3.2 LUMP SUM WORK**
- 4.0 TROUBLE CALLS AND TROUBLE CALL SERVICES**
 - 4.1 GENERAL REQUIREMENTS**
 - 4.2 LUMP SUM WORK**
- 5.0 SYSTEM ENGINEERING**
- 6.0 ENVIRONMENTAL MANAGEMENT SUPPORT**
 - 6.1 GENERAL REQUIREMENTS**
 - 6.2 LUMP SUM WORK**
 - 6.3 DOCUMENTATION AND REPORTING REQUIREMENTS**
 - 6.4 IDIQ WORK**
 - 6.5 DETAILED SPECIFICATIONS**
- 7.0 FACILITY ALARM AND MONITORING SYSTEMS**
 - 7.1 GENERAL REQUIREMENTS**
 - 7.2 LUMP SUM WORK**

- 7.3 DOCUMENTATION AND REPORTING REQUIREMENTS**
 - 7.4 IDIQ WORK**
 - 7.5 DETAILED SPECIFICATIONS**

- 8.0 UTILITIES AND SURFACED AREAS**
 - 8.1 GENERAL REQUIREMENTS**
 - 8.2 LUMP SUM WORK**
 - 8.3 DOCUMENTATION AND REPORTING REQUIREMENTS**
 - 8.4 IDIQ WORK**
 - 8.5 DETAILED SPECIFICATIONS**

- 9.0 REPAIR BUILDINGS & STRUCTURES**
 - 9.1 GENERAL REQUIREMENTS**
 - 9.2 LUMP SUM WORK**
 - 9.3 DOCUMENTATION AND REPORTING REQUIREMENTS**
 - 9.4 IDIQ WORK**
 - 9.5 DETAILED SPECIFICATIONS**

- 10.0 MECHANICAL SYSTEMS**
 - 10.1 GENERAL REQUIREMENTS**
 - 10.2 LUMP SUM WORK**
 - 10.3 DOCUMENTATION AND REPORTING REQUIREMENTS**
 - 10.4 IDIQ WORK**
 - 10.5 DETAILED SPECIFICATIONS**

- 11.0 STEAM DISTRIBUTION SYSTEM OPERATION**
 - 11.1 GENERAL REQUIREMENTS**
 - 11.2 LUMP SUM WORK**
 - 11.3 DOCUMENTATION AND REPORTING REQUIREMENTS**
 - 11.4 IDIQ WORK**
 - 11.5 DETAILED SPECIFICATIONS**

- 12.0 HVAC/R SYSTEMS**
 - 12.1 GENERAL REQUIREMENTS**
 - 12.2 LUMP SUM WORK**
 - 12.3 DOCUMENTATION AND REPORTING REQUIREMENTS**
 - 12.4 IDIQ WORK**
 - 12.5 DETAILED SPECIFICATIONS**

13.0 ELECTRICAL DISTRIBUTION AND EMERGENCY GENERATING SYSTEMS

13.1 GENERAL REQUIREMENTS

13.2 LUMP SUM WORK

13.3 DOCUMENTATION AND REPORTING REQUIREMENTS

13.4 IDIQ WORK

13.5 DETAILED SPECIFICATIONS

14.0 EMERGENCY MANAGEMENT SUPPORT

14.1 GENERAL REQUIREMENTS

14.2 LUMP SUM WORK

--Remainder of Page Intentionally Left Blank--

1.0 GENERAL REQUIREMENTS**1.1 GENERAL**

Attachment J-1 describes the work to be performed under this Center Operations Support Services (COSS) performance based contract for the Marshall Space Flight Center (MSFC). As part of this Performance Work Statement (PWS), the Contractor shall provide operations and maintenance of all MSFC facilities and collateral equipment and other related functions as described herein. These activities shall emphasize supporting the missions of MSFC in a safe, reliable and timely manner, with minimum disruptions to the facility occupants/users. NPR 8831.2 Facilities Maintenance Management shall govern this activity. Functions shall be performed by skilled craftsmen/technicians in accordance with this contract. Some MSFC employees are located at off-Center locations. This contract does not address operations and maintenance of those facilities. However, the Contractor may be requested, from time-to-time, to support a MSFC activity such as relocating equipment to an off-Center location for use, storage, off-Center recognition ceremonies, or other special events.

The U.S. Army, including maintenance of their respective distribution systems, furnishes basic utilities. The interfaces on these utility systems are normally five feet outside the building or at some specific convenient disconnect nearby. The U. S. Army will furnish routine maintenance work on the 4160-Volt system, with the exception of work listed in Paragraph 13.0. However, the Contractor shall have capability to de-energize 4160-Volt systems in emergency situations.

MSFC is committed to safety, quality, and core values. As a result of this a MSFC Safety, Health, and Environmental (SHE) Policy, a Quality Policy, and NASA Core Values have been established. These are provided below.

MSFC SHE Policy:

SAFETY: MSFC strives to prevent human injury and ensure the safety of all operations and products leading to mission success.

HEALTH: MSFC strives to prevent occupational illnesses and promote and maintain the physical and mental well being of its employees to help ensure mission success.

ENVIRONMENTAL: Enabling Marshall's mission through environmental compliance and stewardship.

MSFC Quality Policy:

MSFC policy is to provide quality products and services to our customers through the NASA Values: Safety, Teamwork, Integrity, and Mission Success.

1.2 SCOPE OF WORK

A. General. The Contractor shall provide all resources, including labor, supervision, tools, equipment (except Government Equipment), materials, spare parts, incidental engineering, transportation, and management necessary to fulfill the work required as part of this contract. The Management Plan for accomplishing contract requirements shall be prepared in accordance with DRD 1197MA-002. The scope of this contract covers the following:

<u>Paragraph</u>	<u>Function</u>
1.0	General Requirements
2.0	Definitions and Acronyms
3.0	Documentation, Work Control, and Reliability Centered Maintenance (RCM)
4.0	Trouble Calls (TCs)/Trouble Call Services (TCS)
5.0	Engineering
6.0	Environmental Management Support
7.0	Facility Alarm and Monitoring Systems
8.0	Utilities and Surfaced Areas
9.0	Repair Buildings and Structures
10.0	Mechanical Systems
11.0	Steam Distribution System Operation
12.0	HVAC/R Systems
13.0	Electrical Distribution and Emergency Generating Systems
14.0	Emergency Management Support

B. Contractor Quality Control (QC)

The Contractor shall be responsible for supervising, directing, and otherwise controlling their own personnel. The Contractor shall be responsible for ensuring quality in the work associated with the performance of this contract. As a minimum, the Contractor's quality control program shall be compliant with American National Standards Institute (ANSI) American Society for Quality Control (ASQC) ANSI/ISO/ASQ Q9001: 2000, Quality Management Systems Requirements. The Contractor shall evaluate the entire scope of operations, assign a level of importance, and implement an effective quality control program. The Contractor shall provide the QCP in accordance with DRD 1197QE-001.

Further, the Contractor's established Quality Control Program shall be maintained in accordance with the FAR 52.246-4, "Inspection of Services - Fixed Price" and FAR 52.246-4, "Inspection-Time-and-Material and Labor-Hour" clauses, Section E, to ensure that the work performed under the contract conforms to the contract requirements. The Contractor's QCP shall provide Contractor management with an effective and efficient means of identifying and correcting problems throughout the entire scope of operations.

- C. Government Contract Quality Assurance (QA). In accordance with FAR 52.246-4, "Inspection of Services-Fixed Price" and FAR 52.246-4, "Inspection-Time-and-Material and Labor-Hour" clauses, Section E, each phase of the services rendered under this contract is subject to Government inspection. The Government's QA Surveillance Program is not a substitute for QC by the Contractor. All findings of unsatisfactory or non-performed work shall be administered in accordance with the "Consequences of Contractor's Failure to Perform Required Services" clause of Section E. All costs associated with rework to make the performance satisfactory are the responsibility of the Contractor and are over and above the deduct made pursuant to the "Consequences of Contractor's Failure to Perform Required Services" clause of Section E. The Government reserves the right to choose the inspection methods, define its own Predictive Testing and Inspection (PT&I) program to be used in implementing its QA Program, and vary the inspection methods utilized during the work, without notice to the Contractor. Additionally, the Government intends to use PT&I methods and results during Government surveillance to assist in documenting Contractor performance of the PM program. The Government will inform the Contractor of deficiencies discovered using PT&I methods and will make the PT&I data containing these deficiencies available. PT&I results will be used by the Government as input in determining monthly payments to the Contractor.
- D. System Configuration Control. Many of the systems at MSFC are under configuration control. Therefore, the Contractor shall obtain Government approval prior to making configuration changes to any existing system. Configuration control includes any change that affects form, fit, or function of the existing system or system component. The Contractor shall provide red lined drawings depicting any change in system configuration including identified discrepancies in existing system drawings, physical location changes or system modifications. Ink on paper or computer aided drafting files will be acceptable.
- E. Cooperation with Other Contractors. The Government may undertake or award other contracts for additional work at or near the site of work under this contract. The Contractor shall fully cooperate with other contractors and Government employees and shall carefully adapt scheduling and performance of work under this contract to accommodate the work by others, heeding any direction that may be provided by the COTR.
- F. Interface with the Utility Control System (UCS) Contractor. The COSS Contractor shall work closely with the UCS Contractor in the execution of their contract. The UCS contract is a 24/7 operation that typically provides for the monitoring and control of systems throughout MSFC. There will be frequent interface with the UCS Contractor during core and non-core hours due to alarms received by the UCS Control Room via MSFC's building automation system (BAS). Many of the alarms generated will be classified as urgent or emergency in nature and can occur at any time due to continuous monitoring of MSFC's facilities. Notification and cooperation between the UCS contract and the COSS contract is an essential element in the performance of both contracts. The COSS Contractor shall provide to the UCS Contractor a contact list consisting of names and contact information for use during non-core hours. UCS personnel may

be notified through alarms, telephone, radio or any other method that an urgent or emergency condition may exist in which COSS personnel need to be contacted. The contact list shall be updated by the COSS Contractor to reflect changes in COSS personnel or contact information. The COSS Contractor shall update and distribute a new contact list within 7 days of personnel changes or contact information changes.

The UCS Contractor maintains a daily events log (DEL) which tracks and records many aspects of MSFC's building systems relative to operation and maintenance. The COSS Contractor shall inform the UCS Control Room of significant events and applicable work status updates during core and non-core hours for entry into the DEL. For accurate records to be logged and maintained, it is essential that the COSS Contractor provide work status updates to UCS in a timely manner as well as provide timely feedback on work being performed in the field.

The UCS Contractor shall act as the focal point to receive trouble calls during non-core hours, weekends, and holidays and in accordance with Paragraph 3.2.B. The COSS Contractor shall also be in frequent contact with the UCS Contractor as they jointly address Facility Work Requests (FWR) respective of both contract requirements. The COSS Contractor shall provide adequate notice to the UCS Contractor when UCS support is required for completion of a Facility Work Request. Adequate notice is defined as the proper amount of time that will allow for total FWR completion and system/equipment commissioning prior to the FWR's target completion date.

Specific work boundaries and work assignments between the COSS and UCS Contractors are as follows:

1. The communication aspect of equipment defines the separation point for determining areas of responsibility between the COSS and UCS contracts. The UCS Contractor maintains a variety of Local Area Network (LAN) types relative to MSFC's building automation system (BAS), including wired and wireless, utilizing multiple communication protocols, including proprietary and open systems. The UCS Contractor is responsible for ensuring the integrity and availability of the BAS Local Area Networks in accordance with NASA Procedural Requirements (NPR) 2810, Security of Information Technology. Equipment utilizing a communication interface (LAN devices) connected to a BAS LAN communicate with the UCS central computer servers for remote monitoring and control of equipment throughout MSFC facilities by the UCS Contractor. The UCS Contractor is responsible for the configuration and/or verification of communication parameters and will determine communication faults for all LAN devices.

The COSS Contractor shall be responsible for repair or replacement of LAN devices integrated by manufacturers into their equipment, such as chillers, computer room units, variable frequency drives, lighting control panels. The COSS Contractor shall coordinate the replacement of all equipment communicating via a BAS LAN with the UCS Contractor to ensure

replacement equipment meets UCS compatibility requirements for communication via the BAS LAN.

The UCS Contractor shall be responsible for repair or replacement of application specific and generic LAN devices, including, but not limited to variable air volume (VAV) controllers, air handler unit (AHU) controllers, unitary controllers, direct digital control (DDC) controllers. The UCS Contractor shall be responsible for the equipment utilized to establish the communication link from the LAN devices back to the UCS central computer servers. The communication link includes, but is not limited to communication/network controllers, protocol/data converters, power supplies, uninterruptible power sources (UPS), modems, routers.

2. The UCS Contractor shall terminate communication and instrumentation wiring to application specific and generic LAN devices as described in previous paragraph and which are the responsibility of the UCS Contractor. The COSS Contractor shall be responsible for power wiring.
3. All equipment and instrumentation connected to input/output terminals of controllers, including wiring, interconnects, and conduit shall be the responsibility of the COSS Contractor.
4. Installation of panels, enclosures, and ancillary equipment shall be the responsibility of the COSS Contractor.
5. Instrumentation calibration shall be the responsibility of the COSS Contractor.
6. Validating the functionality of meters (for example, electricity, gas, steam, water, BTU, sewage, air, fuel) supporting the MSFC Energy Program is the responsibility of the UCS Contractor. The programming and database backup of meters is also be the responsibility of the UCS Contractor. Repair or replacement of these meters shall be the responsibility of the COSS Contractor.
7. All stand-alone controllers that do not communicate information back to the UCS central computer servers shall be the responsibility of the COSS Contractor.

G. Customer Notification, Protective Services, and Facility Access

1. Notification. Prior to performing any work in a building, the Contractor shall coordinate and schedule work with the customer(s) of the facility or area being affected. The customer is normally the work requestor that occupies or controls the activities within that facility or the Building Manager. Three working days advance notice shall be provided for all work other than Trouble Calls or Trouble Call Services and as soon as possible for TC or TCS work. Such notification shall include the length of time and type of work to be performed. Should work progress temporarily halt before job completion, the Contractor shall provide the customer with the reason for delay and the

projected date or time they will return to complete the work. If the customer is not able to be notified for emergency TCs, the Contractor shall notify the COTR. The Contractor shall also notify the customer upon completion of work. Notification shall be verbal except for those instances where the customer is not available during core hours or work is completed during non-core hours. In those instances the Contractor shall either leave a telephone message or notify by e-mail that the work has been completed and a point of contact should the customer have a question. A list of Building Managers for each facility will be available to the Contractor.

2. Protective Services. Each Contractor employee requiring extended Center access (longer than 120 days) will be required to undergo a check of their background with favorable adjudication by the Protective Services Department required for continued access (reference Section H.13 and Attachment J-29). The Contractor shall also be required to work in areas at MSFC designated Mission Essential Infrastructure that require an increased level of security. Workers in these buildings are required to submit NASA Form 1760, attend a one hour training course and are subject to additional background checks. Failure to strictly abide by the security requirements (for example, propping open doors or granting entry to unauthorized personnel) may result in future denial of access to these areas. Contractor employees needing regular access to these areas to perform their jobs shall be approved by the COTR and affected area manager and trained by the Government (usually several hours in duration) for access and the Contractor shall obtain proper badges to allow easy access for accomplishing work. Access to secure areas will be an impact for some work that is to be performed. Lack of planning to enter secure area access will not be an acceptable reason for the Contractor to fail to perform timely work.
- H. Existing Conditions. The Government makes no guarantee that all descriptions of areas contained in this contract are maintained commensurate to the current level of services as required by this contract. All data supplied is assumed to be correct at the time this document was released, but some errors may exist. MSFC facilities date back to 1943, and may contain asbestos and lead paint. Some fluorescent light fixture ballasts may contain polychlorinated biphenyl (PCBs). Some areas may have unexploded ordinance buried by the Army that may be uncovered by excavation. The Army will be notified and will dispose of these items. Any areas not presently maintained according to the specified standards of this contract shall be brought to the attention of the COTR for possible Government action in the future.
- I. Facilities. The MSFC has 241 buildings, trailers, and structures on-site, which range in complexity from large rocket engine test stands to major office complexes to warehouses.

The current square footage of MSFC buildings is approximately 4,667,000 gross square feet. The Contractor shall be responsible for the operations and maintenance of all systems, structures, and collateral equipment contained within this square footage. If the Center gross square footage (including Army buildings on loan)

varies more than three percent (3 percent) above or below this amount, an equitable adjustment in the contract price will be made (reference Clause F.2).

J. Contractor Licensing, Certification, and Specific Experience Requirements.

Licenses required of the Contractor to conduct business (for example, local or state business licenses) shall be obtained prior to beginning work on this contract. Personnel licensing and certification shall be complete before that individual performs any work under this contract. The Contractor shall submit verification of all licensing and certifications to the CO and COTR within 30 calendar days after contract award. All licenses and certificates shall be current, and shall be kept current throughout the contract period. The Contractor shall be aware that MSFC is classified as a hazardous waste site as defined in the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). All field workers who work at this site in areas of potential contamination shall have completed a 24-hour hazardous waste site operators training class as defined in Occupational Safety and Health Administration (OSHA) regulations. The Contractor shall provide or make available training courses in environmental compliance, hazardous materials, hazardous waste management, and emergency response in accordance with applicable laws.

Specific training is required to execute some duties at MSFC. The training shall be the responsibility of the Contractor at no expense to the Government. In some cases the Government will provide training to the Contractor at no expense. In either case, training will occasionally remove the Contractor's staff from normal work activities.

MSFC will be commissioning new facilities over the life of this contract that may require maintenance skills beyond those required for this solicitation. Should this occur, the Government will provide limited training for the Contractor to maintain these facilities. Additional training beyond that provided by the Government shall be the Contractor's responsibility.

The Contractor shall provide personnel that have the appropriate skill for that trade. The degree of skill of individuals shall be commensurate with that required for the work. This requirement shall apply to all crafts. Journeyman requirements are defined in Paragraph 2.0, Definitions and Acronyms. The Contractor shall provide a Personnel Certification Plan in accordance with DRD 1197SA-003. Note that DRD 1197SA-003 does not relieve the Contractor of any obligation to evaluate skills required in addition to those specified to insure competent, safe work performance. The Contractor shall propose expansion of the DRD specific skills as necessary to meet the personnel certification plan requirements.

Performance of MSFC critical processes or potentially hazardous operations and accomplishment of these MSFC critical processes or potentially hazardous operations shall be required of personnel when engaged in the buildup, operations, and maintenance of the test facilities and operations, and ancillary equipment and processes listed in the SOW. Personnel performing these MSFC critical processes or potentially hazardous operations shall be certified as having been trained and proficient in their work tasks. Certification shall be accomplished and maintained by

the contractor or in accordance with the requirements of MWI 3410.1, "Personnel Certification Program", Safety certification, and applicable codes for welding, inspection, and NDE of structural and pressure welding. A Personnel Certification Plan shall be prepared and submitted in accordance with DRD 1197MA-003.

1. Apprentices, Helpers, and Limited Mechanics and Technicians. All apprentices, helpers, and limited mechanics and technicians working this contract shall be under the direct supervision and guidance of a journeyman mechanic or technician at all times. All trade apprentices, helpers, and limited mechanics and technicians shall be supervised and have work checked by the applicable lead journeyman in their particular field.
 2. Environmental Management Support. It should be noted that a single person is permitted to provide more than one environmental management support function listed in DRD 1197SA-003.
 3. Electrical Distribution. A qualified journeyman electrician shall perform all electrical work. If trainees or apprentices are used, a journeyman shall accompany them at all times. The Contractor shall be capable of work associated with 4160-Volt systems in accordance with Paragraphs 1.1 and 13.2.I.
- K. Reliability Centered Maintenance. MSFC currently uses a Reliability Centered Maintenance (RCM) strategy. This strategy is a mixture of preventive maintenance (PM), predictive testing and inspection, run-to-failure, and proactive maintenance measures. These four maintenance measures draw upon their respective strengths to maximize facility and equipment operability and efficiency while minimizing required maintenance time, materials, and costs. Note that root cause failure analysis is considered an essential proactive maintenance element. The RCM strategy often includes performing a statistical analysis of historical data related to failures to determine the optimal investment of maintenance resources and risk assessment methods to identify those processes or systems that statistically exhibit the greatest chance of catastrophic failure. Demonstrated RCM improvements resulting in reduced PM requirements can result in savings to the Contractor.
- L. System Outages
1. General. The Contractor shall coordinate with affected parties, schedules of system outages that affect MSFC activities and obtain concurrence from the COTR prior to planned disruption of services. For systems the Contractor has responsibility for under this contract, the Contractor shall participate in planning work by others (Contractors or Government) that will require system outages. Even if outages are required because of work by others, the Contractor shall be responsible for coordinating the outage with all affected parties. The Contractor shall provide knowledgeable personnel to attend outage meetings as required. During core working hours, the Contractor shall notify and schedule outages with the affected parties prior to systems being deactivated and reactivated. Affected parties may be other contractors or

occupants of affected buildings. During non-core work hour emergency outages, the Contractor shall notify the Trouble Desk who shall, in turn, notify and schedule outages with the proper personnel as provided by the Government. Support identified in this paragraph shall not be an additional expense to the Government.

2. Planned Service Outages. When any work other than TCs or TCSs require an outage or reduction in mechanical, electrical, HVAC, or utility services, the Contractor shall provide at least three working days notice to the affected parties through the Building Manager and to the COTR in writing. Notification shall include the time the outage shall occur and an estimate of when normal service shall be resumed. The Contractor shall be fully responsible for planning and coordinating all service outages and receiving the proper approvals. This coordination shall be accomplished with the proper Building Managers. Exceptions to the timeframes are below:
 - a. The Contractor shall provide a minimum of ten working days advanced notice for all planned electrical outages unless approved by the COTR.
 - b. The Contractor shall provide a minimum of 30 calendar days advance notice for planned building service outages during annual shutdowns for maintenance of buildings 4207, and 4663. Note: Because of the nature of the work conducted in Buildings 4207 and 4663, planned outages will be very difficult to obtain.
 3. System/Building Availability. MSFC has a number of facilities conducting critical operations for the Agency. The availability of a number of the electrical and HVAC systems in these buildings is critical to the success of their mission. As an example, the Huntsville Operations Support Center (HOSC) controls payloads on orbit and is in direct communication with the International Space Station and Shuttle crews during some missions as well as directly downloading data from the payload. A loss of electrical power or HVAC to this area would present an unacceptable interruption in operations. Building 4663 has dual commercial power feeds with uninterruptible power supplies and backup emergency power generators as well as redundant chillers, chilled water circulating pumps, and cooling towers. System definitions and system availability requirements are shown in Attachments J-9 and J-10. The Contractor shall be responsible for assuring these availability requirements are met at all times.
- M. Excavations. The Contractor shall locate and identify all underground utilities and other buried structures before excavating for any work. The Contractor shall locate underground utilities through the use of Government-provided Underground Utility Maps (UUM) and through the use of a pipe or cable detector or other acceptable methods (for example, probing rod). The Contractor shall mark utilities found at the site with fluorescent paint or wood stakes and "red-line" the utility map as discrepancies are discovered. All drawing changes shall be submitted to the Government for updating within five working days from when the discrepancy was

first noticed. Some direct buried telephone cables not owned by the Government exist. All excavations require an MSFC permit which shall be obtained prior to excavations for all work under this contract. All discrepancies in underground utility systems shall be documented by "red-lining" existing utility maps complete with size, type, dimensions, location, and other pertinent information and submitting them to the Government for updating within five working days from when the discrepancy was first noticed. It should be noted that MSFC is located on the Army's Redstone Arsenal that was used for the manufacture, storage, and transport of chemical munitions during World War II. Prior to performing excavations in some areas, scans for abandoned munitions will be required. The Contractor shall obtain these scans from approved vendors at Government expense. Periodically, during excavations, abandoned munitions are uncovered which requires all work to cease until the Army clears the area for further excavation.

- N. Contractor General Purpose Vehicles. The Contractor shall be responsible for providing all general-purpose vehicles except as noted in Attachment J-8. MSFC policy is for Contractor utility vehicles to transport a fire extinguisher for emergency use. The Government will provide the fire extinguishers for the Contractor vehicles. Refer to Paragraph 1.7.1.E for fuel requirements.

1.3 GENERAL MANAGEMENT REQUIREMENTS

The Contractor shall manage and administer the total work effort associated with COSS to include trouble calls (TCs) and (TCSs), recurring services including PM and predictive testing and inspection (PT&I), operations, spill response, and emergency management support required herein to assure fully adequate and timely completion of these work requirements in a safe manner. The Contractor shall also assure facility/system reliability and availability as defined elsewhere in this contract. Included in this function are a full range of management duties including, but not limited to, planning, scheduling, implementing cost accounting, report preparation, establishing and maintaining records, and quality control. The Contractor shall provide an adequate staff of personnel with the necessary management expertise to assure the performance of the work in accordance with sound and efficient management practices.

The Contractor shall prepare and submit a Contractor Cost Report in accordance with DRD 1197MA-003.

1.4 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Directives, Instructions, Policies, and Regulations

1. Regulatory Requirements. The Contractor and their employees shall become acquainted with and comply with all Government directives, instructions, policies, and regulations, or abide by requirements as required by the COTR. See Attachment J-26 for a listing of applicable NASA and other Federal agencies directives, instructions, policies, and regulations.

2. Water Conservation. The Contractor shall actively conserve water at all times during the performance of work related to this contract. The Contractor shall use reclaimed water whenever possible.
 3. Shared Savings. Shared savings will be in accordance with NASA FAR Supplement 1852.243-71.
 4. Energy - All energy related work, shall be performed in accordance with Executive Order (EO) 13423 “Strengthening Federal Environmental, Energy, and Transportation Management,” EPLA 2005 “Energy Policy Act of 2005”, EO 13221 “Greening the Government through Energy Efficient Standby Power Devices”, Marshall Policy Directive – MPD 8570.1 and MSFC Technical Specification for Repairs and Construction (TSRC-7) or the most current TSRC. All water fixture replacements shall be “Low Flow” devices and shall comply with the Department of Energy (DOE) best management practices for water conservation. Maintenance of all operating LEED Certified buildings requires review of the types of materials used in the design specifications. All replacement materials in LEED buildings shall at least be equal in performance ability and produce equal or less contamination within the building. All clean-up, after maintenance is performed, in LEED Certified buildings shall be performed with Green Seal Certified cleaning products to assure no additional contamination will be added to the Indoor Air Quality (IAQ). To assist in meeting the requirements efficiency goals and supporting the NASA MSFC mission, all replacement electronic equipment shall have a total harmonic distortion (THD) of 10 percent or less. These practices shall be incorporated in the maintenance of all energy and water consuming systems to assure optimum success in meeting the Federal energy-efficiency goals.
- B. Emergency Procedures. The Contractor shall ensure that their employees know how to report any accident, fire, toxic chemical, electrical, security, flooding, or police emergency.
- C. Environmental Protection and Policies. The Contractor shall comply with all applicable Federal, state, and local laws, and with the regulations and standards listed in Attachment J-26. All environmental protection matters shall be coordinated with the COTR. Inspection of any of the facilities operated by the Contractor may be accomplished by the Government or individual(s) authorized by the Government, without notice at any time. In the event that a regulatory agency assesses a monetary fine or penalty against the Government for violations which directly result from performance by the Contractor in carrying out their responsibilities under this contract, the Contractor shall reimburse the Government for the amount of that fine or penalty and other related costs incurred by the Government. Any such reimbursement shall be accomplished by a contract credit. The Contractor shall use trained personnel to clean up any hazardous waste spills that result from the Contractor's operations. The costs associated with such cleanup are fully the responsibility of the Contractor. The Contractor shall comply with the instructions of the cognizant MSFC Industrial Safety Department, and Environmental Engineering and Occupational Health Office with respect to

avoidance of conditions which create a nuisance or which may be hazardous to the health and safety of on-site personnel. The Contractor shall observe and adhere to all requirements for handling and storage of combustible supplies, materials, waste, and trash. Any oils and lubricants generated by the Contractor, including those removed from Government-owned equipment, resulting from work of the Contractor shall be disposed of in accordance with approved MSFC procedures.

- D. Documentation Reduction. In accordance with Section 101 of Executive Order 13101 of September 14, 1998, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, the Contractor is encouraged to submit paper documents, such as offers, letters, or reports that are printed or copied double-sided on recycled paper that meet minimum content standards specified in Section 505 of Executive Order 13101, when not using electronic commerce methods to submit information or data to the Government.
- E. Disposal. Small amounts of non-hazardous debris, rubbish, and non-usable material resulting from the work under this contract shall be placed by the Contractor in refuse bins located throughout the site for Government disposal. Once debris, rubbish, or non-usable material is placed in these bins, it shall become Government property. Bins are available for landfill rubbish and scrap material. The Contractor shall dispose of material in the proper bins. Larger amounts of debris and hazardous debris shall be disposed of in accordance with Section 6.0, Environmental Management.
- F. Safety, Health, and Environmental Requirements and Reports
1. The contractor shall establish and implement an industrial safety, occupational health, and environmental program that (1) prevent employee fatalities, (2) reduce the number of incidents, (3) reduce the severity of employee injuries and illnesses, and (4) protects the environment through the ongoing planning, implementation, integration and management control of these programs in accordance with DRD 1197SA-001. The SHE Plan shall address each of the following MSFC SHE core program requirements in detail that are applicable to the contracted effort:
 - a. Management leadership and employee involvement.
 - b. System and worksite analysis.
 - c. Hazard prevention and control.
 - d. Safety, health and environmental training.
 - e. Environmental compliance.
 2. Safety and Health. The Contractor shall provide all safety equipment, with the exception of respiratory protection services required to perform the work specified in this contract. All work shall be conducted in a safe manner and shall comply with all safety and health directives, instructions, policies, and regulations and any revisions, updates, or successor documents as listed in this contract. The Contractor shall demonstrate proactive and innovative safety and health practices on a continual basis throughout the contract period.

3. Conference. Within ten days after contract award, the Contractor shall meet in conference with the Contracting Officer and the COTR to discuss and develop mutual understandings relative to implementation of the Safety and Health Plan described in 3.2.A.1 and administration of the Safety and Health Program.
4. Inspections/Investigations. The Contractor's workspace may be inspected periodically for OSHA and NASA violations. Abatement of violations will be the responsibility of the Contractor as determined by the Government. The Contractor shall provide assistance to applicable NASA/MSFC organizations, investigative organizations, and the OSHA inspector if a complaint is filed or an investigation or inquiry is initiated on a company employee.
5. Accidents. The Contractor shall report to the COTR and the MSFC Industrial Safety Department, exposure from any substance, possible exposure from any substance, and all accidents resulting in death, trauma, occupational disease, bodily injury, or environmental damage. Mishaps shall be reported in accordance with DRD 1197SA-002.
6. Damage. The Contractor shall submit to the COTR a full report of damage to Government property, equipment, or the on-site environment by Contractor employees. Damage reports for Government property and equipment shall be submitted to the cognizant Property Administrator. All damage reports shall be submitted to the COTR and the MSFC Industrial Safety Department within 24 hours of the occurrence. Suspected incidents of vandalism or purposeful destruction of property shall be reported to the Protective Services Control Center for investigation.
7. The contractor shall report mishaps and safety statistics to the MSFC Industrial Safety Office in accordance with DRD 1197SA-002. The contractor shall submit direct to the NASA Incident Reporting Information System (IRIS) or shall use the forms listed in section 15.4 of DRD 1197SA-002 or electronic equivalent to report mishaps and related information required to produce the safety metrics.
8. The Contractor shall provide a Quarterly Contractor Safety Self-Evaluation Report in accordance with DRD 1197SA-004.

G. Security Requirements

1. Security. The Contractor shall comply with all NASA and local security requirements. The Contractor shall submit the name and address of each employee hired for work on this contract upon request of the CO.
2. Disclosure of Information. Neither the Contractor nor any of their employees shall disclose or cause to be disseminated any information concerning Government operations, including those performed by contractors for the Government, which could result in or increase the likelihood of the possibility

of a breach of security or interrupt the continuity of operations. Disclosure of information relating to the services hereunder to any person not entitled to receive it, or failure to safeguard any classified, unclassified sensitive, or export controlled information that may come to the Contractor or any person under their control in connection with work under this contract, may subject the Contractor, their agents, or employees to criminal liabilities. All inquiries, comments, or complaints arising from any matter observed, experienced, or learned as a result of or in connection with the performance of this contract, shall be directed to the COTR if the resolution requires dissemination of official information.

3. The contractor shall develop and implement a comprehensive information technology security program which addresses the management, operational, and technical aspects of protecting the confidentiality, integrity and availability of information and information technology systems. The IT security program shall ensure the contractor is responsible for information and IT security when physical or electronic access to NASA's computer systems, networks, or IT infrastructure is required or when information systems are used to store, generate, process or exchange information with NASA or on behalf of NASA, regardless of where the information resides. The contractor shall develop and submit a Contractor IT Security Program Plan in accordance with DRD 1197CD-001.

H. Access to Buildings

1. Access. It shall be the Contractor's responsibility to obtain authorized access to buildings and facilities, and arrange for them to be opened and closed to accomplish work under this contract. Note that a higher level of security and limited access to some buildings demands that scheduled work be well coordinated. Typically, access may be coordinated through the Building Manager and/or approved by an employee listed on the posted Label 24, Controlled Security Area. MPR 1600.1 provides guidance for entrance into secure areas or offices.
2. Keys. Keys may be issued to the Contractor on a case-by-case basis when there is an established need approved by the Protective Services Department. MPR 1600.1 provides guidance for ensuring compliance with MSFC lock and key procedures. However, it shall be the Contractor's responsibility to arrange for adequate security of the buildings and facilities at the end of each workday. The Contractor shall be responsible for the cost of replacing any keys that are furnished to and lost by their employees. If the COTR decides that a lock must be replaced because of the loss of a key by the Contractor's employees, the Contractor shall pay the cost of that replacement. Similarly, the Contractor shall pay the cost of changing a combination if the COTR has reasonable cause to believe that the combination has been compromised. The Contractor shall identify a single point key coordinator to interface with the Government for all issues related to key control. In addition to keys assigned to the Contractor, the Contractor may sign individual keys out from a general use key cabinet

maintained in the Utility Control System (UCS) control room in Building 4250. These keys are intended for access to areas for short-term work. The COSS Contractor shall comply with key sign-out and sign-in controls established by the UCS Contractor.

I. Contractor Employees

1. Contractor Representatives. The Contractor shall provide to the Contracting Officer the name or names of the responsible supervisory person or persons authorized to act for the Contractor. The list shall be updated whenever changes occur. The Contractor shall also provide names for points of contact to the COTR that the Utility Control System (UCS) Contractor will enter into UCS standard operating procedures associated with notification of abnormal work conditions.
2. Conduct. The Contractor shall remove from the site any individual whose behavior is deemed by the Contracting Officer, COTR, or Protective Services Department to be contrary to the public interest or inconsistent with the best interests of Government security.
3. Residency. No employee or representative of the Contractor shall be admitted to the site of work unless they furnish satisfactory proof that they are a citizen of the United States, or, if an alien, their residence within the United States is legal.
4. Badged Employee and Remote IT User Listing. The Contractor shall prepare and submit a Badged Employee and Remote IT User Listing in accordance with DRD 1197MA-004.
5. Contractor Employee Clearance Document. The Contractor shall prepare and submit a Contractor Employee Clearance Document in accordance with DRD 1197MA-005.
6. Position Risk Designation for Non-NASA Employee Form. The Contractor shall prepare and submit a Position Risk Designation for Non-NASA Employee Form in accordance with DRD 1197MA-006.

J. Identification of Vehicles. The company name shall be displayed on each of the Contractor's vehicles in a manner and size that is clearly visible. All Contractor vehicles shall display a valid state license plate, shall be maintained in good repair, and adhere to all state and local codes. All drivers shall adhere to all state and federal laws and Redstone Arsenal and NASA regulations.

K. Permits. The Contractor shall, without additional expense to the Government, obtain all appointments, licenses, and permits required for the prosecution of the work. The Contractor shall comply with all applicable Federal, state, and local laws. Evidence of such permits and licenses shall be provided to the COTR before work commences.

- L. Warranties. The Contractor shall establish and implement a warranty program to exercise, administer, and monitor warranties received for the Government. The program shall include all warranties for facilities, structures, utilities, construction, and equipment that have been transferred to the property accounts of the Government regardless of the source of the warranty. The Contractor shall maintain a list of all active warranties in the Technical Reference Library (TRL).
- M. Support to Government Facilities Engineering and Construction. The Contractor shall provide support to the Government's engineering and construction organizations. The Government is providing this information as best information available because specific data is not tracked by the Government. The Offeror shall use this information and their experience for similar work to determine the effort that would be expended for similar support. This work shall not be considered trouble calls. Support identified in this paragraph shall be part of the FFP Lump Sum.

Support to engineering shall include, but not be limited to, troubleshooting, access support (for example, electrical panels and equipment rooms), measuring, collecting data, and participating in design reviews and activities.

The Contractor shall assess the newly installed systems for readiness for operation and make a recommendation on acceptance to the Government based on their findings. The Contractor shall also provide assistance to the Government construction organizations in system startup, commissioning and utility outages.

N. Records and Reports

1. Records. The Contractor shall maintain historical records of all work performed and prepare and submit all reports and operating procedures specified herein. Daily, weekly, monthly, and other recurring operating records, reports, logs, and other documents are either specified as contract element submissions in the technical sections of this specification under documentation and reporting requirements, as summarized in the Performance Requirements Summary (PRS) Table, Section E.9, or specified within the inherent performance requirements under the Lump Sum portion of the contract.
 - a. Hardcopy and Electronic Format. All correspondence, records, reports, logs, and other documents submitted by the Contractor to the Government shall be provided in electronic form where feasible and software compatible, unless otherwise specified. Acceptable formats are Microsoft Word®, Microsoft Excel®, or formats readable by Microsoft Word® or Microsoft Excel®. Delivery shall be made on compact disc in PC format. The Government utilizes Microsoft Windows XP Professional for the PC.

- b. Contract Completion or Termination. All records and copies of reports shall be turned over to the COTR within five calendar days following contract completion or termination.
 - c. Media. All information and the media (if applicable) on which it is delivered to the Government will become the property of the Government and will not be returned to the Contractor except for correction of errors. All Backlogged Maintenance and Repair (BMAR) will be maintained in the Government-provided system in a format that can be updated continually with the results of periodic inspections and with additions to and deletions from the facilities and equipment inventory. It is the Government's intent for this system to be linked to the Computerized Maintenance Management System (CMMS) at some future date during this contract. The Government will provide the linking feature.
2. Documentation/Data Deliverables. The contractor shall report and document this work and fulfill the requirements of associated Data Requirement Descriptions (DRD's) as outlined in Data Procurement Document (DPD) 1197 (Attachment J-2). The contractor shall determine the data restriction that applies to each data deliverable and mark or transmit the data restriction in accordance with section 2.3.3 of the Data Procurement Document.
- O. Facility Safety Inspection Support. The Contractor shall participate in annual Facility Safety Inspections with the Safety and Mission Assurance Office. Approximately 100 percent of all facilities are inspected and those containing operations classified as hazardous operations are inspected twice a year. All safety findings that are verified to be the Facilities Management Offices's responsibility will be corrected by the Contractor as a Trouble Call (TC) or Indefinite Delivery Indefinite Quantity (IDIQ) work order, depending on the scope of work. Support in this paragraph shall not be an additional expense to the Government.

1.5 LUMP SUM WORK

- A. General. Lump Sum work consists of work that can be identified in advance. This work includes, but is not limited to: (1) responding to trouble calls (TCs) and trouble call services (TCSs); (2) accomplishing recurring services such as preventive maintenance (PM) that involve routine, periodic maintenance, and incidental repair requirements associated with facilities, utility systems, and dynamic equipment for which no specific operators are assigned; (3) operations that require the continuous presence of qualified person(s) during a specified time period; (4) emergency management support; and (5) documentation and reporting requirements in Paragraphs 3.0 through 13.0. The Lump Sum prices submitted by the Contractor shall include all overhead, G&A, profit, and other costs that insure all work identified in the PWS is performed in a complete and satisfactory manner
- B. Workmanship and Materials. All work under this paragraph shall be of professional quality conforming to all applicable codes and standards, and all specified work items such as checkpoints, servicing, repairs, and reporting shall be

performed completely, correctly, and neatly in a safe manner. On new work and where applicable, work shall be performed in compliance with the MSFC Technical Specifications for Repairs and Construction (TSRC). All COSS Contractor repair work shall be fully warranted against defects due to material and workmanship for a period of 180 days following completion of repair. However, any other expressed or implied warranties included within this contract or warranties expressed by the manufacturer or supplier shall take precedence over the 180-day warranty period. Any TC or TCS rework required within this 180-day period shall not be treated as an additional TC or TCS.

- C. Trouble Call (TC) and Trouble Call Service (TCS). The Contractor shall be responsible for all TCs and TCSs regardless of how many are performed under this contract. No price adjustment will be made for TCs and TCSs within the plus or minus 10 percent range based on annual numbers (Reference Clause F.2). If the TC limit is exceeded due to Contractor failure to perform regularly scheduled maintenance or misclassification, the Government will make no equitable adjustment.
- D. Recurring Services. Recurring services are defined as work performed on scheduled frequencies or repetitively throughout the term of the contract. Although routine, recurring services require planning, scheduling, and frequent quality control monitoring by the Contractor and are accomplished without further input from the Government. All recurring services are included in the Lump Sum price portion of the contract. Recurring services in this contract include, but are not limited to, environmental support services, Preventive Maintenance (PM), Predictive Tests and Inspection (PT&I), emergency management support, and scheduled services. PT&I, which involves technically skilled personnel performing recurring services on the part of the Contractor is considered one element of a successful RCM program.

Of all recurring services, PM and PT&I are the largest efforts. (The existing PM and PT&I programs are shown in Attachments J-24 and J-25). Therefore, the following is provided to facilitate the Contractors approach to PM at MSFC.

1. Definition and Repair Limitation. The Contractor shall accomplish all PM work within the Lump Sum portion of this contract. The Contractor shall be responsible for PM on all equipment in any building. PM is defined as routine, periodic maintenance, and incidental repair requirements associated with facility systems and dynamic equipment for which no specific operators are assigned. PM is concerned primarily with items that, if disabled, would interfere with an essential operation (including reliability and availability), endanger life and property, or involve high cost or long lead time for replacement. PM work includes, but is not limited to, visual and operational inspection, cleaning, corrosion removal and related painting, adjustment, alignments, lubrication, and replacement of filters, belts, fasteners, hoses; and other expendable items required to correct or minimize operational wear and deterioration of facility systems and equipment. PM work is continuous and repetitive in nature, is accomplished within the framework of comprehensive

and detailed short and long-term PM schedules, and requires diligent and continuous program management by the Contractor. The Contractor shall accomplish incidental repair of defective equipment or system components detected at the time of PM performance by initiating a work order related to the PM. Repair work that requires adjustment only and no parts shall not be identified by a separate work order and shall be accomplished as part of the PM. When an additional work order is used to account for repairs found and performed as a result of the PM program, it shall be identified as a "PM Find" in the CMMS. The Contractor's repair work liability is limited by the TC limit specified in Paragraph 4.2, Trouble Calls, but shall not be classified as a TC per occurrence, unless specified elsewhere. Repair work exceeding this limit shall, upon notification by the Contractor, be accomplished at the Government's discretion per Paragraph 1.6, IDIQ Work. However, the Contractor is liable for the full cost of any repair or replacement item(s) if the Government determines that the cause of failure, malfunction, or damage to equipment or systems was directly caused due to lack of PM work by the Contractor. The only exception will be for equipment items that are classified as run to failure. The Government will adjust the contract price by the actual cost to the Government for repair or replacement of item(s).

2. Management. Lack of required spare parts, other materials, or staffing which delays PM work shall not be an acceptable cause for non-performance of PM work. Prior to completion of the phase-in period, the Contractor shall assess the spare parts needs of the contract so that upon completion of the phase-in period, the Contractor shall perform the PM program satisfactorily. In addition, current manufacturer's parts ordering information shall be maintained in the TRL to reduce research time needed for spare parts ordering.
3. Standards and PM Work. The Contractor shall perform PM work using the requirements specified in the technical section of this Performance Work Statement under detailed specification, and further referenced in directives, instructions, and manuals listed in Attachment J-26. Terms including "check," "ensure," and "verify" shall mean to visually observe or measure, adjust, clean, maintain, repair, or replace as required. After PM work is complete, the equipment shall be operated over a complete cycle or at regular operating conditions for a minimum of five minutes to observe applicable pressure and temperature readings and identify any unusual mechanical conditions. Any anomaly associated with equipment operation shall be corrected by the Contractor to make the equipment fully functional and operate properly. The Contractor shall perform cleanup following PM, and provide a neat and orderly environment in mechanical rooms and other equipment areas as part of PM work. Dust, debris, dirt, and garbage present in any equipment room that was a direct result of the PM work performed by the Contractor shall be removed during cleanup following PM work and disposed of properly.
4. Reporting of PM, Deficiencies, and Repair. The Contractor shall prepare and submit for approval, a Reliability Centered Maintenance (RCM) Plan within 60-days after contract award in accordance with DRD 1197LS-002 (reference

Paragraph 3.0, CLIN 00X1.0304). The Contractor shall identify and document in the CMMS at time of service all work performed using the accepted RCM Plan and maintenance procedures, including observed operating conditions, deficiencies detected and corrected, and quantities and types of material repaired or replaced on a regular basis for historical records. If the equipment is not listed in Attachments J-24, J-25, or J-6, or is replaced during performance of PM work, the Contractor shall update the CMMS to incorporate the equipment information. The Contractor will assign a new number to the equipment.

5. Timeliness. PM activities have varying frequencies of service. Time intervals associated with the frequency of service are defined in Paragraph 2.0. This is intended to provide the Contractor adequate planning and access time to perform PM. Access restriction shall not be an acceptable cause for failure to perform PM within the time interval unless the Contractor can demonstrate that attempts were made early in the time interval and the Government delayed PM performance. The COTR will unilaterally accept or reject the Contractor's reason for delay. The Contractor should recognize that untimely response to repair requirements and lower levels of PM would result in increased repair frequencies and additional material costs. At the Contractor's option, and at no additional cost to the Government, the PM and/or PT&I schedule can be increased at any time to minimize repair requirements. In addition, with Government approval, the PM and/or PT&I schedule can be reduced or maintenance approach changed by following an Age Exploration process (for example, substituting PT&I for a time-based PM activity). Where PT&I is used to replace a PM task, the Contractor shall demonstrate how the PT&I task addresses the same failure modes as the PM. The Contractor is advised that sufficient PT&I data and/or statistical analysis will be required to support reductions in PM and/or PT&I performance. The Government will accept all reductions in PM and/or PT&I if it supports a proactive RCM program and is beneficial to the Government. The Government accepted reductions will not warrant a Lump Sum price decrease. The Contractor shall provide in the TRL the manufacturer's current recommended PM schedule, as available, and other available manuals and documentation, and shall assess for compliance and supplement as necessary. The current PM checklist is shown in Attachment J-24. For Paragraphs 7.0 through 13.0, all PM performance CLINs shall include both PM and PT&I for Contractor performance evaluation.
6. Predictive Testing and Inspection (PT&I). The Contractor shall perform PT&I on the applicable equipment and systems listed in Attachment J-25, in accordance, as a minimum, with the PT&I technologies outlined in Attachment J-7. If the Contractor determines new "state of the art" or alternate technology is available that is not listed in this paragraph, they may use this technology with COTR approval provided it better predicts equipment and system conditions. PT&I are used to assess the material condition of the inspected equipment and systems. Other than adjustments, the Contractor shall complete all repair requirements identified during the performance of a PT&I as a TC. This TC shall be identified in a manner that associates it as a PT&I find. This

is to allow tracking of all work that was performed as a result of PT&I finds. PT&I adjustments are classified as work incidental to the PT&I. Work exceeding the TC limit shall, upon notification by the Contractor, be accomplished at the Government's discretion per Paragraph 1.6, IDIQ Work. The TC limit applies to each PT&I inspection for each individual piece of equipment or equipment system. All PT&I current results and reports shall be accessible to the Government at all times during the course of this contract.

- E. Operations. Operations are defined as watch standing or attendance type work requiring the presence of one (1) or more qualified persons during a specified time period. TCs will not be issued for operations work. Labor effort to correct equipment malfunctions, breakdowns, and related repair deficiencies that occur shall be considered as part of the watch standing or attendance requirement and is included under the Lump Sum portion of the contract. The Contractor's repair work liability is limited to \$2000 per system, per occurrence. Operational repairs shall comply with the TC timeliness limit for work under \$2,000. Repair work exceeding this limit shall, upon notification by the Contractor, be accomplished at the Government's discretion per Paragraph 1.6, IDIQ Work. The CMMS will be revised as appropriate.

The Contractor shall perform the day-to-day operations, including, but not limited to, operation of the steam boilers and MSFC steam distribution system, operation of the deionized water generation and distribution system, operation of "Heavy Equipment," operation of "Power Systems" in Building 4487, operation of HVAC systems, operation of cranes, operate the Industrial Wastewater Treatment Facility (IWTF) and the. Contract line items that are considered operations are 00X1.0703, 00X1.0704, 00X1.1004, 00X1-1007, 00X1.1011, 00X1.1101, 00X1.1102, 00X1.1218, 00X1.1304, and 00X1.1306. System descriptions and operational requirements are detailed in various paragraphs of this contract. Any alterations to existing operational systems shall be approved by the COTR prior to commencement. An additional operational requirement that is not listed as a specific contract line item due to its infrequent use is the cold watch. The Contractor shall implement a cold watch when weather conditions are such that the temperature drops to or goes below 20°F. The cold watch applies to core, non-core, and holiday hours. This watch shall be continuous visual inspection of MSFC to mitigate potential facilities and equipment freeze damage. The cold watch shall, as a minimum, inspect the perimeter of all facilities to ensure doors, window, etc, are closed. The individual assigned to the cold watch shall physically enter all equipment rooms to assess potential freezing conditions. The cold watch is classified as an operational activity with no additional cost to the Government.

1.6 INDEFINITE DELIVERY INDEFINITE QUANTITY WORK

- A. General. This paragraph further explains the IDIQ portion of the Contract. The services to be provided on an as needed basis include the management, planning, accomplishment, and Quality Control (QC) of a broad variety of IDIQ Facility Work Requests (FWRs) resulting from Delivery Orders (DOs). Pursuant to Section B, the Contracting Officer or an authorized representative may issue

FWRs, but only the Contracting Officer may issue DOs. The Government may acquire the following services under IDIQ:

The Contractor shall furnish IDIQ work in accordance with the requirements set forth in each paragraph that are applicable to the particular service being ordered, and any additional or changed requirements as may be set forth in the FWR or DO issued by the Government to obtain the service.

Either the Contractor or the Government may initiate the requirement for IDIQ work, but work shall not begin without an approved FWR or DO. The FWR or DO "package," which may include design details, sketches, or additional specification sheets, will clearly identify the scope and location of desired work. The Contractor shall include the planning, estimating, and scheduling efforts of IDIQ work as part of the IDIQ coefficients. Approximately ninety percent (90 percent) of all IDIQ work shall be performed during core working hours.

Paragraphs 6.0 through 13.0 show IDIQ work associated with the specific functions covered by the paragraph. This IDIQ work shall not be construed as all-inclusive but is merely a representation of the type of work that will be ordered.

B. IDIQ FWR or DO Ordering And Proposals

1. Upon receipt of an FWR or DO request from the Government, the Contractor shall submit a proposal to the Government. Based on scope of work, work schedule, inability to determine full work scope without partial disassembly or similar actions, or other factors that the Government deems pertinent, work may be ordered and proposal prepared as Firm Fixed Price (FFP), Time and Materials (T&M) or Pre-priced Work (PPW). Pre-Priced Work (PPW) will only require quantity and a schedule with the associated price. The Contractor's FFP proposal shall consist of a detailed cost-estimate prepared in accordance with the instructions included in this paragraph, a proposed period of performance in calendar days, and other information required by the FWR or DO description of work. The proposed period of performance shall include all time required for performance including material procurement and delivery, performance of work, testing, and inspection. The period of performance shall be presented in three parts, material procurement and delivery, performance of work and total. The proposal shall include any submittals that are required by design packages for approval of proposed material and equipment. T&M work will be limited to those instances where the Government decides that work cannot be adequately defined at any time during the work process to develop a FFP cost estimate. T&M will be based upon a work scope, not-to-exceed cost and schedule agreed to between the Government and the Contractor. It is anticipated this will be less than 10% of the total IDIQ work per year. PPW is work that meets the criteria for IDIQ but a unit rate has been established and only quantity is required to determine price. The Contractor's proposal shall reflect pricing instructions specified in Paragraph 1.6.C. Preparation of proposals by the Contractor shall not constitute an obligation by the Government to issue a FWR or DO for performance, nor is the request for proposal to be construed as the Contractor's authority to commence work. If

required by the Government, prior to proposal submission, the Contractor shall respond to the needs of the Government by visiting the proposed work site in the company of the COTR or authorized representative, or establishing verbal contact with the COTR or authorized representative to further define the scope of the requirement. Upon establishment of the scope of the individual requirement, the Contractor shall prepare a proposal for accomplishment of the task.

2. The Contractor shall transmit proposals electronically, by means of a computer disk or local area network, when so directed by the Government. The software used to prepare such proposal submissions shall be Microsoft Windows compatible. The Contractor may also be required to submit three hard copies of all FWR or DO proposals.
3. Proposal estimates shall be submitted within the period specified on each proposal request. Due dates for proposal estimates and work are based on the schedule listed below unless the urgency of the Government's need for the required services specifies an earlier submission. Note that the Government will monitor adherence to meeting proposal estimate schedule as a performance requirement. Working days for the proposal estimate schedule shall begin with the date the FWR status is shown as in the estimating process in the CMMS. This status shall be no later than one working day after the Government returns the FWR to the Contractor to begin the proposal estimating process.

PROPOSAL ESTIMATE SCHEDULE

Estimated Value of FWR/DO	FFP Schedule	T&M Schedule	PPW Schedule
Under \$20,000	10 working days	7 working days	2 working days
\$20,001 to \$100,000	15 working days	7 working days	3 working days
Above \$100,001	20 working days	7 working days	4 working days

If the Contractor cannot meet the proposal schedule, the Contractor shall notify the Government within two working days of receipt of a Government requirement and explain the reason(s) for proposal submission delay. The Contractor shall also propose an alternate schedule, subject to approval by the Government. The Government reserves the right to unilaterally deny any extension.

The Contractor shall use the FWR number or the DO number to identify all proposals, submittals, and other documents submitted to the Government.

Upon receipt of the Contractor’s proposal, the Government shall review the proposal for completeness, accuracy, and reasonableness. The Government may accept the proposal as stated or negotiate any aspect of that proposal. The Government will negotiate with the Contractor all non-pre-priced items.

4. FWRs and DOs issued by the Government to commence work will include the following information:
 - a. Date of the FWR or DO.
 - b. FWR or DO number.
 - c. FWR or DO price.
 - d. FWR or DO Commencement and Performance Data.
 - e. Accounting and appropriation data.
 - f. Any other pertinent data.
5. Upon receipt of FWR or DO:
 - a. The Contractor may use the FWR or DO number for internal control, or an alternate mechanism. However, all documents shall have the Government FWR or DO number included, as it is the Government's tracking mechanism.
 - b. The Contractor shall notify the appropriate Maintenance Project Manager(s) and Building Manager(s) where the work is to be performed, 24 hours prior to actually starting work. When work is performed in Buildings 4663 or 4207, the Operating Manager listed in the FWR or DO must be notified giving the nature and the area of the work to be performed.

C. Pricing Information

1. In preparing its price estimates, the Contractor shall use the appropriate pricing classifications set forth below. Note that the single material coefficient proposed in Section B shall be used with Unit Price Book (UPB) or Fixed Labor Rate (FLR) listed below to determine FFP pricing.

a. Pre-Priced Work

PPW is IDIQ work purchased to provide one unit of work-in place. The unit costs for pre-priced work shall include all costs, direct and indirect, including labor, materials, tools, and special equipment, overhead, G&A, and profit. PPW is specified in applicable parts of Attachment J-1 and is proposed by the Contractor in the "Schedule of Prices for Pre-Priced Work" in Section B. The CO's authorized representative will issue a completed FWR or the CO will issue a completed DO specifying the number of units, expected delivery date (as stated in each applicable line item), and scope of work. Discussion (negotiations) may take place for work performance schedule. Pre-Priced Work is not subject to application of any contractor coefficient factors.

b. Unit Price Book (UPB)

The UPB will be used to establish IDIQ FWR or DO labor hours for Paragraphs 6.0 through 13.0 that are not included in the "Schedule of Prices for Pre-priced Work" for work to be performed as FFP. The Contractor shall use the edition of the selected R. S. Means[®] Cost Data Publication described in Paragraph 1.6.D.1 which is in effect when the proposal request is issued to the Contractor. UPB work is subject to application of the appropriate labor coefficient listed in Section B.

c. Fixed Labor Rates (FLR)

Items that are not pre-priced and are not included in the UPB shall be proposed using fixed labor rates and bare cost of materials and equipment for work performed as FFP or T&M. Contractor price estimates of these items shall be in accordance with 1.6.D.2. The Contractor's proposed cost shall be adjusted by the application of the appropriate coefficient factor listed in Section B.

d. Specialty Services and Equipment

Some items that are included in IDIQ work shall be priced as specialty services and equipment. This will include major equipment purchases as single self-functioning units, costing \$10,000 or greater or services such as tube cleaning or unexploded ordinance surveys. The Contractor's proposed specialty services and equipment quotes will be adjusted by the "Specialty Services and Equipment Coefficient (CLIN00X3.007)."

e. Material Coefficient

All FFP and T&M material shall be adjusted by the application of the appropriate coefficient factor listed in Section B.

2. Pricing Hierarchy

The following hierarchy shall be applied except as specified by the Government.

The Contractor must perform work by the method priced. For example, it is not permissible to price performing work with Contractor craft but actually subcontract the work performance.

- a. Prepriced Work
- b. Unit Price Book (UPB)
- c. Fixed Labor Rates

- d. Specialty Services
- e. Time and Materials

Application of all pricing methods may be necessary to complete the required pricing. The Contractor shall group and clearly identify by hierarchy within each FWR or DO estimate, and clearly indicate the application of the various names and type of coefficient factors applied.

D. Price Estimates

The Contractor shall prepare price estimates for all IDIQ proposals, using the applicable methods described below. The Contractor shall utilize electronic cost data bases specified below and Microsoft Windows compatible computerized estimating software.

Bin materials and supplies shall not be included in the list of proposed priced materials because they are to be included as part of the Contractor's coefficient (reference Section B.5). If the extended cost (item cost multiplied by the number of items) of a single line item of bin material or supply exceeds \$25, the cost for that line item may be included in pricing. The contractor shall not propose to purchase excess quantities of items in order to meet the thresholds for payment. The Contractor shall not combine quantities to meet thresholds for payment.

1. Price Estimates for Unit Price Book (UPB) Work

The basis for the Contractor's proposal shall be the labor hours published by R. S. Means[®], Inc., hereinafter referred to as Means, material cost, and the labor and material coefficients. For maintenance and repair services described in Paragraphs 4.0 and 6.0 through 13.0, Means publication #60307, entitled "Facilities Maintenance and Repair Cost Data," is utilized. This book is available in printed and electronic format from the following source:

R. S. Means[®], Inc.
100 Construction Plaza
PO Box 800
Kingston, MA 02364-0800
1-800-334-3509

Estimates and proposals shall be based on the edition of the cost data publications current at the time of contract award. Yearly updates of Means will become effective on April 1st of the same year following the release by the R. S. Means[®], Inc., Means Estimating Guides will be used to detail the required trades and labor hours. The proposal submitted by the Contractor shall include a detailed estimate comprised of a breakdown of labor, material, and equipment by unit quantities and costs, including work that may be performed as specialty services.

- a. The “remove and relocate” cost of an existing item shall always be 120 percent of the Means bare labor hours plus material cost of installation for a new item of the same type.
- b. The demolition cost of an existing item shall be 40 percent of the Means bare labor hours cost of installation for a new item of the same type, if the item is not listed in the 020 Section of Means.
- c. Government items to be installed by the Contractor shall utilize the bare labor hours. The appropriate coefficient shall be applied to the bare labor cost.
- d. All items whose bare labor, material, and specialty service costs exceed \$5,000 on a per unit basis will be negotiated as non-UPB items for each FWR or DO.

2. Price Estimates for Fixed Labor Rate Work

Non-pre-priced and non-UPB work shall be priced per the following procedures:

- a. Labor. Labor shall be priced per the Fixed Labor Rates (FLR) included in Section B. The Contractor shall prepare in the estimate a detailed line-item-by-line-item breakdown of each type craft hour required to accomplish the necessary work. The Contractor's craft hour rate established in Section B for each craft shall be utilized for each craft to extend and establish the Contractor's extended value. The Government will use its estimate for the number of craft hours needed to accomplish the work in negotiating the final craft hours for each line item. The appropriate coefficient factor shall then be applied to the total bare cost.
- b. Material & Equipment. In its proposal, the Contractor shall submit line-item detail of the types and quantities of materials or equipment required to complete the proposed task. The number of units, unit cost, and extended bare cost shall be provided for each piece of equipment and/or material. The Contractor shall not propose purchase of excessive materials (example; purchasing 500 ft. roll of wire when 200 ft. is required). If the estimated or proposed bare cost for any individual item of material or equipment exceeds \$3,000 the Contractor shall provide competitive vendor quotes to support the proposed bare cost of that line item unless otherwise directed by the Government. Furthermore, the Contractor shall use competition to the maximum extent practical in the acquisition of material or equipment regardless of its estimated value. The appropriate coefficient factors in Section B shall then be applied to the total bare cost of materials and/or equipment.

3. Price Element for Specialty Services and Equipment

Specialty services and equipment are used for items that are not pre-priced, not UPB, and not priceable by FLRs. For specialty services, if the estimated or proposed subcontract price of a line item exceeds \$3,000, the Contractor shall provide three (3) competitive subcontractor quotes to support the proposed price of that line item unless otherwise directed by the Government. For services priced in this paragraph, the Contractor's coefficient factor under CLIN 00X3.0007 shall apply.

E. Performance of FWR's or DO's

1. In performance of work under this contract, the Contractor shall:

- a. As a minimum, ensure the work status in CMMS is updated as of 3:00 p.m. each workday to accurately reflect the following day's FWR schedule. The Building Manager and Maintenance Project Manager shall be notified immediately if revisions to the schedule are necessary during the workday.
- b. Arrange with the Building Manager and/or Maintenance Project Manager a sequence of procedure, means of access, space for storage of materials and equipment, use of approaches, corridors, and stairways. Since space for storage is limited in work areas, the majority of storage must be outside or at the Contractor's assigned area. Only materials to be used for work under this paragraph of the contract may be stored at the assigned areas.
- c. The building and work areas may be occupied during performance of work under the contract. The Contractor shall take particular care in the execution of the work in all computer, mechanical, electrical, and telephone equipment areas. Uninterrupted operations must be maintained in these areas.

2. Additional Items of Work

Items of work not initially determined and not listed in Means but within this contract scope and general intent, may be negotiated by the Contracting Officer and added to the contract by modification any time during the contract period. Prices negotiated for an item for a specific FWR or DO may be used in that order. The negotiated price for the additional items of work incorporated by modification shall remain in effect for that contract year. Prices for additional items of work shall be negotiated each year of the contract.

The Contractor's proposed price for additional items requested shall be broken out by labor, material and equipment costs. Application of the coefficient factor for these items shall be the same as Non-Means items.

3. Changes to Scope of Work

If, during performance of IDIQ work, the Contractor encounters unforeseen conditions which increase the work scope and could not be evaluated during the initial estimating procedures, the Contractor shall not proceed without obtaining the CO's or COTR's authorization. The CO or COTR will direct the Contractor to estimate the change of scope for the unforeseen condition only, or prepare a new estimate for the total job as revised. The Government will, after review and approval of the estimate, issue a modification to the FWR or DO for the change in scope. Modifications will be priced in the same manner and hierarchy as FWRs or DOs. The Contractor shall notify all Building Managers (or customers being affected) of any schedule delays by the Contractor.

4. Commencement, Prosecution, and Completion of Work

The Contractor shall be required to (a) commence work under FWRs and DOs within the time stated on the FWR or DO, (b) prosecute the work diligently, and (c) complete all work and make ready for use not later than the time specified on the FWR or DO, unless otherwise advised in writing by the Contracting Officer for DO or authorized representative for FWR. The time stated for completion shall include final cleanup of the premises.

All work shall be completed in a workman like manner and in accordance with all applicable design drawings, manufacturer's instructions, codes, standards, and the latest edition of the MSFC Technical Specifications for Repairs and Construction (TSRC). Requests for exceptions to TSRC requirements must be submitted in writing and approved prior to commencement of work.

5. Delivery Schedule

The Contractor shall include with the estimate for each FWR the expected material delivery time and the proposed duration of work. Within 2 working days after the FWR is funded and approved for work, the Contractor shall submit the proposed start and finish dates to the COTR or designee for approval.

The Contractor shall attend FWR scheduling meetings with the COTR and/or Maintenance Project Managers for the purpose of setting priorities and negotiating and establishing a realistic schedule for completion of work. The Contractor shall maintain a graphical schedule for use of the Contractor and the Government. The Government will make available Microsoft Project software for the Contractor's use. The Target Start date and the Target Finish date reflected in the CMMS and schedules shall be the actual required start and finish dates of the work, excluding material procurement and delivery.

Days for which work on an FWR or DO is scheduled and cannot be performed because of Government prohibition shall not be considered working days. Interruptions significantly beyond those described in the Work Conditions Subfactor, Section B shall be at no cost to the Government unless the

Contractor can provide sufficient justification that the delay caused the Contractor to incur additional cost beyond the Contractor's control.

Delivery schedules include the time required for final cleanup, inspection, acceptance, and closeout of the FWR or DO. Lack of labor, materials, and all necessary equipment, tools, and transportation shall not be an acceptable cause for unsatisfactory performance or failure to complete IDIQ work.

Noncompliance with scheduled completion dates shall be subject to deductions per Section E, Inspection and Acceptance; Consequences of Contractor's Failure to Perform Required Services.

6. Inspection of FWRs or DOs

Unless otherwise specified in the contract, the Government may accept, as promptly as practicable after completion and inspection, all work required by a FWR or DO or that portion of the work the CO or authorized representative determines can be accepted separately.

a. Inspections – General. See Section E.

b. Inspections - Tests and Concealed Items

- 1) The Contractor shall notify the COTR or authorized representative, at least 2 days prior to any test, concrete placement, and other concealment of critical components. Inspection will be made after notification that all items have been installed for the test or concrete placement. Should the inspection reveal that corrective measures are required or that the work is not complete, an additional 24 hours will be allowed to complete the Government inspection after all work has been corrected.
- 2) The COTR or authorized representative shall be notified at least 24 hours in advance of backfilling or encasing in order that final location and elevations can be verified. Failure to provide such notification may require reopening of a trench to obtain necessary verification and further backfilling, all at the Contractor's expense.

c. Final Inspections

The Contractor shall notify the Maintenance Project Manager and Maintenance Inspector within one (1) working day following completion of each FWR or DO to schedule a joint final inspection. The Contractor shall allow a minimum of three working days after the Contractor's request for the Government to schedule the joint final inspection. The Government, or individual(s) authorized by the Government, will thoroughly inspect the completed work. The Contractor shall submit to the Maintenance Inspector "red line" drawings showing "as-built" conditions for all previously agreed to changes to system configuration at the time of the final inspection.

d. Acceptance of Work For FWRs and DOs

The Government will accept IDIQ work only after all work has been completed and noted discrepancies have been corrected. A complete FWR or DO package, including a statement of corrective action taken and revised sketches or drawings (if other than originally provided in the scope of work), shall be returned to the COTR within three (3) days following the joint final inspection. Following final acceptance by the Government, the Contractor shall invoice for payment as specified in the "Consideration and Payment," Section B.7.

1.7 AVAILABLE GOVERNMENT PROPERTY, MATERIALS, AND SERVICES

1.7.1 General

The Government will make available to the Contractor certain Government-owned facilities, equipment, material, and utilities for use in connection with this contract. The use of Government property and services for other purposes is prohibited. All such facilities, equipment, and materials will be made available in their "as is" condition. However, special purpose shop equipment shall be maintained in accordance with Paragraph 10.2.L. The Contractor shall maintain all shop, worksites, and storage areas in a safe and clean condition at all times. The Government will occasionally elect at their discretion to make available to the Contractor additional Government-owned materials and equipment beyond those listed in this specification.

- A. Government Facilities, (GF). The Government will make available to the Contractor the facilities listed in Attachment J-27. Should the Government elect to mothball, abandon, or otherwise reutilize space provided to the Contractor and the function the Contractor is performing remains a part of the COSS contract, equitable space will be provided elsewhere. Should the Contractor choose to use the GF, adequate precautions shall be taken by the Contractor to prevent fire hazards, odors, and vermin. All GF will receive the normal services provided at MSFC. The Contractor shall obtain written approval from the CO and COTR prior to making any modifications or alterations to the facilities. Any such modifications or alterations approved by the Government will be made at the expense of the Contractor and shall be in compliance with all applicable building codes and standards. At the completion of the contract, all facilities shall be returned to the Government in the same condition as received, except for approved modifications or alterations and reasonable wear and tear. The Contractor shall be held responsible for the cost of any repairs caused by negligence or abuse on their part, or on the part of their employees.
- B. Government Material (GM). The Government does not intend to provide any material for this contract but reserves the right under equitable circumstances as follows:

Spare Parts and Supplies

Spare Parts – There is a small amount of Government owned material available. This material is to be used for IDIQ work only. When these parts are used, the IDIQ proposal shall reflect government furnished material and show no charge. It will be the Contractor's responsibility to procure additional or replacement spare parts. Some of the government owned parts are critical spares for UPS systems and will be replaced at Government expense.

Spill Response – Spill response equipment and materials are listed in AS10-OWI-001, Consolidated Environmental Response Plan.

- C. Government Property Management Plan. The Contractor shall prepare a Government Property Management Plan that defines the Contractor's methods of care, accounting, and control of Government property. The Contractor shall prepare this plan in accordance with DRD 1197LS-001.
- D. Radios. The Government will provide approximately 228 two-way networked radios for the Contractors use in managing work. These radios will be controlled, maintained, and replaced as required by the Government. The Contractor shall not bring onsite any other radio communication devices.
- E. Availability of Utilities. The Government will furnish the following utility services at existing locations, for use in those facilities provided by the Government and as may be required for the work to be performed under the contract: electricity, steam, natural gas, water, sanitary sewer, storm drain, and local communications on-site. Utilities specified above will be furnished at no cost to the Contractor. However, communication services such as long distance telephone service, cellular telephones, high-speed fax/data communications, computers beyond those provided to the Work Control Center, will be the responsibility of the Contractor. The Contractor shall comply with regulatory and energy requirements per Paragraph 1.3, General Management Requirements; Paragraph 1.4, General Administrative Requirements; and Attachment J-26, Directives, Instructions, Policies, and Regulations.
- F. Government Furnished Emergency Services. The Contractor shall post emergency telephone numbers at the job site. Report all emergencies by dialing 911 for ambulance, fire, security, or environmental incidents. The Protective Services Control Center (PSCC), also known as Security, operates 24 hours a day, 7 days a week and may also be reached for assistance at 544-4357, Option 1. The MSFC Medical Center is located on Morris Road, at Building 4249, and phone number is 544-2390. It is open Monday through Friday, between 7:00 a.m. and 3:30 p.m. The MSFC Medical Center may only be used for emergencies and NASA mandated physicals under the general guidelines established by OSHA, EPA, and NRLC.
- G. Respiratory Protection Services. The Government will provide appropriate respiratory protection services. Such services will include quantitative/ qualitative

fit testing, training, maintenance/repair, and issuance of appropriate respiratory protection devices.

- H. The Government will provide approximately 130 ruggedized personal digital assistants (PDA) with software for use with the wireless CMMS system. The Contractor shall utilize the PDA's to scan the barcode on tagged equipment to verify performance of work. Equipment not tagged or with damaged tags shall have a new tag affixed by the Contractor.

1.7.2 Inventory

- A. Joint Inventory. During the last 15 days of the phase-in period, a joint inventory shall be conducted by the Contractor and the Government of all facilities and equipment to be made available to the Contractor. This inventory will not be the cause of an adjustment in contract price.

1. During the inventory, the Contractor shall determine which items they choose to accept for use under this contract and the exact quantity, condition, and serviceability of those items.
2. Items not desired for use by the Contractor shall be identified by written notification on completion of the phase-in period. Equipment not desired shall be staged by the Contractor at an on-site location indicated by the Contracting Officer for Government pick-up within 30 days after the end of the phase-in period.
3. The Contractor shall prepare an electronic inventory listing (jointly approved by the Government and the Contractor) and maintain the inventory in a current status for the initial contract term and for any option years. The Contractor shall submit to the Contracting Officer an electronic inventory listing whenever changes occur.

- B. Inventory Discrepancies. The Contractor shall provide a report electronically or in hardcopy format of inventory discrepancies as they are discovered or suspected. All instances of loss, damage, or destruction (LDD) of Government property shall be reported to the cognizant Property Administrator.

One (1) month prior to expiration of the base contract year and each option year, the Contractor shall conduct a joint inventory with the Government of all Government facilities and equipment made available to the Contractor to ensure no discrepancies exist.

- C. Inventory at Contract Completion. At the completion of the contract (including option period, if any), the Contractor shall return the same property equal in type, kind, quality, and quantity of items as originally made available by the Government and accepted by the Contractor, exclusive of those items of equipment turned over to the Government for disposal during the course of performing the contract. At contract termination, the Contractor shall return all Contractor

replaced equipment for which title was vested in the Government. Such property shall be in the same or better condition as when originally made available except for normal wear and tear.

1.8 CONTRACTOR FURNISHED ITEMS

Except for items listed in Paragraph 1.7, Available Government Property, Materials And Services, the Contractor shall provide all facilities, equipment, materials, and services to perform the requirements of this contract. The Contractor shall assure that all required materials and parts are readily available within the timeframes required for all work on this contract unless otherwise noted.

- A. Materials Required for Repair of Government Owned Equipment. The Contractor shall provide new or factory reconditioned parts and components when practicable in providing maintenance and repair services as described herein. All replacement units, parts, components, and materials to be used in the maintenance, repair, and alteration of facilities and equipment shall be compatible with that existing equipment on which it is to be used; shall be of equal or better quality than original equipment specifications; shall comply with applicable Government, commercial, or industrial standards; shall conform to the metric system of measurement when it is most cost effective for the Government; shall conform to the applicable specifications listed in the technical specifications, Attachment J-1; and used in accordance with original design and manufacturer intent. Items not listed in the technical specifications shall be of acceptable industrial grade and quality. If the original manufacturer has updated the quality of parts for current production, parts supplied under this contract shall equal or exceed the updated quality.
- B. Procurement and Maintenance of Government Owned Equipment For equipment procurements, the Contractor shall assure equipment specifications include PT&I acceptance criteria as defined in Reliability Centered Maintenance Guide for Facilities and Collateral Equipment. This same criteria shall apply to maintain existing in-service equipment.
- C. Consumable and Incidental Tools, Supplies, and Materials The Contractor shall be responsible for providing all incidental tools, supplies, and consumable materials for accomplishing all work under this contract unless otherwise noted. Examples would include, but not be limited to, wrenches, work gloves, face shields, welding rod, lumber, office supplies, uniforms, miscellaneous gases (inert and flammable), drums.
- D. Contractor's Site Office The Contractor shall maintain an office with a local telephone number at which its designated representative may be reached during normal business hours during the contract period. A telephone message-recording device is not acceptable. The Contractor shall immediately notify the Contracting Officer of any change in the telephone number or contacting procedures. The contractor shall also provide telephone numbers at which its designated representative can be reached outside normal business hours.

- E. Contractor Furnished Equipment Unless otherwise noted, the Contractor shall furnish all equipment necessary to accomplish all work under this contract.

--Remainder of Page Intentionally Left Blank--

2.0 DEFINITIONS AND ACRONYMS

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

Where "as shown," "as indicated," "as detailed," or words of similar import are used, it shall be understood that reference is made to this specification and the drawings accompanying this specification unless stated otherwise.

Where "as directed," "as required," "as permitted," "approval," "acceptance," or words of similar import are used, it shall be understood that direction, requirement, permission, approval, or acceptance of the Contracting Officer is intended unless stated otherwise.

Age Exploration - The process of determining the most effective intervals for maintenance tasks. It is called age exploration because it is often associated with identifying age related maintenance actions such as overhaul and discard tasks and then extending the interval between tasks.

Alteration - The work required to adjust, make changes, or modify other physical characteristics of an existing real property facility so that it may be more effectively adapted to or utilized for its designated purpose.

Apprentice - Is a semi-skilled worker that is registered in a bona fide apprenticeship program approved by the U.S. Department of Labor, Bureau of Apprenticeship and Training.

Army Garrison - Army organization providing infrastructure support services to the Army's Redstone Arsenal. Marshall Space Flight Center is located in the middle of Redstone Arsenal and receives all of its major utilities, including electrical, steam (80 percent), domestic water, industrial water, and sanitary sewer from Army Garrison.

Associated Fittings - Those fittings (mechanical, soldered, or welded) that are existing or required new, on both or either end of a run of piping, to allow for the removal and/or reinstallation of said piping for repair or replacement.

ASHRAE - An international organization whose sole purpose is advancement of the arts and sciences of heating, ventilation, air conditioning, and refrigeration for the public benefit through research, standards writing, continuing education, and publications.

Authorized Representative - A person designated either in writing or verbally by the Contracting Officer Technical Representative to authorize COSS activities that are not specifically assigned to the Contracting Officer or the Contracting Officer Technical Representative.

Authority to Proceed (ATP) – The executed purchase order authorizing the contractor to begin phase-in activities.

Backlog of Maintenance and Repair (BMAR) - Unfunded facilities maintenance work required to bring facilities and collateral equipment to a condition that meets acceptable facilities maintenance standards.

Backlogged Trouble Calls - A routine trouble call issued during the previous contract which was not completed for any reason, or maintenance, repair, and minor corrective maintenance requirements which may be identified during lapses, if any, in services between this contract and the previous contract.

Bin Materials - Materials that have a unit cost of less than \$5 or in the case of materials bought by length (for example, wire, conduit, pipe) the price of the length required is less than \$5.

Basic Utilities - Electricity, steam (North of Fowler Road), potable water, sanitary sewer, and natural gas. Basic utilities are furnished by the U.S. Army including maintenance of their respective distribution systems. The interfaces on the utility systems are normally five feet outside the building or at some specific convenient disconnect nearby.

Building - The classification "Building" includes the basic structure, capital improvements, and fixed equipment that are normally required for the functional use of the building and becomes permanently attached to a part of the building and cannot be removed without cutting into the walls, ceilings, or floors, such as plumbing, heating, and lighting equipment; elevators; central air-conditioning systems; and built-in safes and vaults.

Building Manager - A person assigned by the Government that serves as a point of contact for the Center related to problems and issues in a designated area or building for which he/she serves as a representative responsible for relaying information and coordination of activities.

Clean - Clean is defined as free of dirt, dust, litter, debris, loose particles, foreign objects, residue, and other impurities.

Cleanup - Cleanup is the process of returning an area to a clean condition after completion of work or during a delay in work. It includes but is not limited to sweeping, mopping, dusting, vacuuming as well as removal of debris (limited to small amounts, generally that which can be removed in less than one hour).

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 as described below:

- Building-Type Equipment - A term used in connection with facility projects to describe equipment, which is normally required to make a facility useful and operable. It is built in or affixed to the facility in such a manner that removal would impair the usefulness, safety, or environment of the facility. Such equipment includes elevators; heating, ventilating, air-conditioning, and refrigeration systems;

transformers; compressors; and other like items generally accepted as being an inherent part of a building or structure and essential to its utility. Such equipment also includes general building systems and subsystems such as electrical, plumbing, pneumatic, fire protection, and control and monitoring systems.

- Built-in or Large, Substantially Affixed Equipment - A term used in connection with facility projects of any type other than building-type equipment that is to be built in, affixed to, or installed in real property in such a manner that the installation cost, including special foundations or unique utilities service, or the facility restoration work required after its removal is substantial.

Condition Assessment - A standardized survey conducted of facilities at each Center by experienced facilities maintenance personnel to observe the condition of each facility in order to determine the overall average condition of each Center. The surveys should encompass the different components of the facilities, such as roofs, pumps, air conditioning condensers, interior finishes, electrical motors and system. PT&I data, as well as observations noted during PMs, should be included in the condition assessment. They should also include the Center's infrastructure, such as roads, storage tanks, grounds, sidewalks, drainage structures, utility systems.

Conditioned Based Actions - A maintenance or repair action performed when the system/machine condition indicates the action is needed to prevent failure or to initiate repair prior to failure. Conditioned based actions are usually the result of condition monitoring.

Condition Monitoring (also known as Predictive Maintenance, PT&I) - The continuous or periodic monitoring and diagnosis of systems and equipment in order to forecast failure.

Construction of Facilities (CoF) - NASA's capital investment program. CoF projects require Congressional approval.

Contracting Officer - The Contracting Officer is a person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings. The term includes certain authorized representatives of the Contracting Officer acting within the limits of their authority as delegated by the Contracting Officer.

Contracting Officer Technical Representative (COTR) - The person who is an authorized Government representative of the Contracting Officer acting within the limits of their authority as specified by the COTR delegation letter. This term does not include any inspector or other person not named as COTR in the delegation letter or designated representatives.

Contractor Representative - A foreman, superintendent, or manager assigned who is empowered to make day-to-day decisions related to all performance under this contract. The Contractor Representative shall serve as the focal point for all work under this contract and shall be responsible for the coordination of all work activities.

Contractor - The term Contractor as used herein refers to both the prime Contractor and any subcontractors. The prime Contractor has a contract with the Government directly. The prime Contractor shall ensure that subcontractors comply with the provisions of this contract.

Cooling Season - The cooling season is defined as the six (6) month period from 15 April through 15 October.

Core Work Hours - Contractor's work hours are between 7:00 a.m. to 4 p.m., Monday through Friday.

Critical Alarm (CA) - Any fire or gas detection alarm.

Critical Equipment - Collateral equipment that must be available to support key MSFC activities. This equipment is further clarified by its stringent availability factor.

Current Replacement Value (CRV) - Is calculated by escalating facilities and collateral equipment acquisition costs and incremental book value changes to the current year. (See Facilities Maintenance Management Handbook, NPD 8831.2 for more detailed definition).

Debris - Undesirable or discarded material including, but not limited to, cut or trimmed vegetation, paper, cans and bottles, otherwise referred to as "trash," and "litter," fallen tree limbs and branches, and rocks, street sweepings, maintenance, repair, and construction (including roofing) waste, and similar waste material, but not including hazardous waste.

Debris Removal – Is the removal of debris during and after the completion of work. Removal of small amounts of debris (requiring less than one hour) is considered part of cleanup.

Defect - A defect is composed of one (1) or more documented deficiencies of unsatisfactory work performance caused by either poor performance or non-performance.

Delivery Order - An order for supplies placed against an established contract or with Government sources.

Emergency Operations Center - An office that directs, coordinates, and controls all tactical activities and management functions necessary to carry out the objectives of Command and Emergency Response.

Emergency Response – A response effort that requires immediate action by employees or other designated personnel to an occurrence that results or is likely to result in an event that causes imminent danger to life, damage to Government property, or damage to the environment.

Facility Data Book - Is a compilation of individual floor plans of major MSFC facilities and other pertinent information on each facility. Provides an overview of building configuration of select facilities at MSFC.

Facility - A term used to encompass land, buildings, structures, and other real property improvements, including utility systems, collateral equipment, or assembly of units of equipment designated for a specific function. The term does not include operating materials, supplies, special tooling, special test equipment, or non-capitalized equipment.

Failure Mode - The manner of failure. For example, the motor stops is the failure, the reason the motor failed was the motor bearing seized which is the failure mode.

Failure Mode and Effects Analysis (FMEA) - Analysis used to determine what parts fail, why they usually fail, and what effects their failure has on the systems in total. An element of Reliability Centered Maintenance (RCM).

Failure Rate - The number of failures divided by interval such as time or cycles. The failure rate will change over time and can be greater than one (but will never be less than zero).

Fire Alarm Systems - Systems that detect fire or fire-related conditions in buildings, structures, equipment, and activation of fire suppression systems. After detection, the system indicates the alarm condition at both local and remote monitoring displays. System includes detectors, building panels and associated wiring, antennas, host computers, local and remote display units, and printers.

Fixed Labor Rates (FLR) - A FLR is the price proposed by the Contractor which shall include all direct costs and indirect costs plus profit to provide one (1) craft hour of work-in-place. For purposes of this contract, indirect costs and profit are part of the labor coefficient. Therefore, FLR shall only include direct cost.

Frequency of Service

- (1) Triennial (T): Services performed once every three years on a date or during the month specified.
- (2) Biennial (B): Services performed once every two years on a date or during the month specified.
- (3) Annual (A): Services performed once during each 12-month period of the contract at intervals of 335 to 395 calendar days.
- (4) Semi-annual (SA): Services performed twice during each 12-month period of the contract at intervals of 160 to 200 calendar days.
- (5) Quarterly (Q): Services performed four times during each 12 month period of the contract at intervals of 80 to 100 calendar days.
- (6) Bi-monthly (BM): Services performed six times during each 12-month period of the contract at intervals of 57 to 63 calendar days.
- (7) Monthly (M): Services performed 12 times during each 12 month period of the contract at intervals of 27 to 33 calendar days.
- (8) Bi-weekly (BW): Services performed 26 times during each 12-month period of the contract at intervals of 13 to 15 calendar days.
- (9) Weekly (W): Services performed 52 times during each 12 month period of the contract at intervals of six to eight calendar days.
- (10) Semi-weekly (SW): Services performed 104 times during each 12-month period of the contract at intervals of two to three calendar days.

(11) Daily: (DS) Services performed 261 times during each 12 month period of the contract, once each day, Monday through Friday, including holidays unless otherwise noted; or (D7) services performed every day, seven days a week during each 12-month period of the contract including holidays unless otherwise noted.

Gas Detection Systems - Systems that detect gas conditions in buildings, structures, tanks, and equipment. After detection, the system indicates the alarm condition at local, remote, and portable monitoring displays. Systems may include detectors, building panels and associated wiring, host computers, and local and remote display units.

Government - Federal Government.

Government Property - All property owned by or leased to the Government or acquired by the Government.

Grounds - All areas not occupied by buildings, structures, or pavements

Hazardous Material - Materials which because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a hazard to human health or the environment. As defined by 49 CFR 173, 29 CFR 1910, 40 CFR 261 and Federal Standard 313.

Hazardous Waste - As defined by 40 CFR 261.

Heating Boiler, Low Pressure - A boiler operated at pressures not exceeding 15 psig for steam, or at pressures not exceeding 160 psig and temperatures not exceeding 250 degrees F for water.

Heating Season - The heating season is defined as the six (6) month period from 15 October through 15 April.

High Voltage - Any electrical voltage exceeding 600V per the National Electric Code (NEC).

IEEE - The world's largest technical professional society whose technical objective is advancing the theory and practice of electrical, electronics and computer engineering, and computer science.

Incidental Craft or Engineering - Contractor-provided craft or engineering support beyond what the Contractor can relate to a specific contract element. It may include, but not be limited to, limited engineering analysis support for the Contractor's craft, or technical support for NASA on-site meetings, design reviews, utility outage support, opening panels for engineering inspection, or code research for specific issues that are being evaluated.

Indefinite Delivery Indefinite Quantity (IDIQ) - Services which cannot be adequately defined in advance for inclusion with Lump Sum services. IDIQ work will always be associated with a delivery order.

Industrial Sewer System - A system of pipes designed to convey untreated industrial wastewater to MSFC's National Pollutant Discharge Elimination System (NPDES) permitted outfall. MSFC is permitted to discharge laboratory wastewater, shop wash down water, non-contact water and storm water through the industrial sewer system.

Infrared Thermography - A predictive technique that uses infrared imaging to identify defects in electrical and electro-mechanical devices such as fuse boxes, circuit breakers, and switchgear. It also can be used effectively in a non-predictive manner to detect thermal cavities and leaks in walls, ceilings, and rooftops, the correction of which can result in sizeable reductions in heating and air conditioning expenses. Thermal imaging is extremely sensitive, and since it evaluates the heat an object emits, emittance and reflective factors of the object and environment must be considered.

Interferences - An interference is any part of a piece of equipment, obstruction or blockage, whether installed or portable, that must be moved, removed, or disturbed in the accomplishment of work specified.

Journeyman - An experienced reliable person who has served a required apprenticeship or equivalent training period (four years or more) in a designated field, craft, or trade that can be documented by a certificate or diploma from a reputable organization, school, or trade school program.

Life Cycle Cost - The sum of the initial cost, operating cost, maintenance cost, lost opportunity cost, and disposal cost less salvage realized.

Low Voltage - Any voltage below 600V per the National Electric Code (NEC).

Lump Sum - Services that can be defined in advance to insure those services are performed in a complete and satisfactory manner.

Maintenance - The recurring day-to-day, periodic, or scheduled work required to preserve or restore a real property facility to such a condition that it may be effectively utilized for its designated purpose. The term includes work undertaken to prevent damage to a facility that otherwise would be more costly to restore.

Maintenance Alarm (MA) - Any alarm, excluding a critical alarm that indicates equipment or a system is operating outside of established parameters.

Maintenance Project Manager - An individual that interfaces with the Contractor with respect to work priorities, work schedule, and resolution of Government related questions. This normally includes technical monitor duties associated with the contract.

Maintenance Work - Maintenance work includes inspection, servicing, cleaning, repairing, and replacement of the equipment, systems, and their components.

Material Condition - The overall existing physical state of existence of a piece of equipment and its associated components with regards to age, appearance, assembly, assessment, evaluation, and appraisal.

Material - An item that is utilized to produce an end product and is permanently incorporated into or attached to an end item.

Mean Time Between Failures (MTBF) - The reciprocal of the failure rate; the average time to fail. The MTBF is sometimes called the Mean Time To Fail (MTTF).

Motor Circuit Analysis (MCA) - A predictive technique whereby the static characteristics of a motor or generator are measured as indicators of equipment condition.

Motor Current Spectrum Analysis (MCSA) - A predictive technique whereby motor current signatures provide information on the electro-mechanical condition of AC induction motors. It detects faults such as broken rotor bars, high resistance joints, and cracked rotor end rings by collecting motor current spectrums with clamp-on sensors and analyzing the data.

Natural Gas System - A natural gas system is that portion of piping that conveys natural gas from the utility meters to all gas fired fixtures.

Noncollateral Equipment - All equipment other than collateral equipment. Such equipment, when acquired and used in a facility or a test apparatus, can be severed and removed after erection or installation without substantial loss of value or damage thereto or to the premises where installed. Noncollateral equipment imparts to the facility or test apparatus its particular character at the time, for example 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, and is not required to make the facility useful or operable as a structure or building.

Non-Core Work Hours - Contractors work hours other than 7:00 a. m. to 4:00 p. m. Monday through Friday.

Performance Requirements Summary (PRS) - A tabular summary of contract requirements itemized by work requirements (tasks), weight, standards of performance, and AQLs which is used by the Government to assess monthly Contractor performance and is the primary basis for deducting for partially performed, unsatisfactorily performed, and non-performed work. The PRS is provided as Section E.9.

Performance Standards - Those standards that an item is required to meet in order to maintain its required function. The performance standard defines functional failure for the item.

P-F Interval - The interval between the point at which a potential failure becomes detectable and the point of functional failure.

Pleasing Appearance - An appearance similar to the original finished appearance with only minor, unobjectionable deterioration resulting from normal use.

Plumbing System - The plumbing system includes all potable water supply and distribution pipes including deionized water systems, plumbing fixtures, traps, drainage and vent pipe,

and all building drains including their respective joints and connections, devices, receptacles, and appurtenances within the building and to a point of five (5) feet outside each building which shall include potable water piping, gas piping, water heaters, and vents for the same.

Potential Failure - An identifiable condition that indicates that a high probability of failure is imminent.

Power Boiler - A boiler operated at a pressure of more than 15 psig (but not more than 300 psig) for steam, or pressure of more than 160 psig and a temperature of more than 250 degrees F for hot water.

Predictive Testing and Inspection (PT&I) - The use of advanced technology to assess machinery condition. It replaces maintenance scheduled at arbitrary time and usage intervals with maintenance that is scheduled only when the condition of the equipment requires it. The PT&I data obtained allows for planning and scheduling corrective maintenance or repairs in advance of failure. Results of PT&I information collection and analysis are used to schedule preventive maintenance, repair, replace, or validate other maintenance and repair efforts, verify proper new installations, and determine overall material condition of systems and equipment. Use of PT&I is often substituted for time based maintenance in order to perform more effective maintenance activities. Common PT&I technologies include vibration analysis, infrared thermography, and lubricating oil analysis.

Preventive Maintenance (PM) – The planned, scheduled periodic inspection, adjustment, cleaning, lubrication, parts replacement, and routine repair of equipment and systems for which a specific operator is not assigned. PM consists of many checkpoint activities on items that, if disabled, would interfere with an essential operation, endanger life or property, or involve high cost or long lead time for replacement.

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.

Programmed Maintenance - Those maintenance tasks whose cycle exceeds 1 year, such as painting a building every 5th year (this category is different from PM in that if a planned cycle is missed the original planned work still remains to be accomplished, whereas in PM only the next planned cycle is accomplished instead of doing the work twice such as two lubrications, two adjustments, or two inspections.). Some examples of Programmed Maintenance include: painting, roof maintenance (flood coat, flashing, patching, some repair by replacement), road and parking lot maintenance (overlays, seal coating, and patching), utility system maintenance (pigging of constructed lines), and similar functions.

Proper Operation - The operation of a piece of equipment or system in accordance with the manufacturer's specifications and its design parameters

Public Sanitary Sewer - A public sanitary sewer system is a common sewer connecting all building drains together and carrying them to a treatment plant.

Quality Assurance (QA) - A method used by the Government to provide some measure of evaluation over the quality of purchased goods and services received.

Quality Assurance Evaluator (QAE) - A person(s) designated by the COTR to measure/monitor Contractor performance under this contract. Also referred to as a Technical Monitor.

Quality Assurance Program - A program implemented by the Government to evaluate the output quality and responsiveness of the Contractor to ensure that the Government receives the services for which public funds are expended. It is emphasized that the Government's quality assurance program is not a substitute for the quality control program implemented and administered by the Contractor.

Quality Control (QC) - A method used by the Contractor to control the quality of goods and services produced.

Quality Control Plan (QCP) - A plan implemented by the Contractor to help identify, correct, and control problems throughout the entire scope of the Contractor's own operations.

Reactive Maintenance - Often called breakdown maintenance or "run to failure (RTF)." Reactive maintenance or equipment repairs are performed only when the deterioration in a machine's condition causes a functional failure. A high percentage of unplanned maintenance work, high replacement part inventories and the inefficient use of maintenance personnel typify this strategy.

Real Property - All Government lands and rights therein; ground improvements, utility distribution systems, buildings, and structures.

Rebuilt Components/Assemblies - Components, assemblies, or subassemblies of equipment that have been disassembled and reconstructed using replacement or re-manufactured parts as necessary and reassembled to produce a serviceable product whose service life expectancy is at least equal to the original component/assembly.

Rehabilitation - The restoration or overhaul to a reasonably efficient operating condition of a part or all of a facility that has deteriorated due to wear, tear, and use. It improves the general condition of buildings, structures, or systems, rather than specific fixtures, equipment, or repair items. Original configuration is not altered.

Reliability Centered Maintenance (RCM) - RCM is a maintenance strategy that logically incorporates the optimum mix of preventive, predictive, reactive, and proactive maintenance practices. These maintenance practices, rather than being applied independently, are integrated to take advantage of their respective strengths in order to maximize facility and equipment operability and efficiency while minimizing life cycle costs.

Repair - Repair is the restoration of a piece of equipment, a system, or a real property facility to such a condition that it may be effectively utilized for its designated purposes. Repair may be overhaul, reprocessing, or replacement of constituent parts or materials that have deteriorated by action of the elements or usage and have not been corrected through maintenance, or replacement of the entire unit or system if beyond economical repair.

Response Time - Response time is defined as the time allowed the Contractor after initial notification of a work requirement to be physically on the premises at the work site with appropriate tools, equipment, and materials, ready to perform the work required.

Root Cause Failure Analysis (RCFA) - The process of exploring, in increasing detail, all possible causes related to a machine failure. Failure causes are grouped into general categories for further analysis. For example, causes can be related to machinery, people, materials, methods, policies, environment, and measurement error.

Run-to-Failure - A maintenance approach where no action is taken (time or cycle based actions), following installation, to prevent failure. Candidate systems or machines for run-to-failure are usually low cost, easily repaired, and non-critical.

Safety Consequences - The consequences of failure results in personal injury and/or impact on personal well being.

Service Contract Act (SCA) Work - The Service Contract Act (40 U.S.C. 351, as amended provides that contracts in excess of \$2,500.00 to which the United States or the District of Columbia is a party hereto, for the furnishing of services through the use of service employees, shall contain a clause (FAR 52.222-41) that no service employee shall receive less than the minimum prevailing wage rates and fringe benefits as determined by the Secretary of Labor.

SI - The International System of Units; SI is the modernized version of the metric system based on the meter, kilogram, and second (MKS) units. It is a decimal system composed of basic, supplementary, and derived units, and is the system that is preferred for all applications for the Government.

Spill Response - Activities associated with a spill of hazardous or controlled substance that enters or threatens to enter the environment. Activities include containment and cleanup.

Steam Distribution System - A system (including distribution lines and installed equipment forming an integral part of the system) which transmits steam between (1) the outside of the building or structure in which the services are used, and (2) the point of origin or disposal, or the connection with some other system. This only applies to steam systems owned and operated by MSFC

Storm Sewer (Drain) System - The storm sewer system consists of building roof leaders, area drains, gutters, catch basins, drop inlets, curb drains, manholes, open culverts, any piping conveying rainwater, and surface water to public tributaries.

Supplies - Items that are utilized to produce an end product and are not permanently incorporated into or attached to an end item. (Examples include: masking tape, sandpaper, solvent, cleaners, lubricants, grease, oil, rags)

Surfaced Areas - Surfaced areas include all concrete, asphalt, and gravel surfaces and their associated features such as curbs, gutters, inlets, drains, and manhole surfaces. Surfaced areas include, but are not limited to, vehicular pavements, sidewalks, patios, pathways, recreational courts, exterior stairways, ramps, pads, and all shoulders of above.

Trouble Call (TC) - Trouble calls are reactive maintenance work that is generally called in by Building Managers, maintenance workers, or occupants of a facility. This category is composed of three types of work classified in Paragraph 4.2.D, Lump Sum Work; Trouble Calls; Classification of Trouble Calls. The scope of a trouble call is limited to \$2000.00 in total labor and material.

Trouble Call Service (TCS) - Trouble call services are minor requests that are not collateral maintenance items and are not addressed in the scope of another organization's responsibility but are performed by maintenance organizations because they possess the skills necessary to perform the work. The scope of a trouble call service is limited to \$2000.00 in total labor and material.

Trouble Call Operations Fire Alarm System (TOF) - Operation and minor maintenance associated with fire alarm systems shall include, but not be limited to, disabling alarms and panels to prevent inadvertent activation while other personnel are working in an area, enabling alarms and panels after personnel have performed work that might inadvertently activate alarms, maintaining prescribed sensitivity limits in accordance with manufacturer recommendations, restoring power and resetting alarms and panels after planned or unplanned outages, resetting breakers, responding to activated alarms, maintaining panels, replacing batteries, supporting fire drills, and reprogramming systems. The work shall also include repair. The Contractor's repair liability for servicing equipment and system components is limited to \$2,000 per system, per occurrence.

Trouble Call Operations Gas Alarm Systems (TOG) - Operation and minor maintenance associated with gas alarm systems shall include, but not be limited to, disabling alarms to prevent inadvertent activation while other personnel are working in an area, enabling alarms systems after personnel have performed work that might inadvertently activate alarms, restoring power and resetting alarms after planned or unplanned outages, resetting breakers, responding to activated alarms, replacing batteries, maintaining prescribed sensitivity limits in accordance with manufacturer recommendations, replacing cells and detectors, replacing and adjusting monitors, and adding cell fluid. The work shall also include repair. The Contractor's repair liability for servicing equipment and system components is limited to \$2,000 per system, per occurrence.

Trouble Call Operations HVAC/R Systems (TOH) - Operations and minor maintenance associated with HVAC/R systems shall include, but not be limited to, performance of seasonal equipment start-ups and shutdowns, calibrations, resetting and restarting tripped equipment, regulator or thermostat adjustments, filter replacements other than HEPA filters, and isolating and returning equipment to service as a result of planned or unplanned outages.

Isolating and returning equipment to service for PM or PT&I shall be considered part of the PM or PT&I and thus not a TOH. The work shall also include repair of HVAC/R related components (for example, Air Compressors, Air Dryers, Fans, Chillers, Cooling Towers, DXAC units, Humidifiers, Pumps) and associated piping isolated to the first connection point upstream and downstream of each component. All piping, fittings, valves, insulation/lagging, aluminum jacketing, expansion loops, traps, strainers, pipe hangers, anchors, structural supports, and touch-up painting are inclusive. The Contractor's repair liability for servicing equipment and system components is limited to \$2,000 per system, per occurrence.

Ultrasonic Analysis - A predictive technique incorporating the use of airborne and pulse-echo, ultra-high frequency sound. Commonly used to pinpoint steam leaks and steam trap failures. Additionally, ultrasonic thickness gauges are used routinely to measure wall thinning in vessels and pipes and in other similar applications.

Unit Cost - The cost of an item per unit. The unit cost may be expressed in units of length, weight, volume or each piece.

Unit Price Book (UPB) - As used in this contract refers to the prices published by the R.S. Means®, entitled "Facilities Maintenance and Repair Cost Data".

Utility Control Systems (UCS) - A computerized equipment monitoring and control system that detects abnormal conditions, controls HVAC equipment, and provides remote readout of electrical consumption meters.

Vibration Analysis - The dominant technique used in predictive maintenance. Uses noise or vibration created by mechanical equipment to determine the equipment actual condition. Uses transducers to translate a vibration amplitude and frequency into electronic signals. When measurements of both amplitude and frequency are available, diagnostic methods can be used to determine both the magnitude of a problem and its probable cause. Vibration techniques most often used include broadband trending (looks at the overall machine condition).

Water Supply System - The water supply system of a building or premises consists of the building supply pipe, water distribution pipes, and the necessary connecting pipes, fittings, control valves, and all appurtenances carrying or supplying water in or adjacent to the building or premises and connected to the water main for supply.

Work Site - The actual site where the work is performed. An example is a building where equipment is being maintained or repaired.

ACRONYMS AND ABBREVIATIONS

A/C	Air Conditioning
ADA	Americans with Disabilities Act
ADEM	Alabama Department of Environmental Management
AHU	Air Handling Unit
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
ASQC	American Society for Quality Control
ATP	Authority to Proceed
AWS	American Welding Society
BAS	Building Automation System
BHMA	Building Hardware Manufacturer's Association
BMAR	Backlog of Maintenance and Repairs
BOE	Basis of Estimate
CBA	Collective Bargaining Agreement
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CIO	Chief Information Officer
CLIN	Contract Line Item Number
CMMS	Computer Maintenance Management System
CO	Contracting Officer
CoF	Construction of Facilities
COSS	Center Operations Support Services
COTR	Contracting Officer's Technical Representative
CPR	Core Program Requirements
D7	7 Days Per Week
DCAA	Defense Contract Audit Agency
DEL	Daily Events Log
DDC	Direct Digital Control
DI	Deionized
DO	Delivery Order
DOD	Department of Defense
DOE	Department of Energy
DOL	Department of Labor
DOT	Department of Transportation
DPD	Data Procurement Document
DRD	Data Requirements Description
DUC	Damage and Utility Control
DXAC	Direct Exchange Air Conditioning
EMD	Emergency Management Director
EPA	Environmental Protection Agency
EPM	Excel Pricing Model
EWS	Emergency Warning System
FAR	Federal Acquisition Regulation

FCA	Facility Condition Assessment
FEMA	Failure Modes and Effects Analysis
FFP	Firm Fixed Price
FID	Field Interface Device
FLR	Fixed Labor Rate
FMO	Facilities Management Office
FSM	Facility Service Manager
FWR	Facilities Work Request
GAO.	Government Accountability Office
GE	Government Equipment
GF	Government Facilities
GFE	Government Furnished Equipment
GFF	Government Furnished Facilities
GILC	Government Identified Labor Category Description
GM	Government Material
GPE	General Purpose Equipment
GSA	General Services Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCFC	Hydrochlorofluorocarbon
HEPA	High Efficiency Particulate Air
HOSC	Huntsville Operations Support Center
HSPD	Homeland Security Presidential Directive
HVAC	Heating, Ventilating, and Air Conditioning
HVAC/R	Heating, Ventilating, and Air Conditioning/Refrigeration
IAQ	Indoor Air Quality
IDIQ	Indefinite Delivery Indefinite Quantity
IEEE	Institute of Electrical and Electronic Engineers
IT	Information Technology
ITSRCD	IT Security Requirements Compliance Document
IWTF	Industrial Wastewater Treatment Facility
JD/Q	Job Description and Qualifications
KPSTC	Key Personnel, Staffing, and Total Compensation
LAN	Local Area Network
LEED	Leadership in Energy and Environmental Design
LDE	Lifting Devices and Equipment
LDEE	Lifting Devices and Equipment Engineer
LTC	Lost Time Case
MPG	Marshall Procedures and Guidelines
MSFC	Marshall Space Flight Center
MTA	Management and Technical Approach
NAICS	North American Industry Classification System
NASA	National Aeronautics and Space Administration
NDT	Non Destructive Test
NEC	National Electric Code
NEMS	NASA Equipment Management System
NFPA	National Fire Protection Association
NFS	NASA FAR Supplement
NLRB	National Labor Relations Board

NPDES	National Pollutant Discharge Elimination System
NPG	NASA Procedures and Guidelines
NRC	Nuclear Regulatory Commission
NSCCB	Network Security Configuration Control Board
NTE	Not to Exceed
OMB	Office of Management Budget
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PIV	Personal Identity Verification
PKI	Public Key Infrastructure
PM	Preventive Maintenance
POV	Privately Owned Vehicle
PPW	Pre-Priced Work
PRS	Performance Requirements Summary
PSCC	Protective Services Control Center (Contractor)
PT&I	Predictive Testing and Inspection
PWS	Performance Work Statement
QA	Government Quality Assurance
QAE	Quality Assurance Evaluator
QAP	Quality Assurance Plan
QC	Quality Control
QCP	Quality Control Plan
RCFA	Root Cause Failure Analysis
RCM	Reliability Centered Maintenance
RFP	Request for Proposal
RTF	"run to failure"
SAT	Simplified Acquisition Threshold
SB	Small Business
SCA	Service Contract Act
SDB	Small Disadvantaged Business
SEB	Source Evaluation Board
SF	Standard Form
SHE	Safety, Health, and Environmental
SID	State Indirect Discharge
SPE	Special Purpose Equipment
SSA	Source Selection Authority
SWMA	Solid Waste Management Area
T&M	Time and Materials
TBD	To Be Determined
TC	Trouble Call
TCS	Trouble Call Service
TDO	Term Determination Official
THD	Total Harmonic Distortion
TIN	Taxpayer Identification Number
TRL	Technical Reference Library
TSCA	Toxic Substances Control Act .
TSDR	'Treatment Storage, Disposal, Recycling
TSRC	Technical Specification for Repairs and Construction

UCS	Utility Control System
UPB	Unit Price Book
UPS	Uninterrupted Power Supply
UUM	Underground Utility Maps
VAV	Variable Air Volume
VOC	Volatile Organic Compound
VSD	Variable Speed Drive
WCC	Work Control Center
WYE	Work Year Equivalent

--Remainder of Page Intentionally Left Blank--

3.0 DOCUMENTATION, WORK CONTROL, AND RELIABILITY CENTERED MAINTENANCE

3.1 GENERAL

The Contractor shall plan, schedule, assess, monitor, and report work described under this contract in a manner that maximizes visibility and efficiency.

3.2 LUMP SUM WORK

A. Administrative

1. Contract Element (CLIN - 00X1.0301) Safety and Health Plan. The Contractor shall submit and update a Safety and Health Plan in accordance with DRD 1197SA-001.
2. Contract Element (CLIN – 00X1.0302) Quality Control Plan (QCP) and Quarterly Summary Report. A QCP that specifies the Contractor's quality program for PWS tasks shall be submitted with the Technical Proposal. The Contractor shall prepare the QCP in accordance with DRD 1197QE-001. The Contractor shall provide a summary report each contract quarter in accordance with DRD 1197QE-001. Quarters are established by using the contract start date as the beginning date of the first quarter.
3. Contract Element (CLIN – 00X1.0303) Technical Reference Library (TRL). After award of contract, the existing TRL shall be maintained by the Contractor. TRL data shall be current and shall include, but not be limited to, all applicable Government publications and regulations, operation and maintenance procedures prepared by the Contractor, plans and drawings, Government and manufacturers' equipment operation and maintenance manuals, historical data, completed FWRs or DOs, completed TCs and TCSs, completed PM, and a hardcopy of all paragraphs of this contract. Drawings are limited to those drawings or sketches that the Contractor prepares for internal use or those prepared for the Government in support of a work assignment. Codes or publications that are purchased by the Contractor shall remain the property of the Contractor at the end of the contract period. However, the Government shall have access to these documents during the contract period. The Contractor shall maintain and update all TRL equipment operation and maintenance manuals relevant to this contract throughout the entire contract period. The Government will own the TRL and Government personnel shall have continuous access. The TRL shall be fully operational 45 days after the contract start date.

B. Work Control

1. Contract Element (CLIN - 00X1.0305) Work Control Center. The Contractor shall operate a Work Control Center (WCC) between the hours of 6:00 a.m. and 4:00 p.m. on core workdays. This includes operating the Trouble Call

Desk described in Paragraph 3.2.B.1.a. The Utility Control System (UCS) Contractor will receive work requests from 4:00 p.m. until 6:00 a.m. for normal workdays, weekends, and holidays and enter work into the web based work submittal system. The Contractor shall only be required to respond to work identified by the UCS Contractor in non-core hours as identified in Paragraph 1.2.F. The WCC shall enter all web based submittals into the work control system on the first core workday after the web based submittal. The WCC will receive a status report from the UCS Contractor between 6:00 a.m. and 6:30 a.m. at the UCS control room each workday that delineates all alarms that have occurred and work orders submitted through the web based system by the UCS Contractor since the last UCS status report. In addition to processing work orders for all of the Contractor's work, the WCC shall process the FMO construction, grounds care and custodial work orders, and will receive hardcopy or electronic facility work requests from throughout MSFC as well as calls or electronic notification of work needs that meet the definition of trouble calls or trouble call services. FMO construction work orders are work assigned to a FMO project manager and performed in accordance with the Davis-Bacon Act through a construction contract. The WCC shall make an initial assessment to determine if the work requested is within the scope of this contract and if so, properly classify and process work. If the WCC or its management cannot determine if the work is within the contract scope, the COTR will assist in work scope determination. Also, the WCC shall compile a WCC status report consisting of information from the UCS status report, HVAC hot/cold call status, elevator operation status, urgent or emergency work that is ongoing or has been identified since the last WCC status report, and other specific work that the Government has identified. An appropriate Contractor manager that has sufficient background to discuss all aspects of the WCC status report shall meet with the COTR and their representatives by 8:00 a.m. each workday at a location designated by the COTR and will provide the work status report in hard copy. Weekend and holiday information will be included in the report for the next regular workday. The Contractor shall implement all necessary work control procedures to ensure fully adequate and timely completion of work requirements, as well as to permit tracking of work in progress. The Contractor shall plan and schedule work to assure material, labor, and equipment are available, and environmental and safety concerns are met to complete work requirements within the specified time limits and in conformance with the quality standards established herein. All work requirements are to be logged daily and entered into the Computerized Maintenance Management System (CMMS) daily. Verbal scheduling and status reports shall be provided when requested by the COTR. The status of any item of work shall be provided within two (2) hours, except as may otherwise be specified in this specification.

- a. Notification Procedures. The Contractor shall operate a Trouble Call Desk that will screen, classify, assign control numbers to, and issue TCs and TCSs. An individual fully familiar with the Contractor's work control procedures and applicable terms and conditions of this contract shall answer all telephone calls within 30 seconds. The requestor shall be given

a TC number and phone number for future statusing if they should desire. The requestor shall also be given the work classification and the maximum number of days allowable to perform the work. The UCS Contractor will not be held to the notification requirements associated with Trouble Call Desk operation. Notification for work orders submitted through the web base system during non-core hours by the UCS Contractor will be accomplished by the WCC on the first core workday after the web based work submittal.

- b. IDIQ Processing. The Contractor shall provide routing and processing of IDIQs including the transport of MSFC Form 199s to the various persons in the approval chain. This central point of contact shall be responsible for the receipt, numbering, processing, routing, receipt of related design drawings, and statusing of all IDIQ's. Processing shall be in accordance with OWI AS20-OI-015.

2. Contract Element (CLIN - 00X1.0306) Computerized Maintenance Management System (CMMS) Operations and Management. The Contractor shall maintain and manage data in the CMMS to reflect all work performed (including work performed by other contractors or the Government related to facilities maintenance, if notified). All work records, with the exception of preventive maintenance, for work performed by the COSS Contractor shall be updated as complete or closed, as appropriate, on the next workday after physical completion of the work. Preventive maintenance work orders shall be updated as completed or closed within 3 workdays after physical completion of the work. Work status for work not performed by the COSS Contractor shall be entered within one day of notification of status change. The Government will provide maintenance and support for all Government furnished software and hardware unless otherwise specified. The Government will provide all maintenance and administration of the on-site network infrastructure. No data, except data entered in error by the Contractor, shall be deleted from the database without the written consent of the COTR. The Government may at any time access the database and review any information contained therein. The database, including changes made under this contract, is Government property, for the exclusive use of the Government, and may not be transferred to another location, in any form, or used by the Contractor for any purpose except for work performed under this contract. See Paragraph 1.4.G.2, Disclosure of Information.

The contractor shall utilize all modules and features of the CMMS unless waived by the COTR.

The existing CMMS is MAXIMO Extended Enterprise version 5.2.

C. Work Scheduling and Planning

1. The Contractor shall arrange their work so as to not cause interference with the normal occurrence of Government business. Note that a number of facilities

have restricted entry and the Contractor shall develop work schedules around the entry requirements. In those cases where some interference is unavoidable, the Contractor shall make every effort to minimize the impact of the interference and its effects on the occupants or users. The intent of the Government is to allow the Contractor to develop an optimal formal schedule and plan rather than to impose a rigid fixed schedule and plan which in some cases may not be appropriate or cost effective. In developing PM schedules and plan guides, the Contractor should consider and rely on: (1) past Government records; (2) the Contractor's own experience; and (3) industry standards and guides, and then develop a program which produces the most appropriate and effective availability of the equipment and operational efficiency of the building or utility systems to be used for its intended purpose.

2. Contract Element (CLIN - 00X 1.0307) Annual Work Plan. The Contractor shall prepare an Annual Work Plan for all maintenance work per the requirements of NPR 8831.2. NASA will use the work plan to support budget requests for maintenance and to plan other work. The Contractor shall assemble historical information (usually from the CMMS) in order to provide an accounting of work performed and identify emerging trends. The Contractor shall prepare the Annual Work Plan in accordance with DRD 1197LS-003. Data shall be addressed by fiscal year in order to identify trends. Note that utility, construction, and capital investment data will require interfacing with other AS20 groups or contractors.
3. Contract Element (CLIN - 00X 1.0308) Five Year Maintenance Plan. The Contractor shall develop a five-year plan to project maintenance needs beyond the annual work plan. The plan will be used by the Government as a guide for maintenance planning and budgeting. The Contractor shall prepare the plan in accordance with DRD 1197LS-005.
4. Contract Element (CLIN - 00X1.0309) Facility Condition Assessment (FCA). Standardized facility condition assessments shall be conducted on each MSFC facility by experienced facilities maintenance personnel to observe, record, and recommend maintenance activities to maintain reliable facility performance at the least cost. The Contractor shall assess the condition of each facility in order to determine the overall average condition of the Center. The surveys shall encompass the different components of the facilities, such as, but not limited to, roofs, pumps, air conditioning, interior finishes, electrical devices and systems. They also include the Center's infrastructure, such as, but not limited to, roads, storage tanks, grounds, sidewalks, drainage structures, and utility systems. The Contractor shall utilize Government furnished PDA's to gather data and to populate government owned software. The Contractor shall also utilize Government furnished desktop software for data gathering, data manipulation and reporting. The Contractor shall provide FCA reports in accordance with DRD 1197LS-006. The FCA process shall include the use of PM and PT&I data where applicable. The FCA's shall insure 80 percent accuracy of the Center's Backlog of Maintenance and Repair (BMAR) at all times. The Government furnished software is designed to generate reports in

the proper format. The BMAR associated with FCA's shall consist of labor cost, material cost, and contractor overhead.

5. Contract Element (CLIN – 00X1.0310) Facility Condition Assessment (FCA) Schedule. The Contractor shall provide an FCA schedule that provides individual FCA report dates for all MSFC facilities and the Center's infrastructure and associated BMAR data in accordance with DRD 1197LS-006.
 6. Contract Element (CLIN - 00X1.0311) Facility Condition Assessment Project Recommendations. The Contractor shall provide to the Government a recommendation of projects, based on their FCA findings, for Government consideration in initiating capital investment projects. The Contractor shall provide FCA project recommendations in accordance with DRD 1197LS-008. After initial submittal the list shall be revised based on continuing FCA analysis combined with any Government direction associated with a specific Government need. Additional project lists may be requested on an as-needed basis throughout, the contract period. The additional lists should not exceed three in number for any contract year and will be in the format identified in DRD 1197LS-008. The specific project values will normally be the variable for developing the additional lists.
 7. Contract Element (CLIN 00X1.0314) IDIQ Schedule. The Contractor shall provide a graphical schedule for the use of the Government and the Contractor. This shall be the governing document for IDIQ work schedules. The Contractor shall provide a IDIQ Schedule in accordance with DRD 1197LS-016. The start and finish dates reflected in this schedule shall be the actual start and finish dates of the work and shall not include material delivery times. Regularly scheduled meetings shall be held with the Government to address scheduling problems and set priorities. Work that is in process shall be indicated by an "in progress" status in the CMMS. If work cannot be performed on an IDIQ that is scheduled for work it shall be placed in a hold status with an explanation. The Contractor shall schedule support crafts and equipment as well as the primary craft. Unavailability of support craft or equipment and tools will not be considered by the Government as sufficient justification for delay of work unless it was previously planned for by the Contractor and is unavailable through no fault of the Contractor.
- D. Reliability Centered Maintenance (RCM)
1. The overall goal regarding Center operations and maintenance is to attain the building and system availability at the lowest life cycle cost (LLC) while meeting all standards for security, environmental health, safety, and MSFC mission requirements. RCM is the optimum mix of reactive, preventive, condition based, and proactive maintenance practices. Proactive maintenance includes Root Cause Failure Analysis (RCFA) and Failure Modes and Effects Analysis (FMEA) as well as Age Exploration. The maintenance strategies rather than being applied independently are integrated to take advantage of

their respective strengths in order to maximize facility and equipment operability and efficiency while minimizing life cycle cost. The RCM Report format will provide an opportunity for the Contractor to identify trends and to propose changes to the maintenance approach. When proposing changes to the maintenance approach, the Contractor shall use RCM strategy as defined in Paragraph 2.0, Definitions, and in NPR 88.31.2. The Government will consider all proposed changes, even those that reduce the recurring work load (without reducing the lump sum value per Paragraph 1.5, Lump Sum Work) if the result is increased facility availability and reliability. The RCM Report shall provide technical rationale for systems recommendations, and identify risk associated with proposed changes (probability of failure and effect on NASA mission or safety)

2. Contract Element (CLIN 00X1. 0312) RCM Report. The Contractor shall provide a report to the COTR addressing RCM implementation and RCM metrics in accordance with DRD 1197LS-009.
 3. Contract Element (CLIN - 00X1.0304) Reliability Centered Maintenance (RCM) Plan. The Contractor shall prepare a RCM plan and submit it to the Government for approval. The Contractor shall prepare the RCM Plan in accordance with DRD 1197LS-002. This plan shall be developed utilizing the current PM and PT&I program data as shown in Attachments J-24 and J-25, manufacturer's recommendations, the Contractor's knowledge of RCM approaches, and the use of PT&I and best PM practices. All reports and evaluations associated with PM shall include PT&I unless otherwise stated by the Government. After approval, this plan shall become the basis for timeliness and quality evaluations for all PM actions required on this contract. In addition, this plan will become the baseline for any changes to the program as referenced in Paragraph 1.5.D.
 4. Commissioning/Retrocommissioning. The Contractor shall provide support for commissioning and retrocommissioning of systems. This requires tests of systems to verify operation meets design requirements. This work will also include adjustments and repairs as necessary to correct deficiencies. Work shall be accomplished as trouble calls or IDIQ depending on the scope of work required.
- E. Evaluation Period Status Report. The Contractor shall provide summary documentation for the firm fixed price and indefinite delivery indefinite quantity work performed for each evaluation period in accordance with DRD 1197MA-001.
- F. Contract Element (CLIN 00X1.0313) Headquarters (HQ) Metrics. The Contractor shall provide the HQ metrics in accordance with DRD 1197LS-012.

3.3 IDIQ WORK

IDIQ work will be ordered in accordance with Paragraph 1.6, IDIQ Work, and may be ordered for any facility or area at MSFC. IDIQ work shall be completed within the number of days specified on the FWR or DO.

The following CLIN shall be pre-priced in Section B.

Contract Element (CLIN - 00X2.0301) Pre-Flight Facilities Checkout. The Contractor shall provide a report to the COTR that documents evaluation of the integrity of electrical and HVAC systems related to Shuttle launch activities. These electrical and HVAC systems are typically located in Buildings 4207 and 4663. The Contractor shall prepare the Pre-Flight Facilities Checkout Report in accordance with DRD 1197LS-010.

--Remainder of Page Intentionally Left Blank--

4.0 TROUBLE CALLS AND TROUBLE CALL SERVICES

4.1 GENERAL REQUIREMENTS

General. The Contractor shall perform all Trouble Calls (TCs) and trouble call services (TCSs) as described herein under the Firm Fixed Price Lump Sum portion of the contract. All Lump Sum work performed under this contract shall comply with Service Contract Act (SCA) labor requirements. Lack of required labor or materials shall not be an acceptable cause for nonperformance of work. Work shall assure safe, reliable, and available facilities and systems. The Contractor shall submit to the COTR or designated representative "red line" drawings showing the "as built" condition for any TC or TCS work that changes a system configuration.

4.2 LUMP SUM WORK

The Contractor shall respond to and correct all trouble calls of which they are notified.

- A. Contract Element (CLIN-00X1.0401) Trouble Calls Definition and Limitations. A TC is defined as an unscheduled request for work of a one-time nature typically issued to correct, repair, or restore a minor structural, mechanical (including plumbing), electrical, or environmental deficiency, requiring little detailed management control, and which is not projected to exceed \$2000 in total labor and material cost (hereafter referred to as the "limit"). The responsibility to perform work under a single TC ends when the Contractor notifies the COTR that the work is estimated to exceed the total limit specified. If the Government decides to proceed with the work, effort expended and costs incurred by the Contractor prior to such notification will be considered part of the IDIQ and will be applied toward any additional IDIQ work, which may result. The IDIQ shall have the same tracking number as the TC in the CMMS. The TC shall not be cancelled or closed but will be redesignated as an IDIQ. The initiator shall be notified in writing (email is acceptable) when a TC is converted to an IDIQ.
- B. Contract Element (CLIN-00X1.0402) Trouble Call Services (TCS) Minor Service Requests. The Contractor shall perform all minor service requests requiring little detailed management control, and which is not projected to exceed \$2,000 in labor and material cost. The responsibility to perform work under a single TCS ends when the Contractor notifies the COTR that the work is estimated to exceed the total limit specified. The Contractor will make an initial estimate of each TCS work scope prior to beginning work to determine if the work may exceed \$2,000. Should the Contractor initially estimate the work to exceed \$2,000, work will not commence and the COTR will be notified that work does not meet TCS limitations. If work is begun as a TCS and work scope changes for any reason that will cause the \$2,000 limit to be exceeded, work will stop until the COTR provides direction to continue work using the IDIQ process identified in contract Paragraph 1.6. In either case the Contractor shall notify the initiator in writing (email is acceptable) that he must submit an IDIQ before work can proceed. If the Government decides to proceed, any effort expended and incurred by the Contractor prior to such notification is considered part of the IDIQ and will be

applied toward any IDIQ work that may result. The IDIQ shall have the same tracking number as the TCS in the CMMS. The TCS shall not be cancelled or closed but will be redesignated as an IDIQ.

- C. Workmanship and Materials. The level of repair provided by the Contractor shall assure that any item included in a TC or TCS is free of missing components or defects which would affect the safety, reliability, availability, pleasing appearance, or habitability of the facilities, or would prevent any structural members, mechanical (including plumbing) systems, or electrical equipment from functioning per the intended design or use. Corrected or repaired work shall be carried to completion, including touch-up painting or operational checks. The quality of work and the repaired areas shall be fully compatible with adjacent surfaces or equipment. All replacement material shall match existing dimensions, capacities, materials, quality of work, finish, color, design, and function, unless otherwise specified. During performance of work, debris shall not be allowed to spread unnecessarily into adjacent areas nor accumulate in the work area itself. All such debris, excess material, and parts shall be removed upon completion of work or at the end of each workday, whichever occurs first. Upon completion of work, unsightly visual appearances such as any visual fingerprints, stains, surface degradations, caused during performance of work shall be removed.
- D. Classification of Trouble Calls and Trouble Call Services. The Contractor shall perform TCs and TCSs to correct deficiencies at various locations of facilities, structures, and utilities that are a part of MSFC. All TCs and TCSs are classified as follows:
1. Emergency Calls. Emergency calls are issued for situations that require immediate action to eliminate hazards to personnel, equipment, or environment, prevent loss of or damage to Government property, or to restore essential services that have been interrupted by an unplanned event. The Contractor response time shall be within fifteen (15) minutes following notification. The Contractor shall stabilize the situation assuring the emergency will not recur. If further labor and material are required to complete the repair once the emergency is arrested, completion shall be within five working days following notification of the emergency call unless stated otherwise within the technical portion of this specification. If the TC limit is reached during corrective operations, the Contractor shall immediately notify the COTR and continue work up to the point at which the emergency is arrested by stabilizing the situation to eliminate personnel hazards and further damage to Government property. Costs incurred to stabilize the emergency condition which exceed the TC limit will be reimbursed at the T&M coefficient. The Contractor shall provide a detailed breakdown of such costs for Government approval and payment. Remaining emergency work if required to complete the TC or additional work exceeding the TC limit shall be accomplished at the Government's discretion per Paragraph 1.6, IDIQ Work.
 2. Urgent Calls. Urgent calls are issued for situations which do not immediately endanger personnel or threaten to damage property or the environment, but

would soon inconvenience and affect the health or well being of personnel or disrupt operational missions or projects. The Contractor response time to urgent TCs shall be within two (2) hours following notification of the call for both core and non-core working hours. All urgent calls must be completed within five working days following notification of the call. If the TC limit is reached during corrective operations, the Contractor shall immediately notify the COTR and continue work up to the point at which the urgency is arrested. Costs incurred to stabilize the urgent condition that exceed the TC limit will be reimbursed at the T&M coefficient. The Contractor shall provide a detailed breakdown of such costs for Government approval and payment. Remaining urgent work if required to complete the TC or additional work exceeding the TC limit shall be accomplished at the Government's discretion per Paragraph 1.6, IDIQ Work.

3. Routine Calls. Routine calls are for all other calls that do not qualify as emergency or urgent call. The Contractor shall complete routine calls within fifteen working days following notification, unless specified otherwise when issued. Occasionally, the COTR will state specific dates or times for routine TC accomplishment, such as locating utility lines, pavement cutting, providing special maintenance support for other contractors, and other atypical items of work. Should the Contractor determine that work initiated as a routine TC will exceed the TC limit the Contractor shall return the documentation to the COTR along with a preliminary estimate for the remaining work per Paragraph 1.6, IDIQ Work, within one (1) working day of stopping work. However, the Contractor shall not leave the work in an unusable condition, any unsafe condition, any condition that creates a security violation, or any condition that may cause further damage or destruction. Remaining routine work exceeding the TC limit shall be accomplished at the Government's discretion by execution of a FWR or DO.

E. Processing Trouble Calls

1. Notification Procedures. Notification of new work shall be in accordance with Paragraph 3.2.B, Work Control.
2. Trouble Call and Trouble Call Service Documentation. TC and TCS documentation is electronic. The Contractor shall enter all documentation into the CMMS using the MAXIMO and @Hand software and wireless PDA's. For work outside the TC or TCS scope, the call shall be logged and documented in accordance with 3.2.B, Work Control. Calls shall be combined for items that are duplicated, received the same day for the same problem or worked the same day for the same problem, or items that are related to the same system located in the same general area and shall only be conducted as one (1) TC or TCS. Examples of combining work include, but are not limited to, relamping a number of rooms of the same floor of a building on the same day, unstopping a sink and a commode in the same restroom on the same day, and installing locks on a number of doors on the same floor on the same day. The Contractor shall maintain all records in a computer database on a daily basis for easy

accessibility by the Government. The Contractor shall ensure that all information has been entered in the CMMS.

- F. Work Status and Performance. The Contractor shall respond to questions within one (1) hour of receipt from the COTR as to the status of any TC or TCS work. The Contractor shall notify the TC requester by telephone, electronic mail, or fax of the work status within two working days from initial receipt for all emergency and urgent calls, and then shall notify the TC requester upon completion of TCs. The Contractor shall manage and update the CMMS in a manner that current TC or TCS work status shall be provided on demand. The Contractor shall be required to maintain sufficient quantities of materials on hand or have available an immediate source of supply to support TC work. Lack of such materials shall not be considered an acceptable cause for non-performance. Lack of planning shall not be considered acceptable for late performance. The Contractor shall repair any incidental and related damage as a result of the initial service being performed. For example, if the TC is to repair a roof leak, the Contractor shall replace any ceiling tiles or repair other related items damaged as a result of the leaking roof within the scope and limit of the particular TC. All work exceeding the TC limit shall be accomplished at the Government's discretion by execution of a FWR or DO.
- G. Timeliness Deduction. Timeliness for a TC or TCS is based on the work classification of emergency, urgent, or routine. However, the timeliness deduction will be increased in direct relation to completion time exceeding the original completion date unless the Contractor provides sufficient justification for this increase. The increased deduction shall be based on multiples of the original performance time beginning with double. The maximum deduction cannot exceed the total value of the trouble call. For example, should routine work not be completed for thirty-five working days, the timeliness deduction would be double the value determined in DRD 1197MA-001 for that TC or TCS. Deductions are not to be confused with not meeting the Acceptable Quality Level (AQL). If the contractor fails to meet the AQL, it indicates the Contractor's quality control is unsatisfactory.

--Remainder of Page Intentionally Left Blank--

5.0 **SYSTEMS ENGINEERING**

Contract Element (CLIN-00X1.0501) Systems Engineering. The Contractor shall provide a well staffed and skilled engineering group to oversee and guide the work to be performed under this contract. The Government will do all design engineering. The Contractor shall not perform design engineering. System Engineers shall be provided for electrical, mechanical HVAC and civil/structural systems. Engineers shall possess a Bachelor of Science degree from an accredited engineering school in mechanical, electrical or civil/structural engineering and have a minimum of three years experience in the area of the systems assigned. Systems Engineers shall be able to communicate effectively across a broad range of organizational levels, including managerial, supervisory, technical, and crafts personnel. Systems Engineers shall be capable of making effective technical and managerial decisions in regard to the operation and maintenance of their assigned system(s), and shall be knowledgeable regarding industry practices, tools, shops and training. They will perform all the responsibilities of System Engineers including but not limited to:

- Act as technical expert and manager over system(s) including maintaining a broad knowledge of related work issues, such as environmental and safety requirements, systems integration, monitoring and metering concepts.
- Maintain state-of-the-art technical expertise in assigned systems; maintain knowledge of current trends in industry through review of technical publications, attendance of trade shows, manufacturer product briefings and literature, and other continuing education methods.
- Review and correct CMMS equipment information.
- Ensure that all Maintenance work complies with configuration control requirements and provide documentation of configuration changes.
- Brief and keep NASA Technical Monitor(s) updated on system(s) status and key events
- Assist in the troubleshooting and resolution of system problems.
- Develop scope, work statements, specifications and packages for procurement of outsource technical consulting, operation/repair, or other services.
- Monitor equipment and system performance and initiate actions to resolve operational deficiencies, improve performance, increase reliability and improve energy efficiency.
- Monitor the effectiveness of the PM and PT&I programs and recommend improvements
- Review all facility Design Criteria Statements and design drawings, provide comments, and participate in related design review meetings
- Determine and recommend to the Government the disposition of failed equipment, for example, repair or replace.
- Perform Facility Condition Assessments and prepare the Facility Condition Assessment Schedule and Reports (DRD 1197LS-006) and Facility Condition Assessment Project Recommendation Report (DRD 1197LS-008)
- Provide guidance to the craft personnel to ensure sound engineering practices are followed in all work

- Ensure that all applicable codes, standards, and other requirements are met in the performance of work
- Review all data collected for the Pre Flight Facilities Checkout Report (DRD 1197LS-010) and disposition all exceptions that are outside recommended operating limits.
- Provide specifications for replacement equipment when not specified by design
- Provide assistance to the RCM Engineer in the area of their expertise.
- Attend construction inspections and submit findings to the Construction Inspector.
- Provide field engineering support to technicians.

The contractor shall provide a Lifting Devices Engineer, whose primary responsibility will be to monitor and direct all maintenance, repair, modification, installation, and certification of lifting equipment, including but not limited to cranes, hoists, derricks, and elevators. The Lifting Devices Engineer shall be highly qualified in control systems used on lifting equipment. The contractor shall also have on staff engineers of other disciplines required to support the Lifting Devices Engineer in areas outside his major discipline. The LDE shall review all lifting procedures required for work under this contract. The LDE shall review the Annual Crane and Hoist Inspection Report (DRD 1197LS-013), the Annual Elevator Inspection Report (DRD 1197LS-014), and the Five Year Elevator Inspection Report (DRD 1197LS-015) prior to submission to the Government and shall ensure all discrepancies are corrected.

The contractor shall provide a full time RCM Engineer whose primary responsibility will be to lead and direct the implementation of the RCM program. Specific duties of the RCM Engineer shall include but not be limited to:

- Review PT&I data to identify impending equipment failures
- Investigate all equipment failures and determine the actions necessary to prevent or mitigate similar future failures
- Investigate multiple failures on individual pieces of equipment and perform root cause failure analyses.
- Review the PM Plan and make recommendations for continuous improvement based upon equipment history, PT&I data and industry practice
- Monitor current industry state of the art in PT&I and PM practices and recommend changes to the current PM Plan based on emerging technologies
- Prepare the Reliability Centered Maintenance Report (DRD 1197LS-009)
- Monitor equipment and system performance and initiate actions to resolve operational deficiencies, improve performance and increase reliability.
- Monitor the effectiveness of the PM and PT&I programs and recommend improvements
- Review CMMS and PT&I data to identify key areas for improvement in maintenance programs to optimize quality and timeliness of service and system reliability.

6.0 ENVIRONMENTAL MANAGEMENT SUPPORT

6.1 GENERAL REQUIREMENTS

- A. Spill Response. The Contractor shall provide labor, supervision, tools, materials, equipment, and transportation necessary to provide spill response capabilities for petroleum products, toxic, and hazardous and controlled chemical spills at MSFC, including providing containment, cleanup, and treatment of all types of spill emergencies. The Contractor shall be the secondary responder to Redstone Arsenal Fire Department (primary responder). After the Redstone Arsenal Fire Department leaves the scene, the Contractor shall assume the primary responder role.
- B. Asbestos and Lead Management. The Contractor shall provide labor, supervision, tools, materials, equipment, and transportation necessary to provide asbestos and lead management and compliance. The Contractor's asbestos and lead abatement is limited to maintenance within the Service Contract Act.

6.2 LUMP SUM WORK

The following contract elements shall be performed per the Performance Requirements Summary (PRS), Section E.9, and the Performance criteria listed within the contract requirements.

- A. Spill Response
1. Contract Element (CLIN - 00X1.0601) Establish Spill Response Team. The Contractor shall continuously provide sufficient, adequately trained personnel to support and accomplish spill response 24 hours a day, 7 days a week. Initial training is the responsibility of the Contractor. Annual refresher training is provided by the Government onsite at no cost.
 2. Contract Element (CLIN - 00X1.0602) Response to Spills and Releases. The Contractor shall respond upon notification to all spills and release of regulated wastes and materials in accordance with the AS10-OWI-001, "MSFC Consolidated Environmental Response Plan, MSFC Emergency Plan (MPR 1040.3), and all Federal, state, and local environmental laws and regulations (latest edition). The Contractor shall respond to all spills after notification within fifteen (15) minutes for core work hours and one hour for non-core work hours and shall work continuously to contain and clean up the spill and package the material. The Contractor shall not leave the site until all work is completed or the Contractor is released by the Environmental Engineering and Occupational Health Office or lead NASA person. This includes, but is not limited to, the following: dispatching personnel and equipment; securing and containing spilled materials under the direction of the Redstone Fire Department and/or Environmental personnel; cleanup and removal of spilled material and contamination; disposal of material generated during cleanup (wastes generated shall be managed in accordance with MWI 8550.1, Waste Management); and decontamination of personnel, equipment, and all property

affected by the spilled material. The Contractor shall handle all spill response activities as an Emergency Trouble Call (TC) as defined in Paragraph 4.2 up to the TC limit. (Note: Because of reporting requirements, environmental TC's shall be priced and accounted for separately from the rest of the TC's in this contract.) Additional spill response activities beyond the TC limit shall be accomplished at the Government's discretion per Paragraph 1.6, IDIQ Work, Spill Response and Cleanup. (Any spills created by the Contractor due to poor or improper operations shall not be included in this total and will be paid for by the Contractor.)

3. Contract Element (CLIN - 00X1.0603) Spill Equipment and Supplies. The Contractor shall continuously provide and maintain an adequate supply of materials necessary for spill response activities. An itemized inventory of all spills response equipment and materials kept in stock shall be maintained at all times. Required reference materials shall be maintained as part of the inventory (for example, guidebooks, blank forms, chemical reference manuals.) After a spill response, the Contractor shall restock equipment and supplies within three (3) days.
- B. Asbestos and Lead Management Contract Element (CLIN - 00X1.0604) Asbestos and Lead Abatement Records. The Contractor shall maintain asbestos and lead abatement records in an electronic database on a continuous basis. Abatement records shall be added within seven (7) days of abatement completion.

6.3 DOCUMENTATION AND REPORTING REQUIREMENTS

A. Spill Response Reports

1. Contract Element (CLIN - 00X1.0605) Spill Response Team, Equipment and Supplies Listing. The Contractor shall provide the spill response team, equipment and supplies listing in accordance with DRD 1197EE-003.

B. Asbestos and Lead Management

1. Contract Element (CLIN - 00X1.0606) Asbestos Management Program. The Contractor shall establish and implement an Asbestos Program in accordance with all applicable Federal, state, and local laws and regulations, NASA policies and management directives. The Contractor shall prepare an Asbestos Control Manual in accordance with DRD 1197EE-001 and ensure that subcontractors follow this plan. The Contractor shall ensure that employees have the appropriate credential/certifications to perform asbestos abatement.
2. Contract Element (CLIN - 00X1.0607) Lead Program. The Contractor shall establish and implement a Lead Program to minimize worker and employee exposure and minimize releases to the environment during the abatement, removal, or disturbance of paints and materials containing lead or other regulated heavy metals. The Contractor shall ensure that employees have the

appropriate credential/certifications to perform lead abatement. The Contractor shall prepare a Lead Program Plan in accordance with DRD 1197EE-002.

3. Contract Element (CLIN - 00X1.0608) Asbestos and Lead Monthly Report.
The Contractor shall prepare a monthly asbestos and lead report in accordance with DRD 1197EE-005.

- C. Hazardous Waste Disposal. The Contractor Shall dispose of hazardous waste in accordance with MWI 8550.1.

6.4 IDIQ WORK

IDIQ work shall be ordered in accordance with Paragraph 1.6, IDIQ work, and completed within the number of calendar or work days specified in the IDIQ FWR or DO. For subcontracted services, if the estimated or proposed subcontract price exceeds \$2,500, the Contractor shall provide competitive subcontractor quotes to support the proposed price unless otherwise directed by the Environmental Engineering and Management Office.

- A. Spill Response and Cleanup. Includes all spill response and cleanup actions that exceed the Lump Sum per spill event identified in Paragraph 6.2, Lump Sum. Initial spill response is included in the Lump Sum portion of the contract. The Contractor shall handle spill response activities as defined in Paragraph 1.6, IDIQ Work.
- B. Technical Support. The Contractor shall provide technical support as required in the FWR or DO.

6.5 DETAILED SPECIFICATIONS

- A. Environmental Protection. The Contractor shall comply with all environmental directives, instructions, policies, and regulations and any revisions, updates, or successor documents as listed in Attachment J-26.
- B. Debris Disposal. Any debris the Contractor needs to dispose of, except for hazardous and controlled waste, shall be disposed of at the Redstone Arsenal Solid Waste Management Area (SWMA), the City of Huntsville Incinerator, or City of Huntsville Landfill. Disposal of debris or special waste at the SWMA will be in accordance with the MWI 8550.1.
 1. SWMA Guidelines. The following are guidelines for hauling and dumping of INERT material at the Redstone Arsenal SWMA.
 - a. All trees and tree debris, stumps, and yard waste shall be separated from other inert materials
 - b. Separate all construction debris from dirt and rock. Dirt (spoil material) from construction and maintenance activities is acceptable for disposal.

- c. Separate all salable/reusable scrap lumber from construction debris.
 - d. Separate all salable/reusable metal from construction debris. Scrap metal including aluminum, copper, and metal shavings are not acceptable item for disposal at the SWMA.
 - e. Materials containing asbestos will be accepted only if it is in compliance with (OSHA/NESHAPS/ADEM) regulatory requirements.
 - f. Garbage will not be accepted including food and food containers, drink cans and bottles, milk cartons, food wrappers, paper plates, napkins, lunch bags, and scrap. Mixed loads containing garbage will require separation by the generator and the proper disposal method used.
 - g. Liquids of any type are unacceptable.
 - h. Ammunitions and explosive type materials are unacceptable.
 - i. Hazardous material and waste are unacceptable.
 - j. Containers of one gallon or larger that contains material such as, paint solvents, or similar material are unacceptable.
 - k. Empty drums of 5 gallons or larger in good condition are unacceptable.
 - l. Empty drums of 5 gallons or larger in poor condition shall be flattened prior to disposal.
 - m. A Manifest of Material Delivered to the Redstone Arsenal Solid Waste Management Area, Form ASMI-RA 2435 shall be required for each load received at the SWMA.
 - n. Special Waste other than asbestos will not be accepted.
 - o. The SWMA operator shall randomly inspect loads with refuse material that does not comply with regulations and procedures.
2. Other Debris. Debris that is unacceptable at the SWMA will be collected in trash bins located at MSFC for incineration at the City of Huntsville Incinerator other than hazardous and controlled waste and recyclable items such as metal, aluminum cans and white paper.

--Remainder of Page Intentionally Left Blank--

7.0 FACILITY ALARM AND MONITORING SYSTEMS

7.1 GENERAL REQUIREMENTS

The Contractor shall provide all labor, supervision, tools, material, equipment, incidental engineering, and transportation to operate, maintain, and repair the alarm systems and monitoring equipment identified in this paragraph. Emergency conditions require immediate action to (1) prevent loss of or damage to MSFC property, (2) to restore essential services that have been disrupted, or (3) to eliminate hazards to personnel or equipment.

7.2 LUMP SUM WORK

The following contract elements shall be performed per the Performance Requirements Summary (PRS), Section E.9, and the performance criteria listed within the contract requirement:

- A. Contract Element (Include in CLIN - 00X1.0401) Trouble Calls (TC). The Contractor shall perform all TCs related to this paragraph per 4.0. Trouble Calls. The maintenance criteria for equipment and systems in this paragraph shall comply with availability requirements stated in Attachment J-10. The Contractor shall respond to fire and gas alarms as critical alarms and shall respond to maintenance alarms as urgent work. Maintenance alarms may be reclassified as routine work after it has been determined there is no immediate danger to personnel, equipment, or the environment.
- B. Contract Element (CLIN - 00X1.0701) Fire Alarm System PM. The Contractor shall perform PM in order to maintain system integrity on all fire alarm systems that include, but are not limited to, fire transmitters and various fire panels as listed in Attachment J-13.
- C. Contract Element (CLIN - 00X1.0702) Gas Detection System PM. The Contractor shall perform PM in order to maintain system integrity on all gas detection systems listed in Attachment J-14.
- D. Contract Element (CLIN 00X1.0703) Fire Alarm System Operations. The Contractor shall operate, maintain, and repair all MSFC fire alarm systems, including, but not be limited to, those listed in Attachment J-13 continuously, 365 days per year, 24 hours a day, 7 days a week. Operation and maintenance shall include, but not be limited to, disabling alarms and panels to prevent inadvertent activation while other personnel are working in an area, enabling alarms and panels after personnel have performed work that might inadvertently activate alarms, maintaining prescribed sensitivity limits in accordance with manufacturer recommendations, restoring power and resetting alarms and panels after planned or unplanned outages, resetting breakers, responding to activated alarms, maintaining panels, replacing batteries, supporting fire drills, and reprogramming systems. The work shall also include repair. Maintenance timeliness shall be the same as for trouble calls. The Contractor's repair liability for servicing equipment and system

components is limited to \$2000 per system, per occurrence. The Contractor shall not classify response to fire alarms as trouble calls. The Contractor shall respond to emergency situations with correct repair so that system integrity is maintained and personnel safety is not compromised. Work shall conform to Federal and State Codes, EPA standards, NFPA and OSHA regulations. All alarms, detectors, batteries, panels, conduit, fittings, wiring, hangers, structural supports and touch-up painting are included.

- E. Contract Element (CLIN OOX 1.0704) Gas Detection System Operations. The Contractor shall operate, maintain, and repair all MSFC gas detection systems, including but not be limited to those listed in Attachment J-14, continuously, 365 days per year, 24 hours a day, 7 days a week. Operation and maintenance shall include, but not be limited to, disabling alarms to prevent inadvertent activation while other personnel are working in an area, enabling alarms systems after personnel have performed work that might inadvertently activate alarms, restoring power and resetting alarms after planned or unplanned outages, resetting breakers, responding to activated alarms, replacing batteries, maintaining prescribed sensitivity limits in accordance with manufacturer recommendations, replacing cells and detectors, replacing and adjusting monitors, and adding cell fluid. The work shall also include repair. Maintenance timeliness shall be the same as for trouble calls. The Contractor's repair liability for servicing equipment and system components is limited to \$2000 per system, per occurrence. The Contractor shall not classify response to gas detection as trouble calls. The Contractor shall respond to emergency situations and follow the appropriate procedures to notify the proper NASA organizations of the potential safety hazard and provide support to these organizations when required so personnel safety is not compromised for personnel required to work in the affected work areas. Work shall be performed to Federal and State Codes, EPA standards, and OSHA regulations. All alarms, cells, monitors, detectors, batteries, panels, conduit, fittings, wiring, hangers, structural supports and touch-up painting are included. These systems are typically found in controlled areas operated by other Contractors, but that does not negate the Contractor's responsibility to arrest the situation and inform the appropriate area custodian. Regardless extreme caution and safety must be adhered to when dealing with these life safety systems and working in these hazardous environments. The Contractor is not expected to take unreasonable risks that would otherwise put any personnel in harms way, to secure any situation.

7.3 DOCUMENTATION AND REPORTING REQUIREMENTS

- A. Contract Element (Include in CLIN - 00X1.0306) Computerized Maintenance Management System (CMMS) Operations and Management. The Contractor shall continuously update the CMMS to reflect any and all equipment failures and corrective actions taken. All data shall be accurate and current.
- B. Contract Element (CLIN - 00X1.1014) Maintenance Procedures. The Contractor shall provide maintenance procedures in accordance with DRD 1197LS-011. The Contractor shall update and revise all maintenance procedures on a continuing basis as required by physical changes at no additional cost to the Government (See

Paragraph 10.5.E, Maintenance Requirements and Procedures). Maintenance procedures shall be maintained in the TRL.

7.4 IDIQ WORK

IDIQ work will be ordered in accordance with Paragraph 1.6, IDIQ, and completed within the number of calendar or work days specified in the FWR or DO. Each of the following CLINs shall be pre-priced in Section B. All components specified below by part number shall be supplied unless substituted by an approved equal. All components/assemblies described below shall be priced based on an average wire and conduit length of 100 feet. Wire and conduit for components shall be routed in an efficient manner to the nearest UCS Control Panel or as directed by the Government. The Contractor is responsible for the termination of wire at the device end. Termination of wire at the UCS Control Panel is by others. The Contractor is responsible for termination of conduit at the device end and at the UCS Control Panel. The Contractor shall work jointly with the UCS Contractor to conduct a complete operational checkout of installed components/assemblies before installation of components/assemblies is considered complete.

- A. Contract Element (CLIN 0002.0701) Provide and Install New Duct Temperature. The Contractor shall provide and install new duct temperature sensor based on 48 inch (length may vary) Minco Probe, Rigid, Averaging -50 to 275 Deg.F. Part # S456PEY48/TT111PE1AI.
- B. Contract Element (CLIN 0002.0702) Provide and Install New Liquid Temperature Sensor. The Contractor shall provide and install (including thermowell installation) new Liquid Temperature Sensor Minco Immersion Assembly -50 to 275 Deg.F. Part # AS5140PD(U)Y1AIN211A1 (“U” specifies length of probe).
- C. Contract Element (CLIN 0002.0703) Provide and install new Room Temperature Sensor. The Contractor shall provide and install new room temperature sensor Minco Wall-Mount Temp Assembly -32 to 122 Deg. F. Part # S473PDY4K1/TT115PD1N.
- D. Contract Element (CLIN 0002.0704) Provide and install new Room Temperature/Relative Humidity Sensor. The Contractor shall provide and install new room temperature/relative humidity sensor GE Wall-Mount Temp/RH Assembly 32 to 122 Deg.F/0 to 100 %RH. Part # P40250111.
- E. Contract Element (CLIN 0002.0705) Provide and Install Control and Status to Constant Volume AHU. The Contractor shall provide and install control and status to constant volume AHU. Control shall be based on API SPDT, Multivoltage Relay with Enclosure Part # MR-101/C. Status shall be based on Dwyer Low Differential Air Pressure Switch Part # 1910-0.
- F. Contract Element (CLIN 0002.0706) Provide and Install New Liquid Pressure Sensor. The Contractor shall provide and install (including all necessary mechanical

components) new liquid pressure sensor Setra Differential Pressure Transmitter. Part #M230-xxxx-C (“xxxx” indicates specified range to be specified in IDIQ).

- G. Contract Element (CLIN 0002.0707) Provide and Install Control and Status to Constant Volume Pump. The Contractor shall provide and install control and status (including all necessary mechanical components) to constant volume pump. Control shall be based on API SPDT, Multivoltage Relay with Enclosure Part # MR-101/C. Status shall be based on JCI Liquid Differential Pressure Switch Part #P74FA-5.

7.5 DETAILED SPECIFICATIONS

- A. Equipment Failure. The Contractor shall maintain all equipment in optimum operating condition. All equipment shall be operational, functional, and ready to respond to any alarm situation according to its’ design purpose and intent 100 percent of the time except for scheduled or planned outages.

--Remainder of Page Intentionally Left Blank--

8.0 UTILITIES AND SURFACED AREAS

8.1 GENERAL REQUIREMENTS

- A. General. The Contractor shall provide all labor, supervision, materials, tools, equipment, transportation, and management necessary to provide maintenance and repair to the utility systems, associated mechanical equipment, and surfaced areas at MSFC. New fire suppression systems that are different from those identified may be installed at MSFC. The Contractor shall include those systems into the work scope so as to meet all code related requirements related to maintenance and testing. The work includes, but is not limited to, removing debris from earth drainage ditches and drainage structures such as culverts, manholes, drop inlets, catch basins, gutters, piping, and open ditches and swales; minor repair of underground utility systems; grading of earth, replacement of disturbed landscaping and lawn sprinkler systems; soil-aggregate roadways and shoulders; crack sealing; cutout of pavement for utility repairs; temporary and permanent patching of sections of bituminous (flexible) and concrete (rigid) pavements; and pavement marking and snow and ice removal. The Contractor shall initiate contact with the COTR if the weather forecast projects a 60 percent or greater possibility of snow or ice accumulation. The Contractor shall prepare for and perform snow and ice removal from bridges, roads, parking lots, walks, ramps, steps, and other surfaced areas at MSFC when issued a FWR. Work shall be performed and comply with the appropriate directives, manuals, and instructions listed in Attachment J-26.
- B. Drawings. All drawings and utility maps applicable to this paragraph are available from the Government and identify locations of all known underground utility systems, ditches, roadways, and drainage structures. The Contractor shall check all drawings furnished to them immediately upon receipt and shall promptly notify the COTR of any discrepancies. The Contractor shall compare all drawings and field verify the maintenance areas and contract quantities before laying out the work and shall be responsible for any errors which may have been avoided otherwise.
- C. Code Requirements. The Contractor shall follow all Federal, state, and local codes and standards while maintaining, repairing, or replacing any utility system at MSFC.

8.2 LUMP SUM WORK

The Contractor shall perform the following contract elements per the Performance Requirements Summary (PRS), Section E.9, at frequencies or performance criteria specified within the contract requirement:

- A. Contract Element (Include in CLIN - 00X1.0401) Trouble Calls (TC)
1. Pavement Cutting and Patching. When issued, sections of bituminous and concrete pavements at specified locations shall be cut out to permit utility repairs. Within one (1) working day following the utility repair, the cut out

area shall be backfilled with material similar to the adjacent undisturbed material, compacted to a similar density, and temporarily patched as specified in Paragraph 8.4.B, Temporary Pavement Patching. The Government will grant extension times for completion if the Contractor chooses to apply a more permanent patch as specified in Paragraph 8.4.C, Bituminous Pavement Patching or Paragraph 8.4.D, Concrete Pavement Patching. Any landscaped areas or pavement markings damaged as a result of this work shall be restored to their original condition.

2. Water Main and Natural Gas Leak. When issuing a TC for a water main or natural gas leak, the TC shall be classified as an emergency TC according to Paragraph 4.2, Trouble Calls.
 3. Sanitary and Storm Sewer Stoppages. TCs for this work shall be considered urgent. When issued a TC for a sanitary or storm sewer stoppage, in addition to requirements defined in 4.2, the Contractor shall clean the stoppage as follows. During core working hours, the line shall be cleared within a four (4) hour period from initial notification including clean-up of any spillage. During non-core working hours, response, blockage removed, and line restored to normal shall occur within eight (8) hours. The Contractor shall use an approved disinfectant when applicable.
 4. Fire Sprinkler System Mechanical Malfunctions. TCs for this work shall be considered urgent. When issued a TC for this work, in addition to requirements defined in 4.2, the Contractor shall repair fire sprinkler systems as follows. During core working hours, repairs shall be accomplished within an eight (8) hour period and system restored to normal operating condition per proper automatic fire sprinkler system procedures. During non-core working hours, repairs shall be accomplished within the next core working day in compliance with the directive for repairs during core working hours.
 5. Water Meters. The Contractor shall maintain all water meters in a proper working order. Any meter that is inoperable or indicating false readings shall be repaired or replaced within five working days when first noticed upon inspection or notification by the Government.
- B. Contract Element (CLIN - 00X1.0801) Fire Suppression Wet Pipe System PM. The Contractor shall perform PM on all fire suppression wet pipe systems included in Attachment J-15 per NFPA 13 and NFPA 25. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
 - C. Contract Element (CLIN - 00X1.0802) Fire Suppression Pre-action System PM. The Contractor shall perform PM on all fire suppression pre-action systems listed in Attachment J-15 per NFPA 13 and NFPA 25. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
 - D. Contract Element (CLIN - 00X1.0803) Fire Suppression Dry System PM. The Contractor shall perform PM on all fire suppression dry systems included in

Attachment J-15 per NFPA 13 and NFPA, 25. All PM activities shall be accomplished in compliance with the Contractor's PM plan.

- E. Contract Element (CLIN - 00X1.0804) Fire Suppression Foam System PM. The Contractor shall perform PM on all fire suppression foam systems included in Attachment J-15 per NFPA 11. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- F. Contract Element (CLIN - 00X1.0805) Fire Suppression Dry Chemical PM. The Contractor shall perform PM on all fire suppression dry chemical systems included in Attachment J-15 per NFPA 17. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- G. Contract Element (CLIN - 00X1.0806) Emergency Shower/Eyewash Station Monthly PM. The Contractor shall perform PM on all fixed emergency shower/eyewash stations listed in Attachment J-16 per the ANSI Z358.1 for eyewash and safety showers.
- H. Contract Element (CLIN - 00X1.0807) Sump and Sewer Pump PM. The Contractor shall perform PM on all sump pumps included in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- I. Contract Element (CLIN – 00X1.0808) Storm Drainage System PM. The Contractor shall keep all culverts, pipes, catch basins and drop inlets free of debris and sediments from the surface of and up to 15 feet beyond openings of such drainage structures. All ditches and swales bordering and traversing MSFC shall be kept free of all debris and sediments restricting the flow of water. All debris and sediment shall be disposed of in accordance with Paragraph 6.0. Environmental Management Support. Some of these areas are classified as wetlands and shall be managed per applicable Federal, state, and local laws and regulations. These efforts shall be coordinated with NASA, Environmental Engineering and Management Office. All PM activities listed in Attachment J-24 shall be accomplished in compliance with the Contractor's PM plan.
- J. Contract Element (CLIN - 00X1.0809) Surfaced Areas Sweeping: Streets and Parking Lots. The Contractor shall maintain all streets at MSFC free of all debris to the curb or shoulder of the roadway. Debris shall be removed as required to provide a clean sweep. All street sweeping shall be performed during non-core work hours to minimize any disruption to the resident working population, and barricades shall be used to restrict traffic as needed. The Contractor shall sweep all parking lots and other areas as identified, to eliminate standing dirt and obstacles, so as to maintain all painted markings and designations visible and legible, and to remove all hazards to foot traffic, particularly at steps and curbs. All lots shall be swept during non-core work hours, and shall be barricaded to restrict parking and traffic during the sweeping operation. Debris shall not be swept into storm drains, nor left in piles. The Contractor shall submit a schedule for routine street and parking lot sweeping within fifteen days of the contract start date. That schedule shall be the basis for timeliness associated with this contract element.

- K. Contract Element (CLIN - 00X1.0810) Fire Pump PM. The Contractor shall perform PM on all fire pumps included in Attachment J-15 per NFPA 25. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- L. Contract Element (CLIN – 00X1.0811) Standpipe PM. The Contractor shall perform PM on all standpipe included in Attachment J-15 per NFPA 25. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- M. Contract Element (CLIN – 00X1.0812) CO2 PM. The Contractor shall perform PM on all CO2 systems included in Attachment J-15 per NFPA 12. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- N. Contract Element (CLIN – 00X1.0813) Wet Chemical PM. The Contractor shall perform PM on all wet chemical systems included in Attachment J-15 per NFPA 17A. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- O. Contract Element (CLIN - 00X1.0814) Miscellaneous Pump PM. The Contractor shall perform PM on all miscellaneous pumps not included in other contract elements but are included in Attachment J-6. Pumps in this classification include, but are not limited to, potable water, hydraulic, lawn sprinkler. All PM activities shall be accomplished in compliance with the Contractor's PM plan.

8.3 **DOCUMENTATION AND REPORTING REQUIREMENTS**

- A. Contract Element (Include in CLIN - 00X1.0306) Computerized Maintenance Management System (CMMS) Operations and Management. The Contractor shall continuously update the CMMS to reflect any and all equipment failures and corrective actions taken. All data shall be accurate and current.
- B. Contract Element (CLIN - 00X1.1014) Maintenance Procedures. The Contractor shall provide maintenance procedures in accordance with DRD 1197LS-011. The Contractor shall update and revise all maintenance procedures on a continuing basis as required by physical changes at no additional cost to the Government (See Paragraph 10.5.E, Maintenance Requirements and Procedures). Maintenance procedures shall be maintained in the TRL.
- C. Contract Element (CLIN - 00X 1.0815) Automatic Fire Sprinkler System Quarterly Inspection Report. The Contractor shall submit a quarterly automatic fire sprinkler system inspection report to the COTR to demonstrate acceptable operational status of the automatic fire sprinkler systems in accordance with DRD 1197LS-007.

8.4 **IDIQ WORK**

IDIQ work will be ordered in accordance with Paragraph 1.6, IDIQ Work and completed within the number of calendar or workdays specified in the FWR or DO.

- A. Pavement Crack Sealing. The Contractor shall seal cracks and joints 1/8-inch or wider in surfaced areas by cleaning out at ordered locations with mechanical routing and compressed air to remove debris and loose particles, and seal with sealant under dry conditions.
- B. Temporary Pavement Patching. Potholes and depressions in bituminous and concrete pavements at ordered locations shall be temporarily patched by the Contractor with bituminous cold mix or hot mix. The area to be patched shall be cleaned of any loose material or soil, leveled, filled under dry conditions with bituminous material, and compacted using a hand tamp, weighted roller, or loaded truck wheels. The final compacted surface of the patched area shall be approximately level with the adjacent pavement surface.
- C. Bituminous Pavement Patching. The Contractor shall perform bituminous pavement repairs. All work shall be in compliance with the Asphalt Institute MS. 16 and the MSFC Technical Specifications for Repair and Construction (TSRC).
- D. Concrete Pavement Patching. The Contractor shall provide concrete pavement repair. All work shall be in compliance with the American Concrete Institute Manual of Concrete Practice (Latest Edition) and TSRC.
- E. Pavement Stripping Marking. The Contractor shall place pavement striping and markings. All material shall conform to TSRC and the State of Alabama Highway Department, Standard Specification for Highway Construction (latest edition). Color and configuration shall be as follows:
1. Roadway Striping. Furnish and apply white or yellow reflectory roadway traffic striping at ordered locations, four (4) inches in width.
 2. Parking Lot Striping. Furnish and apply white non-reflectory parking lot striping at ordered locations, four (4) inches in width.
 3. Pavement Crosswalks. Crosswalks shall have signs designating their location.
 4. Pavement Stop Bars. Furnish and apply white reflectory pavement stop bars at ordered locations, 12 inches in width extending the full width of, and perpendicular to, the traffic lane. When used in conjunction with a stop sign, the stop bar shall be applied in line with the stop sign unless otherwise requested by the COTR.
 5. Traffic Letters and Numbers. Furnish and apply white non-reflectory pavement traffic numbers and letters at ordered locations, 18 inches in height.
 6. Handicap Symbols. Furnish and apply blue non-reflectory pavement handicap symbols at ordered locations in compliance with the Americans with Disabilities Act (ADA).

7. Parking Stall Letters. Furnish and apply white non-reflectory parking stall letters at ordered locations, 1/2-inch in width.
- F. Underground Fire Sprinkler Piping System. Underground fire sprinkler mains at ordered locations shall be replaced with new pipe of the same size. All piping shall be designed for fire sprinkler mains with 150 pounds working pressure.
- G. Underground Industrial Sewer Piping System. Underground industrial sewer piping at ordered locations shall be replaced with new pipe of the same size.
- H. Underground Industrial Storm Drain Piping System. Underground industrial storm drain piping at ordered locations shall be replaced with new pipe of the same size.
- I. Underground Storm Drain Manholes. Underground sanitary storm sewer manholes at ordered locations shall be replaced with a new manhole of the same size and style as existing manhole to be replaced.
- J. Snow and Ice Removal. Remove snow and ice from areas as prioritized in Attachment J-17. Snow and ice removal shall commence within three (3) hours of initial accumulation but not before COTR approval. Removal shall be completed for all Priority 1 locations within four (4) hours of commencing at any single Priority 1 location. Likewise, removal shall be completed at Priority 2 and 3 locations within four (4) hours of commencing at any single Priority 2 or 3 locations respectively. Priorities may be changed at any time by the COTR.

8.5 DETAILED SPECIFICATIONS

- A. Pavement Marking
 1. Materials and Equipment. Paints for roads and streets shall conform to TSRC and the State of Alabama Highway Department, Standard Specification for Highway Construction (latest edition). All paints shall meet the requirements of the MSFC Pollution Prevention Plan for low VOC paint.
 2. Application
 - a. Surface Preparation. In compliance with the TSRC and the State of Alabama Highway Department, Standard Specification for Highway Construction (latest edition).
 - b. Painting. In compliance with TSRC and the State of Alabama Highway Department, Standard Specification for Highway Construction (latest edition).
 - (1) Reflective Marking Rates. In compliance with the TSRC and the State of Alabama Highway Department, Standard Specification for Highway Construction (latest edition).

- (2) Non-reflective Marking Rates. In compliance with the TSRC and the State of Alabama Highway Department, Standard Specification for Highway Construction (latest edition).
- B. Debris Disposal. The Contractor shall be in compliance with MSFC Environmental Engineering and Occupational Health Office requirements for disposal of debris resulting from drainage system cleaning, pavement cutting, and patching.

--Remainder of Page Intentionally Left Blank--

9.0 REPAIR BUILDINGS & STRUCTURES

9.1 GENERAL REQUIREMENTS

The Contractor shall provide all labor, management, supervision, tools, materials, equipment, incidental engineering, and transportation to perform maintenance, repair, alterations, and inspections on buildings, structures, and equipment at MSFC. This shall also include pest control both inside and outside of buildings and structures. The work shall be performed as Lump Sum and IDIQ work items.

9.2 LUMP SUM WORK

The following Contract Requirements shall be performed per the Performance Requirements Summary (PRS) Section E.9, at the frequencies or performance criteria specified within the contract requirement:

A. Contract Element (Include in CLIN - 00X1.0401) Trouble Calls (TC)

1. The Contractor shall respond to all building and structure related TCs per Paragraph 4.2, Trouble Calls. The Contractor shall provide all maintenance, repairs, and alterations as identified in Paragraph 9.5, A through I, Detailed Specifications, in accordance with Federal, state, and local regulations and codes including historic preservation requirements. Services not identified in the detailed specifications paragraph shall be in accordance with normal industry standards.
2. All roof and interior water leaks shall be considered emergency TCs and the Contractor shall respond, repair, and document roof related TCs in the following manner.
 - a. The Contractor shall protect building interior, furnishings, equipment, and personnel by safely containing incoming water within 1 hour of detection or notification.
 - b. The Contractor shall perform the appropriate temporary repair or alteration within the time allotted. Refer to Paragraph 9.5.H, Roofing, for repair methods.
 - c. The Contractor shall evaluate all temporary repairs when conditions allow for the installation of a permanent repair. Refer to Paragraph 9.5.H, Roofing.
 - d. The Contractor shall document the cause and exact location of roof leaks on the TC form.
3. The Contractor shall do all pest control related TCs per Paragraph 4.0, Trouble Calls/Trouble Call Services.

- B. Contract Element (CLIN - 00X1.901) Semi-Annual Roof Inspections. The Contractor shall perform semi-annual roof inspections on all building roofs. The inspection criteria shall include all elements of maintenance to protect the facilities from leaks, and to preserve the condition of the roof and prevent it from further degradation. The inspection shall include all elements of roofing, flashing, coping, gravel stops, pitch pockets, penetrations, drains, perimeter edging, fascia, scuppers, and caulking. Builtup flat roofs shall be inspected yearly with infrared thermography. The information obtained from the roof inspections shall be used to update the CMMS. The Contractor shall complete all data fields required by the software for each roof inspection. The Contractor shall continuously document in the CMMS all changes which affect the condition of the roofs. Changes to the database shall be made within five working days following completion of the roof work.
- C. Contract Element (CLIN - 00X1.902) Pest Control. The Contractor shall perform periodic inspections of all MSFC facilities and grounds for evidence of rodents, .pest and/or insect infestation; identification of problem areas; preparation and application of insecticides, rodenticides, poisons, chemicals, oils, dust sprays, and mixtures; disposal of reptiles; trapping of rodents and fur bearing animals; application of bird repellents to buildings and structures; and other control measures. All chemical handling and disposal shall comply with Paragraph 6.0, Environmental Management Support. All pest control shall be performed in accordance with Federal, state, and local environmental laws and regulations. The Contractor shall maintain on-site all application records and these records shall be available for inspection by Government and other environmental inspectors at all times. The Contractor shall submit the periodic inspection schedule by the 9th calendar day after the contract award. This schedule will be used as the basis for timeliness in work performance.
- D. Contract Element (CLIN 00X1.903) Equipment Room PM. The Contractor shall develop a schedule to inspect and clean all equipment rooms monthly. Cleanup shall include removing loose debris and furniture. The inspection shall be through and identify and initiate work orders for other work such as leak repair, equipment repair, insulation repair, or painting. The cleaning associated with this contract element does not relieve the Contractor from performing clean up associated with specific work in an equipment room. The schedule shall be submitted to the COTR within 15 calendar days of award of contract and will be used as the basis for timeliness in work performance.

9.3 DOCUMENTATION AND REPORTING REQUIREMENTS

- A. Contract Element (Include in CLIN – 00X1.0306) Status Report. The Contractor shall continuously update the CMMS to reflect any and all equipment failures and corrective actions taken. The Contractor shall also update any roof database or software provided by the Government. All data shall be accurate and current.
- B. Contract Element (CLIN - 00X1.1014) Maintenance Procedures. The Contractor shall provide maintenance procedures in accordance with DRD 1197LS-011. The

Contractor shall update and revise all maintenance procedures on a continuing basis as required by physical changes at no additional cost to the Government (See Paragraph 10.5.E, Maintenance Requirements and Procedures). Maintenance procedures shall be maintained in the TRL.

9.4 IDIQ WORK

IDIQ work will be ordered in accordance with Paragraph 1.6, IDIQ, and may be ordered for any facility or area at MSFC (including buildings on loan from the Army). Maintenance and repair IDIQ work shall be completed within the number of days specified on the FWR or DO.

- A. Roof Repairs. Repair roofs per Paragraph 9.5.H, Roofing. The 'Means® Facilities Maintenance and Repair Cost Data Handbook will be used to determine cost of maintenance and repair items.
- B. Pest Control. Perform abnormal pest control per Paragraph 9.5.I. Paragraph 1.6, IDIQ Work, will be used to determine cost of abnormal pest control.
- C. Sign Making. The Contractor shall provide signs to the Government as requested. Special sign making equipment is included with the Special Purpose Equipment shown in Attachment J-8.

9.5 DETAILED REQUIREMENTS

- A. Carpentry and Masonry. The Contractor shall repair and replace carpentry and masonry portions of buildings, structures, and facilities, including all floor, wall, ceiling and roof construction, building finishes, door hardware, foundations, waterproofing seals, and flashing not included in other paragraphs of this contract. Interior and exterior finishes, trim, and decor shall be maintained to match existing finishes. Loose items shall be re-secured by tightening or replacing screws, or by using a suitable adhesive. Damaged or missing items shall be replaced with items matching the original. Replacement hardware shall conform to original material or MSFC Technical Specifications for Repair and Construction (TSRC). Hardware items requiring lubrication shall be lubricated and restored to an operable condition. Repairable rusted metal components shall be cleaned of all rust, coated with a rust inhibitor, and restored to an operational condition. The Contractor shall also be responsible for structural alterations and equipment installations which include, but not limited to:
 - 1. Floors and Floor Covering. Damaged or deteriorated flooring, subflooring, and structural members shall be repaired or replaced to provide a structurally sound, uniform, and aesthetic surface which is free of cracks, breaks, chips, tears, gouges, stains, and buckling. The Contractor shall inspect exposed portions of subfloor during repair or replacement activity. Any evidence of structural damage or deterioration shall be immediately reported to the COTR or designee before proceeding. Some flooring material, baseboard, or adhesive

may contain asbestos, which will require special handling and disposal in accordance with Paragraph 6.0, Environmental Management Support.

- a. Resilient Tiles. Damaged or deteriorated tiles shall be replaced with matching tiles of the same thickness as original. Damaged tiles or tiles to be replaced shall be removed without affecting adjacent tiles. The affected area shall be cleared of all debris and moisture to provide a clean, uniform, dry surface for the installation of new tile. Installation shall be in accordance with manufacturer's instructions. Upon completion, the entire floor shall be thoroughly cleaned and waxed to provide a uniform surface. Note: Many of the buildings at MSFC have floor tile which contains asbestos. In addition, the mastic attaching these tiles to the subfloor also contain asbestos.
- b. Linoleum and Vinyl Sheet Flooring. Areas of flooring having deep gashes or other defects shall be replaced with matching sheet flooring of the same thickness as the original. A replacement section matching existing flooring which is cut larger than the damaged area shall be taped over the defect such that the decorative flooring pattern is continuous. To ensure a properly fitting patch, the Contractor shall cut through both layers of vinyl around the damaged area. The patch and the section of damaged flooring shall be removed and the underlying surface shall be cleaned of all moisture, adhesive, and debris. The patch shall be installed as recommended by the flooring manufacturer. Loose flooring shall be re-secured using an adhesive recommended by the flooring manufacturer. Upon completion, the entire floor shall be thoroughly cleaned and waxed to provide a uniform surface.
- c. Carpeted Flooring. Repair damaged carpet, replace or install transition strips, tighten loose carpeting, repair seams and other related items as required to match or fix existing carpeting. Complete room carpet replacement is not a part of this paragraph.
- d. Concrete Floors. Cracked, broken or spalled areas shall be patched with a nonshrinking cement mortar. Areas shall be cleaned and all loose concrete removed. Underlying surfaces shall be chipped to ensure bonding with the patch. Shallow spalled areas shall be chipped to provide space for an adequate patch thickness. The patch shall be finished even with the adjacent surfaces and finished to match existing texture.
- e. Vinyl Baseboards. Deteriorated or damaged sections of vinyl baseboard shall be removed. Wall and floor surfaces shall be cleaned of all dirt, oil, grease, mildew, moisture, adhesive and debris. Loose baseboards shall be re-secured to the wall. Damaged, deteriorated, or missing baseboard sections shall be replaced with an adhesive that conforms to the manufacturer's recommendations.

- f. Ceramic Tile. Ceramic tile floors that are broken, missing, cracked or discolored shall be replaced as required. Floor tiles shall be re-grouted to provide a waterproof seal. When replacement tiles of an exact match cannot be found, the Contractor shall remove and replace non-defective tiles to create a pattern and minimize the visual effect of the mismatch.
2. Interior Walls, Ceilings, and Trim. Damaged and deteriorated walls, ceilings, and related trim shall be repaired or replaced to provide a surface which is free of noticeable cracks, spalls, raised areas, holes, dents, marks, and stains to match the surrounding surfaces. Wood trim items and ceiling fixtures shall be removed as necessary to provide access to the damaged area. Upon completion of the repair activity, fixtures and trim shall be reinstalled, nails set, filled, and items repainted or, refinished to restore them to their original condition. When removing wall or ceiling coverings, the Contractor shall inspect the supporting structural system and notify the COTR immediately of any need for repair before proceeding. Wall materials may contain asbestos, and painted surfaces may contain lead, both which shall require special handling and disposal in accordance with Paragraph 6.0, Environmental Management Support. Any paint shall meet the requirements of the MSFC Pollution Prevention Plan for low VOC paint.
 - a. Drywall Construction. Cracks, small dents, and holes shall be repaired with spackle over a backing plate when necessary. Spackle shall be feathered on the adjacent surfaces. Patches shall consist of at least three (3) coats with each completely dry before applying subsequent coatings. The final coat shall be lightly sanded and wiped with a damp cloth or sponge to remove all dust and cement deposits from surrounding surfaces. Loose nails or screws shall be pulled and replaced with a new nail or screw approximately one (1) inch away from the existing hole and driven in to form a slight dimple in the surface. The dimple and the existing nail or screw hole shall be filled and finished with spackle. Holes and other defects in wallboard between two (2) studs or beams shall be repaired by removing a rectangle of gypsum board to the center of the adjoining studs or beams and two (2) parallel lines across the board. Cuts shall be neat and shall not tear the paper covering. Edges of abutting sheets shall be sanded to allow for cement build-up in the joint. Replacement of gypsum board shall be of the same thickness and texture as the adjacent sheets and shall be nailed or screwed into place onto the exposed studs or beams. Joints shall be taped and spackled using the procedure outlined above; reinforcing tape shall be embedded, wrinkle-free, and the first layer centered over each joint.
 - b. Vinyl Wall Covering. Wall covering which has been ripped, scarred, stained, or otherwise damaged shall be repaired or replaced as necessary. Wall covering shall be repaired if the damaged area can be patched and not be noticeable. The patch shall overlay the damaged area 1/2-inch on all sides and be continuous with the pattern of the wall covering. The patch shall be glued in place with an adhesive conforming to the wall covering manufacturer's recommendations. Wall covering which is extensively

damaged or for which a matching wall covering is not available shall be repaired by replacing the wall covering on the entire wall. If matching wall covering is not available, the Contractor shall find a comparable substitute. The COTR shall approve all replacement wall coverings which do not match the existing wall coverings. Replacement wall covering shall be hung according to the manufacturer's recommendations.

- c. Ceramic Tile. Ceramic tile walls, window stools, and marble saddles that are broken, missing, cracked, or discolored shall be replaced as required to match existing. Tiles shall be re-grouted to provide a waterproof seal. In those cases where replacement tiles of an exact match cannot be found, the Contractor shall remove and replace non-defective tiles to create a pattern and minimize the visual effect of the mismatch.
 - d. Hardboard Siding. Damaged hardboard siding shall be removed without damaging adjacent siding or underlayment. All replacement siding joints shall be located on studs and nailed at each stud. Replacement siding shall match the existing siding in color, texture, and material. Siding face and edges shall be factory primed. Nails shall be of the type and size specified by the manufacturer and shall be driven flush. A 1/16 inch space shall be left between the siding and wood or metal trim. All joints shall be caulked.
 - e. Wood Trim. Wood trim items shall be prime painted on all sides and edges prior to installation. Surfaces to receive trim shall be thoroughly cleaned of sealant and paint build-up prior to installation of trim. Damaged or deteriorated insulation board or underlayment shall be replaced with material of the same type, thickness, and quality.
 - f. Suspended Ceilings. Broken and stained ceiling tiles shall be replaced with tiles of the same material, style, size, and color. Damaged and broken suspended grid system shall be repaired and/or replaced as necessary to provide a suspended ceiling system as designed.
3. General Exterior Work
- a. Exterior Walls. Damaged or deteriorated wall areas shall be restored to a serviceable, structurally sound, watertight, and weathertight condition. This includes, but is not limited to, replacing damaged masonry units, tuck-pointing loose or eroded mortar joints, sealing penetrations in wall openings, replacing damaged or deteriorated siding and exterior trim, replacing miscellaneous hardware items, and removal of vegetation, discoloration, graffiti, or other defects which would render an unsightly appearance to exterior walls.
 - b. Seams. Seams between window or door frames and exterior walls shall be caulked. Old joints shall be scraped and cleaned with a solvent recommended by the caulking manufacturer. Caulking shall be applied according to the manufacturer's directions.

- c. Exterior Trim. Exterior trim, including all exterior moldings, millwork, shutters, and cornice shall be repaired or replaced as required. Surfaces to receive trim shall be thoroughly cleaned of sealant and paint build up prior to installation of trim. Damaged or deteriorated insulation board underlayment shall be replaced with new material of the same type, thickness, and quality. Bird screens and soffit vents shall be intact and free of corrosion and missing pieces. All wood trim items shall be primed prior to installation and painted to match surrounding surfaces. Any paint shall meet the requirements of the MSFC Pollution Prevention Plan for low VOC paint.
4. Doors, Windows, and Screens. Doors (including storm doors), windows (including storm windows), and screens shall operate smoothly without binding or sticking in accordance with the manufacturer's design. Damaged, deteriorated, or missing doors, windows, screens, and associated components shall be repaired or replaced as required. Caulking, glazing, and weather stripping shall be fully intact to maintain a fully weathertight seal.
 - a. Wood Doors. All exterior wood doors shall have solid cores. Wood exterior doors shall be water-repellent treated. Interior wood doors shall be of the same species and have the same finish as the original door. Replacement exterior doors shall be installed during the same workday as removal of original door. Scarred areas of door shall be sanded, wiped clean with a low toxicity solvent, sealed, and finished to match surrounding door surface. All replacement doors shall be installed with the hardware from the damaged door unless the hardware is unrepairable. Small holes in door faces shall be filled and finished to match surrounding door surface. Doors shall be planed (to include appropriate bevel) to provide a minimum 1/16-inch clearance after painting between door and adjoining head and jambs. The bottom of the door shall be trimmed to provide adequate clearance above the floor.
 - b. Screens and Screen Doors. Oxidation deposits shall be removed from metal parts. The affected area shall be cleaned and a protective coating of paste wax shall be applied. Replacement screening shall be of the same material as existing screening. Exposed screening ends shall be cemented with a colorless plastic cement. No exposed screening ends shall protrude from the screen. Warped screen doors and frames shall be straightened if possible to fit squarely in opening. If beyond repair, warped items shall be replaced.
 - c. Windows. Damaged, deteriorated, missing, or inoperative window components shall be repaired or replaced to provide a sound, serviceable, weathertight installation.

- d. Weather Stripping. Damaged or deteriorated weather stripping shall be replaced according to manufacturer's recommendations. Flattened spring type weather stripping shall be lifted or replaced to provide a better seal
 - e. Glass. The Contractor shall replace cracked or broken glass in doors or windows. Replacement glass shall be of the same size, type, and quality as the existing glass.
 - f. Door Accessories. The Contractor shall install, maintain, repair, and adjust locks, latches, panic devices, and strikes of different makes, sizes, and shapes installed in buildings and building components. The Contractor shall also install, repair, clean, repack, and adjust all makes and types of door closures.
 - g. Hardware. Damaged, inoperable, or missing hardware such as hinges, locks, striker plates, latches, keepers, window operating mechanisms, door closers, springs, shall be adjusted, repaired, or replaced as required. Replacement hardware shall match existing hardware in type, size, quality, finish, and meet the BHMA Product Standards. Hardware shall be installed in accordance with the manufacturer's recommendations.
5. Countertops. Countertops with loose protective covering shall be repaired in place. Loose joints shall be secured and filled. Countertops and backsplash shall be the fully formed type comprised of a single unit with the shaped edges using wood nose molding at counter edge and covered wood molding or shaped wood block at juncture of the countertop and backsplash. Size and shape of countertop shall be indicated; backsplash shall not be less than 3-1/2 inches high.
- a. Plywood Countertop Material. Plywood core material and particle board core material shall be per the TSRC.
 - b. Countertop Adhesive. The adhesive for bonding plastic laminates, edging, and trim to the core material shall be a rubber-base contact cement.
 - c. Countertop Laminates. Laminates shall be applied in the longest length practicable. Joints in surface sheeting shall be tight and flush and kept to a practicable minimum. Design, color, and finish shall be selected per the delivery order or by the COTR when none is specified.
 - d. Metal Trim. Damaged metal trim shall be removed and replaced with trim of the same configuration and finish. Joints shall be mitered and smooth. All such trim shall match for an acceptable appearance.
 - e. Sink Rims. Sink rims shall be of the clamping type and a standard product of a manufacturer regularly producing this type of equipment, and shall be fabricated from corrosion-resistant steel of the size necessary to receive a sink.

- f. Cabinet Bases. Wood or plastic laminate cabinets which are damaged shall be repaired or replaced. All exposed items shall match for an acceptable visual appearance. Hardware items shall conform to the original or TSRC for institutional applications. Exposed hardware shall be corrosion resistant.
 - g. Kitchen Cabinets. Replacement cabinets shall conform to the original or TSRC.
6. Bathroom Accessories. This item shall include, but not be limited to, paper holders, soap trays and dispensers, towel bars, and shower curtain rods. Damaged or deteriorated, or missing accessories shall be repaired, or replaced if beyond repair.
 7. Caulking. Damaged caulking around sinks, shower stalls, tiles, and accessories shall be chiseled out and replaced with a mildew resistant, silicone base sealant. The sealant shall be applied according to manufacturer's recommendations.
 8. Temporary Structures. Anchor and level temporary structures, primarily modular buildings or trailers.
 9. Metal Door Frames and Windows. Remove and install metal door frames and windows in concrete masonry units and concrete walls.
 10. Nameplate Holders. Missing or damaged nameplate holders shall be replaced with holders of the same type and quality as the existing ones. Loose screws shall be tightened and reseated as necessary.
 11. Laying Block. Mixing mortar, determining correct type of material and mixture; running lines and levels as required; and cutting, shaping and laying bricks, stone, or block.
 12. Masonry Units. Damaged masonry units (brick or concrete blocks) shall be replaced with a unit of the same size, color, and texture. The mortar shall be completely removed and the cavity cleaned and all debris removed. The masonry unit shall then be reseated in mortar and the remaining cavity packed with mortar. The masonry unit shall be painted to match existing units. Any paint shall meet the requirements of the MSFC Pollution Prevention Plan for low VOC paint.
 13. Foundations and Walls. Constructing, maintaining, and repairing foundations and walls, brick, concrete masonry unit, and wood.
 14. Mortar Joints. Damaged mortar joints shall be chipped out, cleaned, and dampened before being repointed. Repointed joints shall match existing undamaged joints.

15. Interior Concrete. Cracked, broken, or spalled areas shall be patched with a nonshrinking cement mortar. Areas shall be cleaned and all loose concrete removed. Underlying surfaces shall be chipped to ensure bond with the patch. Shallow spalled areas shall be chipped to provide space for an adequate patch thickness. The patch shall be finished even with the adjacent surfaces and finished to match existing texture.
16. Placing Concrete. Mixing, placing, and finishing of concrete, including placing reinforcements, and other embedded items.

B. Metalworking. The Contractor shall maintain, repair, and replace metal components of buildings and structures; install building equipment, such as exhaust fans; and shall construct and install metal components in support of other repair activities. Metalworking shall include heating and bending to form metal shapes, drilling, torch cutting, grinding, sawing, and fitting of metal parts. Metalworking responsibilities shall also include the full range of metalworking and sheet metal activities that include, but are not limited to:

1. Welding. Welding provides the necessary support to the other trades in accomplishment of their work and shall include, but not be limited to, pipes, structural forms, plates, railings, sheetmetal, bar stock, and machinery in the maintenance of building structures, public utilities, transportation, and construction equipment. All welders shall be journeyman level and shall be certified to the proper American Welding Society standard. Work may include the build up metal surfaces of equipment for machining, braze and silver solder various metals, pre-heat items to be welded by torch, stress relieving, and annealing. Use various electric arc or gas welding methods. The following safety precautions are to be followed for all welding work accomplished by the Contractor.

Fire Watch. Welding, burning, and open flame work will be permitted, but only subject to the following conditions:

- (1) The Contractor shall provide an adequate firewatch and the required fire extinguishing equipment. The fire alarm system shall be deactivated or re-routed during welding, and immediately restored afterwards.
 - (2) The Contractor shall obtain the proper permits required.
2. General Sheetmetal. The Contractor shall interpret blueprints, drawings, sketches, and work orders; use templates or patterns as guides in laying out and cutting materials from a variety of sheetmetal stocks including aluminum, copper, galvanized and stainless steel; form single-hem and double-hem edges, seams, and flanges; layout and cut materials for any combination of shapes, allowing for seams, joints, laps, and shrinkage; shear, bend, and form metal parts into desired shapes with hand and power tools and equipment; determine dimensions by application of basic shop mathematics and use of scribing tools, dividers, rules, and other measuring devices; use such equipment as shears,

brakes, bending machines, and associated hand tools; repair, position, and clamp work; preheat metal and maintain heat to prevent distortion; use templates, jigs, blueprints, and other guides to repair, modify, or fabricate metal items for all types of equipment. Join parts by riveting, soldering, and spot welding. Semi-concealed hinges shall be of Type I through V materials, per BHMA Standards. Fasteners for hardware or particleboard core elements shall be of the through-bolt type.

- C. Pipefitting. The Contractor shall layout, cut, bend, assemble, and install pipe, fittings, and fixtures to construct or maintain piping systems such as steam heating, hot water heating, hydraulic, shop air, chilled water systems, oil line systems, domestic water, deionized water, fire water, natural gas, storm drains, and sanitary sewer systems at MSFC. Lay out piping systems or sections from blueprints, work orders, sketches, or drawings and plan assembly in relation to walls, passageways, obstructions, existing underground utilities, underground trenches, location of machinery, and determine appropriate places for holes, clamps, struts, hangers, and similar considerations. Cut, bend, thread, weld, solder, and assemble pipe fittings, using various types of shop machinery and equipment. Pack pipe as necessary to avoid flattening during bending operations. Makeup various kinds of pressure tight joints, such as threaded, flame-bolted, flange-welded, soldered, silver soldered, caulked lead, and cemented. Bore holes in partitions, walls, floors, ceilings, and other obstructions to permit passage of pipe, exercising care to avoid impairing structures to be passed through. Install piping and any necessary hangers, brackets, and other supporting fixtures, position and align pieces for welding where required. Position, secure, and connect to piping systems various fixtures such as radiators, toilets, urinals, sinks, laundry equipment, food preparation equipment, pumps, and tanks. Install various types of hand controlled and automatic valves, traps, thermostats, and similar devices. Pack, adjust, and repair valves of various types. Repair leaks, clear obstructions in piping, and make changes and adjustments to obtain proper circulation and flow.
- D. Painting. The Contractor shall prepare surfaces, mix paints, and apply prime, intermediate, and finish coats. Paint includes all enamels, paints, varnishes, stains, and other coatings whether primer, intermediate, or finish coat. Paint used in touchup painting shall blend with the color and texture of surrounding areas. Touchup painting shall be accomplished as a related item to a maintenance activity. Painting shall be limited to the \$2,000 limit associated with the Service Contract Act.
- E. Painting Responsibilities. Painting responsibilities shall include, but are not limited to, determining type of paint best suited for the job, mixing colors for consistency needed to accomplish the work, performing stenciling of signs, preparing and working on a variety of surfaces such as metals, wood, and masonite; repainting and touching up building numbers and signs in place on buildings, structures, and appurtenances, painting all repairs (paint used for areas); moving, resetting, and protecting furniture, equipment, and all Government-owned property during the work performance period. The Contractor shall comply with the requirements of the MSFC Pollution Prevention Plan for low VOC paint and all

other environmental directives, instructions, policies, and regulations as listed in Attachment J-26.

1. Material. Paints shall be in sealed containers that plainly show the designated name, formula, or specification number, batch number, and name of manufacturer, all of which shall be plainly legible at the time of use. Pigmented paints shall be furnished in containers not larger than five (5) gallons. The use of paint containing lead is strictly prohibited for painting any surface. Upon request from the COTR, the Contractor shall furnish a suppliers' record of batch production data and test results for each batch, except that batch production data may be limited to weight per gallon, viscosity, fineness of grind, drying time, color, and gloss. When the required quantity of material of a particular color is five (5) gallons or less, a proprietary brand of material similar to that specified above may be used.
2. Plaster or Wallboard Surfaces. Damaged surfaces shall be repaired. Surfaces which chalk severely shall be prepared with conditioner.
3. Wood Surfaces. Woodwork, including cabinets and doors, shall be repaired. Surfaces painted with a gloss or semi-gloss paint must be dulled with a surface conditioner. Knots and resinous wood should be treated with a knot sealer.
4. Wood Windows and Doors. Window screens and door screens shall be removed before painting. All screen frames shall be painted on faces and edges and allowed to dry; then replaced and fitted. Window runners shall not be painted, but cleaned and coated with boiled linseed oil.
5. Ferrous Metal Surfaces. All ferrous metal surfaces shall be spot primed. These surfaces shall be scraped, wire brushed, and washed clean before painting. Exposed nails and other ferrous metal on or in contact with surfaces to be painted with water-thinned paint shall be spot-primed first.
6. Galvanized and Zinc Copper Alloy Surfaces. All galvanized surfaces shall be cleaned with a phosphoric acid wash and spot primed with galvanized surface primer.
7. Masonry and Concrete Surfaces. All masonry and concrete surfaces shall be roughened where necessary to provide adhesion. Previously painted areas shall be dulled with a surface conditioner. Surfaces which chalk severely shall be prepared with a conditioner, such as a five (5) to ten (10) percent muriatic (hydrochloric) acid. Surfaces which experience water leakage shall be coated with epoxy paint.
8. Pipe Coverings. Pipe coverings shall be brushed with a stiff fiber brush and sizing applied to bare surfaces of covering for adhesion.

9. Electrical Fixtures. Electrical outlet covers, switch covers, and fixtures shall be masked or removed before painting and uncovered or reinstalled prior to work completion.
 10. Application of Paint. Interior paint shall be applied in dust free conditions in accordance with the manufacturer's recommendations. Exterior paint shall not be applied on rainy, foggy, or windy days. The outdoor or indoor temperature shall be within the manufacturer's recommendations before the next coat is applied. Each coat shall be prepared in accordance with the paint manufacturer's recommendations. Each coat of paint shall be of sufficient thickness to completely cover the previous coat or surface. Each coat shall be sanded and dusted as prescribed by the paint manufacturer to produce a finish smooth and free from runs, sags, or other surface preparation defects. Paint surfaces adjoining other materials or colors shall be sharp and clean without overlapping. Stuck windows shall be freed to assure ease of operation within five (5) days following completion of work.
- F. Plumbing. The Contractor shall repair or replace water lines, drain lines, and fixtures. Pipes containing lead shall not be used. Additional work includes, but is not limited to, cleaning out sluggish sinks and sink traps; replacing parts such as valves and traps; recaulking various plumbing fixtures; resetting toilets, urinals, sinks, fixture stops, supply lines; repairing or replacing flush valve assemblies, continuous waste arm assemblies, auxiliary valves, escutcheons, pistons, diaphragms, and handles to flush valves; replacing spuds and spud washers, vacuum breakers, tail pipes, and flush valves; replacing shower heads and necks; replacing plumbing brass, gas connections, stops, toilet seats, and water tank covers; taking general visual inspection of all plumbing fixtures and pipes; making minor repairs, including tightening bolts, nuts, and pipe connections; repairing drinking fountains; and repairing or replacing hot water heaters.
1. Clogged Toilet, Urinal, or Sink Drains. Work may include disassembly of fixture, exterior or interior piping and traps, and cleaning out pipes. Removal of any fixture requires the replacement of all bolts, nuts, washers, wax seals, and caulking. All slip joint washers are to be replaced with new after each removal.
 2. Loss of Water Pressure. If loss of water pressure occurs within the piping, the Contractor shall determine the source of the problem and repair it as quickly as possible. Work may include disassembly and removal of interior piping, cleaning out of piping, or replacing of existing piping with new piping of like materials.
 3. Overflowing Plumbing Fixtures. The water supply shall be turned off in the event of an overflowing plumbing fixture. Faulty valves/faucets and blockages shall be repaired and the service restored with 48 hours. The Contractor shall remove water from floors and repair any damage.

4. Backflowing Floor Drains and Disposal Units. Backflowing floor drains and disposal units shall be treated as clogged drains discussed above.
 5. Loss of Hot Water. The water supply shall be turned off in the event of leaking hot water pipes or water heaters. Leaking piping or water heaters shall be repaired or replaced and service restored as quickly as possible. While performing the needed repair or replacement, the Contractor shall also repair any damage caused by the defective item to restore the building or facility to its original condition. For example, replacement of a leaky pipe shall also include repair of water damage to the surrounding walls, floor, and/or ceiling.
 6. Sump and Ejector Pumps. If the pumps are not operational, the systems involved are to be shutdown and affected restrooms tagged "out of order". The Contractor shall determine the source of the problem and make repairs. System shall be restored to normal operations within one (1) working day. If pump failure requires leadtime for delivery of parts or components, a temporary pump of adequate size shall be installed in its place until the proper components become available.
- G. Electrical. The Contractor shall be responsible for electrical work which includes but is not limited to: installation, maintenance, repair or removal of low voltage electrical circuits, panelboards, motor control centers, building loadcenters, power distribution systems, and equipment. Electrical work shall be limited to interior and exterior distribution systems up to 600 Volts. This includes appliance equipment, power tools, and industrial and office building distribution needs.

Relamping. For non-office areas, the Contractor shall remove and replace all interior incandescent light bulbs and fluorescent tubes that have burned out or been broken, and other defective parts such as, but not limited to, ballasts, starters. Leaking or smoking ballasts may contain PCB's and shall be managed in accordance with Paragraph 6.0, Environmental Management Support. Burned out bulbs, lamps, and troubling bulbs or lamps reported by customers will be considered a TC and shall include cleaning of lenses, reflectors, and luminaries, to obtain maximum lighting output. Energy saving lamps shall be used for relamping when applicable. Fluorescent bulbs shall be placed back in original packing and provided to the Environmental Engineering and Occupational Health Office contractor for disposal if required.

- H. Roofing. The Contractor shall repair or replace damaged, deteriorated, or missing roofing, sheathing, flashing, gravel stops, miscellaneous roof structures and components, and structural supports as required to provide a watertight seal and to retain the original condition of the roof system. The Contractor shall accomplish temporary repairs under wet conditions to protect Government property and personnel. Durable permanent repairs shall be completed as soon as conditions allow. All roofing work shall be in accordance with the original installation or TSRC. All roofing materials applied shall be per the manufacturer's recommendations. Some roofing may contain asbestos that shall require special

handling and disposal by the Contractor in accordance with Paragraph 6.0, Environmental Management Support.

- I. Pest control for cafeteria or snack bar areas shall be such that no insects are found in food preparation, serving, or eating areas except at bait traps. Insects found in any other MSFC facilities between treatment periods shall result in immediate re-treatment at no cost to the Government. The cafeteria located in Building 4708 is not part of this contract.

--Remainder of Page Intentionally Left Blank--

10.0 MECHANICAL SYSTEMS**10.1 GENERAL REQUIREMENTS**

The Contractor shall provide all labor, supervision, materials, lubricants, oils, tools, equipment, transportation, and management necessary to accomplish the operation, predictive maintenance, preventive maintenance (PM), trouble calls (TC), and repair of mechanical equipment and systems that includes, but not limited to: air compressors, roll doors, air dryers, elevators, cranes, and associated equipment identified in Attachments J-24, J-25, and J-6.

10.2 LUMP SUM WORK

The following contract elements shall be performed per the Performance Requirements Summary (PRS), Section E.9, at the frequencies or performance criteria specified within the contract requirement:

- A. Contract Element (Include in CLIN - 00X1.0401) Trouble Calls (TC). The Contractor shall respond to all TCs related to this paragraph and accomplish any necessary repairs per Paragraph 4.0, Trouble Calls/Trouble Call Services.
- B. Contract Element (CLIN - 00X1.1001) Horizontal and Vertical Sliding Roll Door PM. The Contractor shall perform PM for the roll doors listed in Attachment J-24 and in accordance with Paragraph 10.5.F. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- C. Contract Element (CLIN - 00X1.1002) Hoist, Crane, and Derrick PM. The Contractor shall perform load tests, PM and PT&I for hoists, cranes, and derricks listed in Attachment J-18 and in accordance with crane manufacturers operations and maintenance manuals and recommendations. The Government has determined that certain preventive maintenance and predictive testing and inspection shall be performed for this contract line item as enhancements to the existing PM program. These enhancements are as follows: Perform annual inspection of all wiring terminations and wiring harnesses. Perform annual infrared analysis on all electrical components. Perform annual vibration analysis on all electric motors. Documentation for the infrared analysis shall be the completed work order controlling the work. Documentation for the vibration analysis shall be the base documentation and the following annual inspections maintained in the predictive testing program by the Contractor.
- D. Contract Element (CLIN - 00X1.1003) Elevator PM. The Contractor shall perform PM for elevators listed in Attachment J-24 and in accordance with Paragraph 10.5.E, Maintenance Requirements and Procedures.
- E. Contract Element (CLIN - 00X1.1004) Heavy Equipment Operation. The Contractor shall provide operation and operator maintenance of heavy equipment including fixed equipment such as bridge and derrick cranes, hoists, and air bearings and mobile equipment such as truck-mounted cranes, bull dozers, and lift

trucks. This shall include loading, securing, off loading, hauling of heavy and oversized cargo. As a part of heavy equipment operations, the Contractor shall insure all non-mobile equipment is in compliance with appropriate ANSI and OSHA proof load testing requirements. Heavy equipment shall be available 100 percent of the time. The Contractor shall not provide maintenance (for example, oil changes, minor repairs, major overhauls) of mobile equipment but will be required to provide operator support. The Contractor shall rig cranes and loads, fabricate wire rope slings, chokers, and rigging, load test lifting devices, and secure cargo on common and special conveyances. Fabrication of rigging equipment and load testing lifting devices to meet requirements shall be completed within fifteen working days. Maintenance timeliness shall be the same as for trouble calls.

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 in American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A, Personnel Qualification and Certification in Nondestructive Testing. This includes NDT on all lifting devices as defined in NASA-STD-8719.9.

In addition to the equipment identified in Attachment J-8, MSFC owns a special purpose transport truck that has the capability to raise, lower, and level its bed. The truck can transport up to 795,000 pounds at a speed of 6 miles per hour and shall be operated by the Contractor with certified operators.

- F. Contract Element (CLIN - 00X1.1005) Handling and Transporting Program Critical Hardware (PCH). The Contractor shall provide the necessary special support services to handle and transport PCH at MSFC in accordance with MWI 6410.1. The Contractor shall insure that all fixed cranes and related lifting equipment and tools are available and capable to meet the PCH move schedule 100 percent of the time.
- G. Contract Element (CLIN - 00X1.1006) Deionized (DI) Water Operations and PM. The Contractor shall operate and maintain the DI water systems in Buildings 4700 and 4487. Building 4705 houses a DI water system that may be used as a backup to the primary system in Building 4700. The system in Building 4487 supplies only. The Contractor shall operate all DI Water Systems to produce the quality and quantities necessary to meet customers needs at the following purity specifications: Bldg 4487 B-Wing 10-18 megohm/cm; 4487 C-Wing 10-18 megohm/cm; and Bldg 4700 minimum specific resistance of 1 megohm/cm with pH between 6.0 and 9.0. Water quality at Building 4700 should also meet the following particulate requirement per 500 ml: Five or less particles ranging in size between 100 to 175 microns and no particles ranging in size greater than 175 microns. Since the system at Building 4700 was not designed to meet the particulate requirements, the Contractor is to monitor particulate so the Government may consider an alternate means to ensure particular requirements are met. The primary storage vessel for DI water has a capacity of 50,000 gallons and should be maintained at a level necessary to meet customers needs. Maintenance timeliness shall be the same as trouble calls. The Contractor shall have written

operating procedures for this facility. These procedures shall be available for Government inspection at all times. The Contractor shall perform PM on all DI water equipment as listed in Attachment J-24 in compliance with the Contractor's PM plan.

- H. Contract Element (CLIN - 00X1.1007) Industrial Wastewater Treatment Facility (IWTF) Operations and PM. The Contractor shall operate and maintain the IWTF in accordance with MSFC State Indirect Discharge (SID) permit (IU084500027). The IWTF has the capacity to treat 50,000 gallons per day of metal finishing wastewater, and 5,000 gallons per day of paint booth and water blast wastewater. Maintenance timeliness shall be the same as for trouble calls. Sample collection and reporting shall be in accordance with the SID Permit (see DRD 1197EE-004). The Contractor shall have a written operating procedure for this facility. These procedures shall be available for Government inspection at all times. The Contractor shall perform PM on all IWTF equipment as listed in Attachments J-24 and J-25 in compliance with the Contractor's PM plan.
- I. Contract Element (CLIN - 00X1.1008) Air Compressor PM. The Contractor shall perform PM for all air compressors listed in Attachment J-24.
- J. Contract Element (CLIN - 00X1.1009) Air Dryer PM. The Contractor shall perform PM for all air dryers listed in Attachment J-24.
- K. Contract Element (CLIN - 00X1.1010) Ice Machine PM. The Contractor shall perform PM for all ice machines listed in Attachment J-24.
- L. Contract Element (CLIN - 00X1.1011) Special Purpose Shop Equipment PM The Contractor shall perform PM for special purpose shop equipment listed in Attachments J-8 and J-24 .
- M. Contract Element (CLIN - 00X1.1012) Annual Crane and Hoist Inspection. The Contractor shall procure the services of an independent crane inspector to perform annual crane and hoist inspections in accordance with DRD 1197LS-013.
- N. Contract Element (CLIN - 00X1.1013) Elevator Inspection. The Contractor shall procure the services of an independent elevator inspector to perform annual inspections in accordance with DRD 1197LS-014 and a five-year inspection in accordance with DRD 1197LS-015.
- O. Contract Element (CLIN - 00X1.1015) Storage Tank Monitor PM. The Contractor shall perform PM for all storage tank monitors listed in Attachment J-24.

10.3 DOCUMENTATION AND REPORTING REQUIREMENTS

- A. Contract Element (Include in CLIN - 00X1.0306) Computerized Maintenance Management System (CMMS) Operations and Management. The Contractor shall continuously update the CMMS to reflect any and all equipment failures and corrective actions taken. All data shall be accurate and current.
- B. Contract Element (CLIN - 00X1.1014) Maintenance Procedures. The Contractor shall provide maintenance procedures in accordance with DRD 1197LS-011. The Contractor shall update and revise all maintenance procedures on a continuing basis as required by physical changes at no additional cost to the Government (See Paragraph 10.5.E, Maintenance Requirements and Procedures). Maintenance procedures shall be maintained in the TRL.

10.4 IDIQ WORK

IDIQ work will be ordered in accordance with Paragraph 1.6, IDIQ Work, and may be ordered for any facility or area at MSFC involving Mechanical Systems Maintenance and Repair. IDIQ work shall be completed within the number of days specified on the FWR or DO.

10.5 DETAILED SPECIFICATIONS

- A. Interferences. The Contractor shall remove and reinstall interferences necessary to accomplish PM and repair as required by this work paragraph.
- B. Pressure Testing. The Contractor shall accomplish pressure testing for leaks when repairs or alterations are made involving the integrity of gas, vacuum, lubricating oil, and hydraulic systems while conducting maintenance or repair. If the repair requires a mechanical joint be disconnected and reconnected or a weld repair is required, the pressure test shall be visually inspected at operating pressure after ten (10) minutes of operation. If the system is altered or a replacement component is installed, excluding gaskets, the pressure test shall meet the same requirements as the original installation specification. If the repair is made to a buried section of the system, the pressure test shall be accomplished prior to covering the repair area. Allowable leakage: NONE.
- C. Forms. The Contractor shall obtain, fill-out and adhere to all NASA MSFC required permit forms: including, but not limited to burn permit, confined space entry permit, dig permits, and all tag-out, lock-out procedures.
- D. Painting. The Contractor shall prepare, prime and paint all new and disturbed surfaces to match the surrounding area as a result of the requirements of this contract paragraph and Paragraph 6.0, Environmental Management Support for disposal.
- E. Maintenance Requirements and Procedures. The Contractor shall maintain all equipment in optimum operating condition and control. All mechanical systems

under this paragraph shall be operational, functional, and ready to respond to demand according to its design purpose and intent. Any unscheduled or unplanned outage of these systems listed in Attachment J-10 shall not exceed those occurrences and times specified in Attachment J-10. Times listed in Attachment J-10 are referred to as the "outage limit," with the exception for scheduled or planned outages. For work that exceeds the TC limit, the time expended by the Contractor prior to the Contractor notifying the COTR of such condition shall be applied towards the outage limit. All other time will not be counted towards the outage limit for work exceeding the TC limit (reference note G. on the Systems Availability Requirements Table in Attachment J-10). Planned outages for maintenance and repair shall follow standard labor hours and practices per the Means® Facilities Maintenance and Repair Cost Data Handbook. Any time exceeding published labor hours may count towards the outage limit.

The Contractor shall prepare maintenance procedures per the following guidelines: (1) manufacturer's instructions; (2) industry standards and codes, (3) Federal, state, and local regulations, and (4) procedures outlined in NASA publications. The Contractor shall prepare maintenance procedures in accordance with DRD 1197LS-011.

- F. Horizontal and Vertical Sliding Roll Doors. Horizontal and vertical sliding roll doors shall operate smoothly without resistance. Railings shall be checked for alignments. Rusted or corroded areas shall be repaired or replaced. All bearings, rollers, gears, and pulleys shall be properly lubricated. All hangers, bolts, springs, and pins shall be free of rust, corrosion, and shall be tightly mounted and secured. Motors shall operate properly and be properly lubricated. Cables and fusible links shall be properly installed and free from rust and corrosion. The Contractor shall perform PM per Attachment J-24, Horizontal and Vertical Sliding Roll Doors PM.

--Remainder of Page Intentionally Left Blank--

11.0 STEAM DISTRIBUTION SYSTEM OPERATION

11.1 GENERAL REQUIREMENTS

The Contractor shall provide all labor, supervision, incidental engineering, materials, treatment chemicals, tools, equipment, transportation, and management necessary for the yearly operation, preventive maintenance (PM), predictive maintenance, trouble calls (TC), and repair of the boiler plants, and associated steam distribution and condensate return systems, facilities, and equipment described in Attachments J-24, J-25, and J-6. Work shall conform to Federal and State Codes, Environmental standards, OSHA regulations, and ASME power boilers, pressure vessel codes. The work shall include, but not be limited to, operating boilers, testing, analysis, and treatment; boiler start-up and shut-down; PM to include daily site visits for inspections, checks, and adjustments; TC and minor repair of the boilers, entire steam distribution system at MSFC, condensate return system, and associated facilities; annual boiler overhaul; annual boiler inspection, tuning, and certification; and maintaining records and preparing reports in order to provide high pressure steam (up to 200 psig) 24 hours per day, 7 days a week throughout the term of the contract period, compliant with the directives, manuals, and instructions listed in Attachment J-26. PM work shall be accomplished per Attachment J-24. Note: The MSFC steam generation and cross-country distribution system is primarily South of Fowler Road. Most facilities North of Fowler Road are serviced by Army-provided steam.

11.2 LUMP SUM WORK

The following contract requirements shall be performed per the Performance Requirements Summary (PRS), Section E.9, at the frequencies or parameters specified within the contract requirement:

A. Contract Element (CLIN - 00X1.1101) Steam Boiler Operation. The Contractor shall operate, maintain, have inspected and repaired all MSFC steam boiler plants and systems. Boilers shall operate at a minimum of 80 percent efficiency. Maintenance timeliness shall be the same as for trouble calls. The Contractor SHALL respond to emergency situations with correct repair so scheduled test programs will not be delayed. Boiler operation includes all equipment associated with normal boiler operation such as fuel supply, condensate pump, and feed water pump. The steam boiler equipment the Contractor shall operate includes, but is not limited to, boilers listed in Attachment J-19. Failure of the Government to supply water, fuel, or electricity for plant operations will relieve the Contractor of responsibility of operations during the time period the Government is remiss in these supply functions. If interrupted by the Government, the Contractor shall return the boiler on-line within two (2) hours of re-establishment of Government service. The Government will provide the Contractor all operational procedures that are presently available for MSFC steam boilers systems.

1. The Contractor shall operate equipment 24 hours a day, 7 days a week in accordance with Attachment J-19. Summer schedule will begin April 15th and

- the winter schedule will begin October 15th. The COTR will confirm actual schedule dates.
2. The Contractor shall perform fuel storage and transfer operations associated with boiler plant storage tanks (fuel oil to be furnished by the Government). The Contractor shall notify the Government of fuel needs allowing enough time for the Government to place an order and have the fuel delivered. This lead-time is typically one (1) week (seven (7) days)
 3. The Contractor shall prevent accumulation of boiler deposits and corrosion by carrying out a prescribed program of boiler water chemical treatment. This includes analyzing boiler and feed water, selecting chemicals and components according to formula and injecting carefully measured solutions into boiler and feed water.
- B. Contract Element (CLIN - 00X1.1102) Steam Distribution. The Contractor shall maintain and repair the entire steam distribution and condensate return systems continuously, 365 days per year minimizing steam and condensate losses due to leakage. Maintenance timeliness shall be the same as for trouble calls. Steam distribution includes all steam and condensate piping both north and south of Fowler Road that falls under the responsibility of MSFC. This shall include, but is not limited to, elevated and underground steel steam supply piping and condensate return piping, fittings, valves, insulation/lagging, aluminum jacketing, expansion loops, pipe hangers, anchors, structural supports, and touch-up painting. Steam distribution includes, but is not limited to, regulator adjustment, relief adjustment, strainer or trap cleaning, and isolation and return to service. Work shall be done in accordance with Paragraph 11.5.R, Maintenance Requirements and Procedures.
- C. Contract Element (CLIN - 00X1.1103) Primary Steam Boiler PM. The Contractor shall perform all primary steam generation boilers PM, listed in Attachment J-20 and in accordance with Paragraph 12.5.U, Maintenance Requirements and Procedures. All PM activities shall be accompanied in compliance with the Contractor's PM plan.
- D. Contract Element (CLIN - 00X1.1104) Boiler Feed Water Pump PM. The Contractor shall perform PM on feed water pumps listed in Attachment J-24 and in accordance with Paragraph 11.5.R, Maintenance Requirements and Procedures. All PM activities shall be accompanied in compliance with the Contractor's PM plan.
- E. Contract Element (CLIN - 00X1.1105) Condensate Pump PM. The Contractor shall perform PM on steam condensate return pumps as listed in Attachment J-24 and in accordance with Paragraph 11.5.R, Maintenance Requirements and Procedures. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- F. Contract Element (CLIN - 00X1.1106) Power Boiler Annual Certification. The Contractor shall procure the services of an independent inspector to perform annual boiler inspections in accordance with DRD 1197LS-004. The annual

certification consists of (1) Type A - internal and external, (2) Type B - internal and external with hydrostatic test, and (3) Type C - external under steam. This includes all Contractor support to the certifying agency.

- G. Contract Element (CLIN - 00X1.1107) Portable Boiler PM. The Contractor shall perform all portable steam generation boilers PM in accordance with Paragraph 11.5.R, Maintenance Requirements and Procedures. All PM activities shall be accompanied in compliance with the Contractor's PM plan.
- H. Contract Element (CLIN - 00X1.1108) Steam Trap Inspection. The Contractor shall perform a yearly inspection of all steam traps prior to April 15th using the Government provided Trapman system. Trouble Calls or IDIQ's, as appropriate, shall be initiated for defective traps. Defective traps shall be repaired or replaced prior to October 15th. The Contractor shall enter all currently unidentified traps into the Trapman system and the CMMS. There are approximately 1000 steam traps. The currently identified traps are shown in Attachment J-12. If the number of traps varies more than 3% there will be a equitable adjustment made.

11.3 DOCUMENTATION AND REPORTING REQUIREMENTS

- A. Contract Element (Include in CLIN - 00X1.0306) Computerized Maintenance Management System (CMMS) Operations and Management The Contractor shall continuously update the CMMS to reflect any and all equipment failures and corrective actions taken. All data shall be accurate and current.
- B. Contract Element (CLIN - 00X1.1014) Maintenance Procedures. The Contractor shall provide maintenance procedures in accordance with DRD 1197LS-011. The Contractor shall update and revise all maintenance procedures on a continuing basis as required by physical changes at no additional cost to the Government (See Paragraph 10.5.E, Maintenance Requirements and Procedures). Maintenance procedures shall be maintained in the TRL.

11.4 IDIQ WORK

IDIQ work will be ordered in accordance with Paragraph 1.6, 1DIQ Work, and may be ordered for any facility involving Steam Distribution Maintenance and Repair. IDIQ work shall be completed within the number of days specified on the FWR or DO.

11.5 DETAILED SPECIFICATIONS

The Contractor shall accomplish the following detailed specifications and requirements in accomplishing work required by this work paragraph:

- A. Interferences. The Contractor shall remove and reinstall interferences necessary to accomplish work required by this work paragraph.

- B. Forms. The Contractor shall obtain, fill-out, and adhere to all NASA, MSFC required permit forms such as: burn permit, confined space entry permit, dig permit, and all lock-out, tag-out procedures in accordance with Safety and Health Requirements and Reports in Paragraph 1.0.
- C. Operation of Certified Boilers. The Contractor shall not operate any power boiler that does not have a valid annual inspection certificate. The COTR shall be notified if unsafe conditions are found, following repair of a power boiler, or after any authorized modification to boilers, control equipment, or associated components.
- D. Environmental Management Support. The Contractor shall handle all hazardous waste and environmental work associated with, or arising from, this work paragraph, in accordance with the requirements of Paragraph 6.0, Environmental Management Support.
- E. Replacement of Expansion Joints. Replacement of joints shall consist of removing insulation, fasteners, expansion joint, and installing the new expansion joint, fasteners, and insulation.
- F. Structural Support System. The Contractor shall repair or replace all deteriorated pipe hangers and supports, expansion loops, guy wires, anchor rods, screw anchors, turnbuckles, fasteners, and anchors.
- G. Valves. The Contractor shall repair or replace deteriorated, damaged, and leaky valves, stems, disks, seals, packing, and gaskets. If a valve requires disassembly for repair, the Contractor shall, while the valve is disassembled, clean the bonnet, lubricate the stem, and inspect the valve for signs of deteriorated or damaged packing and broken, bent, corroded, or missing parts. After the valve is restored, the Contractor shall apply system pressure to ensure all joints are sealed, and check for seat, body, and packing leaks, and check for proper operation, correcting any defects discovered. Valves under two (2) inch shall be replaced with new valves if found defective.
- H. Traps and Y-Type Strainers. The Contractor shall repair or replace all defective parts of traps and Y-type strainers such as baskets, plugs, gaskets, bellows, floats, valves, valve seats, hooks, buckets, linkages, and strainer orifices. If repair requires disassembly, the Contractor shall clean, inspect, and test the trap or strainer in the same manner as valves. The Contractor shall test traps and strainers to determine correct operation without breaking insulation.
- I. Gauge and Thermometer. The Contractor shall insure all system gauges and thermometers are in good working order. The Government's Calibration Laboratory will be available should the Contractor elect to calibrate this equipment. Each gauge and thermometer shall be functional to allow safe operation of the system.

- J. Fasteners. When required by deterioration, missing or damaged threads, the Contractor shall remove the existing and install new fasteners that conform to original requirement or TSRC. Apply high temperature anti-seize compound to all boiler and associated fasteners.
- K. Gaskets. When required, the Contractor shall install new gaskets conforming to the manufacturer's specifications and or the latest code and industry standards for boiler watersides and boiler firesides. Removal of existing gaskets may require special requirements per Paragraph 6.0, Environmental Management Support.
- L. Testing of Systems. When repairs and alterations are made involving the integrity of the steam distribution system, the Contractor shall, after all repairs are complete, pressurize the system and check for leaks. If the repair is made to a buried section of the system, the pressure test shall be accomplished prior to covering the repair area. System shall be tested in compliance with ANSI B31.1.
- M. Insulation. The Contractor shall repair or replace damaged pipe insulation as part of PM or repair. When repairing or replacing insulation, the Contractor shall inform their personnel of the possible hazards of asbestos and shall comply with the requirements set forth in accordance with MPR 8500.1 and MSFC instructions. All replacement pipe insulation shall match existing insulation or be installed per Technical Specification for Construction and Repair (TSRC).
- N. Conduit. The Contractor shall repair and replace damaged electrical conduits and tighten or repair defective or loose connections to all conduits.
- O. Valve Houses and Pits. The Contractor shall, while performing work in steam line valve houses and manhole pits, repair or replace defective covers, supports, guides, and ladders, and shall be alert to defects in other systems and the surrounding manhole and conduit.
- P. Water Treatment. The Contractor shall provide chemical or mechanical water treatment to control corrosion to the steam boiler(s) and the steam supply and return system. Water treatment disposal shall be in compliance with the MSFC NPDES permit. Water treatment chemicals containing chromium or tributyltin shall not be used.
- Q. Painting. The Contractor shall prepare, prime, and paint new and disturbed surfaces to match the surrounding surfaces, as a result of the requirements of this work paragraph in accordance with Paragraph 10.5.D, Painting, and Paragraph 6.0, Environmental Management Support for disposal.
- R. Maintenance Requirements and Procedures. The Contractor shall maintain all equipment in optimum operating condition and control. All equipment shall be operational, functional, and ready to respond to demand according to its design purpose and intent except for scheduled or planned outages. Note: Scheduled and planned outages for buildings 4663 and 4207 will be very difficult to obtain and most likely will only be available during a holiday period such as Christmas. For

unscheduled and unplanned outages, the steam distribution system under this paragraph shall be down no greater than those occurrences and times specified in Attachment J-10, herein referred to as the "outage limit." For work that exceeds the TC limit, the time expended by the Contractor prior to the Contractor notifying the COTR of such condition shall be applied towards the outage limit. All other time will not be counted towards the outage limit for work exceeding the TC limit (reference note G on the Systems Availability Requirements Table in Attachment J-10). Planned outages for maintenance and repair shall follow standard labor hours and practices per the Means® Facilities Maintenance and Repair Cost Data Handbook. Any time exceeding published labor hours may count towards the outage limit.

The Contractor shall prepare maintenance procedures per the following guidelines (1) manufacturer's instructions, (2) industry standards and codes, (3) Federal, state, and local regulations; and (4) procedures outlined in NASA publications. The Contractor shall prepare maintenance procedures in accordance with DRD 1197LS-011.

- S. Operating Records and Logs. The Contractor shall maintain operating records, laboratory records, maintenance records, and emergency condition records. The Contractor shall keep all operation, maintenance, and repair records orderly, readily accessible, and simply referenced in such a manner to be quickly accessed by all authorized Government authorities at any time. The Contractor will continuously update the CMMS to reflect any and all equipment failures and corrective actions taken.
1. The Contractor shall provide, maintain, and post current signs and instructions including, but not limited to, 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.
 2. The Contractor shall maintain a bound logbook for each boiler in operation identifying the operator's name, date, time, observations made, checks of flame failure and low water cut-off devices, meter readings, operational changes, and all other maintenance performed during each visit.
 3. The Contractor shall maintain a daily record of all treatment chemicals used and of all laboratory analyses performed.

--Remainder of Page Intentionally Left Blank--

12.0 HVAC/R SYSTEMS

12.1 GENERAL REQUIREMENTS

The Contractor shall provide all labor, supervision, materials, oils, lubricants, tools, equipment, transportation, and management necessary for the operation, predictive maintenance, preventive maintenance (PM), corrective maintenance, and repair of heating, ventilating, air conditioning, and refrigeration (HVAC/R) equipment, identified in Attachments J-24, J-25, and J-6. The work shall include PM and repair of equipment and system components consisting of, but not limited to, gas, oil, and electric heating boilers, centrifugal, reciprocating, screw, liquid and air-cooled air conditioning systems, direct expansion package air conditioning units, self-contained computer cooling units, electric heat pumps, through-the-wall heating and air conditioning units, cooling towers, air handling units, unit heaters, refrigerant compressors, humidifiers, ventilation blowers/fans, service valves, dampers, condensers, coils, chillers, pumps, purge units, electrical and mechanical controls, duct work, piping, motors, evaporators, air filters and dryers, thermostats, humidifiers, fan coil units, water coolers, ice machines, refrigerators, reach-in freezers, and performance of seasonal equipment start-ups and shut-downs; annual heating boiler overhaul, associated inspection and certification assistance; maintaining records and preparing reports to ensure safe and efficient equipment operation and to maximize the life of each piece of equipment for optimum operational efficiency. All additional costs associated with performance of refrigerant leak detection, reclamation, cleaning, reporting, and recycling shall be provided at no additional cost to the Government. PM and repair work shall comply with the applicable directives, manuals, and instructions listed in Attachment J-26.

12.2 LUMP SUM WORK

The following contract requirements shall be performed per the Performance Requirements Summary (PRS), Section E.9, at the frequencies or parameters specified within the contract requirement:

- A. Contract Element (CLIN - 00X1.1201) Hot Water Boiler PM. The Contractor shall perform PM on the boilers listed in Attachment J-19 and in accordance with Paragraph 12.5.U, Maintenance Requirements and Procedures. Annual certifications are required and shall be obtained by the Contractor. The annual certification consists of (1) Type A - Internal and External, (2) Type B - Internal and External with hydrostatic test, and Type C - External under steam. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- B. Contract Element (CLIN - 00X1.1202) Boiler Hot Water Pump PM. The Contractor shall perform PM on the boiler hot water pumps included in Attachment J-24 and in accordance with Paragraph 12.5, Detailed Requirements. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- C. Contract Element (CLIN - 00X1.1203) Boiler Feed water Pump PM. The Contractor shall perform PM on the boiler feed water pumps included in Attachment J-24 and in accordance with Paragraph 12.5, Detailed Requirements.

All PM activities shall be accomplished in compliance with the Contractor's PM plan.

- D. Contract Element (CLIN - 00X1.1204) Chilled Water Pump PM. The Contractor shall perform PM on the chilled water pumps included in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- E. Contract Element (CLIN - 00X1.1205) Chiller PM. The Contractor shall perform PM on the reciprocating A/C plants included in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- F. Contract Element (CLIN - 00X1.1206) Air Handler Unit PM. The Contractor shall perform PM on the air handler units included in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- G. Contract Element (CLIN - 00X1.1207) Exhaust Fan PM. The Contractor shall perform PM on the exhaust fans included in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- H. Contract Element (CLIN - 00X1.1208) Cooling Tower PM. The Contractor shall perform PM on the cooling towers listed in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- I. Contract Element (CLIN - 00X1.1209) Cooling Tower Circulating Pump PM. The Contractor shall perform PM on the cooling tower circulating pumps included in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- J. Contract Element (CLIN - 00X1.1210) Cooling Tower Water Treatment. The Contractor shall perform water treatment for the cooling towers. Water treatment equipment is shown in Attachment J-23. All treatment activities shall be accomplished in compliance with the Contractor's PM plan.
- K. Contract Element (CLIN - 00X1.1211) Humidifier and Dehumidifier PM. The Contractor shall perform PM on the humidifiers and dehumidifiers listed in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- L. Contract Element (CLIN - 00X1.1212) Trailer Mounted Mobile Chiller (Emergency Chiller) PM. The Contractor shall perform a monthly PM on the trailer mounted mobile chillers included in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- M. Contract Element (CLIN - 00X1.1213) Water Treatment for Chilled Water Systems. The Contractor shall perform water treatment for the chilled water systems. All water treatment activities shall be accomplished in compliance with the Contractor's PM plan.

- N. Contract Element (CLIN - 00X 1.1214) Water Treatment for Hot Water and Steam Boilers. The Contractor shall perform water treatment for the hot water and steam boilers. Water treatment equipment is listed in Attachment J-23. All activities shall be accomplished in compliance with the Contractor's PM plan.
- O. Contract Element (CLIN – 00X1.1215) Refrigerant Reclamation. The Contractor shall reclaim all CFC and HCFC refrigerants for reuse.
- P. Contract Element (CLIN – 00X1.1216) Supply and Return Air Fan PM. The Contractor shall perform PM for all supply and return air fans included in Attachment J-24.
- Q. Contract Element (CLIN – 00X1.1217) Heating Vent Unit PM. The Contractor shall perform PM for all heating vent units included in Attachment J-24.
- R. Contract Element (CLIN – 00X1.1218) Heating, Ventilating, Air Conditioning and Refrigeration (HVAC/R) Operations and Maintenance. The Contractor shall operate, maintain, and repair all MSFC HVAC/R systems continuously, 365 days per year, 24 hours per day, 7 days a week maintaining special environments that are currently in force in accordance with Attachment J-21. The special environment areas may be subject to change as Center objectives and programs are defined. The Contractor will not be responsible for operating and maintaining a new special environment with criteria that exceeds the HVAC/R design for that area without compensation from the Government. The Contractor shall minimize personnel discomfort in administrative areas when HVAC/R conditions are impacted by events outside of the Contractor's control. Operations shall include, but not be limited to, performance of seasonal equipment start-ups and shutdowns, calibrations, resetting and restarting tripped equipment, regulator or thermostat adjustments, filter replacements other than HEPA filters, and isolating and returning equipment to service as a result of planned or unplanned outages. The work shall also include repair of HVAC/R related components (for example, air compressors, air dryers, fans, chillers, cooling towers, DXAC units, humidifiers, pumps) and associated piping isolated to the first connection point upstream and downstream of each component. All piping, fittings, valves, insulation/ lagging, aluminum jacketing, expansion loops, traps, strainers, pipe hangers, anchors, structural supports, and touch-up painting are included. Work shall be done in accordance with Paragraph 12.5.U, Maintenance Requirements and Procedures. Maintenance timeliness shall be the same as for trouble calls. The Contractor's repair liability for servicing equipment and system components is limited to \$2000 per system, per occurrence. The Contractor shall not classify response to alarms associated with HVAC/R as trouble calls, exclusive of Utility Control System monitoring hardware. The Contractor shall respond to emergency situations with correct repair so scheduled test programs will not be delayed. Work shall conform to Federal and state Codes, EPA standards, OSHA regulations, and ASHRAE requirements. The HVAC systems and equipment the Contractor shall operate includes, but is not limited to, those identified in Attachments J-24, J-25, and J-6. Failure of the Government to supply water, fuel, or electricity for plant operations will relieve the Contractor of responsibility of operations during the time period the

Government is remiss in these supply functions. If interrupted by the Government, the Contractor shall return the HVAC/R system on-line within two (2) hours of re-establishment of Government service. The Government will provide the Contractor all operational procedures that are presently available for MSFC HVAC/R systems. It is understood that all critical and comfort environments shall be maintained within assigned set points and related dead bands. Furthermore, no routine visits by operators will be necessary if the zone environmental parameters are within assigned guidelines. Comfort zones shall be maintained in accordance with Paragraph 12.5.F.

- S. Contract Element (CLIN – 00X1.1219) DXAC/Heat Pump Unit PM. The Contractor shall perform PM on the DXAC/heat pump units included in Attachments J-24 and J-6. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- T. Contract Element (CLIN – 00X1.1220) Computer Room Unit PM. The Contractor shall perform PM on the computer room units included in Attachments J-24 and J-6. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- U. Contract Element (CLIN – 00X1.1221) Backflow Preventer PM. The Contractor shall perform PM on the back-flow preventers included in Attachments J-24 and J-6. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- V. Contract Element (CLIN – 00X1.1222) Air Filter PM. The Contractor shall perform PM on the filters included in Attachments J-24 and J-6. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- W. Contract Element (CLIN – 00X1.1223) Hot Water Pump PM. The Contractor shall perform PM on the hot water pumps included in Attachments J-24 and J-6. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- X. Contract Element (CLIN – 00X1.1225) Coil Cleaning. The contractor shall establish a program to clean all heating and cooling coils. The program shall clean the interior and exterior of all coils every five years (approximately 20% of the coils each year). The Contractor shall enter all coils into the CMMS equipment database. A list of air handlers is shown in Attachment J-22. There are approximately 1264 reheat coils that are not listed. If the number of reheat coils varies more than 3% there will be an equitable adjustment made.

12.3 **DOCUMENTATION AND REPORTING REQUIREMENTS**

- A. Contract Element (Include in CLIN - 00X1.0306) Computerized Maintenance Management System (CMMS) Operations and Management. The Contractor shall continuously update the CMMS to reflect any and all equipment failures and corrective actions taken. All data shall be accurate and current.
- B. Contract Element (CLIN - 00X1.1014) Maintenance Procedures. The Contractor shall provide maintenance procedures in accordance with DRD 1197LS-011. The Contractor shall update and revise all maintenance procedures on a continuing basis as required by physical changes at no additional cost to the Government (See Paragraph 10.5.E, Maintenance Requirements and Procedures). Maintenance procedures shall be maintained in the TRL.
- C. Contract Element (CLIN – 00X1.1224) Refrigerant Recovery Management Plan. The Contractor shall have a Refrigerant Management Plan in which all CFC and HCFC refrigerants are tracked, inventoried, preserved, and recovered for reuse. A status shall be maintained and continuously updated on the CMMS. The plan shall also include servicing records for all equipment containing 50 pounds or more of CFC refrigerant which detail the amount of refrigerant added to equipment as well as the service date. The Contractor shall establish the baseline full charge amount for this equipment and calculate an annualized leak rate. Leaks shall be repaired if the annualized leak rate exceeds ten percent of the baseline full charge amount.

12.4 **IDIQ WORK**

IDIQ work will be ordered in accordance with Paragraph 1.6 IDIQ Work, and may be ordered for any facility involving HVAC/R and Boiler Maintenance and Repair. Maintenance and repair IDIQ work shall be completed within the number of days specified on the FWR or DO.

12.5 **DETAILED REQUIREMENTS**

The Contractor shall accomplish the following detailed specifications and requirements in accomplishing work required by this work paragraph:

- A. Safety. The Contractor shall abide by all local, state and Federal regulations in the respect to personnel safety and in accordance with the Contractors approved Safety and Health plan.
- B. Interferences. The Contractor shall remove and reinstall interferences necessary to accomplish work required by this work paragraph.
- C. Forms. The Contractor shall obtain, fill-out, and adhere to all NASA MSFC required permit forms including , but not limited to, burn permit, confined space entry permit, dig permit, and all lock-out, tag-out procedures in accordance with the Contractors approved Safety and Health plan.

- D. Shut-down of Heating and Air Conditioning Equipment. Prior approval shall be obtained from an authorized representative for unscheduled work requiring shutdown of any equipment for over 60 minutes during core work hours, except for an emergency. Whenever possible, maintenance requiring shutdown of equipment for more than 60 minutes shall be performed when winter heating or summer air conditioning is not required.
- E. Operation of Certified Boilers. The Contractor shall not operate any power or heating boiler that does not have a valid annual State Inspection Certificate for which the Contractor shall be responsible. The COTR shall be notified if unsafe conditions are found following repair of a pressure part, after any major modification to boilers, control equipment, or associated components. The affected equipment shall not be placed back in operation until written authorization is received from the Government.
- F. Temperature Settings for HVAC/R Equipment and Systems. The Contractor shall maintain temperature settings for HVAC/R equipment and systems during performance of work as specified herein. The majority of buildings shall be maintained at a comfortable heating temperature range of between 68 degrees F to 72 degrees F and a comfort cooling range of between 72 degrees F and 74 degrees F as desired by the occupants and their requirements. However, the heating and cooling ranges are subject to change based on MSFC energy conservation goals. Attachment J-21 lists special temperature control requirements currently in force.
- G. Environmental Management Support. The Contractor shall handle all hazardous waste and environmental work associated with, or arising from, this work paragraph, in accordance with the requirements of Paragraph 6.0, Environmental Management Support.
- H. Pressure Testing. The Contractor shall accomplish pressure testing for leaks when repairs or alterations are made involving the integrity of refrigerant, steam, hot water, feed water, chilled water, condenser water, or make-up water systems while conducting maintenance or repair. If the repair is made to a buried section of the system, the pressure test shall be accomplished prior to covering the repair area.
- I. Structural Support Systems. The Contractor shall accomplish the repair or replacement of pipe hangers, supports, expansion loops, guy wires, anchor rods, screw anchors, turnbuckles, motor mounts, fasteners, and anchors while conducting maintenance and repair.
- J. Valves. The Contractor shall repair or replace deteriorated, damaged, and leaky valves, stems, disks, seals, packing, bonnets, and gaskets. If a valve requires disassembly for repair, the Contractor shall, while the valve is disassembled, clean the bonnet, lubricate the stem, and inspect the valve for signs of deteriorated or damaged packing and broken, bent, corroded, or missing parts. After the valve is restored, the Contractor shall apply system pressure to ensure all joints are sealed, and check for seat, body, and packing leaks, and check for proper operation, correcting any defects found. The Contractor shall apply anti-seize compound

conforming to gasket surfaces and moving parts. All valves under two (2) inches shall be replaced with new valves if found defective by the Contractor, not repaired.

- K. Expansion Joints. The Contractor shall accomplish the replacement of deteriorated, damaged, and leaky expansion joints, associated fasteners, and insulation. The new expansion joints shall be installed with new fasteners and insulation.
- L. Traps and Y-Type Strainers. The Contractor shall repair or replace all defective parts of traps and Y-type strainers such as baskets, plugs, gaskets, bellows, floats, valves, valve seats, hooks, buckets, linkages, and strainer orifices. If repair requires disassembly, the Contractor shall clean, inspect, and test the trap or strainer in the same manner as valves. The Contractor shall test traps and strainers to determine correct operation, without breaking insulation.
- M. Fasteners: Steam, Condensate, and Hot Water. When required by deterioration, damaged threads, missing fasteners or new installations, the Contractor shall remove the existing and or install new fasteners that conform to original requirements or MSFC Technical Specification for Construction and Repair (TSRC).
- N. Fasteners: Potable Water, Chilled Water, or Condenser Water. When required by deterioration, damaged threads, missing fasteners, or new installations, the Contractor shall remove the existing and or install new fasteners that conform to original requirements or TSRC.
- O. Gaskets. When required, the Contractor shall install new gaskets conforming to the manufacturer's specifications and or the latest code and industry standards for "boiler water sides" and "boiler fire sides". Apply high temperature anti-seize compound to boiler gasket mating surfaces. The Contractor shall install new gaskets conforming to original requirements or TSRC.
- P. Gauge and Thermometer Calibration. The Contractor shall insure all system gauges and thermometers are in good working order. The Government's Calibration Laboratory will be available should the Contractor elect to calibrate this equipment. Each gauge and thermometer shall be functional to allow safe operation of the system.
- Q. Water Treatment. The Contractor shall provide chemical water treatment to control corrosion, the growth of algae, viruses, and all other micro-biological growth to: steam and hot water boilers and their associated systems, chilled water systems, cooling towers and condenser water systems. Water treatment disposal shall be in compliance with the MSFC NPDES permit. Water treatment chemicals containing chromium or tributyltin shall not be used.
- R. Refrigerants. The Contractor shall accomplish the use, handling, holding, cleaning, disposal, modifying, repairing, and testing of all refrigerants and refrigerant

systems in accordance with all applicable Federal, state, local, EPA and ASHRAE regulations.

- S. Pipe Insulation. The Contractor shall repair or replace damaged pipe insulation as found or caused in accomplishing PM or repair. When repairing or replacing insulation, the Contractor shall inform their personnel of the possible hazards of asbestos and shall comply with the requirements in the Contractor's Safety and Health Plan and MSFC instructions. All replacement pipe insulation shall match existing insulation or be installed per TSRC.
- T. Painting. The Contractor shall prepare, prime, and paint all new and disturbed surfaces to match the surrounding surfaces, as a result of the requirements of this work paragraph in accordance with Paragraph 10.5.D, Painting, and Paragraph 6.0, Environmental Management Support, for disposal.
- U. Maintenance Requirements and Procedures. The Contractor shall maintain all equipment in optimum operating condition and control. All HVAC/R systems shall be operational, functional, and ready to respond to demand according to its design purpose and intent. Note - scheduled and planned outages for Buildings 4663 and 4207 will be very difficult to obtain and most likely will only be available during a holiday period such as Christmas. For any unscheduled or unplanned outages, the HVAC/R systems listed in Attachment J-10 shall be non-functional no greater than those occurrences and times specified in Attachment J-10, herein referred to as the "outage limit," except for scheduled or planned outages. For work that exceeds the TC limit, the time expended by the Contractor prior to the Contractor notifying the COTR of such condition shall be applied towards the outage limit. All other time will not be counted towards the outage limit for work exceeding the TC limit (reference note G. on the Systems Availability Requirements Table in Attachment J-10). Planned outages for maintenance and repair shall follow standard labor hours and practices per the Means® Facilities Maintenance and Repair Cost Data Handbook. Anytime exceeding published labor hours may count towards the outage limit.

Chillers shall be operated based on seasonal demand to provide for maximum chiller life and minimal operational costs. The maintenance procedures shall be prepared by the Contractor per the following order as applicable: (1) manufacturer's instructions; (2) industry standards and codes; (3) Federal, state, and local regulations; and (4) procedures outlined in NASA publications. The Contractor shall keep all records and procedures orderly, readily accessible, and simply referenced in such a manner to be quickly accessed by all authorized Government authorities at anytime. The Contractor shall provide the maintenance procedures in accordance with DRD 1197LS-011.

13.0 ELECTRICAL DISTRIBUTION AND EMERGENCY GENERATING SYSTEMS**13.1 GENERAL REQUIREMENTS**

- A. General. The Contractor shall provide all labor, management, supervision, tools, materials, equipment, incidental engineering, and transportation to operate, maintain and repair all low voltage electrical distribution systems, street and perimeter lighting systems, electrical support of the high voltage systems and emergency generation systems. The Contractor shall be directly responsible for: (1) emergency generators; (2) transformers; (3) uninterruptable power supplies (UPS); (4) switchgear; and (5) exterior and interior lighting systems, including but not limited to, office, street, flood, perimeter, emergency egress and security lighting; and (6) all facility internal and external low and medium voltage power distribution systems. Emergency egress lighting within facilities consists of approximately 1,230 lights. High voltage systems (above 600 Volts) will be maintained by the Army except as noted in Section 13.2.I.
- B. Emergency Requirements: Loss of Primary Power. Following a complete loss of primary power, the Contractor shall confirm that existing emergency generating equipment is on-line. The Contractor shall respond to the outage as an emergency trouble call (TC). After the Government has restored primary power the Contractor shall confirm that all emergency generating equipment has returned to normal which is still performed as part of the same TC.

13.2 LUMP SUM WORK

The following Contract Requirements shall be performed per the Performance Requirements Summary (PRS) Section E.9, at the frequencies or performance criteria specified within the contract requirement:

- A. Contract Element (Include in CLIN 00X1.0401) Trouble Calls (TC). The Contractor shall respond to and repair all inoperative electrical systems called in as a trouble call.
- B. Contract Element (CLIN - 00X1.1301) Fixed and Mobile Emergency Generator System PM. The Contractor shall perform PM on the emergency generator systems as shown in Attachments J-11 and J-24. The Contractor shall perform a visual inspection on all emergency generating equipment fuel oil tanks for material condition and adequate fluid levels. The Contractor shall ensure there is suitable fuel to operate all emergency generating equipment. The Contractor shall maintain and repair all monitoring systems on fuel tanks. The Contractor shall also inspect all monitors to determine if there is any inner tank leakage. If leakage is discovered the Contractor shall report their findings to NASA/Environmental Engineering and Occupational Health Office immediately. The Contractor shall maintain all fuel oil handling equipment including storage tanks, monitoring systems, pumps, piping, and heaters. The Contractor shall check proper operation of the generators by starting and running them until normal engine operating temperature is achieved. The frequency shall be measured for proper output (Refer

to Paragraph 13.5.D, Performance) for performance criteria. All PM activities shall be accomplished in compliance with the Contractor's PM plan.

- C. Contract Element (CLIN - 00X1.1302) Electrical Switchgear PM. The Contractor shall perform PM on all electrical switchgear. (Refer to Paragraph 13.5.D), Performance, for performance criteria. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- D. Contract Element (CLIN - 00X1.1303) Street and Perimeter Lighting PM. The Contractor shall inspect on a regular basis all street and perimeter lighting systems. Inspections shall take place after dark to locate inoperative fixtures. The Contractor shall relamp all burned out street and perimeter light fixtures and repair or replace all broken fixtures. Any inoperative fixtures reported to the Contractor by a TC shall be placed back in service within five working days from initial notification. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- E. Contract Element (CLIN - 00X1.1304) Mobile and Fixed Emergency Generator System Operation. The Contractor shall maintain the emergency generators as listed in Attachment J-11 in a ready state for use. The Contractor shall connect and disconnect, and operate portable generators during planned and unplanned power outages at various structures and remote locations when no normal source of power is available. Connection, disconnection and operation will be accomplished by TC, TCS or IDIQ. Government furnished portable generators shall be utilized. The Contractor shall provide emergency generators required by the Government in addition to the Government furnished generators under the indefinite quantity paragraph of this contract. (Refer to Paragraph 13.5.D.) Performance for performance criteria.
- F. Contract Element (CLIN – 00X1.1305) Uninterrupted Power Supply, Rectifiers, and Battery Bank PM. The Contractor shall perform PM on the uninterrupted power supply, rectifiers, and battery bank systems listed in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- G. Contract Element (CLIN - 00X1.1306) Special Electrical Power Systems Operation. The Contractor shall operate, repair, maintain, inspect, and modify special electrical and electronic controlled power distribution systems in Building 4487. Special power systems are capable of supplying two to four hundred Volts of DC power from six patch panels. Two hundred lead acid batteries and forty battery chargers are included in the special power systems.
- H. Contract Element (CLIN - 00X1.1307) Interior and Exterior Low and High Voltage Distribution System PM. The Contractor shall accomplish all electrical system PM in compliance with their PM plan. This shall include PT&I activities such as thermography to identify weak or failing system components.
- I. Contract Element (CLIN 00X1.1308) 4160-Volt Power Support. The Contractor shall perform operational support activities to service, maintain, repair and test

4160-Volt systems that are integral to the NASA MSFC systems. Typical systems throughout MSFC that the Contractor shall be responsible for include, but are not limited to, transfer switches, switchgear, and starters for chilled water system compressors, MSFC-owned 4160-Volt generators, transformers, and switchgear. The Contractor shall provide continuous maintenance support for all 4160-Volt outages that affect MSFC facilities. The Contractor shall ensure that affected parties are informed that power restoration is completed properly and that system configuration and integrity is not compromised at the conclusion of the work. The Contractor shall provide PM service and repair activities on MSFC-owned equipment. The Contractor's repair liability for servicing equipment and system components is limited to \$2000 per system, per occurrence. The repairs shall be accomplished on TC's or IDIQ's as required.

Additionally, the Contractor shall assist the Army Garrison High Voltage personnel involved with 4160-Volt Power equipment anomalies and scheduled power outages that affect NASA facilities. The Contractor is liable for support activities only on the Army Garrison-owned 4160-Volt systems.

- J. Contract Element (CLIN - 00X1.1309) Emergency Light PM. The Contractor shall inspect on a regular basis all emergency lighting systems. Emergency lights, as identified in NFPA Life Safety Code 101, shall be maintained in accordance with the Life Safety Code. Emergency lights that do not meet the definition of the Life Safety Code shall be maintained in accordance with Paragraph 4.0, Trouble Calls. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- K. Contract Element (CLIN - 00X1.1310) Variable Speed Drives PM. The Contractor shall perform PM on all variable speed drives listed in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- L. Contract Element (CLIN - 00X1.1311) Static Ground and Lightning Protection PM. The Contractor shall perform PM on all static ground and lightning protection systems listed in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.
- M. Contract Element (CLIN - 00X1.1312) Storage Tank Monitor PM. The Contractor shall perform PM on all storage tank monitors listed in Attachment J-24. All PM activities shall be accomplished in compliance with the Contractor's PM plan.

13.3 DOCUMENTATION AND REPORTING REQUIREMENTS

- A. Contract Element (Include in CLIN - 00X1.0306) Computerized Maintenance Management System (CMMS) Operations and Management. The Contractor shall continuously update the CMMS to reflect any and all equipment failures and corrective actions taken. All data shall be accurate and current.
- B. Contract Element (CLIN - 00X1.1014) Maintenance Procedures. The Contractor shall provide maintenance procedures in accordance with DRD 1197LS-011. The

Contractor shall update and revise all maintenance procedures on a continuing basis as required by physical changes at no additional cost to the Government (See Paragraph 10.5.E, Maintenance Requirements and Procedures). Maintenance procedures shall be maintained in the TRL.

13.4 **IDIQ WORK**

Indefinite quantity work will be ordered in accordance with Paragraph 1.6, IDIQ and completed within the number of calendar or workdays specified in the FWR or DO.

13.5 **DETAILED REQUIREMENTS**

- A. Emergency Generators. The Contractor shall make all necessary repairs to emergency generating equipment and ancillary component equipment, including diesel engines on a priority basis. The Contractor shall work continuously to repair the disabled system and shall provide the COTR with daily reports of progress until all repairs and tests are complete. The Contractor shall turn in used oil in containers to the hazardous waste storage facility.
- B. Batteries and Battery Chargers. The Contractor shall maintain, repair, or provide labor to order and replace batteries and battery chargers of 12 and 24 Volts on emergency generators and up to 550 Volts for UPS systems. All batteries in service shall be maintained in a 100 percent working order.
- C. Storage Batteries. The Contractor shall maintain, repair, or replace batteries in storage per the manufacturer's recommendations.
- D. Performance. All equipment shall be operational, functional, and ready to respond to demand according to its design purpose and intent except for scheduled or planned outages. Note: Scheduled and planned outages for Buildings 4663 and 4207 will be very difficult to obtain and most likely will only be available during a holiday period such as Christmas. For unscheduled and unplanned outages, the electrical systems listed in Attachment J-10 shall be non-functional no greater than those occurrences and times specified in Attachment J-10, herein referred to as the "outage limit," except for scheduled or planned outages. For work that exceeds the TC limit, the time expended by the Contractor prior to the Contractor notifying the COTR of such condition shall be applied towards the outage limit. All other time will not be counted towards the outage limit for work exceeding the TC limit (reference note G on the Systems Availability Requirements Table in Attachment J-10). Planned outages for maintenance and repair shall follow standard labor hours and practices per the Means® Facilities Maintenance and Repair Cost Data Handbook. Anytime exceeding published labor hours may count towards the outage limit.
- E. All replacement electronic equipment (for example, electronic ballasts, variable frequency drives) shall have a total harmonic distortion (THD) of ten percent or less.

14.0 EMERGENCY MANAGEMENT SUPPORT**14.1 GENERAL REQUIREMENTS**

The Contractor shall provide personnel to support the MSFC emergency program. It is expected that personnel on staff will be trained to perform this function and no additional personnel will be required.

14.2 LUMP SUM WORK

The following Contract Requirement shall be performed per the Performance Requirements Summary (PRS) Section E.9, at the frequencies or performance criteria specified within the contract requirement:

Contract Element (CLIN - 00X1.1401) Damage and Utility Control (DUC) Team. The Contractor shall respond to all emergencies and disasters at MSFC as part of the emergency response efforts for all facilities and equipment for which the Contractor has maintenance and/or repair responsibilities as directed by the Emergency Management Director (EMD). The Contractor shall provide a core complement of personnel that are trained in emergency response as damage and utility control specialists. This team will be referred to as the Damage and Utility Control Team (DUC Team) and will be responsible for isolating and making safe utilities such as electrical power, steam, natural gas, and water during emergency/disaster situations as well as helping to mitigate any additional damages. The team shall receive its directions from either the Incident Commander, EMD or Deputy EMD, or their designee during emergency situations. The Contractor shall determine the number of personnel that are trained as DUC Team members.

The Contractor shall respond to all major emergency/disaster events on a 24-hour, seven (7) day per week basis. The Contractor shall handle each event as an emergency TC with the corresponding limitations. Remaining work shall be accomplished at the Government's discretion per Paragraph 1.6, IDIQ Work. Historically, less than (5) five emergency/disaster situations occur per year.

DUC Team members shall be trained in Hazardous Waste Operations and Emergency Response (HAZWOPER), Incident Command, how to safely approach an emergency situation/disaster scene, and shall be totally familiar with utility cutoff procedures and locations for each facility/structure at MSFC. See Paragraph 6.0, Environmental Management Support for training.

(End of Attachment)