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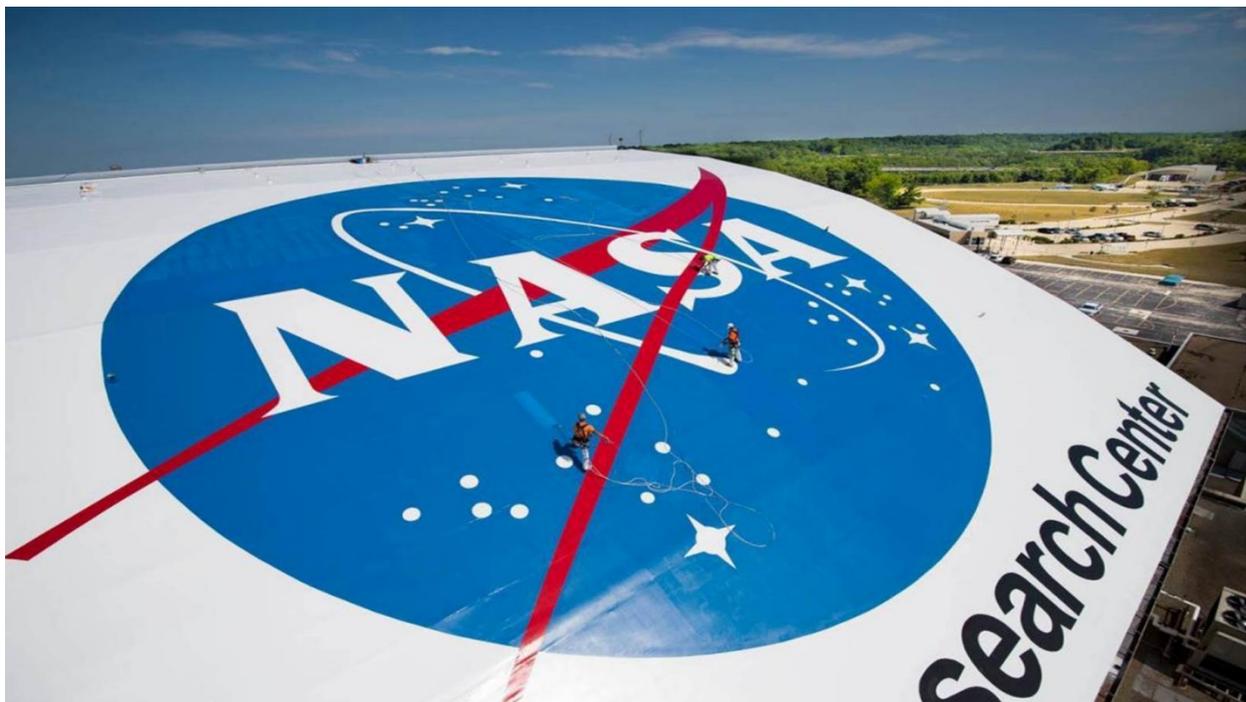
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Construction Contractor Manual

Facilities Division

NASA Glenn Research Center

Cleveland, Ohio 44135



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Disclaimer:

This manual is reference material to be used for information only. Contractors are to follow guidelines and procedures set forth in the Glenn Research Center Safety Manual, the Glenn Research Center Environmental Programs Manual, the Glenn Research Center Occupational Health Programs Manual, current contracts, project specifications, and any other applicable documents.

The John H. Glenn Research Center includes two locations: Lewis Field, which is the Cleveland campus, and Plum Brook Station, a satellite station in Sandusky. This manual is applicable to construction activities at both locations. Note that contact information, procedures, and certain documents will vary between the two locations, as noted in this manual.

Acronyms

ACM	asbestos-containing material
AED	automated external defibrillator
AHJ	authority having jurisdiction
ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BEHST	Basics of Environmental, Health, and Safety Training
CFR	Code of Federal Regulations
CI	construction inspector
CM	construction manager
CO	contracting officer
COR	contracting officer representative
CPR	cardiopulmonary resuscitation
EASC	Electrical Applications Safety Committee
EMS	Environmental Management Systems
FD	Facilities Division
FDP	Facilities Project Management Branch
FE	Environmental Management Office
GRC	NASA Glenn Research Center
HASP	health and safety plan
HAZCOM	hazard communication
IDLH	immediately dangerous to life or health
IEEE	Institute of Electrical and Electronics Engineers
JHA	job hazard analysis
LED	light-emitting diode
LEV	local exhaust ventilation
LOTO	lockout/tagout
MADS	Material Asset Data Sheet
MOT	maintenance of traffic
NFPA	National Fire Protection Association
NMIS	NASA Mishap Information System
NPR	NASA Procedural Requirements
NTP	notice to proceed
OAC	Ohio Administrative Code
OCHMO	Office of the Chief Health and Medical Officer
OEPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
OSHA	Occupational Safety and Health Administration
PM	project manager
PPE	personal protective equipment
PSO	Pressure Systems Office

QA	quality assurance
RCRA	Resource Conservation and Recovery Act
RFI	request for information
RFP	request for proposal
RSO	radiation safety officer
SDS	safety data sheet
SEOHC	safety, environmental, and occupational health coordinator
SHeD	Safety, Health, and Environmental Division
SMAD	Safety and Mission Assurance Directorate
SPCC	spill prevention, control, and countermeasures
SWP3	storm water pollution prevention plan
URD	underground record drawing
USEPA	United States Environmental Protection Agency
VIS	vehicle inspection station
WMT	Waste Management Team

CHAPTER 1.—CONTACT LIST

Emergencies

From a Glenn Research Center (GRC) Telephone: **Dial 911***

From a Cell Phone:

Lewis Field: 216-433-8888

Plum Brook Station: 419-621-3222

**Dialing 911 from a GRC phone will link directly to the GRC's communications center. Never dial 911 from a cell phone. Notifying the communications center of an emergency allows them to better coordinate emergency services and provide a quicker response time.*

Main Gate/Security/GRC Communications Center

Lewis Field: 216-433-2088

Plum Brook Station: 419-621-3226

Shipping and Receiving

Lewis Field: 216-433-2254

Plum Brook Station: 419-621-3224

Facilities Division (FD) Construction

Deb Millard: 216-433-6732

FD Environmental, Health, and Safety Coordination

Bill Howser: 216-433-5110

Safety and Health Division (SHed) Construction Safety

Christine Greenwalt: 216-433-3105

1.1 NASA Facilities Division (FD)

<https://www.grc.nasa.gov/fd/>

The FD at NASA Glenn Research Center (GRC) has the responsibility to assure safe, efficient, reliable, and sustainable facilities and systems to support the research and development mission of GRC. The FD operates, maintains, updates, and demolishes institutional, research, and test facilities at Lewis Field in Cleveland, Ohio, and Plum Brook Station in Erie County, Ohio (see Appendix H for maps).

Performance of the work under FD construction contracts is subject to the technical direction of the Contracting Officer Representative (COR), who shall be specifically appointed by the Contracting Officer (CO). FD construction projects are then managed from concept through completion by the Facilities Project Management Branch (FDP). Civil servants and support service contractors perform the roles of Project Manager (PM), Construction Manager (CM), Construction Inspector (CI), and Safety, Environmental, and Occupational Health Coordinator (SEOHC). Descriptions of the primary FD roles follow here.

Contracting Officer Representative (COR)

The COR is the individual designated by the CO to act as the CO's authorized representative in administering a contract.

Project Manager (PM)

The PM oversees the progress of the project for NASA. The PM works with the CM/CI to track project status and handle issues during construction. The PM serves as the point of contact for any issues related to requests for information (RFIs), requests for proposals (RFPs), contract modifications, closeout documents, and other relevant documents. The PM or the COR has the authority to issue a notice to proceed (NTP). The PM will attend preconstruction meetings and weekly progress meetings and will periodically visit the construction site.

Construction Manager (CM) and Construction Inspector (CI)

The CM provides day-to-day coordination and communication between the Construction Contractor and the PM. The CM monitors the overall contract performance by the Construction Contractor, including delivery of the final product and services as identified in the construction contract. The CM may perform the functions of the CI on certain projects when this functional area is not staffed by another employee.

The CI provides in-the-field observance, monitoring, and inspection of day-to-day construction activities at the jobsite. This function includes monitoring and checking construction fieldwork to verify that it meets the requirements of the project documents, drawings, and specifications with respect to location, details of work, quality of materials and workmanship; monitoring conformance with the contract terms and provisions relating to construction safety and quality; and monitoring and reporting the Construction Contractor's progress in relation to the approved project schedule.

The CM and/or the CI will serve as the onsite point of contact for contractors for all issues that affect NASA. The assigned CM/CI will supervise construction; ensure quality of work; ensure safe working conditions; assist in permits, outages, and badging; track RFIs and submittals; etc. The CM/CI will organize the preconstruction meeting and the weekly construction progress meetings. GRC requires that construction contractors be monitored at all times while working onsite. This oversight is provided by the CM/CI.

Authority Having Jurisdiction (AHJ)

The AHJ is responsible for enforcing the requirements of the life safety and building codes and/or approving equipment, materials, an installation, or a procedure. Variances to requirements shall be submitted in writing to the AHJ for consideration and approval.

Safety, Environmental, and Occupational Health Coordinator (SEOHC)

The SEOHC's support involves safety, environmental, and occupational health design and oversight responsibilities on both large and small facility and/or system projects. Among other duties, the SEOHC reviews construction contractors' site-specific and project-specific health and safety plans (HASPs) and contributes comments regarding safety and environmental and occupational health.

Environmental Management Office (FE)

FE personnel provide support for hazardous waste, asbestos, lead-based paint, wastewater, storm water, and chemical spill response and cleanup.

Waste Management Team (WMT)

The WMT manages the Construction Waste Management Program and coordinates all reuse, recycling, and disposal activities at NASA GRC.

1.2 NASA Safety and Health Division (SHeD)

<https://www.grc.nasa.gov/smاد-ext/construction-safety/>

SHeD implements the requirements established by the director of the Safety and Mission Assurance Directorate (SMAD) and assists Center organizational supervisors with Health and Safety Management System compliance. SHeD includes an Operational Safety Branch, an Occupational Health Branch, and a number of safety committees.

Operational Safety

<https://www.grc.nasa.gov/smاد/operational-safety/>

The Operational Safety Branch provides safety oversight and consultation to promote safe operations and practices for all programs, projects, and workers at GRC. Safe operations and practices can reduce the risk of injury to personnel and prevent damage to property. SHeD's Operational Safety Branch is the authorizing office for HASP approvals, Confined Space Entry permits, and Hot Work Authorization permits. SHeD jointly approves digging and excavating permits with FD.

Occupational Health

<https://www.grc.nasa.gov/smاد/occupational-health/>

In compliance with directives from the Office of the Chief Health and Medical Officer (OCHMO) and Federal, state, and local requirements, the Occupational Health Branch promotes wellness and provides health services and programs protective of worker and visitor health in all GRC working environments. Among other duties, SHeD occupational health personnel regulate hazardous working conditions such as noise pollution, toxic fumes, and asbestos.

Safety Committees

Safety committees conduct independent reviews of all proposed installations and operations in their assigned areas to ensure that the proposed design and/or operation is consistent with the dictates of sound engineering judgment and acceptable health and safety standards. Committee membership includes individuals with engineering and operational expertise, as appropriate for that area's activities, and representatives from SHeD.

- **Area Safety Committees** provide the reviews for test rigs and/or test facilities that are not supported by Central Process Systems to ensure that all systems meet minimum design, operational, and safety standards. Refer to the Safety Committee area map for area assignments.
- The **Electrical Applications Safety Committee (EASC)** reviews tasks in all major electrical power systems. This committee is primarily responsible for high-voltage electrical power systems. If requested, the EASC will also review new additional or modified electrical applications and any direct impact on existing systems. EASC review and permission are

required for any construction activity at Lewis Field or Plum Brook Station that will modify a permitted system's one-line diagram or require a crew to work in the vicinity of high-voltage lines or equipment, both inside and outside of electric supply stations.

- The **Process Systems Safety Committee** ensures that Central Process Systems and the associated facilities (Central Air Equipment Building, wind tunnels, air dryers, etc.) are designed and operated safely. The committee conducts reviews of all proposed installations, modifications, and operations that could affect systems specifically assigned to this committee to ensure that all systems meet minimum design, operational, and safety standards.

CHAPTER 2.—SITE ACCESS

All personnel who enter GRC must comply with all security protocols. No animals are permitted at GRC. No guns, knives, or other weapons are permitted at GRC.

2.1 Standard Operating Hours

The standard hours of operation for GRC are 6 a.m. to 6 p.m., Monday through Friday. Normal construction hours are 7 a.m. to 3:30 p.m. If additional work outside of this time is required, the Contractor must coordinate this with the CM/CI at least 24 hours prior to working an extended shift.

Below are the standard recognized holidays for Federal employees:

- New Year's Day
- Martin Luther King Day
- Washington's Birthday (Presidents Day)
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Veterans Day
- Thanksgiving Day
- Christmas Day

The Contractor's Superintendent is required to be at the Center (Lewis Field or Plum Brook Station) at all times that construction is occurring. The Construction Contractor shall provide 100 percent supervision over all construction on the project.

For further information, contact or consult: COR

2.2 After Hours

Access to GRC outside of standard operating hours requires prior notice with an After Hours Notification form (GRC 624). This form is to be filled out and submitted by the CM/CI. The CM/CI should be given at least 24 hours prior notification of all after-hours work.

Coordinate with Security to provide manpower for Main Gate access at Plum Brook Station; a minimum 4-hour shift is required. The Plum Brook Station Security Force protection policy requires an additional guard at the guard booth for after-hours work.

For further information, contact or consult: COR

Applicable forms:

GRC 624 – After Hours Notification (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

2.3 Badging

No person is permitted access to the GRC without a visitor's pass or a worker's badge (temporary or permanent). Construction Contractors will be permitted three permanent badges for GRC. All workers and site visitors must obtain badges. Every person entering the gate must have a government-issued photo ID (driver's license, state ID, etc.) in compliance with the REAL ID Act. All visitors, workers, and employees must display their badges at all times while onsite.

Visitors (Nonworkers):

All Contractor visitors must have a visitor's pass for access to the GRC. The Contractor is to give the CM/CI prior notice of the visit with the following information:

- Visitor's full name
- Company the visitor represents
- Nationality (must be a U.S. citizen)
- Date of visit
- Time of arrival
- Duration of visit (how many days visitor will be consecutively onsite)
- Location(s) of visit (building number(s))
- Sponsor (the sponsor is responsible for visitor's safety)

This information will be forwarded to the GRC Office of Protective Services.

Construction Workers (less than 15 days):

This process will be used for any worker who requires access for 14 days or less. The Contractor is to give prior notice to the CM with the following information:

- Worker's full name
- Company the worker represents
- Nationality
- Date and time of arrival
- Duration of work (how many days worker will be consecutively onsite)
- Location(s) of work (building number(s))

Construction Workers (15 to 180 days):

Any worker requiring access for more than 14 days and less than 180 days will be issued a Temporary Worker Badge. The issuance of this badge requires specific information from each worker, including (but not limited to) the following:

- Worker's full name
- Social Security number
- Date of birth
- Citizenship
- Birthplace
- Personal contact information (phone, address, and email)
- Company contact information (phone and address)
- Worker's title
- Date and time of arrival
- Duration of work (how many days worker will be consecutively onsite)
- Location(s) of work (building number(s))

A criminal background check will be conducted on the worker. Once the criminal background check is approved, the worker will be contacted. A photo, fingerprinting, and verification through two forms of ID will be required to complete the badging process.

All construction workers shall view the GRC Construction Safety Briefing. Documentation must be provided that all Contractor employees have viewed the GRC Construction Safety Briefing within the past 2 years.

<https://www.grc.nasa.gov/smاد-ext/wp-content/uploads/sites/82/Construction-Safety-Briefing-Lewis-Field.pdf>

International visitors or workers require specific paperwork that will take approximately 6 weeks to process. Contractors should contact their COR for further details.

For further information on badging procedures, contact or consult: COR

2.4 Deliveries

All deliveries require prior notification to the NASA Main Gate by the Contractor.

Lewis Field: 216-433-2204

Plum Brook Station: 419-621-3221

All deliveries will be processed through the Vehicle Inspection Station (VIS) and inspected by Security. The VIS is open Monday through Friday, 7 a.m. to 4 p.m. Deliveries outside these hours may experience delays due to limited resources. The U.S. Government is not responsible for damages resulting to deliveries outside normal operating hours or delays due to traffic congestion at the VIS. The Contractor (permanent badged) will notify security of the following information:

- Name of delivery company
- Who delivery is for (Contractor is required to receive all deliveries)
- Where delivery is going (building, etc.)
- Name of driver
- Date and time of arrival
- After-hours deliveries must be coordinated with CM/CI at least 48 hours prior to delivery.

Prior to the beginning of construction, the CM/CI will instruct the Contractor on required truck routes through GRC. All drivers should be notified of the required routes.

The Contractor is responsible for receiving and unloading all deliveries. NASA equipment cannot be used for unloading.

Please note: Many facilities at the GRC do not have loading docks.

2.5 Property Passes

A property pass is required to remove any Contractor materials, instruments, parts, supplies, machinery, tools, or equipment from the GRC. The property pass (GRC 702) confirms that the materials, instruments, parts, supplies, machinery, tools, or equipment are owned by the Contractor and not by NASA. The CM/CI or a designee will provide the property pass after inspecting the vehicle and cargo. The driver must give a copy of the property pass to gate guards before leaving GRC.

Each property pass includes three copies:

- White Copy—Security/Main Gate
- Pink Copy—Contractor
- Yellow Copy—CM

For further information, contact or consult: CM

Applicable forms:

GRC 702 – Contractor Property Pass (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

CHAPTER 3.—SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

Contractors are responsible for providing a safe and healthful workplace for their employees and subcontractor employees and for ensuring that their work is performed in a safe manner. This includes meeting the necessary codes and standards covering health and safety requirements (e.g., personal protective equipment and the associated training, required task-specific monitoring equipment and the associated training and calibration requirements, etc.) as well as installation and testing requirements of the associated codes, standards, and manufacturer installation manuals.

The Contractor shall demonstrate an understanding of the hazards that arise from the performance of the contract. This demonstration shall be in the form of a site-specific health and safety plan (HASP) submitted electronically to GRC for review and concurrence. A HASP is the written review of the general tasks to be performed at GRC, the hazards associated with each individual task, and the method(s) used to ensure the safety of GRC personnel and the workers performing the tasks. Requirements for HASPs are further discussed below.

It is expected that contractor employers and employees reporting to GRC facilities to perform an assigned task are already in compliance with OSHA requirements, recognized national safety codes and consensus standards (e.g., ANSI, ASTM, IEEE, NFPA, etc.), and manufacturer's installation manual requirements regarding the level of training necessary to be considered "Qualified." The employer is responsible for determining an employee's qualification and ability to perform the required work. These laws, codes, and standards also provide requirements for proper installations and testing procedures. These requirements shall be enforced and adhered to. Prior to commencing work, the Contractor may be required to provide copies of training certificates to the project's CO.

Employers shall ensure that all requirements set forth by this manual are communicated to their employees. The Contractor is responsible for training employees and/or subcontractor(s) on the site-specific HASP content. Each employee (prime or subcontractor) will sign the site-specific HASP to document this training.

The safe completion of tasks shall always be the primary concern and objective of Center Management when construction activities are being performed at GRC. No individual shall be knowingly placed in a situation that could put them at risk of injury or have an adverse effect on their health. This is a GRC priority, and it shall be a priority of all personnel while working at GRC.

The Contractor shall conduct daily, documented safety inspections of the worksite(s). This documentation is to be maintained at the worksite in an easily retrievable form for field audits performed by GRC personnel.

3.1 Emergencies

The Contractor should be aware that building-specific emergency response diagrams are posted near entry/exit doorways. These diagrams include the locations of the evacuation "muster point," the severe weather shelter, and emergency response equipment (fire extinguishers, first aid, automated external defibrillator (AED), eye wash station, shower, etc.). For work not occurring

inside buildings, CMs shall confer with Contractors regarding jobsite-specific emergency response procedures as outlined in the site-specific HASP. **In all emergency situations, it is the responsibility of the Contractor’s Superintendent (or designee) to take a head count of their employees.**

To Report Emergencies

From a GRC Telephone: **Dial 911***

From a Cell Phone:

Lewis Field: 216–433–8888

Plum Brook Station: 419–621–3222

Dialing 911 from a GRC phone will link directly to the GRC’s communication center. **Never dial 911 from a cell phone. Notifying the communications center of an emergency allows them to better coordinate emergency services and provide a quicker response time.*

For further information, contact or consult: CM

Applicable forms:

Quick Reference Guides for Emergencies (see Appendix A)

- Lewis Field:

<https://www.grc.nasa.gov/smad/wp-content/uploads/sites/59/Quick-Reference-Guide-Lewis.pdf>

- Plum Brook Station:

<https://www.grc.nasa.gov/smad/wp-content/uploads/sites/59/Quick-Reference-Guide-PBS.pdf>

3.2 Fire Prevention and Hot Work

The Contractor must provide fire extinguishers and other fire prevention equipment as required and ensure that all employees are trained in their proper use. For more information on Fire Prevention, refer to the GRC Safety Manual—Chapter 31.

The GRC Safety Manual defines hot works as “all heat, spark, or flame producing operations including cutting, welding, thermite welding, brazing, soldering, grinding, thermal spraying, thawing pipe, torch-applied roofing, or any other similar situation.” Any construction work at GRC that may generate heat, sparks, or flame (welding, burning, grinding, etc.) outside of a designated shop or welding location requires a Hot Work Authorization Permit. Prior to starting any hot work, the Contractor is required to apply for and receive an approved Hot Work Authorization Permit from SHED. Apply for a Hot Work Authorization Permit using form GRC 7a, available in Appendix B or online.

Each permit will be for a single site-specific hot works task and will not be transferable to other sites, projects, or tasks. The CM/CI will provide the Contractor with contact information. The Contractor is required to follow all procedures set forth in the Hot Work Authorization Permit and the Hot Work Operation Checklist (Form GRC 7b) as well as the GRC Safety Manual—Chapter 28. Note that only certified personnel may operate welding equipment.

If any hot work activities are to occur, the Contractor shall

- Identify the need for hot work operations. If there is a need, apply for a Hot Work Authorization Permit. This application process requires the Requestor (the Contractor) to review the site/operation and obtain signatures from the designated parties prior to the start of work.
- Complete the Hot Work Authorization Permit (including all necessary signatures) and maintain all documentation in the field.
- Verify that hot work is not being performed on a painted surface. All paint shall be removed prior to any hot work. If a surface contains lead-based paint, measures to abate any lead-based paint must be undertaken.
- Ensure that all specified safety precautions are taken, including
 - Completion of Hot Work Authorization Permit and Hot Work Operation Permit and posting of permits near work area
 - Adherence to all aspects of Hot Work Authorization Permit and Hot Work Operation Permit
 - Designation of the fire watch
 - Making appropriate safety and firefighting equipment available; ensuring completion of required fire extinguisher training
 - Proper protection or removal of flammable and combustible material within 35 ft of the work
 - Ensuring that workers comply with the required safety and occupational health regulations
 - Inspection of equipment, including the following:
 - Check for worn or cracked hoses; oil or grease on regulators; and dented or cracked cylinders.
 - Inspect condition of torches; helmet and lens; welding screen; ventilation equipment; electrical plugs on electrical welders; fire extinguisher; and gauges.
 - Check for proper attire (gloves, long-sleeved shirts, apron, and long pants).
 - Ensure cylinders are stored securely and upright and oxygen is stored away from fuel gas cylinders by 20 ft.

The Contractor shall return the original permit and daily check sheets to SHED, Mail Stop (MS) 6–4, when hot work operations are complete.

For further information, contact or consult: CM or SHED; GRC Safety Manual—Chapter 28; GRC Safety Manual—Chapter 31

Applicable forms:

- GRC 7a – Hot Work Authorization Permit (see Appendix B)
- GRC 7b – Hot Work Operation Checklist (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

3.3 Safety Inspections

For each contract, the Contractor is to designate, in writing, a Site Health and Safety Officer and/or a Safety Manager. This person will ensure compliance with all safety and health requirements.

In accordance with GRC Safety Manual—Chapter 17, Paragraph 6.6.1, Contractor Inspections: “Except for maintenance projects that last one day or less, the Contractor shall conduct and document daily safety inspections of the jobsite to ensure that the site and work practices are safe and done in accordance with the Contractor’s site-specific HASP. Documentation shall be maintained at the jobsite. The Contractor shall close all self- and GRC-generated inspection findings in a timely manner.”

In general, inspections of the jobsite shall be conducted by the Contractor’s Superintendent, by a Health and Safety Officer, by a Competent Person (as defined by the Occupational Safety and Health Administration (OSHA)), or by another qualified individual. Violations of safety and health requirements shall be corrected immediately. Copies of all inspection reports shall be maintained by the Contractor. The COR and SHeD may audit these records.

SHeD will conduct routine construction site inspections and can at any time issue a Stop Work Notice if any IDLH (immediately dangerous to life or health) violations are discovered. Findings will be documented and provided to the CM/CI and prime Construction Contractor for resolution.

The Contractor shall refer to the individual OSHA standards and the site-specific HASP for additional inspection requirements (scaffolding, heavy construction equipment, etc.) applicable to the scope of work.

For further information, contact or consult: SHeD; GRC Safety Manual—Chapter 17

Applicable forms:

GRC 16 – Construction Contractor Daily Inspection Report (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

3.4 OSHA Regulations

In addition to adhering to all GRC Safety Manual and GRC Occupational Health Manual requirements, Contractors shall follow all applicable OSHA standards found in 29 CFR 1910 and 1926.

The Contractor must allow access for Federal compliance safety and health officers to conduct announced and unannounced reviews of operations.

For further information, contact or consult: SHeD

3.5 Traffic Regulations

Construction vehicles are to follow a predetermined traffic route only and shall not pass through or around any barricades, cones, or signs. GRC is a secure facility. Contractor personnel are not

permitted to visit areas beyond the worksite. Workers are required to drive to and from their worksite. Everyone in the GRC shall obey all traffic rules and regulations.

Regulations governing the operation of motor vehicles within the GRC are delineated as follows. The provisions of Ohio Revised Code (ORC) Title XLV, as they relate to the operation of motor vehicles, are adopted into the Federal Criminal Code under Title 18 of the United States Code Section 13, and all persons operating or parking a vehicle in the GRC are required to fully comply with them.

Speed limits and restrictions at GRC are as follows:

- 25 mph unless otherwise posted (35 mph at Plum Brook Station).
- 15 mph when entering or leaving gates at Lewis Field; 10 mph at Plum Brook Station.
- 10 mph in parking areas.
- Due to the high population of deer and Canadian geese at GRC, operators of motor vehicles shall reduce their speeds whenever animals are seen in close proximity to roadways and shall use extreme caution when driving during hours of darkness, in inclement weather, or when hazardous conditions exist.

Vehicle speeds are monitored by radar. Repeated speeding violations, dangerous operation of vehicles, or driving through or around barricades may result in being permanently banned from the GRC.

During hazardous test operations at GRC, roads traversing any controlled access areas or designated exclusion zones will be barricaded in accordance with conditions stated in the test operation's Safety Permit to deny traffic passageway through these areas. Personnel are strictly prohibited from entering designated exclusion zones.

Parking is not permitted

- In a manner that prevents access by emergency vehicles
- On grass, unless approved as a construction site
- On crosshatched areas
- Within 20 ft of a traffic control device or intersection
- Within 10 ft of fire hydrants
- At yellow curb locations
- On sidewalks
- Against the flow of traffic on streets and parking lots
- Alongside a vehicle located at the curb
- On the streets during periods when a parking ban is in effect
- By personal vehicles in government slots
- In handicapped parking areas without proper license plate or dashboard placard
- In designated "No Parking" zones or areas

For further information, contact or consult: GRC Safety Manual—Chapter 19.

3.6 Electrical Safety

All electrical systems and equipment at GRC shall be considered energized until verified to be de-energized and grounded, if required, prior to beginning hands-on work. GRC will not permit work on energized electrical systems with exposed energized conductors or parts. Exceptions are provided for

- Testing, troubleshooting, and voltage measuring
- Thermography and visual inspections if the restricted approach boundary is not crossed

NOTE: Other exceptions may be approved after careful review of the situation and hazard involved. An Energized Electrical Work Permit (Form GRC 780) must be submitted and approved prior to any work on live electrical equipment.

When working on electrical equipment such as switchboards, panelboards, industrial control panels, motor control centers, and similar equipment where an individual works on or in the proximity of exposed energized and unguarded components, a “Buddy” shall be required whenever the restricted approach boundary is crossed.

All employees exposed to shock hazards, including the Buddy, shall be trained in methods of safe release of victims from contact with exposed energized electrical conductors or circuit parts. It is highly recommended that all personnel who work with energized electrical equipment be qualified in emergency first aid procedures and cardiopulmonary resuscitation (CPR). If the Buddy is to be used for emergency response, the Contractors shall submit documentation of first aid/CPR training to the CM prior to starting work. If the Buddies are not trained to respond to medical emergencies, the Contractor shall state in the HASP how these emergencies shall be responded to.

Electrical activities with systems over 600 volts require review and approval from the Electrical Applications Safety Committee (EASC).

NOTE: When construction activities are in the proximity of overhead electrical power lines, it is the responsibility of the Contractor to maintain safe clearances in accordance with OSHA 29 CFR 1926.550 and 1910.33. A minimum clearance of 10 ft must be maintained between mechanical equipment (such as excavators) and energized overhead power lines. This clearance distance must be increased for voltage levels over 50 kV.

Only GRC-qualified operators/switchpersons shall perform isolation of high-voltage circuits (above 600 volts). Personnel entering areas with high-voltage equipment shall be accompanied by a NASA-designated GRC high-voltage safety person Designated Safety Person. This NASA representative is present to determine and maintain safe work zones and protect NASA equipment. The Contractor is still responsible for providing a competent high-voltage safety person during work activities in high-voltage areas.

Additional information on high-voltage and low-voltage operating instructions can be provided by the project CM/CI and SHeD.

GRC Lockout/Tagout (LOTO) procedures shall be followed whenever isolation of hazardous energy is required to safely work on a system or piece of equipment that could result in injury to personnel. GRC's LOTO program is presented in the GRC Safety Manual—Chapter 9.

Use of ground fault interrupting circuitry is required on construction sites.

For further information, contact or consult: SHeD; GRC Safety Manual—Chapter 8; GRC Safety Manual—Chapter 9

Applicable forms:

- GRC 780 – Energized Electrical Work Permit (see Appendix B)
- GRC 787 – Isolation and Lockout/Tagout Record (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

3.7 Good Housekeeping

Contractors are expected to use good housekeeping practices. Construction debris and waste are to be disposed of properly in a timely fashion. Construction sites should be cleaned (swept, vacuumed, mopped, etc.) on an as-needed basis.

For further information, contact or consult: CM

3.8 Sanitation

Contractor may be required to provide portable latrines for workers if restroom facilities will not be accessible.

3.9 Health and Safety Plan (HASP)

Prior to any construction activities, the Contractor must electronically submit a site-specific HASP. The plan shall describe all chemical, physical, biological, and other hazards that are likely to be encountered and procedures to either eliminate or control the hazards. A Job Hazard Analysis (JHA; also referred to as a Job Safety Analysis, or JSA) shall be prepared and included in the HASP. The site-specific HASP shall be reviewed and accepted by GRC prior to initiation of any construction activities. The Contractor shall be responsible for all Federal, state, NASA GRC, and local health and safety requirements for the protection of all persons (including NASA employees and support service contractors) and property. It is the Contractor's responsibility to initiate, maintain, and supervise all health and safety requirements, precautions, and programs in connection with the work under this contract and in accordance with the site-specific HASP. All employees shall be trained on the content of the site-specific HASP and shall sign the HASP as documentation of this training.

For the minimum requirements for the site-specific HASPs, refer to GRC Safety Manual—Chapter 17 and GRC specification section 01 35 26.98, General Safety Requirements.

For further information, contact or consult: SEOHC; GRC Safety Manual—Chapter 17; and GRC specification Section 01 35 26.98, General Safety Requirements.

3.10 Accident Investigation

An incident is an occurrence of a mishap or close call. NASA defines two types of incidents:

- Mishap—Unplanned event that results in an injury to non-NASA personnel, caused by a NASA operation; damage to public or private property caused by NASA operations or NASA-funded development or research projects, occupational injury or illness to NASA personnel, NASA mission failure before scheduled completion of the planned primary mission, or destruction or damage to NASA property.
- Close Call—An occurrence or a condition of employee concern in which there is no injury or only minor injury requiring first aid and no significant equipment or property damage or mission failure (less than \$1,000) but which possesses a potential to cause a mishap.

The NASA Mishap Information System (NMIS) is the current system for reporting mishaps, close calls, and hazards.

Contractors shall report all incidents, including close calls, to the CM/CI and enter the data into NMIS. To report an incident, simply type “NMIS” into the GRC WING transporter or use this link: <https://nmis.sma.nasa.gov/>. An investigation will be initiated within 24 hours.

For further information, contact or consult: SHeD; GRC Safety Manual—Chapter 17; GRC Safety Manual—Chapter 21

Applicable forms:

NMIS Report (see Appendix F); populated on the NMIS web page at <https://nmis.sma.nasa.gov/>

3.11 Personal Protective Equipment

Personnel shall wear required personal protective equipment (PPE) on construction sites when doing so is determined to be mandatory. This often includes hard hats, safety glasses, and protective footwear. Sleeveless shirts are not permitted on construction sites. Long pants are required on construction sites. The site-specific HASP will document the PPE required for each construction site.

As required for specific site hazards employees should use

- Hard hats
- High-visibility safety vests
- Safety glasses
- Steel-toed boots
- Work gloves
- Electrical protective devices
- Fall protection equipment
- Face shields
- Respiratory protection
- Other PPE as needed

For further information, contact or consult: SEOHC; GRC Safety Manual—Chapter 15; GRC Occupational Health Program Manual—Chapters 4 and 22

3.12 Fall Protection

GRC's Fall Protection Program utilizes ANSI Z 359 (Fall Protection Code) and OSHA 29 CFR 1926, Subpart M, as guidelines. Anytime a worker is on a walking or working surface or constructing a leading edge with an unprotected side or edge that is 6 ft or more above a lower level, or when workers could fall into or onto dangerous equipment from 6 ft or less, the worker must be protected from falling through the use of guardrail systems, safety net systems, fall restraint systems, or personal fall arrest systems. The Contractor shall designate a Competent Person for each task requiring fall protection. A Competent Person is required to have industry-recognized Fall Protection Competent Person training. A Fall Prevention Plan for each activity requiring an active fall protection system is required to be submitted with the HASP.

Contractors should review Section 6.10 of the GRC Safety Manual—Chapter 34 for specific fall protection safety requirements. In accordance with Section 6.10, a Fall Prevention Plan (GRC 979) shall be prepared by a Competent Person and developed for a specific job when traditional fall protection is being used. The Fall Prevention Plan shall include a written discussion of measures that will be taken to reduce or eliminate the fall hazard for workers. The plan details the task, fall protection equipment, fall hazards identified, the procedure, and a rescue plan. The Competent Person shall review the plan with workers involved with the task. After reviewing the plan, all individuals involved will sign off to indicate that they understand the hazards involved, the equipment to be used, and the rescue plan. The Fall Prevention Plan will be kept onsite for the duration of the project.

The Contractor is responsible for providing barricades to prevent people from walking underneath overhead work. Measures should also be taken to prevent tools, equipment, and materials from falling onto people or equipment below. Furthermore, all workers are to use ladders properly.

For further information, contact or consult: SHeD; GRC Safety Manual—Chapter 34

Applicable forms:

GRC 979 – Fall Prevention Plan (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

3.13 Safety Signs/Barricades

The Contractor may be required to provide construction signs that contain the company name, subcontractor name, and Contractor emergency contact. The sign should be visibly displayed while construction is underway. The sign should be removed promptly when the project is completed.

In certain instances, chain-link fence barricades may be required around large sites to keep unauthorized personnel out. Other physical barricades that can withstand 200 lb of lateral force

may be used. Orange cones and caution tape are not considered adequate barriers unless they are reviewed and approved by SHeD.

In certain situations where the use of previously identified controls is not feasible, a safety watch may be approved by SHeD.

NASA has a standardized color code system for barricades and beacons/warning lights:

- Red (or red and white) means DANGER—KEEP OUT
- Yellow means CAUTION (follow instructions on posted signs)
- White represents all other meanings/instructions (traffic awareness)

The Contractor is responsible for all safety barricading needed for the scope of work. No one is to violate construction signs warning of danger, hazards, etc.

NASA Form GRC 136, Barricading Request, shall be submitted with a barricade drawing depicting the requested barricaded area. This plan shall include the locations and a map illustrating required limits. The Barricading Request form shall be submitted to the CM/CI for routing and approval.

For further information, contact or consult: CM/CI; SHeD; GRC Safety Manual—Chapter 29

Applicable forms:

GRC 136 – Barricading Request (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

3.14 Confined Space Entry

The GRC Safety Manual defines a confined space as a space that has each of the following three characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work
- Has limited or restricted access for entry or exit, making it difficult for someone to enter or to rescue an individual in case of an emergency
- Is not designed for continuous worker occupancy

A confined space that requires a Confined Space Entry Permit (GRC 199) meets one or more of the following conditions:

- Contains or has the potential to contain a hazardous atmosphere (e.g., oxygen-deficient, oxygen-enriched, flammable, explosive, toxic, or otherwise harmful)
- Contains a material that has the potential for engulfing an entrant
- Has an internal configuration such that an entrant could be trapped or asphyxiated because of inwardly converging walls or a floor that slopes downward and tapers to a smaller cross section

- Contains any other recognized serious safety or health hazard (e.g., need for LOTO provisions or PPE)

The Confined Space Entry Permit will be granted by SHeD. The project CM/CI will provide the Contractor with contact information.

The Contractor is responsible for all required air monitoring and for following all procedures set forth in the Confined Space Entry Permit and the GRC Safety Manual—Chapter 16. Refer to Appendix B for a copy of the Confined Space Entry permit.

For further information, contact or consult: SHeD; GRC Safety Manual—Chapter 16

Applicable forms:

GRC 199 – Confined Entry Permit (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

3.15 Lighting

During construction activities, the Contractor is responsible for maintaining all emergency and exit lighting. In addition, the Contractor should provide adequate lighting to any work area in order to maintain a safe work environment.

For further information, contact or consult: SHeD

3.16 Safety, Health, and Environmental Training

The Contractor shall implement the following guidelines for employee safety, health, and environmental training:

- Site-specific safety orientation training shall be given to all new employees.
- The Contractor is responsible for providing and documenting safety training for all affected employees for the specific potential hazards and environmental impacts of the site's construction activities.
- The Contractor is responsible for training each employee and/or subcontractor on the content of the site-specific HASP. Employees and subcontractors will sign the site-specific HASP to document this training.

NASA has developed a matrix to assist Contractors in complying with the safety, health, environmental, and security training programs that apply to construction and maintenance at GRC. A copy of this matrix is provided in Appendix G. Certain courses are required for all onsite Contractors, including, but not limited to

- Basics of Environmental, Health, and Safety Training (BEHST)
- Hazard Communication (HAZCOM)
- Environmental Management System (EMS)
- Information Technology Security and Privacy Awareness Training
- GRC Security Awareness

Contractors are also required to prepare and submit a periodic Training Summary Report as directed by the COR.

For further information, contact or consult: SEOHC; GRC Safety Manual—Chapter 2; NASA Training Matrix/Required Health and Safety Courses (Revised July 2014)

Applicable forms:

NASA Safety, Health, and Environmental Training Matrix (Appendix G)

3.17 Evacuation Procedures

It is the policy of GRC that personnel at the location where a fire occurs will take action in the following sequence:

- Immediately activate the nearest pull station and evacuate to the designated safe location while warning others.
- Report the emergency condition to the GRC dispatcher via telephone by dialing 911 (from GRC phones only).
- If you are properly trained and the fire is small enough, you may fight the fire with a portable fire extinguisher after appropriate notifications have been made. Evacuate to the designated safe location if the fire is beyond the incipient stage, significant smoke develops, or the fire starts to increase in size.
- Do not reenter the building until the building is declared safe to reenter.

Only personnel who have received fire extinguisher training will be qualified to use GRC fire extinguishers.

Prior to commencing construction, the Contractor will determine a primary evacuation route and a designated safe location (“muster point”) where personnel will meet in the event of an emergency. The location of the muster point will be identified in the site-specific HASP. The Contractor is responsible for maintaining an emergency egress.

In the case of severe weather, all personnel should seek shelter inside a sturdy building.

Reference guides for emergencies for both Lewis Field and Plum Brook Station are included in Appendix A and are also available online:

Quick Reference Guide for Emergencies—Lewis Field:

<https://www.grc.nasa.gov/smadv/wp-content/uploads/sites/59/Quick-Reference-Guide-Lewis.pdf>

Quick Reference Guide for Emergencies—Plum Brook Station:

<https://www.grc.nasa.gov/smadv/wp-content/uploads/sites/59/Quick-Reference-Guide-PBS.pdf>

For further information, contact or consult: SHED; Quick Reference Guides for Emergencies; GRC Safety Manual—Chapter 27

3.18 Job Safety Meetings

The Construction Contractor is responsible for providing the following meetings for all onsite employees and all onsite subcontractor employees:

- Daily “Tool Box Safety Meetings”—Recommended meetings to address specific safety concerns for that day’s activities. Each safety review should be documented in the daily report.
- Weekly Safety Meetings—Meeting content should address relevant site-specific safety topics. These meetings are to be documented, with copies made available to SHED.
- Coordination Meetings—Whenever necessary, the prime Construction Contractor is to hold coordination meetings with all relevant subcontractors to coordinate activities between subcontractors and to ensure a safe working environment for all personnel.

For further information, contact or consult: COR

Applicable forms: Per site-specific HASP

3.19 Crane/Lifting Procedures

All employees who are responsible for rigging any equipment for lifting shall be properly trained. Only trained, certified personnel are allowed to operate cranes or other lifting equipment. Contractors are also responsible for retaining a list of specific devices employees are trained to operate. Construction Contractors shall not use NASA material handling equipment (e.g., overhead cranes, forklifts) without proper training and authorization.

Personnel shall not be located under suspended or moving loads. This includes occupied buildings, offices, shops, etc. The operator shall never pick up a load in excess of the rated capacity marked on the lifting device. All loads hoisted above shoulder level should have a tag line attached.

Additional protocols and procedures are required when operating critical lifts. Critical lifts include

- Lifts in which a loss of control could result in loss of life, loss of flight hardware, or damage to flight hardware
- Lifts involving specialized, high-dollar items such as spacecraft, one-of-a kind articles, or major facility components whose loss would have serious programmatic impact
- The lifting of personnel with a crane
- Lifts where personnel are required to work under a suspended load
- Operations with special personnel
- Use of more than one crane to lift an article
- Equipment safety concerns beyond normal lifting hazards

Note that the use of cranes or other tall structures at Lewis Field requires additional coordination due to the proximity of the Cleveland Hopkins Airport. The Contractor is required to fill out a crane permit (GRC 185, Temporary Crane Request) for government approval 2 weeks prior to lift.

At both Lewis Field and Plum Brook Station, all cranes over 200 ft require form FAA 7460-1, Notice of Proposed Construction or Alteration.

For further information, contact or consult: PM/CM; GRC Safety Manual—Chapter 20; NASA Standard 8719.9—Lifting Devices and Equipment

Applicable forms:

- GRC 185 – Temporary Crane Request (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

- FAA 7460-1 – Notice of Proposed Construction or Alteration (see Appendix B)

https://www.faa.gov/documentLibrary/media/Form/FAA_Form_7460-1_2017.pdf

3.20 Lockout/Tagout (LOTO)

The GRC LOTO procedure (modeled after 29 CFR 1910.147) is required when equipment that possesses potentially hazardous energy sources is capable of being locked out. Energy sources can include electrical, mechanical, steam, air, vacuum, etc. These energy sources must be identified, locked out (red bodied locks only), tagged (GRC 946A), deenergized, and verified safe during periods of activity/operation when exposures to those sources could cause harm.

Contractors must ensure that all employees under their supervision comply with the requirements of GRC Safety Manual—Chapter 9. A written energy isolation plan is required when more than one lock (red bodied locks only) is needed for the maintenance/service work to be performed. The Contractor shall document the plan by completing form GRC 787, GRC Switching and Lockout/Tagout Record.

For the shutdown, isolation, and lockout/tagout of area Clearance protocols shall be implemented in accordance with Section 6.8.

For further information, contact or consult: SHeD; GRC Safety Manual—Chapter 9

Applicable forms:

- GRC 787 – GRC Switching and Lockout/Tagout Record (see Appendix B)
- GRC 946A – Tag–Do Not Operate–Elec. Mech.–Indoor (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

3.21 Radiography and Lasers

Activities using radiography on the construction site (typically weld inspections) should be minimized due to potential safety and logistical issues. Radiography subcontractors shall possess all appropriate licenses and shall have a designated Radiation Safety Officer (RSO). Off-shift and weekend radiography activities are most common. Radiography activities during standard working hours require addressing many logistical issues beforehand. The use of radiography is to be specifically addressed in a project's HASP.

Moisture and density gauges are commonly used on construction sites to measure soil compaction and water content. Contractors using these gauges shall possess all appropriate licenses and have a designated RSO. All workers using these gauges shall have been properly trained as specified by the licenses. The use of these gauges is to be specifically addressed in a project's HASP.

Current leak test data must be available for any equipment being used onsite that uses a radioactive source. A Radiation Safety Plan must be submitted and approved by the GRC RSO. Requirements are outlined in the NASA GRC Occupational Health Programs Manual—Chapter 9, Section 6.6.

Construction lasers used at GRC are limited to Class 3a (3R) for visible lasers and Class 1 for others. Physical control measures are generally not required for construction lasers. Per OSHA requirements, a construction laser operator must be trained and qualified. Procedures for laser use shall be outlined in the project's HASP. Lasers may be used during daylight hours only. Use of any laser not within the "construction laser" criterion will require a Safety Permit.

Contact SHeD personnel for additional information on the use of radiography and lasers at GRC.

For further information, contact or consult: SEOHC; GRC Occupational Health Programs Manual—Chapter 9, Section 6.6

3.22 Toxic Fumes

Construction and maintenance of all local exhaust ventilation (LEV) systems shall comply with OSHA standards and with national consensus standards (e.g., American Conference of Governmental Industrial Hygienists (ACGIH) and ANSI).

Activities that involve toxic or harmful fumes require a hazard assessment to determine if respiratory protection is needed. During the hazard assessment, several factors will be investigated, including

- The nature of the task being performed and the potential for generation of airborne contaminants
- Physical, chemical, and toxic properties of the material
- Concentration and duration of exposure
- Frequency of exposure
- Environmental factors (heat and humidity)
- Worker exertion level while performing the task
- Other protective equipment needed
- Potential need for engineering and administrative controls

If an inhalation hazard is identified based on information from the hazard assessment, an Industrial Hygienist will recommend the installation of controls. Engineering and administrative controls such as ventilation, chemical substitution, and limiting or restricting personnel access to areas will be used whenever feasible and practical. When engineering controls are not feasible and practical, or do not completely eliminate the hazard, respiratory protection will be used. Respirators may be used for tasks that are of short duration, infrequent, or nonroutine.

Respiratory protection will be selected based on information obtained during the hazard assessment. The user will not wear a respirator in unknown atmospheres or in the presence of hazardous materials other than those identified in the hazard assessment. The Contractor is responsible for ensuring that all employees required to use respirators have the proper training.

For further information, contact or consult: SEOHC; GRC Occupational Health Manual—Chapter 4

3.23 Asbestos

It is the policy of the GRC to comply with all applicable regulations regarding asbestos management and to prevent illness to employees and damage to the environment from the use, removal, and disposal of asbestos.

The policy of the GRC with regard to asbestos is to

- Restrict contact with asbestos-containing material (ACM) to employees who have been properly trained and properly licensed.
- Provide sufficient training and communication for effective implementation of this policy.
- Ensure that contact with ACM, whether in restricted or nonrestricted areas, is conducted in accordance with GRC specifications and OSHA requirements for such work.
- Ensure that any job that may involve disturbing ACM is coordinated with SHed.
- Prohibit the new use of ACM.
- Ensure that existing ACM is maintained in good condition (isolated from routine contact by the establishment of regulated areas) or abated.
- Ensure that asbestos levels do not exceed 0.01 f/cc outside of regulated areas.

The site-specific HASP will address asbestos abatement hazards and provide clear guidelines for removal, storage, and disposal of ACM.

For further information, contact or consult: SEOHC; SHed; GRC Occupational Health Programs Manual—Chapter 2

3.24 Lead

It is the policy of the GRC to comply with all applicable regulations regarding lead and to prevent illness to workers and damage to the environment from the use, removal, and disposal of lead.

Lead-related work in construction and maintenance activities ranges from large lead remediation projects to small maintenance operations. In all cases, lead-related operations must be done within a controlled area using engineering and work practice controls that minimize worker exposure and prevent contamination of surrounding areas. The area will be posted with signs meeting OSHA requirements to restrict access to trained workers with the required personal protective equipment. Contractors generating hazardous waste are required to complete Resource Conservation and Recovery Act (RCRA) training.

Regulations governing worker protection must be strictly followed, including requirements for

- A Competent Person, defined by OSHA as someone capable of identifying existing and potential lead hazards in the surroundings or working conditions, who has authority to take prompt corrective measures.
- A written lead compliance program that describes each lead activity: engineering, work practice, and administrative controls; air monitoring procedures; and inspection schedules. The compliance program should be included in the project's HASP. Documentation of all air monitoring results is to be available for NASA review.

General lead awareness training is required for all workers exposed to any amount of lead. Employees who may be exposed to lead at or above the regulated action level on any day require further training on the following subjects:

- Nature of operations that may result in lead exposure
- Purpose and description of medical surveillance program
- Awareness of medical removal program and protection
- Routes of exposure
- Toxicity, health effects, and chelation therapy
- Possible engineering controls and work practices for employee tasks
- Proper disposal methods

If the project involves the handling, disturbance, or removal of lead-based paint or other sources of lead, the Contractor shall document the PPE, medical surveillance, and related requirements (per OSHA 29 CFR 1926.62) in the site-specific HASP.

All lead-containing materials will be collected and disposed of in accordance with all applicable environmental regulations.

For further information, contact or consult: SEOHC; GRC Environmental Programs Manual—Chapter 5; GRC Occupational Health Programs Manual—Chapter 5

3.25 Digging, Trenching, and Excavating

Prior to performing any excavation work or any surface penetrations on any ground surface, the Contractor shall obtain an Excavation Permit (GRC 927) from the FD. The Contractor shall comply with procedures and requirements set forth in GRC Safety Manual—Chapter 35, Digging, Trenching, and Excavating.

Contractors must obtain an Excavation Permit (GRC 927) for any penetration into surface at GRC. Each permit is limited to a 400-linear-ft section or approximately 1 acre, as determined by the COR and NASA Civil Systems Manager. The permit will be valid for 3 months or until work is complete within the permit-defined area, whichever comes first. The government shall be responsible for filling out Part A of the permit. The Prime Contractor and Excavation Contractor shall be responsible for filling out Parts B and C when required by COR.

The Contractor shall engage a Professional Ohio Surveyor to stake out all proposed infrastructure work. The Contractor shall mark excavation with white temporary marking paint prior to receiving the approved Excavation Permit.

- Permit Part B1 is the Utility Verification and Marking Log. The Contractor is required to track utility markings and request them every 2 weeks, or sooner if necessary. See the GRC Excavation Manual for further information.
- Permit Part B2 is the Potholing Log. The Contractor is required to verify (“pothole”) all utilities as identified on the underground record drawing (URD) prior to commencing infrastructure excavation. The Potholing Log verifies that all utilities are properly identified and protected. See the GRC Excavation Manual and GRC Safety Manual for further information on potholing requirements.
- Permit Part C is the Daily Meeting Log. The Contractor is required to hold daily meetings with excavation personnel to coordinate the day’s work activities. These meetings shall be witnessed by the NASA CM and/or CI and shall address the area of work to be performed that day; the Contractor will be limited to this area as discussed. See the GRC Excavation Manual for further information.

The Requestor is a member of the GRC organization or support service contractor that will monitor the excavation activities. The Requestor shall

- Initiate Form GRC 927, Excavation Permit, by filling out Part A, Step 1, and submitting it electronically using the “submit” button located at the end of Part A, Step 1.
- Ensure the Contractor-designated Competent Person for this activity has the GRC Excavation Manual and has read the manual thoroughly; verify the Competent Person has the knowledge and training required by the GRC Excavation Manual.
- Ensure the Contractor’s excavator operator has GRC Excavation Quick Reference card and understands all utility markings.
- Ensure that all personnel working at the jobsite are trained and aware of the hazards of digging, trenching, excavating, and ground penetration. Ensure that all items outlined in the permit are properly defined and resolved prior to any digging, trenching, or other excavating activities to avoid damage to utilities and structures identified on the construction drawings.
- Notify Emergency Dispatch and the Emergency Dispatch Supervisor (if a civil servant) or COR (if a contractor) if an unexpected underground utility or structure is found during the activity or if an underground utility or structure is hit or broken during the activity. The requestor shall notify Emergency Dispatch at 911 if using a NASA internal telephone; if

using a cell phone, dial 216–433–8888 at Lewis Field or 419–621–3222 at Plum Brook Station. It is the Supervisor's or COR's responsibility to notify SHeD.

- Comply with all requirements of the above-listed reference documents and other regulations regarding safe performance of the job.
- Coordinate construction work with the Lab utilities to assure that related activities such as utility shutdown are addressed.
- Attend daily meetings held by Contractor's Competent Person with Contractor's excavation personnel to ensure that all aspects of excavation work are discussed and coordinated and all portions of GRC 927 are filled out properly.
- If problems are found, ensure all work ceases until the excavation site is made safe for entry.

The Contractor performing the excavation and/or utility work shall designate a Competent Person to oversee each permitted excavation (GRC 927). This person shall be present at the physical excavation site 100 percent of the time when work is being performed. The responsibilities of the Excavation Competent Person shall include comparing construction documents to the URD, auditing the excavation process, evaluating utility markings, evaluating symbols versus details, and ensuring the permit process is followed. The Contractor shall submit an official document stating the compliance and qualifications of Competent Persons. The Excavation Competent Person designation will expire at the end of each contract and/or every 3 years, whatever is more stringent. The following are minimum requirements:

Excavation Competent Person—Mandatory Qualifications:

- a. Has a working knowledge of trenching, excavation, horizontal directional drilling, underground construction, shoring, and soil types, as appropriate to the assigned task.
- b. Has the ability to assure that all underground utilities are located, field verified, and clearly marked prior to excavation.
- c. Is knowledgeable in applicable excavation regulations to include OSHA 29 CFR 1926. Have knowledge of trench collapse prevention, ventilation and air monitoring requirements (where applicable), ground water control, personal protective equipment, and emergency procedures as they pertain to underground construction and utility work. A minimum of 5 years of excavating experience is required.
- d. Has the ability to notify the prime Contractor or Government (as applicable) of any nonconformance issues and document them; has the ability to provide any corrective actions to mitigate hazards or nonconformance issues.
- e. Has successfully completed GRC Excavation 101, Course GRC–012–15.

Utility Competent Person—Mandatory Qualifications:

- a. Has a working knowledge of trenching, excavation, horizontal directional drilling, underground construction, shoring, and soil types as appropriate to the assigned task.
- b. Has the ability to assure that all underground utilities are located, field-verified, and clearly marked prior to excavation for proposed infrastructure or infrastructure repair.

- c. Is knowledgeable in applicable excavation regulations, including OSHA 29 CFR 1926. Has knowledge of trench collapse prevention, ventilation and air monitoring requirements (where applicable), ground water control, PPE, and emergency procedures as they pertain to underground construction and utility work. A minimum of 5 years of excavating experience is required.
- d. Has the ability to document and notify the prime Contractor or Government (as applicable) of any nonconformance issues; has the ability to provide any corrective actions to mitigate hazards or nonconformance issues.
- e. Has the ability to review, understand, and interpret underground record drawings, contract drawings, and specifications.
- f. Has successfully completed GRC Excavation 101, Course GRC-012-15.
- g. Has the ability to oversee and witness underground construction and utility work to ensure that established processes are followed. A minimum of 5 years of utility installation experience is required.
- h. Has working knowledge of hydrostatic testing and pigging, as well as welding and fusion procedures, as appropriate to the assigned task.
- i. Is knowledgeable in applicable rules and regulations, including OSHA 29 CFR 1926, and installation of utilities such as domestic water (e.g., fire hydrants, thrust blocks, testing, cleaning, and chlorination), sewers, duct banks, natural gas, and other pressure pipes, as appropriate to the assigned task.
- j. Is capable of identifying existing and predictable hazards in the proximity of underground utility construction and understanding the corrective measures to eliminate them.

Excavations greater than 4 ft in depth may be considered confined spaces. As such, these shall be evaluated by SHED with regard to existing and potential hazards to determine if the excavation shall be considered a permit-required confined space. Further regulations regarding confined spaces follow:

Below 4 to 20 ft, SHED shall evaluate and determine if an excavation is to be considered a permit-required confined space based upon the known and potential hazards.

Below 20 ft in depth, all excavations shall be considered permit-required confined spaces and the requirements of the GRC Safety Manual, Chapter 16, Confined Space Entry, shall be in effect.

Confined Space Entry Training shall be required if an excavation has been determined to be a permit-required confined space. Employees who work in or around excavations must be provided training according to their work activities.

GRC adheres to ORC 3781.30. In addition, GRC has established a tolerance zone surrounding all underground utilities. The tolerance zone is the total width of the underground utility plus 18 in. on each side. The vertical tolerance zone extends from the elevation shown on the utility profile and/or the URD to 24 in. above the top edge and 24 in. below the bottom edge of the utility.

Methods of excavation within the tolerance zones are hand digging, vacuum excavation, and hydro excavation. Potholing of all utilities for verification is required prior to infrastructure excavation. The GRC Civil Systems Manager may grant a waiver for potholing; however, the Contractor is still required to excavate in accordance with the tolerance zone requirements. See the GRC Excavation Manual for further information.

The NASA Civil Systems Manager, NASA COR, and NASA Health and Safety Office will strictly monitor digging, excavation, trenching, and ground penetration activities to ensure compliance with the Excavation Permit. Significant discrepancies shall be documented in the SHEtrak System.

All permits and associated documentation issued for the purpose of controlling digging, trenching, excavating, and ground penetration activities shall be considered part of the construction and/or task documentation. Records retention requirements shall be governed by those of the construction and/or task documents or contract.

Completed Excavation Permits shall be submitted in accordance with specification Section 01 33 00, Submittal Procedures, in sufficient detail to show full compliance with the specification. Contractor is responsible to submit the permit in its entirety as a submittal to the Government once the permit is expired and/or terminated, along with all as-built information on associated subsurface infrastructure installed and obtained as part of this permit. Permit and as-built submittal is required within 10 business days after permit expiration or termination.

The Contractor shall submit the utility as-builts for newly installed utilities and surface features along with any existing utility information collected as part of the excavation permit process. The applicable as-builts shall be submitted to the government for approval within 10 days after each completion of the excavation permit (GRC 927). A complete set of as-builts will be required at completion of project. The as-built redlines must be completed on official construction drawings. Lines, letters, and details shall be sharp, clear, and legible. Additions or corrections to the drawings shall be drawn to the scale of the original drawing.

Soils will be classified by criteria set forth by the NASA Environmental Office. Soil classified as solid waste (hazardous or non-hazardous) shall be disposed of only at an Environmental Protection Agency (EPA) landfill licensed to accept the soil. Soil classified as suitable for commercial/industrial use shall be reused onsite or removed from government property and transported to a commercial or industrial fill site meeting the definitions found in the Ohio Voluntary Action Program, OAC 3745–300. In no case shall excess excavated soil be allowed to come into contact with a waterway. No excess excavated soil shall be removed from the site without written authorization from the government in the form of completed and signed manifests and/or bill of lading. Refer to Chapter 4 of this manual for information on manifest procedures. Refer to Appendix B for a copy of the Excavation Permit.

For further information, contact or consult: SEOHC; SHED; GRC Safety Manual—Chapter 35; GRC Environmental Programs Manual—Chapter 23

Applicable forms:

GRC 927 Excavation Permit (Appendix B)
GRC forms are available online: <https://nef.nasa.gov/>

3.26 Hearing Conservation

All personnel who enter areas or perform tasks where exposure to noise is greater than or equal to 82 dBA, regardless of the duration of exposure, shall be provided with personal hearing protection. All personnel who enter designated hazardous noise areas or who perform tasks where exposure to noise is greater than or equal to 85 dBA or 140 dB peak, regardless of the duration of exposure or number of impulses, shall be provided with and required to wear personal hearing protection.

Contractors shall ensure compliance with all program requirements, including noise hazard assessments, training, hearing protection, medical surveillance, and other requirements as needed to ensure compliance with NASA policy.

For further information, contact or consult: SEOHC; SHed; GRC Occupational Health Manual—Chapter 3

Applicable forms: Per site-specific HASP

CHAPTER 4.—ENVIRONMENTAL

Glenn Research Center (GRC) operates in a manner that protects and preserves the environment through pollution prevention, continual improvement of our operations, and complying with regulations.

4.1 Compliances

The GRC Environmental Programs Manual provides guidance on environmental regulations applicable to GRC. This guidance follows the laws and regulations of the United States Environmental Protection Agency (USEPA) and the Ohio Environmental Protection Agency (OEPA). For details, visit these agencies' websites. Contractors are responsible for following all applicable regulations.

For further information, contact or consult: GRC Environmental Programs Manual

4.2 Storm Water Pollution Prevention Plan (SWP3)

Contractors will be required to serve as “co-permittees” under NASA’s Notice of Intent and Storm Water Pollution Prevention Plan (SWP3) for areas of disturbance 1.0 acre and greater or as defined within construction documents. The purpose of the SWP3 is

- To enforce policies outlined in GRC’s storm water management program
- To minimize the discharge of pollutants to the storm sewer system to the maximum extent practicable by requiring, where appropriate, the use of best management practices, structural and/or nonstructural storm water quantity and quality control measures, and other provisions
- To provide for the inspection and proper maintenance of structural and nonstructural storm water controls and the storm sewer system
- To prohibit non-storm-water discharges to GRC’s storm sewers and require the removal of illicit connections to GRC’s storm sewers
- To prevent improper disposal of materials that degrade water quality
- To permit sampling and monitoring for pollutants such as those associated with illicit discharges, improper disposal, industrial and construction activities, and the application of pesticides, herbicides, and fertilizers
- To reduce erosion associated with storm water runoff

The Contractor is responsible to comply with all requirements of the SWP3 and to ensure that best management practices are being utilized appropriately.

For further information, contact or consult: GRC Environmental Programs Manual—Chapter 24

Applicable forms:

- Storm Water Pollution Prevention Plan (SWP3) Concurrence
- NASA GRC Duty To Inform Signoff Form
- GRC Construction Storm Water Site Inspection Form and Storm Event Site Inspection Checklist
- NASA GRC Pre-Notice of Termination (NOT) Sign-Off Form
- Environmental—Storm Water Inspection Report

These forms are available in Appendix B and online at <https://www.grc.nasa.gov/smad-ext/wp-content/uploads/sites/82/epmc-24.pdf>

4.3 Waste Storage/Waste Disposal/Recycling

All elements of waste storage, waste disposal, and waste recycling are overseen by the Environmental Management Office (EMO) and NASA's Waste Management Team (WMT). By regulation, NASA is considered the generator of all waste streams that leave the Center. Therefore, strict control and regulation of all waste streams must be maintained by WMT (or EMO) at all times.

Contact WMT with questions about acceptable items for disposal. The following are generally acceptable for disposal in trash dumpsters (municipal waste containers):

- Bottles—if they are empty or contain only materials that are acceptable for trash dumpster disposal. Empty bottles must be less than 5-gallon size.
- Cans—if they are empty or contain only materials that are acceptable for trash dumpster disposal. Empty cans must be less than 5-gallon size or flattened to eliminate void space.
- Disposable Freon containers—only if completely empty and valve assembly is removed
- Floor sweepings
- Landscaping debris
- Garbage
- Paint cans—if they are empty or if they contain only dried-out portions of water-based paint (no free liquid)
- Glass, paper, cardboard, plastic, and rubber

The following are generally **not** acceptable for disposal in trash dumpsters (municipal waste containers):

- Liquids—any material that is a liquid or releases a free liquid
- Corrosives
- Batteries
- Chemicals
- Combustible or ignitable materials
- Compressed gas cylinders
- Compressors
- Fuels

- Lighting bulbs—including, but not limited to, fluorescent, LED, metal halide, mercury vapor, or sodium vapor
- Lighting ballasts
- Lumber or wood—other than tiny incidental pieces included in floor sweepings, etc.
- Metal that can be recycled
- Combustible or pyrophoric metals
- Oil
- Oil-soaked rags that have free liquid, including solvents or fuels
- Pallets
- Paint cans—if they are not empty and if they contain liquid paint of any type or solid (dried-out) oil-based paint
- Powdered metals
- Solvents

GRC promotes recycling of materials whenever possible. Recyclable or hazardous materials should not be placed inside the municipal waste containers. Information on Glenn’s recycling programs can be accessed at <https://ltid.grc.nasa.gov/WasteManagementRecyclingServices>.

Contact environmental personnel at the NASA EMO for more information on disposal of materials not acceptable for municipal waste containers.

Contractors will be responsible for their own waste dumpsters. Construction and demolition debris is to be placed in a designated container. Recycling materials must be stored in separate containers. General trash should not be placed in construction/demolition debris containers or recycling containers. Any wastewater generated during construction activities must be evaluated and disposed of properly.

Whenever any material including construction demolition debris, recyclables, soil or fill, hazardous or non-hazardous waste, chemicals, or trash is removed from GRC, the WMT (or NASA EMO at Plum Brook Station) must provide signed permission to the Contractor. This permission granted by the government is given in the form of a manifest or bill of lading. The permission process involves detailed research of the material, the hauling Contractor, and the recipient site. To minimize the impact of this research on the construction schedule, the Construction Contractors must contact the WMT (or NASA EMO at Plum Brook Station) at the beginning of the project and provide the pertinent information for the investigations. Note that all potential receiving facilities and transporters must be preapproved for use. This process often takes 30 days or more from start to finish, so preplanning is essential to the success of this operation.

Note that Plum Brook Station uses a different manifest form and procedure than Lewis Field. Copies of the GRC manifest forms are provided in Appendix C. A general outline of procedures to obtain manifests at Lewis Field and Plum Brook Station follows here.

Lewis Field Manifest Procedure

- Contractor shall submit a list of all recipient sites and trucking companies to WMT via email using the Facility/Transporter Request Form. Information should include project name, contract/task number, NASA Project Manager, NASA Quality Assurance Technicians (QAs)/Construction Managers (CMs), recipient company's name, company's location, mailing address, phone number, point of contact, and description of material to be hauled, including estimated volumes. List companies in order of preference. Incomplete forms may result in a delay.
- WMT will evaluate the information and return the request as approved or disapproved within 10 working days.
 - If disapproved: WMT will explain the reasons via email
 - If approved: WMT will issue a blank draft manifest for each type of material, to be filled out by the Contractor
- Contractor will complete the draft manifest and resubmit to WMT for review.
- Once approved: Contractor may request the required number of blank manifests needed via email (not to exceed 100).
- WMT will review and obtain government-signed manifests within 5 working days. Notification will be provided via email. WMT will control all signed and numbered manifests and issue them as required.
- Contractor may schedule excavation and hauling. When the manifest is required, the Contractor will contact WMT via email no less than 24 hours in advance.
- WMT will issue no more than 25 manifests for each material at the start of the day.
- Contractor will issue a manifest to each truck driver and ensure that the driver's portion of the manifest is filled out correctly (weight, date, signature, etc.) before leaving Lewis Field. The Contractor is to ensure that the truck is within the legal weight limit for the vehicle transporting the material.
- Shipping documents are to be completed in blue or black ink.
- Contractor shall ensure that drivers cover their load at the jobsite.
- At the end of each workday, the Contractor shall call each recipient facility and confirm the number of loads received. The Contractor will then send a confirmation email to WMT documenting the number of loads that went out and notify them of any discrepancies with the receiving facility.
- Contractor is responsible for the return of completed manifests within 10 working days of shipment (return all unused manifests to WMT).

All email communications for manifests shall be copied to the project CM/CI. For more information on Lewis Field manifest procedures, contact the WMT.

Plum Brook Station Manifest Procedure

- Contractor will identify the need for a manifest. When a manifest is required, the Contractor will contact CM via email no less than 5 days in advance.
- Contractor shall submit a list of all recipient sites and trucking companies to the NASA CM via email. Information should include company's location, mailing address, phone number, point of contact, and description of material to be hauled. List companies in order of preference.
 - NASA WMT will evaluate the information and return the request as approved or disapproved within 10 working days via the CM.
 - If disapproved: CM will explain the reasons via an email.
- If Hazardous Materials: the materials are tested (either by the Contractor or the NASA EMO, per the project contract) and the report of the hazards assessment is emailed to the NASA CM and officially submitted to the NASA Project Manager as a Project Submittal. NASA WMT will review the results before disposal.
- Contractor will provide the NASA CM with all relevant information:
 - Contractor and contract number
 - Description of material to be hauled
 - Transporter company (name and phone number)
 - Recipient/dumpsite (name, address, and phone number)
- Dumpsite must be an approved facility, as determined by the NASA EMO representative.
- NASA CM will provide Contractor with a numbered and approved/signed manifest.
- NASA CM will sign and approve manifests for non-hazardous material.
- NASA WMT will sign and approve manifests for hazardous material.
- Contractor will issue a manifest to each driver and ensure that the truck driver's portion of the manifest is filled out correctly (weight, date, signature, etc.) before leaving Plum Brook. The Contractor is to ensure that the truck transporting the material is within the legal weight limit.
- Transporter driver must do the following (Contractor to verify):
 - Receive a weight ticket with before and after weights at the GRC Shipping and Receiving location (Shipping and Receiving provides weight slip for material).
 - Write the vehicle license plate number on the manifest.
 - Print name on the manifest; sign and date.
 - Receive weight ticket from recipient site.
- Recipient center must do the following (Contractor to verify):
 - Sign and date the manifest.
- Original manifest with weight ticket attached MUST be returned to the NASA CM.
- Contractor is responsible for the return of completed manifests within 15 working days of shipment (return all unused manifests to CM).

For more information on manifests at Plum Brook Station, contact the Plum Brook Station CM.

Once a manifest has been signed by a government representative, no changes may be made to the filled-out portions. If corrections must be made to the manifest, the original document must be returned to NASA to be voided, and a new manifest will be created.

For further information, contact or consult: CM/CI; WMT; GRC Environmental Manual—Chapters 5 and 10.

Applicable forms: Waste Manifests (Appendix C)

4.4 Spill Control

It is GRC policy to minimize spill potential through engineering and administrative controls. Should a spill occur, containment and cleanup procedures shall be promptly implemented to assure compliance with all applicable Federal, State, and local regulations and to minimize the effect on the environment.

Spill prevention, control, and countermeasures (SPCC) plans are required for all applicable projects. Workers should be properly trained in responses to small spills. The Contractor should keep containment and cleanup supplies necessary for small spills available onsite.

In case of a spill, the Contractor should respond as follows:

- Report all spills by calling **911** (GRC phone only) or GRC Emergency Dispatch, **216-433-8888** (Lewis Field) or **419-621-3222** (Plum Brook Station). If possible, identify the material and estimate the volume released. After emergency services have been called, notify the project CM/CI about the incident.
- For small spills, and in the absence of a safety permit, call GRC Dispatch, then attempt to contain and clean up the spill if safe to do so.
- For larger spills, take immediate emergency response actions as required under the safety permit or, in the absence of a safety permit, call GRC Dispatch, then attempt to contain the spill if possible or practical. If there are any questions with regard to safety, evacuate the area.
- Complete an incident report.

The Contractor should maintain Safety Data Sheets (SDSs) onsite that address potential dangers of the product as well as recommended procedures for spills.

For further information, contact or consult: GRC Environmental Programs Manual—Chapter 8

Applicable forms:

- Spill Occurrence Report (Appendix B)
<https://www.grc.nasa.gov/smad-ext/wp-content/uploads/sites/82/epmc-8.pdf> (p. 9)
- Emergency Notification Checklist (Appendix B)
<https://www.grc.nasa.gov/smad-ext/wp-content/uploads/sites/82/epmc-8.pdf> (p. 11)

4.5 Hazardous Materials

Hazardous materials are any substance or material that has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated.

Projects with construction activities involving hazardous materials will include a hazard communication (HAZCOM) program in the HASP. HAZCOMs will meet the requirements specified in 29 CFR 1926.59.

The Contractor is to ensure SDSs and inventory lists are available onsite in the work area at all times. Inventory lists should include (at a minimum) chemical name/product, substance weight/volume, container type (e.g., aerosol, bottle, glass, etc.). The Contractor is to store, label, and dispose of all hazardous materials per NASA guidelines.

For more information on hazardous materials, refer to the Environmental Programs Manual.

<https://www.grc.nasa.gov/smadv-ext/wp-content/uploads/sites/82/epm-manual.pdf>

For further information, contact or consult: SEOHC; Environmental Management Office, <https://www.grc.nasa.gov/ftd/services/eemo/>; GRC Environmental Programs Manual—Chapter 5 and Chapter 16

Applicable forms: Per site-specific HASP

4.6 Concrete Truck Washout

A custom-made covered rolloff box has been placed adjacent to Building 215 in the South Area for use as the dedicated concrete washout container for all construction and maintenance concrete placement activities.

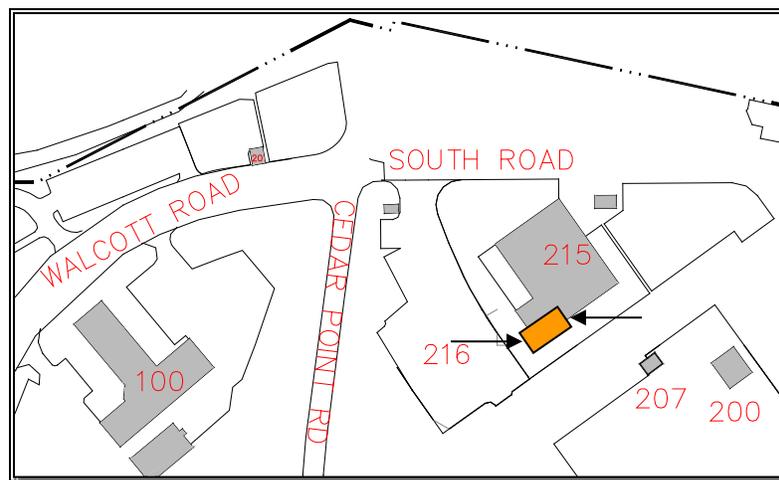


Figure 1.—Location of concrete washout container at Lewis Field.

This rolloff should be used to contain the water from washing out chutes of concrete trucks at Glenn Research Center when washing out onsite is not feasible. *Washing out of concrete mixer trucks onto pavement or anywhere that it can flow into the storm or sanitary system or into adjacent waterways is **STRICTLY PROHIBITED.***

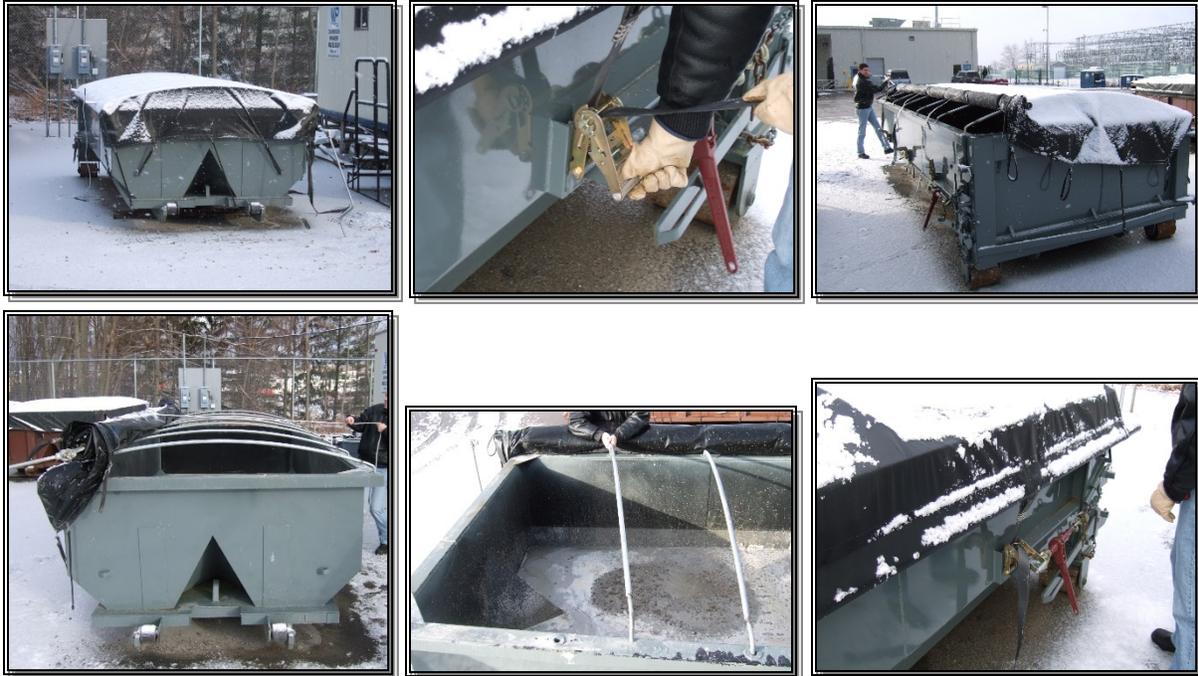


Figure 2.—Concrete washout container.

The washout container is designed to be used by front- or rear-discharging concrete ready mix trucks. Some concrete equipment, including portable cement mixers and pump trucks, is physically incompatible with this container. In these cases, the WMT can provide another approved container to collect concrete wash.

The following steps shall be followed when using the concrete washout container:

1. The NASA COR or CM must notify the WMT before concrete placement is to occur.
2. The concrete mixer truck should discharge its entire load onsite.
3. Once the truck is empty, the truck driver shall be escorted by a Contractor Representative to the concrete washout container.
4. The cover shall be removed from the washout container.
 - a. The bungee cords must be released.
 - b. The nylon straps on the side must be loosened.
 - c. The cover shall be rolled up over the top of the aluminum ribs. (A tool used for rolling the cover is located on the container.)
 - d. Sections of aluminum ribs should be removed as necessary to wash out the equipment so the ribs are not damaged or coated with concrete.
5. The driver shall clean the chute while it is extended over the container. *Excess concrete in the drum of the mixer can only be discharged into the washout container if there is no discharge area available on the construction site. COR or CM should coordinate this with WMT prior to placement.*
6. Once washout is complete, the Contractor Representative shall replace and resecure the cover and fill out the log sheet located inside of Building 215.

At Plum Brook Station, construction/removal of the washout pit is the Contractor's responsibility. No community pits are available for Contractor use.

CHAPTER 5.—PERMITS

A safety permit constitutes a license to operate within the constraints listed on the permit. The need for a safety permit is determined by the nature and extent of the hazards associated with a proposed activity. Refer to the GRC Safety Manual, the GRC Occupational Health Manual, and the GRC Environmental Programs Manual, or contact the project CM/CI or SHED for more information regarding the permit process. Table 1 presents a list of the primary permits associated with construction-related activities at GRC. Copies of standard permits are provided in Appendix B. GRC forms and permits can be downloaded at <https://nef.nasa.gov/>

TABLE 1.—GRC CONSTRUCTION-RELATED PERMITS

Activity/Permit	GRC Permit/Form Number
Excavation Permit	GRC 927
Hot Work Authorization Permit	GRC 7a
Confined Space Entry Permit	GRC 199
Area Clearance Authorization	GRC 978
Road Closure	GRC 136
Crane Authorization	GRC 185
Pneumatic Test Permit	GRC 804
Switching and Lockout/Tagout Record	GRC 787
Energized Electrical Work Permit	GRC 780
Fall Prevention Plan	GRC 979

The following general guidelines apply to construction permits at GRC:

- The Contractor shall be mindful of the timeframes for the permit approval process. Most permits cannot be submitted and approved in the same day. The Contractor must take processing time into account.
- The Contractor is responsible to keep copies of all active permits onsite during any construction activities.
- If a safety permit has expired, all construction activities within the constraints listed on the permit are forbidden to continue. Contact the CM/CI and SHED personnel to renew or extend an existing permit.
- SHED personnel and their designees have the authority to shut down any operation or activity if safety or environmental hazards are a concern.
- A safety permit is invalidated by any change in apparatus, operating conditions, or qualified operators list unless the change has been approved by the permit grantors.
- Once the construction activities related to the permit are complete, the original permit is to be returned to NASA. The Contractor will be instructed on who is to receive the permit.

CHAPTER 6.—CONSTRUCTION PHASE IMPLEMENTATION

It is recommended that the Contractor keep a binder onsite with the following information:

- Daily reports
- Meeting minutes
- Permits
- Training, fit test, medical records, etc.
- Site-specific HASP
- SDSs
- Letters from subcontractors (HASP acknowledgments and Competent Person designations)
- Signoff sheet for employee HASP acknowledgment
- JHA (Job Hazard Analysis) breakdown
- Daily safety inspections
- Supplemental work plans as required by contract, such as Construction Project Plan, Environment Compliance Plan, Radiation Safety Plan, Maintenance of Traffic Plan, or Detour Plan (road closures)

It is also recommended that the Contractor program emergency numbers* into his/her phone and post emergency numbers at the jobsite.

***911 is to be dialed from GRC phones only. When using cell phones, dial 216–433–8888 (Lewis Field) or 419–621–3222 (Plum Brook Station).**

6.1 Preconstruction Meeting

The Preconstruction Meeting will be held prior to the commencement of work. Subjects addressed will include scope of work, contract administration, safety/environmental concerns, technical aspects of the project, and other issues as needed. The preconstruction meeting is led by the CM and attended by the project team, including the PM, Contractor, subcontractors, SHeD representatives and, as necessary, facility, systems, and safety representatives.

At the preconstruction meeting, the Contractor will submit the following: Standard Form (SF) 1413 (Statement and Acknowledgment); schedule of values; schedule of bonds; and baseline schedule. Copies of documents and forms related to the Preconstruction Meeting are provided in Appendix D.

For further information, contact or consult: PM or CM

Applicable forms:

- GRC 621—Preconstruction Conference Agenda and Checklist (completed by the CM).
 - GRC 699—Notice of Preconstruction Conference
 - GRC 9417—Preconstruction Conference
- GRC forms are available online: <https://nef.nasa.gov/>
- SF 1413—Statement and Acknowledgment
<https://www.gsa.gov/portal/forms/download/115794>

6.2 Construction Progress Meetings

The Contractor will meet regularly (typically once a week for most projects) with the CM/CI and any other appropriate personnel for a construction progress meeting. The meeting will discuss work accomplished, work look ahead, as-builts, warranty issues, incidents, punch lists, and other issues as needed. A typical construction progress meeting agenda may include the following:

- Attendance (sign-in sheet)
- Safety/environment/health issues
- Work performed
- Work planned
- Updated schedule, with current project completion date
- Quality control issues and concerns, including, as necessary, status of corrective actions for deficiencies
- Coordination items
- Facility change requests
- Submittals
- RFIs/RFPs
- Status of permits
- Status of as-built drawings
- Roundtable comments/concerns

The CM will prepare the meeting minutes and distribute to the project team following the meeting. The PM will review/approve the minutes prior to distribution. Contractor shall review minutes and make any objections within 5 days.

For further information, contact or consult: CM

6.3 Subcontractors

The Contractor is required to provide a list of all subcontractors for each project and furnish that list to the PM. The Contractor is responsible for the activities of all subcontractors at GRC. Accordingly, the Contractor's Superintendent (or designee) shall be present at the jobsite when construction work is in progress. The following additional guidelines shall apply to all subcontractors:

- Subcontractors shall be listed in the site-specific HASP. All subcontractor personnel shall sign the HASP acknowledgment page.
- Subcontractors are subject to the same training and medical surveillance as the prime Contractor. The Contractor is responsible for collecting subcontractor training and/or medical certificates and submitting to the CM.
- An assigned safety representative for each subcontractor shall be designated for the project and shall be available to address any health and safety issues that arise during the performance of any activities related to their subcontract. The name of the assigned safety representative shall be listed in the HASP.

- Planned operations for the day shall be verbally conveyed to the Contractor's Superintendent at the beginning of each day. Any changes in scope of work or specified quantities shall also be conveyed to the Superintendent on a regular basis.
- Subcontractor personnel shall attend a project safety orientation prior to beginning work onsite.
- Subcontractor personnel shall attend daily tailgate safety meetings. If scheduling precludes attendance, subcontractors shall hold and document their own safety meeting. Safety meeting documentation is to be submitted to the Contractor.
- All accidents, fires, injuries, illnesses, and spills shall be immediately reported to the Superintendent.
- Heavy equipment is to be inspected daily by the equipment operator. Initial inspection documentation is to be submitted to the Contractor.
- Subcontractors are required to frequently inspect work sites for safety deficiencies and to correct all deficiencies. Documentation of these inspections and any corrective actions implemented will be submitted to the Superintendent.

For further information, contact or consult: CM/CI; PM

6.4 Request for Information (RFI) and Request for Proposal (RFP)

Request for Information (RFI)

RFIs can be originated by the Contractor or by NASA. They generally involve questions about construction or installation, methods or procedures, differing site conditions, etc. The Contractor is to submit RFIs to the NASA PM and notify the CM/CI. A copy of the RFI Form (GRC 9C) is provided in Appendix B.

Request for Proposal (RFP)

RFPs originate from NASA. The RFP could be a response to a previously submitted RFI or may have been drafted after NASA became aware of a differing site condition.

When a differing site condition is encountered, NASA is to be notified prior to continuing the work. Failure to notify NASA of differing site conditions could create future complications and result in increased project costs at the Contractor's expense.

The result of this process may be a contract modification. This is a contractual amendment to the scope of work signed by both the Contractor and NASA.

NOTE: Only the CO has the authority to modify the contract. Contractors shall not deviate from approved plans and specifications without prior written notification, an approved RFI, or a signed contract modification furnished by the CO or COR.

For further information, contact or consult: PM; COR

Applicable forms:

GRC 9C – Request for Information (Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

6.5 Daily Reports

Contractor

The Contractor's Superintendent of each project is required to prepare a daily report of construction activities (Form GRC 16, Construction Contractor Daily Inspection Report). These reports will include, at a minimum

- Weather conditions
- Manpower by trade
- Subcontractors onsite (and subcontractor manpower by trade)
- Work accomplished on that day
- Material received and results of inspections
- Equipment received and results of inspections
- Hours worked
- Quality control activities, including tests performed and results
- Incidents/accidents (as applicable)
- Job safety issues
- Instructions received
- Conflicts or discrepancies in the plans and/or specifications
- Corrective actions taken
- Delays encountered

Daily reports will be turned in to the CM as directed.

The Contractor is also responsible for daily safety inspections of the jobsite and all equipment. For more information, refer to "Safety Inspections" in Section 3.3 of this manual.

CM/CI

The CM/CI shall complete a daily Inspector's Report (Form GRC 600), recording prime Contractor manpower, work in progress, materials received (or shortage), visitors, trade difficulties, accidents, major equipment (arriving or departing), and instructions. A compilation of daily Inspector's Reports shall be maintained and entered into the project files at the end of the job. Supporting documentation to be attached to the Inspector's Report includes, but is not limited to

- Concrete mix data
- Load tickets
- All quality control test results
- Property passes

For further information, contact or consult: CM/CI

Applicable forms:

- Contractor: GRC 16 – Construction Contractor Daily Inspection Report (see Appendix B)
- CM/CI: GRC 600 – Inspector's Report (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

6.6 Materials and Equipment

The Contractor will implement a receiving inspection system to ensure that all procured materials and equipment are inspected and tested properly. Records from this receiving inspection system will be maintained by the Contractor. Any defects, discrepancies, waivers, evidence of Government inspection, and other relevant information shall be reflected in the records. The Contractor will submit a nonconformance report in response to any discovered deficient materials or equipment. The Contractor or subcontractor is responsible for inspecting, storing, preserving, operating, and maintaining the shipped material or equipment. Any Contractor-owned equipment and material removed from GRC must be accompanied by an approved property pass as discussed in Section 6.6.

For further information, contact or consult: CM

6.7 Quality Assurance/Testing

The CM/CI will observe construction activities and will conduct field measurements to verify quality of construction. Any testing required for various systems (pneumatic, hydraulic, electrical, etc.) per contract will be witnessed and verified by the CM/CI or designee and any other applicable personnel. All testing is the responsibility of the Contractor. Certain activities involving specific hazards (e.g., high-voltage or high-pressure systems) require review and approval of a GRC Safety Committee. High-pressure system installations also require certification from the GRC Pressure Systems Office (PSO). The PSO will review all design standards, testing procedures (hydraulic and pneumatic), and quality verifications (weld inspections, etc.) prior to final acceptance of work.

The Contractor shall maintain all quality control records at a central onsite location. Each record will be traceable to a specific requirement in the project's specifications and drawings. The Contractor should maintain records of calibration for any gauges, tools, instruments, etc., used during testing. The project's Contracting Officer (CO) and the Contracting Officer Representative (COR) have the authority to inspect construction activities and audit any records.

The following is a list of tests that shall be witnessed by a NASA Representative:

- Proof rolling
- Compaction testing
- Concrete slumps
- Hydrostatic testing
- Pneumatic testing (GRC 804, Pneumatic Test Permit)
- Megger testing

For further information, contact or consult: CM/CI

Applicable forms: Test-specific

6.8 Authority Having Jurisdiction (AHJ)

The NASA-appointed AHJ is responsible for implementing the fire provisions of NPR 8715.3 and complying with Public Law 100-678, which requires all Federal agencies to follow the latest editions of nationally recognized fire and life safety codes. Any inspection/testing regarding the installation of fire/life safety equipment or system shall be inspected/accepted by the GRC AHJ. The AHJ or designee will review all installations and testing procedures prior to scheduled tests and shall witness all code- and standard-required testing prior to final acceptance of work. Final acceptance documentation shall be completed and present at the time of testing. The AHJ reserves the right to withhold the structure's occupancy permit until all deficiencies are corrected to the required codes/standards. The AHJ has final authority for approving/concurring with designs, associated installations, procedures, and/or equipment. Approvals must be granted before the start of construction/installation of any fire/life safety systems and/or equipment. The AHJ or designee shall witness and inspect all installations of fire/life safety assemblies and/or equipment, to include the installation or modification of domestic water used for the purpose of fire protection. The AHJ or designee shall be present and witness all flushing, hydrostatic testing, and acceptance testing of all fire/life safety equipment. It is the responsibility of the Contractor to notify the AHJ of installation completion prior to covering. If installations are covered prior to

inspection, the Contractor will be required to uncover the installation at no cost to the Government. Inspection requests shall be made with a minimum 24-hour notice. The Contractor is to submit all required flushing, testing, and acceptance documentation at the time of final inspection.

6.9 Area Clearance Authorization

An Area Clearance Authorization (Form GRC 978) is required when construction activities require system shutdown/isolation/outage in order to accomplish the work in a safe and protected manner. Form GRC 978 is designed to ensure that all appropriate notification and coordination activities are conducted for any shutdown/isolation/outage impacting major systems, large areas, and/or multiple GRC personnel, thereby protecting sensitive GRC research projects during the interruption. Services to be interrupted may include electrical power, steam, gas, pneumatic, HVAC, and fire suppression.

The Contractor is responsible for ensuring the isolation of any mechanical/electrical system or utility to be worked on during performance of the contract. At least 3 weeks prior to work, the Contractor must submit Form GRC 978 and attach a task-specific implementation plan, an isolation plan, schematics/one-line diagrams, and switch orders as appropriate. This includes all appropriate Lockout/Tagout procedures (GRC 787) in accordance with Section 3.21. The CM/CI will coordinate the approval process. Refer to Appendix B for a copy of the GRC Area Clearance Authorization form.

For further information, contact or consult: CM/CI; GRC Safety Manual—Chapter 9

Applicable forms:

- GRC 787, Isolation and Lockout/Tagout Record
- GRC 978, Area Clearance Authorization

GRC forms are available online: <https://nef.nasa.gov/>

6.10 Construction Work Trailers

The Contractor is responsible for providing and placing any work trailers that may be needed. The trailers must be placed in an approved location. All trailers are required to be at least 25 ft away from any buildings or other trailers. The GRC will provide electricity only, but the Contractor is responsible for making the connection. Electricity will only be provided if ease of access exists. Trailer location site is not guaranteed.

For further information, contact or consult: COR

6.11 NASA Lock Set Protocols

Whenever existing locks on NASA property are to be removed or replaced, the Contractor must deliver the existing lock set to the project CM/CI. This is a NASA security protocol.

For further information, contact or consult: CM

6.12 Road Closures

All closures require advance notification and coordination with the project CM. The CM will contact the NASA Safety Branch. The Contractor shall provide a minimum of 2 full weeks' notice or as required in the construction drawings. The Contractor is to provide the following information:

- Map of exact location of closure
- Maintenance of Traffic (MOT) Plan and/or Detour Plan
- Description of work to be performed
- Duration of closure (including specific start and ending dates)
- Point of contact for more details

Traffic closures include, but are not limited to, parking lots, parking lanes, roadways, sidewalks, and accessways.

The NASA traffic engineering point of contact must approve all closures and will notify all GRC personnel who will be affected by the closure. The Contractor will be responsible for all signs and barricades required for the closure.

For further information, contact or consult: CM; GRC Safety Manual—Chapter 29 (Signs and Barricades)

Applicable forms:

GRC 136 – Barricading Request (see Appendix B)

GRC forms are available online: <https://nef.nasa.gov/>

6.13 Submittals

The Contractor is responsible for reviewing the contract specifications and extracting the submittal requirements. Submittals include, but are not limited to

- Design drawings
- Test reports
- Material specifications
- Manufacturer literature
- Shop drawings
- Samples

All submittals shall be provided to the Facilities Support Assistant for date stamping, assignment of a submittal number, and routing to the PM. The PM will then distribute it to all appropriate

disciplines for review. The submittal will be returned to the Contractor (if approved), or a resubmit may be required based on NASA review comments. Construction activities related to a specific submittal cannot commence until NASA has returned the submittal to the Contractor as approved.

For further information, contact or consult: PM

Applicable forms:

- Transmittal Sheet (Contractor-specific)
- NASA Submittal Cover Sheet with Letterhead
- Routing Slip

6.14 Pay Requests

The Contractor shall submit all pay requests to the PM. The PM will confirm the progress status and, if approved, forward the pay request to the COR for a signature. It will then be forwarded to the CO for payment. The Contractor shall refer to contract requirements for pay request instructions, including when requests are due and any backup documentation required.

For further information, contact or consult: PM; COR

Applicable forms: AIA G702/703 or similar pay request form

6.15 As-Built Drawings

As-built drawings or “redlines” are to be submitted using the process described in Section 6.13. The Contractor shall document every deviation from the construction drawings and specifications. Deviations may include changes in location, elevation, alignments, material, and configuration. Any unknown utilities encountered by the Contractor are to be located and indicated on the as-built drawings. As-built drawings are to be kept onsite and continuously updated throughout the duration of the construction activities as needed. These drawings will be made available for review by NASA personnel when requested.

For further information, contact or consult: PM

6.16 Project Turnover (Closeout)

Completing and closing out a construction task will generally follow as shown:

- Rolling completion list
- 70 percent completion walk-through
- Acceptance testing (mechanical, electrical, structural, and/or civil)
- Equipment startup
- Operation and maintenance manual (electronic copy)
- As-built drawings
- Training
- Commissioning (in-service testing)
- Material asset data sheet (MADS) for all newly installed equipment

- Punch list walk-through
- Return of all outstanding waste manifests
- Final walk-through
- Final acceptance (NASA)
- Issue of warranty letter (Contractor)
- Final payment request

For further information, contact or consult: PM

APPENDIX A.—CONSTRUCTION SAFETY BRIEFING AND QUICK REFERENCE GUIDES FOR EMERGENCIES

Index

- Construction Safety Briefing—Presentation available online:
<https://www.grc.nasa.gov/smاد-ext/wp-content/uploads/sites/82/Construction-Safety-Briefing-Lewis-Field.pdf>
- Quick Reference Guide for Emergencies—Lewis Field
- Quick Reference Guide for Emergencies—Plum Brook Station

Quick Reference Guide for Emergencies: Lewis Field

<https://www.grc.nasa.gov/smad/wp-content/uploads/sites/59/Quick-Reference-Guide-Lewis.pdf>



Quick Reference Guide for Emergencies At Lewis Field

This guide is not intended to replace approved emergency response checklists. The procedures outlined in this quick reference guide are actions applicable to the general workforce at GRC. For specific emergency plans, refer to the NASA GRC internal Web site for the Emergency Preparedness Plan.

TO REPORT EMERGENCIES AT LEWIS FIELD – DIAL 911
Cell Phone: 216-433-8888
May 2011

CRIMINAL/SUSPICIOUS ACTIVITY
ACCIDENT/INJURY/MEDICAL EMERGENCY
CHEMICAL SPILL (EMERGENCY/NONEMERGENCY)
SUSPICIOUS OBJECT
FLOODING/WATER DAMAGE
POWER OUTAGE
SHELTER IN PLACE
FIRE
WORKPLACE VIOLENCE
BOMB THREAT
TORNADO/SEVERE STORMS
LIGHTNING SAFETY
EVACUATION
LEWIS FIELD EVACUATION ROUTES

[Building Specific Emergency Information](#)

[Lewis Field Mass Notification](#)

[Emergency Preparedness](#)

Criminal / Suspicious Activity

1. All criminal or suspicious activity should be reported to Security at 3-2203. Reports can be made anonymously at this number.
2. If there is an immediate threat to life or property **DIAL 911** (Cell phone: 216-433-8888). Remain on the line, if possible, until told to hang up.

Accident / Injury / Medical Emergency

1. If there has been an accident or medical emergency, DIAL 911 from a NASA phone (Cell phone: 216-433-8888) and report the incident by giving:
 - a. YOUR name
 - b. LOCATION (building and room number)
 - c. DESCRIPTION of the incident
 - d. Stay on the line with emergency dispatcher until released
2. If victim is unconscious, and you are qualified, do **ABCs** and act accordingly:
 - A – Check victim's airway (open airway)
 - B – Check victim's breathing (rescue breathing; Heimlich maneuver if needed)
 - C – Check victim's pulse (CPR if needed)
3. If victim is conscious, perform required first aid (if qualified).
4. **DO NOT** move the victim unless absolutely necessary.
5. Designate someone to meet ambulance.
6. Clear the area of nonessential personnel.
7. Meet with emergency response to provide additional information.
CAUTION: Always take precautions to avoid contact with body fluids.
REPORT any suspected exposure to medical personnel immediately.

Chemical Spill (Emergency / Non- Emergency)

Chemical Spill – Emergency

1. If there has been a chemical spill, and the spill is beyond the organization's ability to contain and cleanup (based on their HAZCOM site-specific training), or if the material endangers unprotected personnel:

DIAL 911 (Cell phone: 216-433-8888) and give the following:

- a. YOUR name
 - b. LOCATION (building and room number)
 - c. DESCRIPTION of the spill and spilled material (MSDS)
2. If applicable, EVACUATE the area (upwind).
 3. If applicable, decontaminate personnel (emergency showers / eyewash).
 4. Meet with emergency response personnel to provide additional information and MSDS (Material Safety Data Sheets).

Chemical Spill – Non-Emergency

If the spill is within the organization's ability to contain and clean up (based on their HAZCOM site-specific training), do so, then contact Waste Management 216-433-2124 for proper handling.

Suspicious Object

If you notice a suspicious letter, package or object:

1. **DO NOT** go near, handle, or touch the suspicious item.
2. **DO NOT USE TWO-WAY RADIOS OR CELL PHONE UNDER ANY CIRCUMSTANCE.**
3. **DIAL 911** (Cell phone: 216-433-8888) immediately and report the location and the nature of the item (building, room number, and description of the item).
4. Write down everything you can remember about receiving the item or the description of the person that left the item.
5. If evacuation is ordered, proceed to designated muster point as directed (see EMERGENCY EVACUATION).

Flooding / Water Damage

Immediately notify facility trouble desk 3-4948 or **DIAL 911** (Cell phone: 433-8888) and give

- a. YOUR name
- b. LOCATION (building number and room number)
- c. DESCRIPTION of the incident – broken piping, overflowing drain lines, critical equipment in the area of the flooding, etc.

WARNING:

If there is electrical equipment in the area, evacuate the area as soon as possible (see EMERGENCY EVACUATION checklist).

Meet with emergency response personnel to provide additional information.

Power Outage

- Remain calm until emergency lighting comes on.
- Proceed cautiously to an area that has natural lighting.
- If you are in an elevator, stay calm and use elevator phone to notify emergency dispatch.
- If directed to evacuate, follow EMERGENCY EVACUATION checklist.

Shelter In Place

Shelter-in-Place is ordered when for various reasons Glenn personnel need to be inside buildings or vehicles and not out in the open. Orders for Shelter-in-Place will be given by Safety or Security via the building paging system, or verbally. Specific Shelter-in-Place orders and actions are as follows:

1. Shelter-in-Place: All personnel outside need to quickly enter and remain inside the nearest habitable building.

Additional Shelter-in-Place conditions:

There may be a necessity to add special protective measures when sheltering is ordered. The following are likely conditions and shall be followed when ordered to do so:

2. Shelter-in-Place, Take Deep Shelter: This means that personnel should not only take shelter but they also should vacate all rooms with in the building that have windows. This may be ordered for safety or security reasons.

Fire

1. Immediately activate the nearest pull station and evacuate to the designated safe location while warning others.
2. If Possible, without endangering yourself
DIAL 911 (Cell phone: 216-433-8888) and give
YOUR name
LOCATION (building and room number)
DESCRIPTION of the incident
3. If you are properly trained and the fire is small, fight the fire with a portable fire extinguisher.
4. When an alarm sounds, evacuate to the designated muster point.
DO NOT use elevators.
Feel doors carefully for heat prior to opening them.
Close office doors on the way out.
See **EMERGENCY EVACUATION** checklist.
5. **DO NOT** reenter building until the building is declared safe to reenter.
6. Proceed to the designated muster point. Note conditions of building and where persons may need assistance and report findings to Safety, Security, or other response personnel.
7. Personnel should remain at the designated muster point to await further instructions, be accounted for by their supervisor and assist supervisors in identifying the location of employees which have not been accounted for.

How To Respond When an Active Shooter is in Your Vicinity

Quickly determine the most reasonable way to protect your own life.
Have an active shooter response plan and practice that plan with your employees.

1. Evacuate—if directed

- Predetermine an escape route and plan for your workarea.
- Leave your belongings behind.
- Keep your hands visible to law enforcement and security personnel.

2. Shelter-in-Place

- Hide in an area out of the active shooter's view.
- Block entry to your hiding place and lock the doors.
- Stay away from the windows.
- Remain in place until law enforcement evacuates you or an "all clear" is given.

3. Take action—last resort

- Remember only to take action against the shooter as a last resort and when your life is in imminent danger.
- As a last resort, attempt to incapacitate the active shooter through physical aggression.

Call 911 or 216-433-8888 by cell phone when it is safe.

1. How to react when law enforcement arrives:

- Remain calm and follow the officer's instructions.
- Immediately raise hands and spread fingers.
- Keep hands visible at all times.
- Avoid making quick movements toward the officers such as attempting to hold on to them for safety.
- Avoid pointing and/or yelling.
- Do not stop to ask officers for help or direction when evacuating, just proceed in the direction from which the officers are entering the premises.

2. Information to give law enforcement or 911 operators:

- Location of the active shooter(s).
- Number of shooters.
- Physical description of weapons held by the shooter(s).
- Number and type of weapons held by the shooter(s).
- Number of potential victims at the location.

BOMB THREAT CALL PROCEDURES

Most bomb threats are received by phone. Bomb threats are serious until proven otherwise. Act quickly, but remain calm and obtain information with the BOMB THREAT CHECKLIST.

If a bomb threat is received by phone:

- Remain calm. Keep the caller on the phone as long as possible. DO NOT HANG UP, even if the caller does.
- Listen carefully. Be polite and show interest.
- Try to keep the caller talking to learn more information.
- If possible, write a note, e-mail, text, or tweet a colleague to get help. Instruct them to call the Glenn Emergency Dispatch Center at 216-433-8888.
- If your phone has a display, copy all information that is noted in the window display. Detail is important.
- Complete the Bomb Threat Checklist immediately.
- Write down as much detail as possible.
- Once the caller hangs up, DO NOT hang up your phone. Call 216-433-8888 from another phone.

If a bomb threat is received by handwritten note:

- Call 216-433-8888 or from a NASA phone 3-8888.
- Handle the note as minimally as possible.

Signs of a suspicious package:

- No return address
- Excessive postage
- Stains
- Strange odor
- Strange sounds
- Unexpected delivery
- Poor handwriting
- Misspelled words
- Incorrect titles
- Foreign postage
- Restrictive notes

DO NOT

- Use two-way radios or cell phones; radio signals may potentially detonate a bomb.
- Evacuate the building until Protective Services arrive and evaluate the threat.
- Activate the fire alarm or cause panic.
- Touch or move a suspicious package.

WHO TO CONTACT:

- Glenn Protective Forces Emergency Dispatch Center
216-433-8888

BOMB THREAT CHECKLIST

Date: _____ Time: _____
 Time caller _____ Phone called _____
 hung up: _____ in on: _____

Ask the caller:

- Where is the bomb located?
- When will it go off?
- What does it look like?
- What kind of bomb is it?
- What will make it explode?
- Did you place the bomb?
- Why?
- What is your name?

Exact words of the threat:

INFORMATION ABOUT CALLER:

- Where is the caller located?
- Estimated age:
- Is voice familiar? If so, what does it sound like?

Caller's voice

- Accent
- Angry
- Calm
- Clearing throat
- Coughing
- Cracking voice
- Crying
- Deep
- Deep breathing
- Disguised
- Distinct
- Excited
- Female
- Laughter
- Lisp
- Loud
- Male
- Nasal
- Normal
- Ragged
- Rapid
- Raspy
- Slow
- Slurred
- Soft
- Stutter

Background sounds

- Animal noises
- Booth
- Clear
- Conversation
- Factory sounds
- House noises
- Kitchen noises
- Local
- Long distance
- Motor
- Music
- Office machinery
- PA system
- Static
- Street noises

Threat language

- Incoherent
- Irrational
- Message read
- Profane
- Taped
- Well-spoken



Other information:

Tornado / Severe Storms

1. Lightning can occur from cloud-to-cloud, within a cloud, cloud-to-ground, or cloud-to-air.
2. Remember the 30/30 rule:
 - a. Go indoors if, after seeing lightning, you cannot count to 30 before hearing thunder.
 - b. Stay indoors for 30 minutes after hearing the last clap of thunder.
3. Severe Thunderstorm Watch: Is issued when risk of hazardous weather conditions have increased, but it's occurrence, location, and timing are uncertain. The watch is issued to heighten public awareness.
4. Severe Thunderstorm Warning: Indicates hazardous weather is occurring or is imminent and seeking appropriate shelter is advised.
5. Tornado Watch: Indicates tornados are possible in the area. Remain alert for approaching storms. Know what areas are in the watch by listening to NOAA (National Oceanic and Atmospheric Administration) Weather Radio or local radio/television outlets.
6. Tornado Warning: A tornado has been sighted or indicated by weather radar. Take cover immediately at the location indicated on the BUILDING SPECIFIC EMERGENCY INFORMATION section.
7. If lightning or severe storm is imminent:
 - a. Take cover immediately.
 - b. If inside, stay inside and away from windows.
 - c. Do not go outside except in an emergency (rolling up car windows is not an emergency).
 - d. If outside, take shelter in sturdy building (first choice) or hardtop car (last choice). If tornado, take shelter on ground or in ditch rather than in car.
 - e. The highest object around should not be you, power lines, or metal poles.
 - f. Be alert for flying objects.
 - g. Use phones for emergencies only, avoid using electrical equipment.
 - h. Wait for an all-clear announcement.
 - i. If required, and without endangering yourself, conduct damage assessment, look for potential victims, and evacuate area.
 - j. Report information to emergency response personnel.

Lightning Safety

If Caught Outdoors and No Shelter Is Nearby

1. Find a low spot away from trees, fences, and poles. Make sure the place you pick is not subject to flooding.
2. If you are in the woods, take shelter under the shorter trees.
3. If you feel your skin tingle or your hair stand on end, squat low to the ground on the balls of your feet. Place your hands over your ears and your head between your knees. Make yourself the smallest target possible and minimize your contact with the ground. DO NOT lie down.
4. If you are boating or swimming, get to land and find shelter immediately!

Lightning Safety Rules

1. Postpone outdoor activities if thunderstorms are imminent. This is your best way to avoid being caught in a dangerous situation.
2. Move to a sturdy building or car. Do not take shelter in small sheds, under isolated trees, or in convertible automobiles. Stay away from tall objects such as towers, fences, telephone poles, and power lines.
3. If lightning is occurring and a sturdy shelter is not available, get inside a hardtop automobile and keep the windows up. Avoid touching any metal.
4. Utility lines and metal pipes can conduct electricity. Unplug appliances not necessary for obtaining weather information. Avoid using the telephone or any electric appliances. Use phones **ONLY** in an emergency.

Quick Reference Guide for Emergencies: Plum Brook Station (For Reference Only)

<https://www.grc.nasa.gov/smad/wp-content/uploads/sites/59/Quick-Reference-Guide-PBS.pdf>



Quick Reference Guide for Emergencies At Plum Brook Station (PBS)

This guide is not intended to replace approved emergency response checklists. The procedures outlined in this quick reference guide are actions applicable to the general workforce at PBS. For specific emergency plans, refer to the NASA PBS internal website for the Emergency Preparedness Plan.

TO REPORT EMERGENCIES AT PLUM BROOK – DIAL 911
Cell Phone: 419-621-3222
September 2015

CRIMINAL/SUSPICIOUS ACTIVITY
ACCIDENT/INJURY/MEDICAL EMERGENCY
CHEMICAL SPILL (EMERGENCY/NONEMERGENCY)
SUSPICIOUS OBJECT
FLOODING/WATER DAMAGE
POWER OUTAGE
SHELTER IN PLACE
FIRE
WORKPLACE VIOLENCE
BOMB THREAT
TORNADO/SEVERE STORMS
LIGHTNING SAFETY
EVACUATION
PLUM BROOK STATION MAP

Building Specific Emergency
Information

Emergency Preparedness

FOR REFERENCE ONLY

Printed copies are uncontrolled and may not reflect current information.

Criminal / Suspicious Activity

1. All criminal or suspicious activity should be reported to Security at 4-3222.
Reports can be made anonymously at this number.
2. If there is an immediate threat to life or property **DIAL 911** (Cell phone: 419-621-3222).
Remain on the line, if possible, until told to hang up.

Accident / Injury / Medical Emergency

1. If there has been an accident or medical emergency, DIAL 911 from a NASA phone (Cell phone: 419-621-3222) and report the incident by giving:
 - a. YOUR name
 - b. LOCATION (building and room number)
 - c. DESCRIPTION of the incident
 - d. Stay on the line with emergency dispatcher until released
2. If victim is unconscious, and you are qualified, do **ABCs** and act accordingly:
 - A – Check victim's airway (open airway)
 - B – Check victim's breathing (rescue breathing; Heimlich maneuver if needed)
 - C – Check victim's pulse (CPR if needed)
3. If victim is conscious, perform required first aid (if qualified).
4. **DO NOT** move the victim unless absolutely necessary.
5. Designate someone to meet ambulance.
6. Clear the area of nonessential personnel.
7. Meet with emergency response to provide additional information.
CAUTION: Always take precautions to avoid contact with body fluids.
REPORT any suspected exposure to medical personnel immediately.

Chemical Spill (Emergency / Non- Emergency)

Chemical Spill – Emergency

1. If there has been a chemical spill, and the spill is beyond the organization's ability to contain and cleanup (based on their HAZCOM site-specific training), or if the material endangers unprotected personnel:

DIAL 911 (Cell phone: 419-621-3222) and give the following:

- a. YOUR name
 - b. LOCATION (building and room number)
 - c. DESCRIPTION of the spill and spilled material (MSDS)
2. If applicable, EVACUATE the area (upwind).
 3. If applicable, decontaminate personnel (emergency showers / eyewash).
 4. Meet with emergency response personnel to provide additional information and MSDS (Material Safety Data Sheets).

Chemical Spill – Non-Emergency

If the spill is within the organization's ability to contain and clean up (based on their HAZCOM site-specific training), do so, then contact Waste Management 216-433-2124 for proper handling.

Suspicious Object

If you notice a suspicious letter, package or object:

1. **DO NOT** go near, handle, or touch the suspicious item.
2. **DO NOT USE TWO-WAY RADIOS OR CELL PHONE UNDER ANY CIRCUMSTANCE.**
3. **DIAL 911** or 419-621-3222 immediately and report the location and the nature of the item (building, room number, and description of the item).
4. Write down everything you can remember about receiving the item or the description of the person that left the item.
5. If evacuation is ordered, proceed to designated muster point as directed (see EMERGENCY EVACUATION).

Flooding / Water Damage

Immediately notify facility or **DIAL 911** (Cell phone: 419-621-3222) and give

- a. YOUR name
- b. LOCATION (building number and room number)
- c. DESCRIPTION of the incident – broken piping, overflowing drain lines, critical equipment in the area of the flooding, etc.

WARNING:

If there is electrical equipment in the area, evacuate the area as soon as possible (see EMERGENCY EVACUATION checklist).

Meet with emergency response personnel to provide additional information.

Power Outage

- Remain calm until emergency lighting comes on.
- Proceed cautiously to an area that has natural lighting.
- If you are in an elevator, stay calm and use elevator phone to notify emergency dispatch.
- If directed to evacuate, follow EMERGENCY EVACUATION checklist.

Shelter In Place

Shelter-in-Place is ordered when for various reasons Glenn personnel need to be inside buildings or vehicles and not out in the open. Orders for Shelter-in-Place will be given by Safety or Security via the building paging system, or verbally. Specific Shelter-in-Place orders and actions are as follows:

1. Shelter-in-Place: All personnel outside need to quickly enter and remain inside the nearest habitable building.

Additional Shelter-in-Place conditions:

There may be a necessity to add special protective measures when sheltering is ordered. The following are likely conditions and shall be followed when ordered to do so:

2. Shelter-in-Place, Take Deep Shelter: This means that personnel should not only take shelter but they also should vacate all rooms with in the building that have windows. This may be ordered for safety or security reasons.

Fire

1. Immediately activate the nearest pull station and evacuate to the designated safe location while warning others.
2. If Possible, without endangering yourself
DIAL 911 (Cell phone: 419-621-3222) and give
YOUR name
LOCATION (building and room number)
DESCRIPTION of the incident
3. If you are properly trained and the fire is small, fight the fire with a portable fire extinguisher.
4. When an alarm sounds, evacuate to the designated muster point.
DO NOT use elevators.
Feel doors carefully for heat prior to opening them.
Close office doors on the way out.
See **EMERGENCY EVACUATION** checklist.
5. **DO NOT** reenter building until the building is declared safe to reenter.
6. Go to your designated safe location and report any significant information to the Emergency Responders.
7. Personnel should remain at the designated safe location until further directed.

How To Respond When an Active Shooter is in Your Vicinity

Quickly determine the most reasonable way to protect your own life.
Have an active shooter response plan and practice that plan with your employees.

1. Evacuate—if directed

- Predetermine an escape route and plan for your workarea.
- Leave your belongings behind.
- Keep your hands visible to law enforcement and security personnel.

2. Shelter-in-Place

- Hide in an area out of the active shooter's view.
- Block entry to your hiding place and lock the doors.
- Stay away from the windows.
- Remain in place until law enforcement evacuates you or an "all clear" is given.

3. Take action—last resort

- Remember only to take action against the shooter as a last resort and when your life is in imminent danger.
- As a last resort, attempt to incapacitate the active shooter through physical aggression.

Call 911 or 419-621-3222 by cell phone when it is safe.

1. How to react when law enforcement arrives:

- Remain calm and follow the officer's instructions.
- Immediately raise hands and spread fingers.
- Keep hands visible at all times.
- Avoid making quick movements toward the officers such as attempting to hold on to them for safety.
- Avoid pointing and/or yelling.
- Do not stop to ask officers for help or direction when evacuating, just proceed in the direction from which the officers are entering the premises.

2. Information to give law enforcement or 911 operators:

- Location of the active shooter(s).
- Number of shooters.
- Physical description of weapons held by the shooter(s).
- Number and type of weapons held by the shooter(s).
- Number of potential victims at the location.

BOMB THREAT CALL PROCEDURES

Most bomb threats are received by phone. Bomb threats are serious until proven otherwise. Act quickly, but remain calm and obtain information with the BOMB THREAT CHECKLIST.

If a bomb threat is received by phone:

- Remain calm. Keep the caller on the phone as long as possible. DO NOT HANG UP, even if the caller does.
- Listen carefully. Be polite and show interest.
- Try to keep the caller talking to learn more information.
- If possible, write a note, e-mail, text, or tweet a colleague to get help. Instruct them to call the Glenn Emergency Dispatch Center at 216-433-8888.
- If your phone has a display, copy all information that is noted in the window display. Detail is important.
- Complete the Bomb Threat Checklist immediately.
- Write down as much detail as possible.
- Once the caller hangs up, DO NOT hang up your phone. Call 216-433-8888 from another phone.

If a bomb threat is received by handwritten note:

- Call 216-433-8888 or from a NASA phone 3-8888.
- Handle the note as minimally as possible.

Signs of a suspicious package:

- No return address
- Excessive postage
- Stains
- Strange odor
- Strange sounds
- Unexpected delivery
- Poor handwriting
- Misspelled words
- Incorrect titles
- Foreign postage
- Restrictive notes

DO NOT

- Use two-way radios or cell phones; radio signals may potentially detonate a bomb.
- Evacuate the building until Protective Services arrive and evaluate the threat.
- Activate the fire alarm or cause panic.
- Touch or move a suspicious package.

WHO TO CONTACT:

- Glenn Protective Forces Emergency Dispatch Center
216-433-8888

BOMB THREAT CHECKLIST

Date: _____ Time: _____
 Time caller _____ Phone called _____
 hung up: _____ in on: _____

Ask the caller:

- Where is the bomb located?
- When will it go off?
- What does it look like?
- What kind of bomb is it?
- What will make it explode?
- Did you place the bomb?
- Why?
- What is your name?

Exact words of the threat:

INFORMATION ABOUT CALLER:

- Where is the caller located?
- Estimated age:
- Is voice familiar? If so, what does it sound like?

Caller's voice

- Accent
- Angry
- Calm
- Clearing throat
- Coughing
- Cracking voice
- Crying
- Deep
- Deep breathing
- Disguised
- Distinct
- Excited
- Female
- Laughter
- Lisp
- Loud
- Male
- Nasal
- Normal
- Ragged
- Rapid
- Raspy
- Slow
- Slurred
- Soft
- Stutter

Background sounds

- Animal noises
- Booth
- Clear
- Conversation
- Factory sounds
- House noises
- Kitchen noises
- Local
- Long distance
- Motor
- Music
- Office machinery
- PA system
- Static
- Street noises

Threat language

- Incoherent
- Irrational
- Message read
- Profane
- Taped
- Well-spoken



Other information:

Tornado / Severe Storms

1. Lightning can occur from cloud-to-cloud, within a cloud, cloud-to-ground, or cloud-to-air.
2. Remember the 30/30 rule:
 - a. Go indoors if, after seeing lightning, you cannot count to 30 before hearing thunder.
 - b. Stay indoors for 30 minutes after hearing the last clap of thunder.
3. Severe Thunderstorm Watch: Is issued when risk of hazardous weather conditions have increased, but it's occurrence, location, and timing are uncertain. The watch is issued to heighten public awareness.
4. Severe Thunderstorm Warning: Indicates hazardous weather is occurring or is imminent and seeking appropriate shelter is advised.
5. Tornado Watch: Indicates tornados are possible in the area. Remain alert for approaching storms. Know what areas are in the watch by listening to NOAA (National Oceanic and Atmospheric Administration) Weather Radio or local radio/television outlets.
6. Tornado Warning: A tornado has been sighted or indicated by weather radar. Take cover immediately at the location indicated on the BUILDING SPECIFIC EMERGENCY INFORMATION section.
7. If lightning or severe storm is imminent:
 - a. Take cover immediately.
 - b. If inside, stay inside and away from windows.
 - c. Do not go outside except in an emergency (rolling up car windows is not an emergency).
 - d. If outside, take shelter in sturdy building (first choice) or hardtop car (last choice). If tornado, take shelter on ground or in ditch rather than in car.
 - e. The highest object around should not be you, power lines, or metal poles.
 - f. Be alert for flying objects.
 - g. Use phones for emergencies only, avoid using electrical equipment.
 - h. Wait for an all-clear announcement.
 - i. If required, and without endangering yourself, conduct damage assessment, look for potential victims, and evacuate area.
 - j. Report information to emergency response personnel.

Lightning Safety

If Caught Outdoors and No Shelter Is Nearby

1. Find a low spot away from trees, fences, and poles. Make sure the place you pick is not subject to flooding.
2. If you are in the woods, take shelter under the shorter trees.
3. If you feel your skin tingle or your hair stand on end, squat low to the ground on the balls of your feet. Place your hands over your ears and your head between your knees. Make yourself the smallest target possible and minimize your contact with the ground. **DO NOT** lie down.
4. If you are boating or swimming, get to land and find shelter immediately!

Lightning Safety Rules

1. Postpone outdoor activities if thunderstorms are imminent. This is your best way to avoid being caught in a dangerous situation.
2. Move to a sturdy building or car. Do not take shelter in small sheds, under isolated trees, or in convertible automobiles. Stay away from tall objects such as towers, fences, telephone poles, and power lines.
3. If lightning is occurring and a sturdy shelter is not available, get inside a hardtop automobile and keep the windows up. Avoid touching any metal.
4. Utility lines and metal pipes can conduct electricity. Unplug appliances not necessary for obtaining weather information. Avoid using the telephone or any electric appliances. Use phones **ONLY** in an emergency.

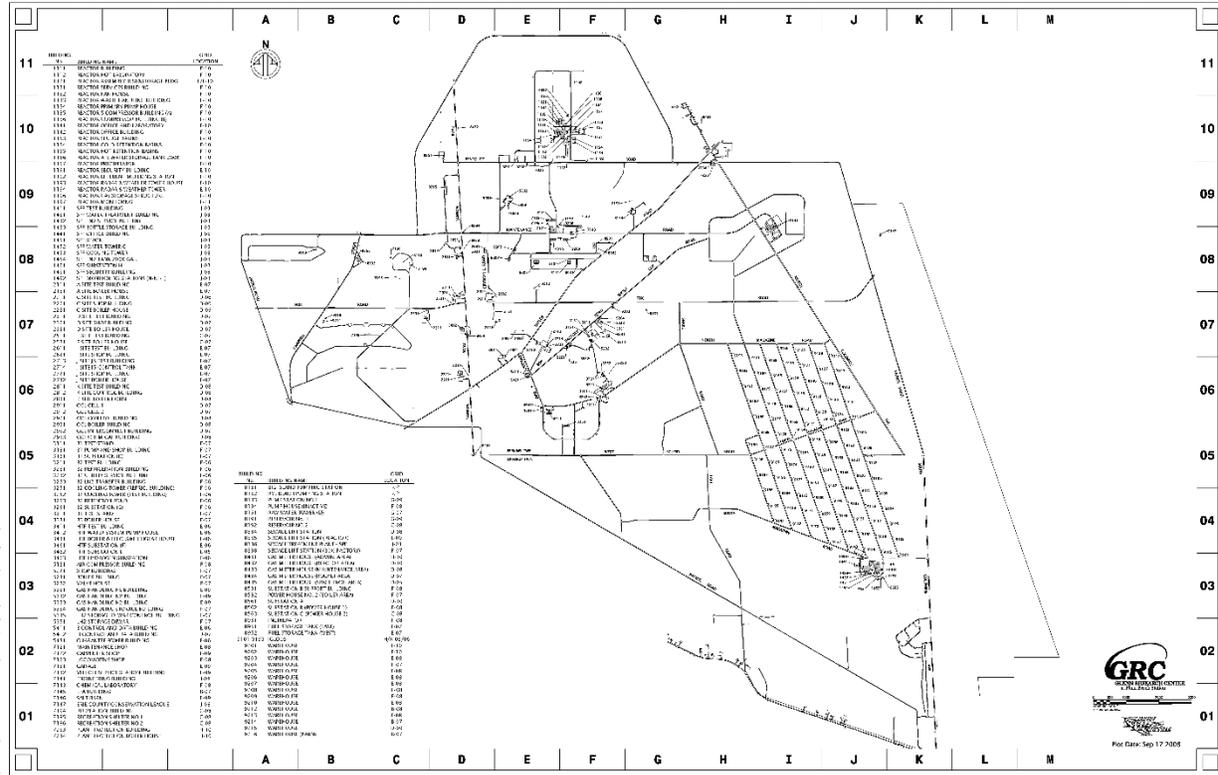
Evacuation

1. When notified to evacuate (fire alarm, overhead announcement, or verbally) take
 - a. Car keys (you may be unable to re-enter the building).
 - b. Coat if cold weather.
 - c. Personal items such as medicine, purse, cell phone, etc.

When possible, all employees should stop work and turn off their computers or any electrical device.

Individual employees are required to know emergency evacuation procedures applicable to their own work location.

2. **ALL EMPLOYEES MUST** leave the facility and report to the designated safe areas.
3. Exit the building (do not run) via the closest safest exit or as directed by an emergency responder or other Safety or Security personnel.
4. Do not lock your office.
5. Do not use elevators.
6. Assist persons in need of help to evacuate – within safety considerations.
7. Note conditions of building and where persons may need assistance and report findings to Safety, Security, or other response personnel.
8. Proceed to designated safe area, or as directed by Safety, Security or Emergency Response Personnel.
9. Assist injured persons within your training and capability with first aid. Help move persons in need of medical assistance to the designated safe area.
10. Report any employees/ visitors missing or absent (as reported by supervisor) to the Incident Commander.
11. Personnel should remain at the designated muster point to await further instructions, be accounted for by their supervisor and assist supervisors in identifying the location of employees which have not been accounted for.
12. Termination of evacuation siren does not indicate approval to re-enter the building.
13. ALL EMPLOYEES SHOULD STAY OUTSIDE OF THE FACILITY UNTIL NOTIFIED BY THE BUILDING MONITOR OR NASA SECURITY OR NASA EMERGENCY RESPONSE THAT IT IS CLEAR TO RE-ENTER.
14. Notes:
 - a. In the event of a Center wide evacuation, remain at Glenn until it is safe to travel. You will be informed of off site conditions as soon as information is available.
 - b. If you depart Glenn without checking in with your supervisor, responsible person, or Safety or Security personnel, you may be reported as missing and cause an unnecessary search.



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APPENDIX B.—PERMITS AND FORMS

Permits and forms included in Appendix B are **for reference only**. Permits and forms for submittal should be downloaded to ensure that the most recent version is used. Contact the GRC Facilities Division with any questions about permits and forms.

Most GRC forms are available online from the NASA Electronic Forms (NEF) Portal:
<https://nef.nasa.gov/>

Safety permits are available from the Safety Permits website:
https://safetypermit.grc.nasa.gov/SAFETY_PERMIT_list.cfm

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PART 1—GRC PERMITS AND FORMS

- GRC 7A – Hot Work Authorization Permit
- GRC 7B – Hot Work Operation Checklist
- GRC 9C – Request for Information
- GRC 16 – Construction Contractor Daily Inspection Report
- GRC 136 – Barricading Request
- GRC 185 – Temporary Crane Request
- GRC 199 – Confined Space Entry Permit
- GRC 239 – Job Hazard Analysis Worksheet
- GRC 600 – Inspector’s Report
- GRC 621 – Preconstruction Conference Agenda and Checklist
- GRC 624 – After Hours Notification
- GRC 699 – Notice of Preconstruction Conference
- GRC 702 – Contractor Property Pass
- GRC 780 – Energized Electrical Work Permit
- GRC 787 – Isolation and Lockout/Tagout Record
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- GRC 927 – Excavation Permit

- GRC 946A – Tag – Do Not Operate – Elec. Mech. – Indoor
- GRC 978 – Area Clearance Authorization
- GRC 979 – Fall Prevention Plan
- GRC 8095 – SOW Requirements Review and Concurrence
- GRC 9417 – Preconstruction Conference
- GRC 9995 – Contracting Submittals Following Action

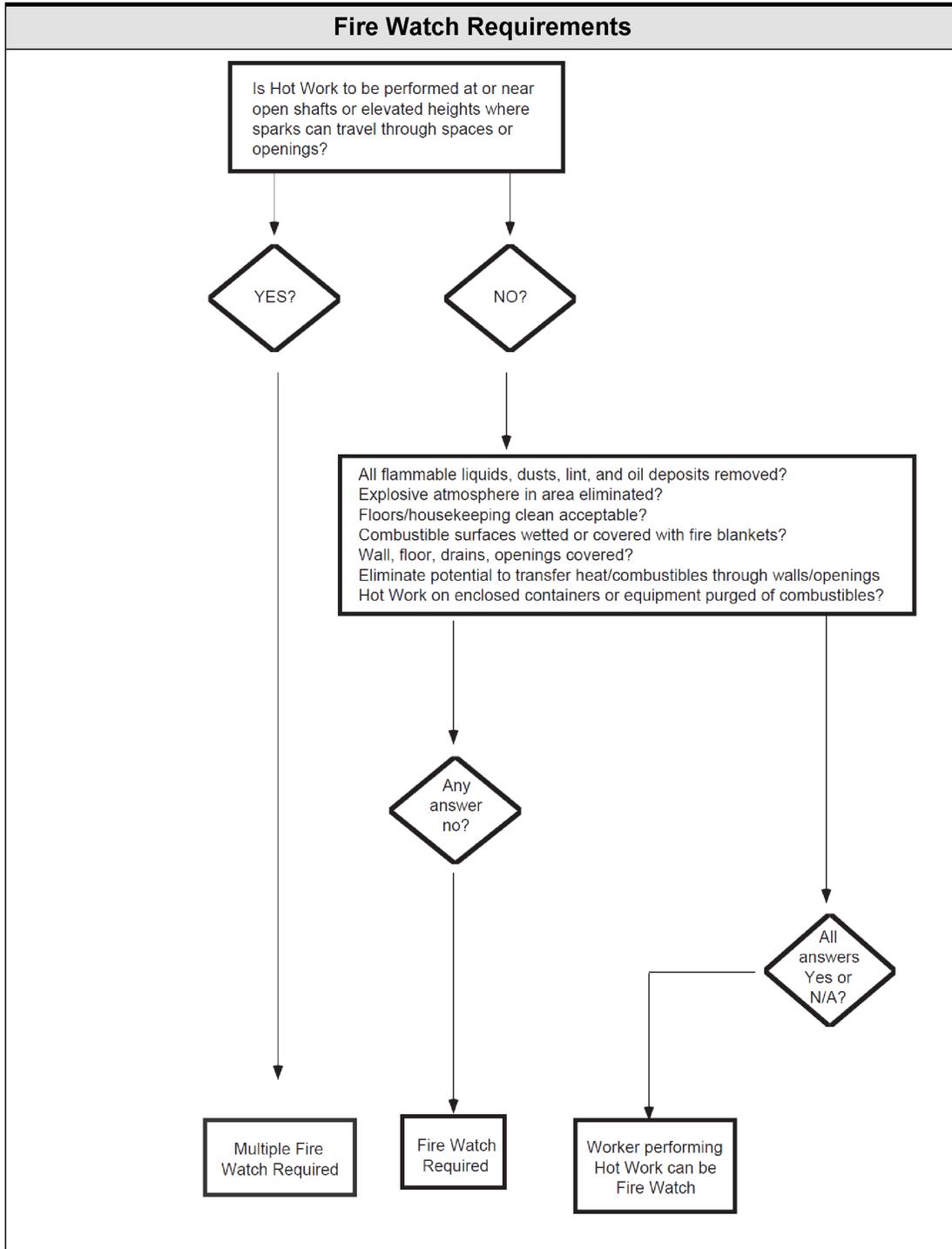
GRC 7A – Hot Work Authorization Permit

	National Aeronautics and Space Administration	Hot Work Authorization Permit	
In case of emergency: Call 911 from NASA phone From cell or pay phone: Glenn Research Center: (216) 433-8888 Plum Brook Station: (419) 621-3222			
Original to be posted at work site			
Start Date of Hot Work	End Date of Hot Work	Permit Number <i>(Filled in by SHeD)</i>	
Specific Site: Building		Room/Floor Number	
Task Number	Contract Number	Work Order Number	
Confined Space <input type="checkbox"/> No <input type="checkbox"/> Yes <i>(If yes, see Chapter 16 of the GRC Safety Manual)</i>			
Brief Description of Task			
NASA Point of Contact			
Permit Approvals			
I shall fill the role of requester by verifying that the requirements on the Hot work Pre-Operations checklist have been completed and that permission has been granted from SHeD prior to starting hot work activities in the above location.			
Requested by: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> Print name Signature Telephone number Date </div> Alternate Requester (Print name) _____ <div style="display: flex; justify-content: space-between; width: 100%;"> Signature Date </div>			
<i>To be completed by SHeD Official:</i> I verify that the above location has been examined and permission is granted to start work subject to the conditions in the Hot Work Requirements Checklist/Conditions.			
Reviewed by: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> Print name Safety and Health Division <i>(Signature)</i> Date </div> Comments/Conditions			
<i>Hot Work Permit Closeout:</i> I verify that the work outlined in this permit is no longer being performed and have verified all pre-operations checklist forms are completed and attached to this document.			
Permit closeout Hot work completed: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> Requester signature Date </div>			
Return original authorization permit and task operation permit(s) to SHeD MS 6-4 when operations are complete.			

Hot Work Requirements Checklist/Conditions
Requirements within 35 ft. of hot work
<input type="checkbox"/> Flammable liquid, dust lint, and oily deposits removed. <input type="checkbox"/> Explosive atmosphere eliminated. <input type="checkbox"/> Floors swept clean and trash removed. <input type="checkbox"/> Combustible floors wet down or covered with fire-resistive/noncombustible materials or equivalent. <input type="checkbox"/> Personnel protected from electrical shock when floors are wet. <input type="checkbox"/> Other combustible storage material removed or covered with listed or approved materials (welding pads, blankets, or curtains; fire-resistive tarpaulins) metal shields, or noncombustible materials. <input type="checkbox"/> All walls and floor openings covered. <input type="checkbox"/> Ducts that might carry sparks to distant combustible material covered, protected, or shut down.
Requirements for hot work on walls, ceilings, or roofs
<input type="checkbox"/> Construction is noncombustible and without combustible coverings or insulation. <input type="checkbox"/> Combustible material on other side of walls, ceilings, or roofs is moved away.
Requirements for hot work on enclosed area or equipment
<input type="checkbox"/> Enclosed equipment is cleaned of all combustibles. <input type="checkbox"/> Containers are purged of flammable liquid/vapor. <input type="checkbox"/> Pressurized vessels, piping, and equipment removed from service, isolated, and vented.
Requirements for hot work fire watch and fire monitoring
<input type="checkbox"/> Fire watch is provided for a minimum of 30 minutes after hot work, including break activity. Type of fire watch required: <input type="checkbox"/> Self-administered <input type="checkbox"/> One additional person <input type="checkbox"/> Multiple people Refer to comments below for conditions. <input type="checkbox"/> Fire watch is provided with suitable fire extinguishers. (Minimum 2A:20B:C dry powder) <input type="checkbox"/> Fire watch is trained in use of equipment and in sounding alarm. <input type="checkbox"/> Fire watch to monitor torch applied roofing for 60 minutes after work is complete
Tar Kettle
<input type="checkbox"/> Locate tar kettle 20 feet from building or build 4 ft. barrier on all sides of tar kettle exposed to building. <input type="checkbox"/> Tar kettle not located within 10 ft. of egress route. <input type="checkbox"/> Fuel containers must be located at least 10 ft. from burner unless insulated.
Fire Protection Systems
<input type="checkbox"/> Fire detection system is in service. Deactivate smoke/heat detectors in immediate vicinity of work area for less than 4 hours. If a fire protection system is shut down or impaired for greater than 4 hours, complete a Fire Protection Impairment Authorization, NASA C-316, and contact the Authority Having Jurisdiction for approval. <input type="checkbox"/> Is sprinkler system in service/operational? If not , hot work cannot be performed unless additional fire prevention precautions are implemented to assure adequate fire protection. <input type="checkbox"/> Is fire alarm system in service/operational? If not , alternate method of notification will be implemented.
Health and Safety
<input type="checkbox"/> Provide fire extinguishers within 25 feet of work area. <input type="checkbox"/> Provide local ventilation to remove smoke/vapor from work area. <input type="checkbox"/> For all designated Hot Work locations, have a "Negative Exposure Assessment" conducted and/or wear Respiratory Protection. <input type="checkbox"/> Provide personal protective equipment to safely perform the work. <input type="checkbox"/> Verify that all paint is removed from surfaces prior to hot work. <input type="checkbox"/> Combustible gas monitoring is required.
Comments

GRC 7B – Hot Work Operation Checklist

Hot Work Operation Permit		
In case of emergency: Call 911 from NASA phone		
From cell or pay phone: Glenn Research Center: (216) 433-8888 Plum Brook Station: (419) 621-3222		
Managerial Controls		
Building or Adjacent Structure	Site or Specific Location	Hot Work Permit Number
Task Number	Contract Number	Work Order Number
Hot Work to be performed (<i>Check all that apply</i>):		
<input type="checkbox"/> MIG <input type="checkbox"/> TIG <input type="checkbox"/> Stick <input type="checkbox"/> Cutting <input type="checkbox"/> Brazing <input type="checkbox"/> Soldering <input type="checkbox"/> Grinding <input type="checkbox"/> Other _____		
Organization/Company Conducting Hot Work		
Prime Contractor		Onsite Contractor
RTD/EDD/NASA Organization		
The following items are mandatory:		
<input type="checkbox"/> Review Hot Work Requirements Checklist/Conditions (<i>See GRC7A</i>) <input type="checkbox"/> Notify GRC Dispatch of hot work start and completion, Lewis Field (216) 433-2088 or Plum Brook (419) 621-3226 <input type="checkbox"/> Hot work authorization permit has been issued <input type="checkbox"/> Hot work equipment to be used has been inspected <input type="checkbox"/> Inspect fire extinguishing equipment <input type="checkbox"/> Review egress plan <input type="checkbox"/> Communicate with, and coordinate hot work activities with all workers within 35 feet of hot work <input type="checkbox"/> Wearing proper welding/hot work clothing	<input type="checkbox"/> Pull station located (<i>if applicable</i>) <input type="checkbox"/> Guards/barriers/barricades in place (<i>if applicable</i>) <input type="checkbox"/> *Detectors/suppression systems require deactivation (<i>if applicable</i>) *If yes, upon completion of Hot Work, notify dispatcher at Glenn Research Center (216) 433-2088 or Plum Brook (419) 621-3226	<input type="checkbox"/> Determine fire watch requirements (<i>see back</i>) Check one only <input type="checkbox"/> Multiple fire watch required <input type="checkbox"/> Fire watch required <input type="checkbox"/> Fire watch - worker performing hot work
Method of communicating with NASA emergency dispatch		
Other general safety/fire prevention remarks/comments/instructions		
Hot Work Operator		
Printed Name		Telephone Number
Signature		Date
Fire Watch/Hot Work Monitoring		
Fire watch personnel will be provided during and for 30 minutes after hot work including any work breaks.		
Fire Watch Signature		
Name of Fire Watch Personnel		Date of Extinguisher Training
Fire Extinguisher(s) at work site: UL Classification (Minimum 2A:20B:C dry powder):		
Requester (<i>From permit approvals on GRC 7A</i>)		
<input type="checkbox"/> Set-up and above precautions verified	Date	Time
Approval Signature		Print Name
Return original authorization permit and task operation permit(s) to SHed MS 6-4 when operations are complete.		



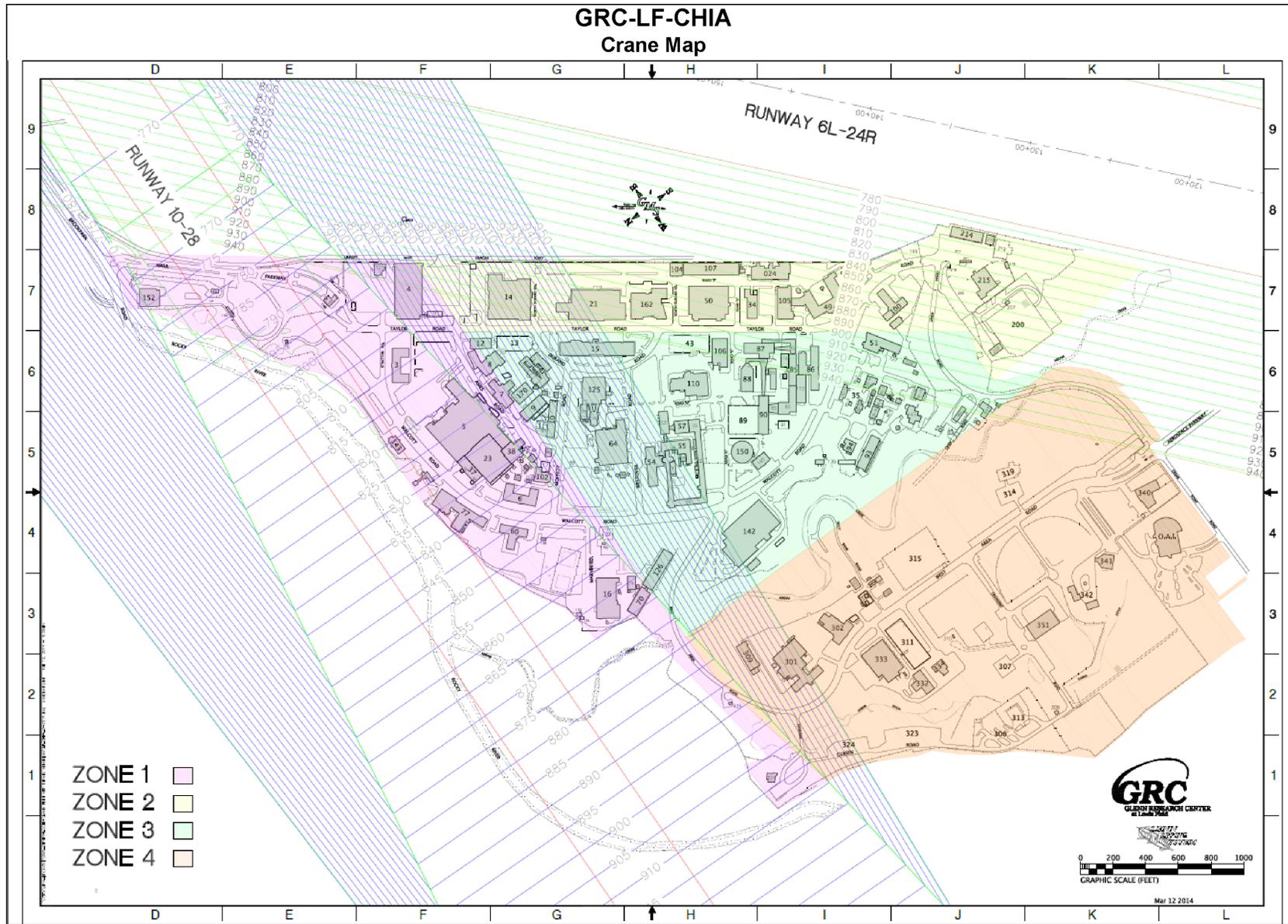
Delays		
Major equipment used		
Safety concerns		
Material received/shortages		
Visitor's on-site		
Remarks/problem areas/differing site conditions, etc.		
I have inspected today's construction activities and I am not aware of any deviations from the contract specifications and drawings except as identified or explained above.		
Site Superintendent Name	Signature of Site Superintendent	Date

GRC 136 – Barricading Request

Barricading Request	
Requester Name	Requester Telephone Number
Location of Proposed Barricade	
Reason for Barricade	
Start Date	End Date
Submit completed form and all drawings Submit	
1. Facilities Division Civil Systems Manager Approval	
Barrier type: <input type="checkbox"/> Cones <input type="checkbox"/> Stanchions <input type="checkbox"/> Jersey barriers <input type="checkbox"/> Fencing <input type="checkbox"/> Other _____ <input type="checkbox"/> Barricade drawing attached	
Requirements	
Signature	Date
2. Operational Safety Branch Approval	
Requirements	
Signature	Date
3. Authority Having Jurisdiction	
<input type="checkbox"/> Authority having jurisdiction review or by Facilities Division. <i>(Required if checked by Operational Safety Branch or by Facilities Division.)</i>	
Requirements	
Signature	Date

GRC 185 – Temporary Crane Request

Temporary Crane Request or Permanent Structure Notification			
Requester Name		Organizational Code/Company	Telephone Number
Adjacent Building Numbers (<i>North, South, East, West</i>)		Dates Required (<i>Window dates</i>)	Duration (<i>Days/weeks</i>)
Latitude and Longitude		Anticipated Boom Height	Ground Elevation
Brief Description of Work			
Permanent structure? <input type="checkbox"/> Yes <input type="checkbox"/> No		Reference GRC Safety Manual Chapter 20 - Cranes and Lifting Devices	
Submit by Email (<i>Requester is required to submit map of depicting lift location.</i>)			
General notes: GRC Civil Systems will make local determinations and issue permits for temporary crane erection only. <ul style="list-style-type: none"> • For all new buildings or permanent structures, FAA 7460 permit shall be submitted prior to construction. This shall include any temporary cranes for erecting. • For any penetration within the GRC–Cleveland Hopkins International Airport (CHIA) Crane Map Part 77 Surface Map, FAA 7460 is required unless special consideration is granted from CHIA. • For any crane 200 foot above ground level, FAA 7460 permit is required. • FAA 7460 process can take up to 3–6 months for a determination. • All cranes and excavators shall have a flag or light on the highest point. • For PBS, permits are required for all permanent structures and cranes over 200 ft. height. 			
OFFICIAL USE (<i>Do not complete the following.</i>)			
Request Number		Zone Location	7460# (<i>If applicable</i>)
Building Height	Building Elevation	Part 77 Elevation	Total Above Ground Level (AGL)
<ul style="list-style-type: none"> • Submit permits 10 business days prior to planned lift. Extensions will require 5 additional days notification and permit may only be extended once, a new permit is then required. • Permits will be returned 4–5 days prior to planned lift. • Notification: If the notification box is checked, the contractor responsible party for the lift must call Cleveland Hopkins International Airport 30 minutes prior to lift at (216) 265–6090. 			
<input type="checkbox"/> Approved		<input type="checkbox"/> Denied	
<input type="checkbox"/> AGL study is required		<input type="checkbox"/> AGL study is not required	
<input type="checkbox"/> Returned for information		<input type="checkbox"/> Contact CHIA	
<input type="checkbox"/> Do not contact CHIA			
Comments			
Civil Systems Signature			Date



GRC 185 10/16 (1.2)

PREVIOUS EDITIONS ARE OBSOLETE.

Page 2 of 2

FOR REFERENCE ONLY

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GRC 199 – Confined Space Entry Permit

	National Aeronautics and Space Administration	<h3 style="margin: 0;">Confined Space Entry Permit</h3> <p style="margin: 0;">Call 911 from NASA Phone From Cell or Pay Phone Glenn Research Center: (216) 433-888 Plum Brook Station: (419) 621-3222</p>
<p>NOTE: If the conditions or procedures specified on this permit change, stop work, and notify SHeD immediately.</p>		
Start Date	End Date	Confined Space Entry Permit Number <i>(Filled in by SHeD)</i>
Confined Space Identification Number <i>(If known)</i>		
Excavation <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(If yes, see Chapter 35, Glenn Safety Manual)</i> Excavation Permit Number: _____		
Location of confined space		
Description of confined space		
Description of work to be performed		
Chemicals located and/or brought into the confined space <i>(MSDS's must be attached)</i>		
Equipment located or to be brought into the confined Space		
Check all documents required to be attached <input type="checkbox"/> Detailed procedure <input type="checkbox"/> Hazardous operations procedure <input type="checkbox"/> Loto cover sheet or list <input type="checkbox"/> MSDS <input type="checkbox"/> Ventilation Sketch		
Permit Approvals		
I certify the requirements of this permit shall be implemented prior to performing any confined space activities.		
Requested by: _____ <div style="display: flex; justify-content: space-around;"> Print Name Print Name </div> <div style="display: flex; justify-content: space-around;"> _____ _____ </div> <div style="display: flex; justify-content: space-around;"> Entry Supervisor Signature Alternate Entry Supervisor Signature </div> <div style="display: flex; justify-content: space-around;"> _____ _____ _____ _____ </div> <div style="display: flex; justify-content: space-around;"> Telephone Number Date Telephone Number Date </div>		
I verify the above location has been evaluated and permission is authorized to start work subject to the conditions in the Hazards Control section of this permit.		
Reviewed by: _____ <div style="display: flex; justify-content: space-around;"> Print Name SHeD Signature Date </div>		
Comments		
Confined Space Entry Permit terminated: _____ <div style="display: flex; justify-content: space-around;"> Signature Date </div>		
Return original permit and all attached documents to SHeD, Mail Stop 6-4 when operations are complete		

Hazard Assessment (To be filled out by the Entry Supervisor)	
Check all potential Hazards (Check all inherent and introduced hazards)	
Hazardous Atmospheres (Identify)	Physical Hazards
<input type="checkbox"/> Flammable _____ <input type="checkbox"/> Toxic _____ <input type="checkbox"/> Irritant _____ <input type="checkbox"/> Corrosive _____ <input type="checkbox"/> Oxygen - Deficient <input type="checkbox"/> Oxygen - Enriched	<input type="checkbox"/> Temperature <input type="checkbox"/> Noise <input type="checkbox"/> Entrapment <input type="checkbox"/> Vibration <input type="checkbox"/> Electrical Equipment <input type="checkbox"/> Mechanical Equipment <input type="checkbox"/> Hot Work <input type="checkbox"/> Spilled Liquids <input type="checkbox"/> Engulfment <input type="checkbox"/> Radiation <input type="checkbox"/> Entry and Exit Limitations
Other anticipated hazards (Describe below)	
Hazard Controls (To be filled out by the Entry Supervisor)	
<input type="checkbox"/> Yes <input type="checkbox"/> No Is lockout/tagout required? List isolation points or attach GRC787, GRC Switching and Lockout/Tagout Record/Equivalent:	
<input type="checkbox"/> Yes <input type="checkbox"/> No Is explosion-proof equipment required? <input type="checkbox"/> Yes <input type="checkbox"/> No Are barriers required? <input type="checkbox"/> Yes <input type="checkbox"/> No Is communication equipment required? <input type="checkbox"/> Yes <input type="checkbox"/> No Is telephone or 2-way radio for summoning rescue available?	
Check required emergency equipment <input type="checkbox"/> Safety Harness <input type="checkbox"/> Tripod and Winch <input type="checkbox"/> Other (Specify) _____	
Special entry and/or work procedures	
List required personal protective equipment	
Hazard controls to be verified by Entry Supervisor and documented on entry verifications page.	

GRC 239 – Job Hazard Analysis Worksheet

National
Aeronautics and
Space
Administration

Glenn Research Center Job Hazard Analysis (JHA) Worksheet Instructions

1. With the Task Description information found in the original Maximo work order, fill in all applicable sections on the top half of page 2. (i.e., Maximo Work Order number, Job/Task Description, Work Group, Building, Room, Trade, etc.)
2. Conduct a pre-assessment of the hazards related to the Maximo work order. This may include a walk-through of the work area.
3. Briefly detail the "Steps of the Task" in column two on page 3. Use the +/- boxes in column six to add additional hazards for a specific step.
4. Briefly detail all identified "Hazards" per step in column three on page 3. (Keep steps task specific and try for 10 steps or less when feasible.) Note: Some steps may have multiple hazards associated with them and specific on the hazard (i.e., High voltage panels vs. Electrical).
5. Briefly detail all the "Hazard Controls" first or Administrative and then any required "PPE" on page 3. Use the JHA Guidance, pages 4 – 6, columns two and three, to assist you in identifying potential hazard, administrative, controls and PPE.
6. Write in specific GRC policies or Federal and State requirements that should be referenced for further information. Enter these references in column four on page 3. (SOPs, manuals, operating instructions, etc.)
7. A supervisor, team lead, or appropriate manager shall read and sign off on the GRC 239 under the "Reviewer" section on page 2.
8. All employees and subcontractors working on the task shall review, print, and sign their name on the GRC 239 on page 2.
9. Ensure a copy of the completed JHA is present at the job site for personnel and subcontractor reference during the task. A generic copy of this JHA should be maintained in Maximo for future use.
10. Review Glenn Safety Manual, Chapter 33 – Job Hazard Analysis and Chapter 15 – Personal Protective Equipment for further guidance with completing this form.
11. Contact the Safety and Health Division (SHeD) for further assistance at (216) 433-3016 or (216) 433-3019.

 National Aeronautics and Space Administration		Glenn Research Center Job Hazard Analysis (JHA) Worksheet (Per OSHA 29 CFR 1910.132(d) Requirements)			
Maximo work order number		Job/Task description			
Work group		Building	Room	Trade	
Employee populating JHA (<i>Print name and title</i>)				Date	
LIST OF OTHER EMPLOYEES WORKING ON THE JOB/TASK (<i>Use the comment box below or on page 8 to include additional personnel.</i>)					
_____		_____		_____	
Print Name		Signature		Signature	
_____		_____		_____	
Print Name		Signature		Signature	
SIGNATURE OF REVIEWER (<i>LEAD, SUPERVISOR, OR MANAGER</i>) BELOW CONFIRMS THE COMPLETION OF THIS JHA TO THE BEST OF THE ASSIGNED CREW'S ABILITY.					
JHA Certification:					
Reviewer Signature and Title _____				Date and Time _____	
REQUIRED PERMITS/FORMS					
<input type="checkbox"/> Hot Work Authorization Permit GRC7A		<input type="checkbox"/> Confined Space Entry Permit GRC199		<input type="checkbox"/> Waste Disposal Request GRC260A	
<input type="checkbox"/> Switching and Lockout/Tagout Record GRC787		<input type="checkbox"/> Area Clearance Authorization GRC978		<input type="checkbox"/> Fall Prevention Plan GRC979	
<input type="checkbox"/> Other _____					
Specific chemicals to be used					
Pre-Assessment – Observed Workplace Hazards (<i>Note: How hazards will be addressed on next page.</i>)					

 National Aeronautics and Space Administration Glenn Research Center Job Hazard Analysis (JHA) Worksheet		
Work shall stop when conditions change, the job changes, or a deficiency in the plan is discovered and the current JHA will be modified or a new JHA created.		
Hazard	Engineering and Administrative Controls	Required PPE
Adjacent Workplace Hazards See GSM Chapter 33	<input type="checkbox"/> Notify adjacent employees of our presence <input type="checkbox"/> Need barriers between <input type="checkbox"/> Other _____ <input type="checkbox"/> Other workers adjacent, above, or below <input type="checkbox"/> Coordinated with adjacent supervisor/customer/operator <input type="checkbox"/> JHA Pre-Assessment – Site visit	<input type="checkbox"/> Other _____
Asbestos, Lead, Silica, RCF, Dust See OHPM Chapters 2, 4, 5, and 19	<input type="checkbox"/> Areas of work may contain asbestos or lead paint <input type="checkbox"/> Lead based paint controls in place <input type="checkbox"/> Other _____ <input type="checkbox"/> Asbestos controls incorporated <input type="checkbox"/> Exposure monitoring conducted <input type="checkbox"/> Facility Asbestos Site Survey <input type="checkbox"/> Training	<input type="checkbox"/> Respirator w/P100/HEPA filter <input type="checkbox"/> Glove/nitrile <input type="checkbox"/> Tyvek suit
Chemicals, Solvents, Cleaners, Acids, Oils See OHPM Chapter 14, 21, and 25 GSM Chapter 15 EPM Chapter List chemicals, etc., involved here:	<input type="checkbox"/> Proper storage locations <input type="checkbox"/> Reviewed Safety Data Sheet (SDS) <input type="checkbox"/> Exposure monitoring required <input type="checkbox"/> Have proper containers and labels <input type="checkbox"/> Local exhaust ventilation (lab hood, snorkel, enclosure) <input type="checkbox"/> Training <input type="checkbox"/> Other _____ Can a safer alternative be used? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, list below.	<input type="checkbox"/> Chemical resistant gloves Type: _____ <input type="checkbox"/> Rubber boots, closed toe safety shoes <input type="checkbox"/> Goggles w/faceshield <input type="checkbox"/> Goggles <input type="checkbox"/> Sleeves, wristlets <input type="checkbox"/> Respirator w/organic vapor cartridge <input type="checkbox"/> Respirator w/acid gas cartridges or respirator w/combination organic vapor and acid/gas cartridge <input type="checkbox"/> Lab coat or apron/sleeves, Tyvek suit, or lab coat
Confined Space GSM Chapter 16	<input type="checkbox"/> Confined Space Entry Permit GRC199 <input type="checkbox"/> Confined space NOT permitted <input type="checkbox"/> Other _____ <input type="checkbox"/> Confined space to be reviewed by SHED <input type="checkbox"/> Air monitoring <input type="checkbox"/> Training	<input type="checkbox"/> Harness and tripod <input type="checkbox"/> Hard hat <input type="checkbox"/> Other _____
Cranes, Lifting Devices, Excavations GSM Chapters 20, 29, and 35	<input type="checkbox"/> Signalman assigned <input type="checkbox"/> Tag lines in use <input type="checkbox"/> Areas around crane barricaded <input type="checkbox"/> Lifting equipment inspected <input type="checkbox"/> Inspected prior to entering <input type="checkbox"/> Personnel protected from overhead load <input type="checkbox"/> Proper sloping/shoring <input type="checkbox"/> Other _____ <input type="checkbox"/> Access/egress provided <input type="checkbox"/> Protection from accumulated water <input type="checkbox"/> Critical lift plan <input type="checkbox"/> Specific lift procedure/area <input type="checkbox"/> Digging, Trenching, and Excavating Permit, GRC927 <input type="checkbox"/> Confined Space Entry Permit GRC199 <input type="checkbox"/> Training	<input type="checkbox"/> Hard hat <input type="checkbox"/> Steel toe safety shoes <input type="checkbox"/> Leather boots or safety shoes w/ metatarsal guards <input type="checkbox"/> Traffic vest <input type="checkbox"/> Leather gloves <input type="checkbox"/> Safety glasses <input type="checkbox"/> Other _____
Electrical Hazards GSM Chapters 8 and 9 OIs:	<input type="checkbox"/> Power de-energization required <input type="checkbox"/> Insulation blankets required <input type="checkbox"/> Wire watcher required <input type="checkbox"/> Required clearance distance = _____ FT <input type="checkbox"/> Safe work zone marked <input type="checkbox"/> Reviewed as-builts <input type="checkbox"/> Subsurface surveys <input type="checkbox"/> Other _____ <input type="checkbox"/> Excavation permit <input type="checkbox"/> Lockout/Tagout/Tryout <input type="checkbox"/> Confirm that equipment is de-energized <input type="checkbox"/> Reviewed electrical safety procedures <input type="checkbox"/> Area Clearance Authorization GRC978 <input type="checkbox"/> Training	<input type="checkbox"/> Arc rated clothing/FR clothing based on Hazard Risk Category (NFPA 70E) <input type="checkbox"/> Safety glasses w/faceshield based on the Hazard Risk Category (NFPA 70E) <input type="checkbox"/> Hard hat Type "E" (formerly Type "B") <input type="checkbox"/> Insulated rubber gloves (Class based on rated voltage) with leather outer protective glove <input type="checkbox"/> Other _____

 National Aeronautics and Space Administration Glenn Research Center Job Hazard Analysis (JHA) Worksheet		
Hazard	Engineering and Administrative Controls	Required PPE
Environmental/Natural Hazards See Occupational Health Programs Manual (OHPM) See Environmental Programs Manual (EPM) chapters. List known hazards here:	<input type="checkbox"/> Air emissions <input type="checkbox"/> Water discharge <input type="checkbox"/> Staying upwind of collection/filtration <input type="checkbox"/> Spill prevention plan <input type="checkbox"/> Weather checked <input type="checkbox"/> Other _____ This section lists hazards, not controls.	<input type="checkbox"/> Waste minimization/Green Product use <input type="checkbox"/> Waste Disposal Request GRC260A <input type="checkbox"/> Terrain flagged/barricaded <input type="checkbox"/> Adequate lighting <input type="checkbox"/> Bug repellent <input type="checkbox"/> Training
Eyes and Face Hazards GSM Chapter 14, 15, and 33 List known hazards here:	<input type="checkbox"/> Guards/shielding checked and in place <input type="checkbox"/> Control room automation <input type="checkbox"/> Curtain <input type="checkbox"/> Operational SOP <input type="checkbox"/> Other _____	<input type="checkbox"/> Safety glasses w/side shields <input type="checkbox"/> Glasses/goggles w/faceshield <input type="checkbox"/> Impact goggles <input type="checkbox"/> Welding goggles or welding helmet/shield w/safety glasses and side shields <input type="checkbox"/> Shaded safety glasses <input type="checkbox"/> Laser safety glasses or goggles <input type="checkbox"/> Other _____
Fire, Sparks, Hot Work GSM Chapters 15, 28, and 31 List known hazards here:	<input type="checkbox"/> Hot Work Authorization Permit GRC7A and Hot Work Pre-operations Checklist GRC7B <input type="checkbox"/> Fire extinguishers and training <input type="checkbox"/> Adjacent areas protected <input type="checkbox"/> Other _____	<input type="checkbox"/> Fire watch <input type="checkbox"/> Unnecessary flammable material removed <input type="checkbox"/> Fire Blankets <input type="checkbox"/> Welding curtains <input type="checkbox"/> Evacuation plan
Hand and Arm (Non-chemical) GSM Chapter 14 and 15 List known hazards here:	<input type="checkbox"/> Inspect general condition <input type="checkbox"/> GFCI in use <input type="checkbox"/> Reviewed safety requirements in operator's manual(s) <input type="checkbox"/> Other _____	<input type="checkbox"/> Identified PPE required for each tool <input type="checkbox"/> Guarding/guards in place <input type="checkbox"/> Use tool for intended purpose <input type="checkbox"/> First Aid Kit
Heat/Cold GSM Chapter 5, 6, and 7 List known hazards here:	<input type="checkbox"/> Heat stress monitoring (>85°) <input type="checkbox"/> Liquids available <input type="checkbox"/> Cool down periods <input type="checkbox"/> Proper clothing (i.e., gloves, coat, coveralls) <input type="checkbox"/> Other _____	<input type="checkbox"/> Sunscreen <input type="checkbox"/> Wind chill <32° <input type="checkbox"/> Reviewed cold stress symptoms <input type="checkbox"/> Warm up periods <input type="checkbox"/> Reviewed heat stress symptoms <input type="checkbox"/> Handling SOP <input type="checkbox"/> Training
Ladders GSM Chapter 17, 22, and 34	<input type="checkbox"/> Inspect general condition before use <input type="checkbox"/> Ladder inspected within last quarter <input type="checkbox"/> Buddy system <input type="checkbox"/> Other _____	<input type="checkbox"/> Proper angle and placement <input type="checkbox"/> Reviewed ladder safety <input type="checkbox"/> Ladder tied off or held <input type="checkbox"/> Training

 National Aeronautics and Space Administration Glenn Research Center Job Hazard Analysis (JHA) Worksheet		
Hazard	Engineering and Administrative Controls	Required PPE
Manual Lifting OHPM Chapter 15 Ergo	<input type="checkbox"/> Reviewed proper lifting techniques <input type="checkbox"/> Minimize overhead lifting <input type="checkbox"/> Other _____ <input type="checkbox"/> Back support belts <input type="checkbox"/> Two man lift <input type="checkbox"/> Identified material requiring lifting equipment <input type="checkbox"/> Training	<input type="checkbox"/> Leather gloves <input type="checkbox"/> Hard hats <input type="checkbox"/> Other _____ <input type="checkbox"/> Back-support belt
Noise OHPM Chapter 3 GSM Chapter 15	<input type="checkbox"/> Control room <input type="checkbox"/> Distance <input type="checkbox"/> Other _____ <input type="checkbox"/> Time limitation <input type="checkbox"/> Noise monitoring <input type="checkbox"/> Signage posted	<input type="checkbox"/> Ear plugs or muffs <input type="checkbox"/> Double hearing protection (plugs and muffs) <input type="checkbox"/> Other _____
Pinch Points GSM Chapter 14 and 17	List potential pinch points: _____ <input type="checkbox"/> Working near operating equipment <input type="checkbox"/> Other _____ <input type="checkbox"/> Distance/guards <input type="checkbox"/> Hand/body positioning <input type="checkbox"/> Training	<input type="checkbox"/> Leather gloves <input type="checkbox"/> Other _____
Respiratory OHPM Chapter 4, 7, and 12	<input type="checkbox"/> Local exhaust ventilation (lab hood, snorkel, enclosure) <input type="checkbox"/> Sensors/O2 monitoring <input type="checkbox"/> Other _____ <input type="checkbox"/> Fit testing <input type="checkbox"/> Medical clearance	<input type="checkbox"/> Half or full face mask P100 HEPA <input type="checkbox"/> SCBA or Type C airline respirator <input type="checkbox"/> Disposable N95 dust/mist mask <input type="checkbox"/> Other _____
Scaffolding GSM Chapter 34	<input type="checkbox"/> Inspect general condition before each use <input type="checkbox"/> Tags in place <input type="checkbox"/> Properly secured <input type="checkbox"/> Other _____ <input type="checkbox"/> Toe boards used <input type="checkbox"/> Footings adequate <input type="checkbox"/> Materials properly stored on scaffold <input type="checkbox"/> Guard rails <input type="checkbox"/> Training	<input type="checkbox"/> Hard hat <input type="checkbox"/> Other _____
Slips, Trips, or Falls GSM Chapter 3, 29, and 34	<input type="checkbox"/> Fall Prevention Plan GRC979 <input type="checkbox"/> Inspect for trip hazards <input type="checkbox"/> Hazards marked <input type="checkbox"/> Tools and material properly stored <input type="checkbox"/> Extension cords properly secured <input type="checkbox"/> Work zone free of debris <input type="checkbox"/> Guard rails <input type="checkbox"/> Other _____ <input type="checkbox"/> Barriers around open holes/pits <input type="checkbox"/> Anchorage points identified <input type="checkbox"/> Fall distance calculated <input type="checkbox"/> Rescue plan <input type="checkbox"/> Cover/lid <input type="checkbox"/> Warning signs/tapes <input type="checkbox"/> Powered lifts inspected <input type="checkbox"/> Training	<input type="checkbox"/> Body harness <input type="checkbox"/> Single lanyard <input type="checkbox"/> Double lanyard required <input type="checkbox"/> Retractable device needed <input type="checkbox"/> Beam clamp or strap <input type="checkbox"/> Horizontal life line system required <input type="checkbox"/> Rope grab <input type="checkbox"/> Vertical/lifeline <input type="checkbox"/> Restraint <input type="checkbox"/> Other _____
Traffic GSM Chapters 17, 19, and 29	<input type="checkbox"/> Traffic barricades <input type="checkbox"/> Cones <input type="checkbox"/> Signs <input type="checkbox"/> Other _____ <input type="checkbox"/> Flagmen <input type="checkbox"/> Lane closure <input type="checkbox"/> Communication with equipment operator <input type="checkbox"/> Training	<input type="checkbox"/> Traffic vest <input type="checkbox"/> Hard hat <input type="checkbox"/> Flags <input type="checkbox"/> Other _____

GRC 600 – Inspector’s Report

 National Aeronautics and Space Administration		<h2>Inspector's Report</h2>	
Contract Title		Contract Number	Date
Contractor Name			PR Number
Temperature	Weather	Reported by <i>(Signature of Inspector)</i>	
Prime Contractor <i>(Show number of men working in each trade; describe work in progress.)</i>			
Start Work		Completion Date	\$
Subcontractor <i>(Show number of men working in each trade; describe work in progress.)</i>			
Man Hours to Date	Today's Man Hours	Total Man Hours	

Progress - Interference - Delays
Material Shortage
Visitors
Trade Difficulties
Accidents <i>(Personnel or Equipment)</i>
Major Equipment <i>(Arrival and Departure)</i>
Instructions <i>(Given for cleanup or safety.)</i>

GRC 621 – Preconstruction Conference Agenda and Checklist

 National Aeronautics and Space Administration		<h2 style="margin: 0;">Preconstruction Conference Agenda and Checklist Project Management Branch (FDP)</h2>	
Contract/Task Number	Project ID Number	Time	Date
Contractor		Building	Meeting Room
Job Title			
Project Location Building _____ Room _____		Scheduled Start Date	Completion Date _____ Days after NTP
<p>I. Agenda</p> <ul style="list-style-type: none"> A. Introduction (Attendees) B. Project Description/Goals C. Security and Badge Requirements D. Environmental Aspects E. Safety and Health Requirements F. Contract Administration G. Technical Aspects H. On-site Work Implementation I. Other 			

II. Checklist			
A. Introduction (Attendees)			
*Complete prior to meeting.			
Contractor's Representatives	Office Telephone	NASA Representatives	Office Telephone
Company	Emergency Telephone	Construction Manager (CM)	
Owner	Inspector		
Project Manager	Project Manager		
Field Superintendent	Contracting Officer		
Other(s)	Safety Representative		
	Building Manager		
	Facility Manager(s)		
	Waste Management Representative		
	System Manager(s)		
	Occupational Health Representative		
	FD Environmental Health and Safety Coordinator		
B. PROJECT DESCRIPTION/GOALS			
*Section to be completed by CM prior to meeting. Use Summary of work from Spec. Section. If specs. are not listed, generate short summary of work. Include critical shutdowns, and schedule goals.			
C. SECURITY AND BADGE REQUIREMENTS			
<input type="checkbox"/> Explain NASA Security Procedures _____			
<input type="checkbox"/> Distribute GRC 9975 Forms (Registration and ID Badge Request) _____			

D. ENVIRONMENTAL ASPECTS	
<input type="checkbox"/> Dust controls (<i>Demolition, concrete cutting</i>) _____	
<input type="checkbox"/> Toxic fumes controls/ventilation (<i>Lead-based paint, welding/grinding, chemical use, CO</i>) _____	
<input type="checkbox"/> Suspect Asbestos Containing Material (ACM), inform Inspector–NASA will test _____	
<input type="checkbox"/> Asbestos removal (<i>Read Asbestos Summary of Work at meeting.</i>) _____	
<input type="checkbox"/> Spill response phone number (216) 433-8888 PBS (419) 621-3222 _____	
<input type="checkbox"/> Storm Water Pollution Prevention (SWPP) measures (<i>Silt fencing, inlet protection, soil stabilization</i>) _____	
<input type="checkbox"/> Agency Notifications (EPA, ODH, USACE) _____	
<input type="checkbox"/> Initial inspection of SWPP measures prior to construction _____	
<input type="checkbox"/> Waste disposal/Profiles/Manifests/Waste storage _____	
<input type="checkbox"/> Other environmental considerations (<i>Bald Eagle, Indiana Bat, Wetlands</i>) _____	
Remarks: _____	
E. SAFETY AND HEALTH REQUIREMENTS	
<input type="checkbox"/> Emergency telephone number 911 from internal NASA phone Mobile phone (216) 433-8888–Lewis Field Mobile phone (419) 621-3222–Plum Brook	<input type="checkbox"/> Hard hats, safety glasses, work boots: Required at all times _____
<input type="checkbox"/> Hot Work/Fire Prevention _____	<input type="checkbox"/> Other PPE _____
<input type="checkbox"/> Daily Site Safety Inspections _____	<input type="checkbox"/> Construction Laser (Usage, training, daylight hours only) _____
<input type="checkbox"/> OSHA Regulations/Formal Inspections _____	<input type="checkbox"/> Fall Protection (Required at 6 feet and above) _____
<input type="checkbox"/> Traffic Impacts/Barricade Requests/Parking _____	<input type="checkbox"/> Ladders and Scaffolding (Proper use of tie-offs and daily inspections) _____
<input type="checkbox"/> Electrical Applications Safety Permit _____	<input type="checkbox"/> Designate Construction Zone (Signage and demarcation tape) _____
<input type="checkbox"/> Electrical Hazards (LO/TO) _____	<input type="checkbox"/> Confined Space Entry (Permit, atmospheric monitoring) _____
<input type="checkbox"/> Ground Fault Circuit Interrupter (for all electrical equipment) _____	<input type="checkbox"/> CO monitoring (<i>Operation of combustion equipment indoors</i>) _____
<input type="checkbox"/> Special Testing (Pneumatic testing, radiography, compaction) _____	<input type="checkbox"/> Illumination/Temp. Lighting _____
<input type="checkbox"/> Housekeeping Debris/Removal _____	<input type="checkbox"/> Safety Training Records _____
<input type="checkbox"/> Sanitation _____	<input type="checkbox"/> Evacuation Procedures (Muster points, head count) _____
<input type="checkbox"/> Daily Site Coordination Review (CM/Superintendent) _____	<input type="checkbox"/> Weekly Job Safety Meeting (required) include in Safety Plan _____
<input type="checkbox"/> Safety Equipment at job site (Fire extinguishers, First Aid Kit with eye wash, etc.) _____	<input type="checkbox"/> SDS's maintained on site with HASP. _____
<input type="checkbox"/> Health and Safety Plan (Required on job site) _____	

H. ON-SITE WORK IMPLEMENTATION	
<input type="checkbox"/>	Daily contact with NASA representative _____
<input type="checkbox"/>	Superintendent (100% on Center/On-site at all times) _____
<input type="checkbox"/>	Material delivery, contractor is responsible to receive (communicate with Main Gate) _____
<input type="checkbox"/>	Permits (ex. Crane, Area Clearance, Fall Protection, Hot Work, Confined space, etc.) _____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	Contractor's Isolation Planning, Process _____ Identifying isolation valves, breakers, etc., to be submitted and approved by CM prior to start of work.
<input type="checkbox"/>	Protection of building occupants and/or equipment.
<input type="checkbox"/>	Completion date _____
Remarks/other job related concerns: Daily inspection report by contractor, check in with Inspector every a.m., all communications through NASA CM.	
I. OTHER	
Prepared by _____	
	(CM Signature)
	Date
cc:	
/Bldg. Manager/	
/Safety Office	
/Office of En. Programs/	
/Contr. Spec/	
FDP /Project Manager/COTR/	
FDP /URD Manager	
FDP /Alt. COTR/	
FDP /Branch File	
Contractor	

GRC 624 – After Hours Notification

 National Aeronautics and Space Administration		<h2>After Hours Notification</h2>
Company or Name		
Date of Work Visit	Time of Arrival/Departure	
Building and Room of Work/Visit		
Telephone Number of Working Area	NASA Contact	
Telephone Number of Contact	Person Making This Notification	

GRC 624 02/00 (1.0)

PREVIOUS EDITIONS ARE OBSOLETE.

Page 1 of 1

FOR REFERENCE ONLY

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GRC 699 – Notice of Preconstruction Conference

National Aeronautics and
Space Administration
John H. Glenn Research Center
Lewis Field
Cleveland, OH 44135-3191



Reply to Attn of: **FDP**

Date _____

TO: Distribution

FROM: FDP/Project Management Branch

SUBJECT: Notice of Preconstruction Conference

Contract Number _____ Amount \$ _____

Company: _____

Meeting Date: _____ Time: _____ Building: _____ Room: _____

Construction Manager: _____ Telephone Number _____

Description: _____

Environmental issue: Asbestos Lead Other _____

Subject contract activity will commence in the near future. Your attendance at this meeting is required to insure safe, effective, coordinated performance by the contractor. If you are not available at the above time, you are requested to send an alternate who can represent your interest.

Please be prepared to offer a short narrative on your interest/responsibility on this project and any pertinent project related comments on contract performance expectations. I.e., environmental should be knowledgeable on scope of related overview on the Health and Safety Plan expectations. Construction manager should discuss daily shift and work-related items, etc. and any other project matters.

Questions in this regard should be directed to the Construction Manager.

Construction Manager

Distribution:

QS/Safety/

FE/Environmental/

CH/Procurement/

Building Managers/

/(Move Coordinator is required)/

/System Managers/

/Project Managers/

FDO/Operations Management Branch/

/COR/

/CM/Inspector/

/Branch File/

GRC 702 – Contractor Property Pass

 National Aeronautics and Space Administration Glenn Research Center		<h2 style="margin: 0;">Contractor Property Pass</h2>		Valid on Date Issued Only	
				Date Issued	
Company/Agency Name		Person to Whom Issued (Name)		Date	
City and State		<input type="checkbox"/> Contractor Representative <input type="checkbox"/> Other (Specify) _____		Contract/Purchase Order No	
Type of contractor vehicle (mark appropriate block(s)): <input type="checkbox"/> Auto <input type="checkbox"/> Station Wagon <input type="checkbox"/> Van/Panel Truck <input type="checkbox"/> Open or Cab Truck <input type="checkbox"/> Trailer <input type="checkbox"/> Other (Specify) _____					
Type of property transported (or hand carried) for removal from Glenn premises check appropriate block(s) and enter additional identifying description: <input type="checkbox"/> Equipment <input type="checkbox"/> Material <input type="checkbox"/> Instrument(s) <input type="checkbox"/> Parts <input type="checkbox"/> Machinery <input type="checkbox"/> Supplies <input type="checkbox"/> Tool(s)					
Additional description:					
I certify that the property being removed from the Glenn premises listed on this pass is Contractor-Owned Property as defined under Contractor Property Pass Requirements below.		I have ascertained that the property identified hereon is contractor-owned as defined on reverse side.		FOR GUARD FORCE USE ONLY	
To Whom Issued (Print name)		C.O.R. or Authorized Personnel (Print name)		Guard (Signature) _____ Date _____	
To Whom Issued (Signature)		C.O.R. or Authorized Personnel (Signature)		Gate (Specify) _____ Time Out _____ AM _____ PM	
Contractor Badge Number		Org Code	Telephone Number	Copy Distribution: Copy 1 - Guard Force Copy 2 - Originator Copy 3 - Bearer	

GRC 702 06/09 (1.0)

PREVIOUS EDITIONS ARE OBSOLETE.

Page 1 of 1

Present all 3 parts of the form, Copy 1, Copy 2, and Copy 3 to the Guard Force

CONTRACTOR PROPERTY PASS REQUIREMENTS

1. To be issued for removal of Contractor-Owned Property, as defined below, by the owning contractor or his authorized personnel.
2. When applicable, the COR or authorized personnel must enter the contract or purchase order number in the appropriate block on this form.
3. Definition of Contractor-Owned Property:
 Contractor-Owned Property is that which has been brought into Glenn by a contractor (or his authorized personnel) and remains under his continuous cognizance during the performance of contractual requirements (includes residual materials and scrap) or while on the Center premises for other authorized purposes except as stated in paragraph 4 below; includes Government property previously furnished to a contractor for which the contractor is required to identify and maintain accountability in accordance with the terms of a Government contract.
4. Not Applicable To:
 - A. Authorized motor freight, vendor, or contractor vehicles entering the Cleveland Center or Plum Brook Station for:
 - (1) Delivery or pick-up of equipment, materials, and/or supplies to or from designated receiving or shipping areas.
 - (2) Delivery of contractor-owned equipment, materials, and/or supplies to on-site contractors.
 - B. Salesmen representatives, or service personnel entering the Center or Plum Brook Station for:
 - (1) Demonstration of vendor products.
 - (2) On-site servicing or repair of Government property

NSN 7530-00-LNO-0326

GRC 780 – Energized Electrical Work Permit

	National Aeronautics and Space Administration	<h3 style="margin: 0;">Energized Electrical Work Permit</h3> <p style="margin: 0;">This document contains hazardous operation procedures.</p>
Part I. To be completed by the requester.		
Job/Work Order/Contract number		
1. Description of circuit/equipment/job location.		
2. Description of work to be done.		
3. Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage.		
Requester/Title	Date	
Part II. To be completed by the electrically qualified persons performing the work.		
1. Detailed job description procedure to be used in performing the above detailed work.		
2. Description of the safe work practices to be employed.		
3. Results of the Shock Risk Assessment.		
4. Determination of shock protection boundaries.		
5. Results of Arc Flash Risk Assessment.		
6. Determination of the Arc Flash protection boundary.		

7. Necessary personal protective equipment to safely perform the assigned task.		
8. Means employed to restrict the access of unqualified persons from the work area.		
9. Evidence of completion of a job briefing including discussion of any job related hazards.		
10. Do you agree the above described work can be done safely? <i>(If no, return to requester.)</i> <input type="checkbox"/> Yes <input type="checkbox"/> No		
Electrically qualified person (Printed name)	Electrically qualified person (Signature)	Date
Electrically qualified person (Printed name)	Electrically qualified person (Signature)	Date
Additional comments.		
Part III. Approval signatures required allowing electrically energized work to be accomplished.		
Requester Supervisor	Date	
Project Manager/Engineer/COTR	Date	
System Manager or Appropriate Safety Committee	Date	
Safety and Health Division (SHeD)	Date	
<p>Note: Once the work is complete forward this form to the SHeD at Mail Stop: 6-4 for review and retention.</p>		

Instructions

Glenn Research Center Isolation and Lockout/Tagout Record									
14. Requester(s) <i>(Authorized employee(s) in charge.)</i>				15. Phone/Pager Number				16. Time/Date	
_____				_____				Time: _____	
_____				_____				Date: _____	
17. Reason for isolation									
18. Location	Item	Equipment/Apparatus Identification					Status	LO/TO	
19. Switchperson(s) <i>(Qualified Operators)</i>	On/Off	Date	Time	DP	Bldg Not.	Ops Not.	TR	Remarks	
20. Tag cancelled by:				DP	Date	Time	Bldg Not.	Ops Not.	
21. Associated tags:				Switching Order Number(s)			Tag Number		

GRC 804 – Pneumatic Test Permit

 National Aeronautics and Space Administration	Pneumatic Test Permit			Date Issued (mm/yyyy)	Expiration Date (mm/yyyy)
	Title		Location of Activity		Permit Number
Emergency Contacts					
Name (Knowledgeable person)			Work Phone	Home Phone	
Name (Alternate contact)			Work Phone	Home Phone	
Activity Description					
Conditions for Conducting Activity 1. Barricade plan shall be followed. 2. The maximum allowable pneumatic pressure shall not be exceeded. 3. Pneumatic test report shall be signed and witnessed. 4. Test procedures and/or check sheets shall be followed. 5. The "Buddy System" shall be followed per Chapter 22.2(d), "No-One-Along" System. 6. All original documentation shall be signed, completed, and returned to the PSO at Mail Stop 6-8.					
Pneumatic Permit Requester (Print name)		Email	Organization	Work Phone	Mail Stop
Calogero DiRienzo GRC Pressure System Manager (PSM)		Date	Activity completed - Requester sign and date below, then return to Pressure systems Office (MS: 6-8). _____ Signature		
			_____ Date		

GRC 927 – Excavation Permit

	National Aeronautics and Space Administration <h2 style="margin: 0;">Excavation Permit</h2>	Civil Systems Use Only Permit Expiration Date
PART A.		
Step 1. NASA/SSC Initiator (NOTE: Provide 48 hours advance notice to surveyors prior to marking.)		
NASA/SSC Initiator	Telephone number	Date
Contract number/Project title		
Prime Contractor	Telephone number	
Excavation Contractor	Telephone number	
Contractor Excavation and Utility Competent Person	Telephone number	
Project scope and limits		
Work area defined: (Work area limited approximately 400 linear feet or 400' x 110' area) LF _____ Area _____ Depth _____ NOTE: The contractor must mark the center line of new utility installed with appropriate stakes and color in area project segment and excavation limits with white paint. Contractor to also submit marked up drawing. Excavation dates: Projected start = _____ Finish = _____ NOTE: Permit is valid for 3 months after final signature. Click on the button to electronically submit the permit. SUBMIT		
Step 2. GRC Soil Coordinator		
GRC Soil Coordinator shall assess soil conditions for contaminants in designated excavation area/segment. The completed Soil Determination Checklist, GRC133, shall be attached to the GRC 927. Notes: GRC Soil Coordinator: _____ Date: _____		
Step 3. Safety and Health Division (SHeD)		
SHeD Evaluation: SHeD shall perform a preliminary confined space determination and verify excavation process being adhered too. Notes: <input type="checkbox"/> GRC 199, Confined Space Entry Permit is required. SHeD Determination: _____ Date: _____		
Step 4. NASA Surveyor		
Excavation Identification/Marking: The NASA Surveyor shall mark the location of any existing utility lines that may be encountered during excavation including the location of isolation valves for pressure lines. The NASA contact shall coordinate all interfaces between the contractor and the NASA Surveyor. Notes: The contractor must contact OUPS at 1-800-362-2764 or 811. <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable Glenn Mapping System: _____ Date: _____		
Step 5. Excavation and Infrastructure Approval		
The NASA/SSC Initiator must acquire an area clearance. <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable Comments: System Manager (For the utility being installed;) _____ Telephone number: _____ Date: _____ Civil System Manager: _____ Telephone number: _____ Date: _____		
Permit is valid for 3 months after step 5 is complete or until work is complete, whatever comes first. Proceed to use Part B.		

GRC 946A – Tag – Do Not Operate – Elec. Mech. – Indoor

dashed line are diecut line

DANGER

DO NOT OPERATE

LOCAL TAG

*CENTRAL CONTROL DISPATCH

*TAG NO. _____

APPARATUS _____

NAME _____

DATE _____

PHONE _____

DISPATCHER _____

*The information for this tag is on file with the Electrical Power Dispatcher (3-3100) or the Central Air Dispatcher (3-3200).

NASA-C-946a Front (2-2005) Stock No. 7530-01-LNO-1449

DANGER

DO NOT OPERATE

SWITCHPERSON _____ (OPTIONAL)

PHONE _____ (OPTIONAL)

REMARKS:

THIS TAG REPRESENTS THE FINAL POINT(S) OF ISOLATION AND WILL BE USED WITH A LOCK.

Unauthorized removal of this tag will result in disciplinary action.

NASA-C-946a (2-2005) Reverse

Font: Helvetica Medium
Helvetica Neue 85 Heavy
Helvetica Neue 65 Medium

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GRC 978 – Area Clearance Authorization

 National Aeronautics and Space Administration		<h2 style="margin: 0;">Area Clearance Authorization</h2>	
1. Requester organization code		Date	
2. Contract number and title			
3. Contractor		Subcontractor	
4. Equipment or system to be worked on <div style="float: right;"> <input type="checkbox"/> Maintenance <input type="checkbox"/> Repair/Upgrade </div> <p>a. Location of work</p> <p>b. Utilities, services, and/or equipment shutdowns that are required. Shutdown of any part of a fire suppression, fire detection or life safety system for more than 4 hours will require a GRC316, Fire Protection Impairment Form. Impairment Plan Required: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Note: When routing for approval, attach all supporting documentation, i.e., system configuration drawings, one lines, panel legends, etc.</p> <p>c. Request shutdown on: _____ d. Work completed, restore services on: _____</p> <p>Note: NASA, using qualified switchpersons (operators) under the direction of a designated person, will shutdown the utilities, services and/or equipment listed above and will maintain them in a shutdown position until authorized by the requester to restore.</p>			
5. Has a system coordination meeting been held? <input type="checkbox"/> Yes <input type="checkbox"/> No		Date	
6. Is a NASA Safety Permit required for this shutdown activity (If yes, a copy should be attached)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Signature lines Requested by (Must include at least one civil servant signature.)			
_____ Requester _____ Date		_____ Project Engineer/Technician/Specialist _____ Date	
Approved by (All signatures required, Research Facility Manager, only if applicable.)			
_____ (1st) QAE/TR/Facility Specialist _____ Date		_____ (2nd) Building Manager/Area Supervisor _____ Date	
_____ (3rd) COTR/ACTOR (of supporting contractor) _____ Date		_____ (4th) Research Facility Manager (if applicable) _____ Date	
_____ (5th) System Manager _____ Date		_____ (6th) Glenn Network Operations Coordinator (GNOC) _____ Date	
Concurrence by Note: If additional approval signatures are required, use page 2.			
_____ Project Manager _____ Date		_____ Safety and Health Division (SHeD) _____ Date	
_____ Program Manager _____ Date		Distribute approved Area Clearance Authorization. Distribution: All signees QS/Official file Requester's Branch Chief Contract file	
_____ Designated person/CAD/EPD _____ Date			
Closeout Action: When the work is completed and services have been restored, the requester will provide electronic notification to all parties. Tag number: _____			

Area Clearance Authorization Signature Sheet			
_____	_____	_____	_____
QAE/TR/Facility Specialist	Date	Building Manager/Area Supervisor	Date
_____	_____	_____	_____
QAE/TR/Facility Specialist	Date	Building Manager/Area Supervisor	Date
_____	_____	_____	_____
	Date	Building Manager/Area Supervisor	Date
_____	_____	_____	_____
	Date	Building Manager/Area Supervisor	Date
_____	_____	_____	_____
System Manager	Date		Date
_____	_____	_____	_____
System Manager	Date		Date
_____	_____	_____	_____
System Manager	Date	Research Facility Manager	Date
_____	_____	_____	_____
	Date	Research Facility Manager	Date
_____	_____	_____	_____
	Date		Date
_____	_____	_____	_____
	Date		Date
_____	_____	_____	_____
	Date		Date
_____	_____	_____	_____
	Date		Date
_____	_____	_____	_____
	Date		Date
_____	_____	_____	_____
	Date		Date

GRC 979 – Fall Prevention Plan

	National Aeronautics and Space Administration	<h2 style="margin: 0;">Fall Prevention Plan</h2>	<input type="checkbox"/> Hazardous Operation																						
<p>Purpose</p> <p>The purpose of this procedure is to provide continuous fall protection while accessing the (fill in task information). Fall protection will be utilized by (described system). Work performed at this location has been identified as posing a fall hazard; therefore, this procedure shall be followed to provide continuous fall protection. This procedure does not address additional hazards not specifically related to fall protection.</p> <p>If there are any questions regarding these procedures, contact your supervisor immediately. The procedure described here supplements and is subordinate to existing Occupational Safety and Health Administration (OSHA) regulations and equipment manufacturer's instructions.</p>																									
<p>Construction Projects</p> <p>When an active fall protection is to be used the following shall be submitted with the Health and Safety Plan: detailed GRC 979, training certification for the competent fall protection person, manufacturer product sheets on the elements of the fall protection system hardware including selected anchorage device, connector and lanyard.</p>																									
<p>Task Description</p>																									
<p>Important checklist before the start of any work activities at height:</p> <ol style="list-style-type: none"> 1. Follow fall protection training and procedures. 2. Have successfully completed fall hazard training before working from heights. 3. Use the "Buddy System" at all times when working at an elevation (minimum of two people at any work site). 4. Discuss fall prevention procedures with coworkers and supervisors to ensure that all of those involved have a clear understanding of the outlines. 5. Assemble all equipment needed for fall protection and rescue procedures in accordance with manufacturer's instructions. 6. Perform pre-use inspection of all equipment in accordance with manufacturer's requirements. 7. Follow Lockout/Energy Control as required. 8. Do not use this fall protection system and equipment for any other purpose than as described in this procedure. 																									
<p>Fall Protection Equipment List</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Full body harness</td> <td><input type="checkbox"/> Beam clamp</td> </tr> <tr> <td><input type="checkbox"/> Self retracting lanyards</td> <td><input type="checkbox"/> Horizontal lifeline</td> </tr> <tr> <td><input type="checkbox"/> Shock absorbing lanyards</td> <td><input type="checkbox"/> Vertical lifeline</td> </tr> <tr> <td><input type="checkbox"/> Positioning lanyard</td> <td><input type="checkbox"/> Rope grab</td> </tr> <tr> <td><input type="checkbox"/> Guardrail</td> <td><input type="checkbox"/> Other</td> </tr> <tr> <td><input type="checkbox"/> Choker</td> <td></td> </tr> </table>		<input type="checkbox"/> Full body harness	<input type="checkbox"/> Beam clamp	<input type="checkbox"/> Self retracting lanyards	<input type="checkbox"/> Horizontal lifeline	<input type="checkbox"/> Shock absorbing lanyards	<input type="checkbox"/> Vertical lifeline	<input type="checkbox"/> Positioning lanyard	<input type="checkbox"/> Rope grab	<input type="checkbox"/> Guardrail	<input type="checkbox"/> Other	<input type="checkbox"/> Choker		<p>Identified Fall Hazards</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Fall from lift equipment</td> <td><input type="checkbox"/> Other</td> </tr> <tr> <td><input type="checkbox"/> Hole/floor opening</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Unprotected edge</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Non-standard use of ladder</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Scaffold</td> <td></td> </tr> </table>		<input type="checkbox"/> Fall from lift equipment	<input type="checkbox"/> Other	<input type="checkbox"/> Hole/floor opening	_____	<input type="checkbox"/> Unprotected edge		<input type="checkbox"/> Non-standard use of ladder		<input type="checkbox"/> Scaffold	
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<p>Fall Prevention Procedures <i>(Step by step description of how equipment will be implemented.)</i></p> <table border="1" style="width: 100%; border-collapse: collapse; height: 100px;"> <tr><td style="width: 5%;"></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>																									

Fall Prevention Plan		
<p>Rescue Information</p> <p>Normal first aid procedures should be performed by certified individuals as the situation requires.</p> <p>Glenn Research Center Emergency Phone Numbers: Dial 911 on any NASA phone or 216-433-8888 on a cell phone.</p> <p>Plum Brook Station Emergency Phone Numbers: Dial 911 on any NASA phone or 419-621-3222 on a cell phone.</p>		
Phone Locations	First Aid Kit Locations <i>(If other, please list.)</i>	AED Locations
<p>Rescue Considerations</p> <p>When personal fall arrest systems are used, the job site supervisor or designated competent person must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders, or other rescue equipment should be verified before work begins. In some situations, equipment that allows employees to rescue themselves after the fall has been arrested may be desirable, such as devices which have descent capability.</p>		
<p>Rescue Plan <i>(Step by step description of how equipment will be implemented.)</i></p>		
1.	Buddy system or phone/radio communication	
2.	Self rescue	
3.	If self-rescue is not possible,	
<p>Sign off</p> <p>All employees authorized to apply the procedures and use the equipment specified in this Fall Protection Plan will be given by a competent person the opportunity to review this plan and instructions on the proper use of the specific fall protection devices they will be using. Every employee permitted to work under this plan must sign below to verify they have been provided this opportunity and instructions.</p>		
<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
Competent Person		Date
<p>*A COPY OF THIS WORK PLAN SHOULD BE AVAILABLE ON THE JOBSITE WHILE WORK IS BEING PERFORMED.</p>		

GRC 8095 – SOW Requirements Review and Concurrence

Statement of Work (SOW) Requirements Review and Concurrence				Purchase Request Number <i>(If known)</i>	
To		Safety and Mission Assurance Directorate (SMAD) Email GRC 8095 to SOW Coordinator at paula.s.umlau@nasa.gov.		Submit by email	Instructions
1. Requiring Organization					
Requester Name		Org Code	Telephone Number	Mail Stop	Date
Title/Description of Requirement		Task Number <i>(If applicable)</i>		Estimated Cost	
Contractor <i>(If applicable)</i>		Contract Number <i>(If applicable)</i>		Contract Type <i>(If applicable)</i>	
2. Procurement Information					
PR Number					
Initiator		Org Code	Telephone Number	E-mail	
Contract Specialist		Org Code	Telephone Number	E-mail	
Description of the Procurement: (Required for Processing)					
<input type="checkbox"/> Services <input type="checkbox"/> Supply/Materials/Equipment					
Will the work be conducted completely or partially on premises owned or controlled by the Government? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please indicate where the work will be performed at: <input type="checkbox"/> Lewis Field <input type="checkbox"/> PB <input type="checkbox"/> Other _____					
The work to be contracted includes: Construction: <input type="checkbox"/> Yes <input type="checkbox"/> No Dismantling, Demolition or Removal of Improvements <input type="checkbox"/> Yes <input type="checkbox"/> No Repair: <input type="checkbox"/> Yes <input type="checkbox"/> No					
3. Safety Information					
Hazard Analysis: Hazardous Material is defined as a substance, material or device that may pose an unreasonable risk to health and safety of personnel or property. A list of materials may be found in 49 CFR 172-101. Typical hazardous materials are those that may cause adverse health effects or produce contamination or pollution of the environment. These include materials considered poisonous, toxic, explosive, flammable, corrosive, oxidizer, or radioactive. Hazardous Operations are those that involve the use or handling of hazardous materials or involve the use of other materials, elements, or phenomena at abnormal environmental or physical conditions that require special precautions. Some examples are high pressure gas operations (in excess of 150 psig), low pressure (vacuum), explosives, the use of Lifting Devices and Equipment (LED), heavy material handling equipment, high or low temperature environments, operations in spaces with less than 19.5% or more than 25% oxygen by volume at normal atmospheric pressure, forced variations in gravity, excessive radiation, vibration, or noise = or >80 db at a distance of 1 foot (approximately the noise of a vacuum cleaner).					

Please identify all potential hazards involved in this procurement on the checklist below:

Potential Hazards			Potential Hazards		
Blood-borne Pathogens	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Fire Protection System Modifications	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Changes to Building Mechanical/Electrical Systems	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Hot Work (Arc Welding & Cutting, Oxygen Fuel Gas Cutting & Welding, Burning, Grinding, etc.)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Confined Spaces (Permit or Non-permit)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Asbestos	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Controlled Drugs	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Corrosives	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Control of Hazardous Energy (Lock Out/Tag Out)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Cryogenic Materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Low-Voltage (Above 50 Volts)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Explosives	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Hi-Voltage (Above 550 Volts)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Flammables	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Work on Live (Electrified) Components	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Hazardous Waste Operations (HAZWOPER)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Powered Platforms/Man Lifts	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Lead	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Vehicle Mounted Elevating/Rotating Working Platforms	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Nanomaterials	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Scaffold Erection	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Oxidizing Materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Work Above 6 Feet	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Noise Emission = or > 80db	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Ozone Depleting Substances (see full list @ http://www.epa.gov/ozone/science/ods/index.html)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Pressure Vessels/Pressurized Systems and Components	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Petroleum Products	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Ionizing Radiation (Radioactive Sources or X-ray Devices, Electron Guns, SEMs, etc.)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Toxic/Poisonous Materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Non-ionizing Radiation (Lasers, Radio Frequency, Ultraviolet, infrared)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Other Hazardous Materials (See full list @ 49 CFR 172-101)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Storage Tanks	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Heavy Material Handling Equipment	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Trenching/Shoring Operations	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mobile/Truck Cranes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Power Operated Hand Tools	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Mechanical Power Presses	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Waste Generating Operations	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Overhead Cranes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Wells/Drilling Operations	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Powered Industrial Trucks	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Other Hazardous Operations	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. LDE/PVS Information					
Will the procurement involve the purchase or rental/lease of any type of lifting equipment (cranes, forklifts, mobile platforms, slings, shackles, etc.)?				<input type="checkbox"/> Yes	<input type="checkbox"/> No
Will this procurement involve the purchase or rental/lease of any type pressure vessels, vacuum vessels (>100 cubic feet capacity), or pressure system components?				<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Environmental Information					
Will the procurement involve any discharge to Air, Land, or Water (including Storm or Sanitary Systems)? If yes, please provide the names and estimated amount of the discharge products.				<input type="checkbox"/> Yes	<input type="checkbox"/> No
Will this procurement involve purchasing items on the EPA designated list for Recovered Materials (https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program), Federal Biobased Preferred Procurement Program list (https://www.biopreferred.gov/BioPreferred/), or products that have environmentally preferable, energy- and water-efficient, or less-toxic alternatives?				<input type="checkbox"/> Yes	<input type="checkbox"/> No
Will this procurement involve any land or wetland disturbance?				<input type="checkbox"/> Yes	<input type="checkbox"/> No
Will this procurement involve rental or lease of land or facilities?				<input type="checkbox"/> Yes	<input type="checkbox"/> No
Could this action individually or cumulatively result in any of the following: a) Significant environmental impacts; b) A high degree of public controversy, or; c) Risk of violating any Federal, State, or local laws? If yes, please explain below.				<input type="checkbox"/> Yes	<input type="checkbox"/> No
Will this action utilize fuels (i.e., jet fuel, gasoline, diesel, other) from underground storage tanks, above ground storage tanks, or other oil reservoirs with capacities of 55 gallons or more?				<input type="checkbox"/> Yes	<input type="checkbox"/> No

6. Reviews/Concurrences	
Program and Project Assurance Division (PPAD) requirements <input type="checkbox"/> will* <input type="checkbox"/> will not be incorporated into SOW *Attach statement of PPAD requirements.	
PPAD (Signature)	Date
NEPA environmental requirements <input type="checkbox"/> will* <input type="checkbox"/> will not be incorporated into SOW *Attach statement of PPAD requirements.	
EEMO (Signature)	Date
Safety and Health Division (SHeD) requirements <input type="checkbox"/> will* <input type="checkbox"/> will not be incorporated into SOW *Attach statement of PPAD requirements.	
SHeD (Signature)	Date
<input type="checkbox"/> Pressure System Office review required:	
Pressure System Office (Signature)	Date
Remarks	
Copy distribution: Procurement – Requester – Reviewing Office	

Statement of Work (SOW) Requirements Review and Concurrence Instructions Go to page 1	
Background For procurements that meet the criteria set forth in GLPR 5100.1, Procurement, 1.2.1 (5), a Statement of Work Review is required by Safety and Health Division (SHeD), Programs and Project Assurance Division (PPAD) and Environmental and Energy Management Office (EEMO). To facilitate this review the GRC 8095 form is used.	
Responsible Person or Organization	Process Flow
Requester	Completes sections 1–5 on the GRC 8095 form and submits with the “Statement of Work” (SOW) to the Safety and Mission Assurance Directorate (SMAD) Coordinator.
SMAD Coordinator	Records the receipt of SOWs received in the GRC 8095 and notifies the applicable reviewers.
Applicable Reviewer	As a minimum, SHeD, PPAD and EEMO shall review the SOWs and the GRC 8095. The established review period is 20 days or less. If pressure vessels or pressure system components, the SHeD reviewer will facilitate the review by the Pressure System Manager. All pressure vessels and pressure system components require review by the Pressure System Manager.
SMAD Coordinator	Records the Applicable Reviewers that have been selected to be in the review cycle for each SOW in the GRC 8095 Review Log. Emails the Applicable Reviewers noting the start date.
Applicable Reviewers	Decides whether the submitted SOW contains the appropriate safety, occupational health, quality assurance and environmental requirements and regulations.
Applicable Reviewers	If the SOW package is complete, documents the review and results for the SOW assessed on the GRC 8095.
Applicable Reviewers	If the SOW package is incomplete, documents the review and the applicable contract requirements on the GRC 8095 for inclusion in the SOW.
SMAD Coordinator	Ascertains whether all required SMAD Office Contacts have reviewed the SOW and returns the GRC 8095 form to the requester.
SMAD Coordinator	Records the final SOW review results on the GRC 8095 Review Log.
SMAD Coordinator	Emails Procurement Division the electronically signed GRC 8095 and SOW which states the completion of the review. Completed SOW packages shall include: the completed GRC 8095, supplemental attachments (if any) clarifying SOW requirements and/or describing resolution of concerns/issues. If the GRC 8095 was approved without requirements, the GRC 8095 Review Log shall provide objective evidence of the SMAD reviews that took place.

GRC 9417 – Preconstruction Conference

National Aeronautics and
Space Administration

John H. Glenn Research Center
Lewis Field
Cleveland, Ohio 44135



Date: _____

Reply to Attn of: FDP

Contractor Name:

Contractor Address:

City, State, Zip code:

Subject: Contract

Prior to commencing the contract work, you will be contacted by this office to arrange a Preconstruction Conference. This is an extremely important meeting. You will meet the NASA/GRC personnel who will be monitoring your daily work. You will be afforded the opportunity to ask questions, whether they be of technical, administrative, or safety nature. Because the goal of the Preconstruction Conference is to achieve a mutual understanding of the requirements, it is appropriate that you bring your key personnel. We ask that your designated field superintendent, responsible for daily direction of on-site work, be in attendance.

You are requested to bring to the Preconstruction Conference the following items:

1. Progress schedule GRC 622 is attached for your use; one original and four copies are required.
2. A list of your subcontractors; an original and six copies are required. Please identify any minority subcontractors with an asterisk. (If none, please indicate.)
3. Statement and Acknowledgment, Form SF-1413, is attached for your use. Completion of this form is required for each subcontractor, prior to proceeding with their work.
4. Your monetary contract breakdown which will be used for your progress payments, GRC 302, is attached for your use. One original and four copies are required.
5. Your Safety and Health Plan, for approval as required under Part 1.1 of Section 01500, "Safety and Health Requirements," is needed prior to proceeding with the work.
6. Apprentice papers, as appropriate.
7. Welder's certification papers, as appropriate.
8. Electrician resume(s) reflecting qualifications for safe, skillful work on:
 - a. High Voltage Systems
 - b. Low Voltage Systems

Construction Manager

3 Enclosures:
GRC 622-5 copies
GRC 302-1 set
SF-1413-1 copy

APPENDIX B, PART 2—OTHER PERMITS AND FORMS

- Delivery Request Form (for after-hours delivery)
- Notice of Proposed Construction or Alteration—FAA 7460-1
- Spill Control Forms
 - Spill Occurrence Report
 - Emergency Notification Checklist
- Statement and Acknowledgment—SF 1413
- Storm Water Pollution Prevention Plan Forms
 - Storm Water Pollution Prevention Plan (SWP3) Concurrence
 - NASA GRC Duty to Inform Signoff Form
 - GRC Construction Storm Water Site Inspection Form and Storm Event Site Inspection Checklist
 - NASA GRC Pre-Notice of Termination (NOT) Sign-Off Form
 - Environmental—Storm Water Inspection Report

Delivery Request Form (for after-hours delivery)

NASA GRC Visitor Information Sheet (form)

Page 1 of 2



National Aeronautics and Space Administration
 Glenn Research Center
 Office of Protective Services



Delivery Request Form

This form should be completed and electronically submitted by the NASA GRC Sponsor coordinating a delivery arriving at Glenn Research Center (GRC) after normal business hours. If you have questions regarding deliveries, please call the Physical Security Specialist at ext. 3-5567.

All deliveries to GRC should be made between Monday-Friday, 7:00 AM - 4:00 PM in order to process through the Commercial Inspection Point at Lewis Field (LF) or if being delivered to Plum Brook Station (PBS), at the PBS Main Gate. Outside of normal business hours, weekends, or holidays, the Delivery Request Form is required to ensure your delivery is processed through security and is not rejected.

Due to limited after-hours security staffing, delays with processing your delivery may occur. Sponsors with deliveries that are time sensitive or may expire should consider IDIQ staffing for the Commercial Inspection Point. Some examples are concrete deliveries or delivery companies which prevent their drivers from waiting longer than 45 minutes.

Please provide an after-hours contact number that you can be reached if security have any questions about your delivery.

September 30, 2016

Timeframe:

Delivery Date:
 (mm/dd/yyyy)

Delivery Time Range: to

Entry Point

- Lewis Field Main Gate
- Plum Brook Station

Supplier/Transporter:

Company Name:

Driver Name: Name Unknown

Number of Deliveries:

Select type of after-hours delivery:

- Construction Delivery
- Oversized Load Requirements
- Hazardous Cargo
- Special Security Requirements

http://security-t.grc.nasa.gov/form_Delivery_Information.cfm

9/30/2016

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NASA GRC Visitor Information Sheet (form)

Other

Sponsor Information: (Permanent badged (PIV II) NASA GRC Employee)

Sponsor's Last Name:

Alt Phone Number:

After Hours Phone Number:

Submitter Information: (If different from Sponsor)

Submitter's Last Name:

Visitor Control Entry Points:

Lewis Field Main Gate ext. 3-2205
Plum Brook Station ext. 4-3226

Responsible Official: [Del Simonovich](#) Webcurator: [Bob Purgason](#)

NASA [Privacy Policy](#) This webpage is [Section 508](#) compliant.
[Return to Top](#)

Notice of Proposed Construction or Alteration – FAA 7460-1

NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

§ 77.7 Form and time of notice.

(a) If you are required to file notice under §77.9, you must submit to the FAA a completed FAA Form 7460-1, Notice of Proposed Construction or Alteration. FAA Form 7460-1 is available at FAA regional offices and on the Internet.

(b) You must submit this form at least 45 days before the start date of the proposed construction or alteration or the date an application for a construction permit is filed, whichever is earliest.

(c) If you propose construction or alteration that is also subject to the licensing requirements of the Federal Communications Commission (FCC), you must submit notice to the FAA on or before the date that the application is filed with the FCC.

(d) If you propose construction or alteration to an existing structure that exceeds 2,000 ft. in height above ground level (AGL), the FAA presumes it to be a hazard to air navigation that results in an inefficient use of airspace. You must include details explaining both why the proposal would not constitute a hazard to air navigation and why it would not cause an inefficient use of airspace.

(e) The 45-day advance notice requirement is waived if immediate construction or alteration is required because of an emergency involving essential public services, public health, or public safety. You may provide notice to the FAA by any available, expeditious means. You must file a completed FAA Form 7460-1 within 5 days of the initial notice to the FAA. Outside normal business hours, the nearest flight service station will accept emergency notices.

§ 77.9 Construction or alteration requiring notice.

If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of:

- (a) Any construction or alteration that is more than 200 ft. AGL at its site.
- (b) Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:
 - (1) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway more than 3,200 ft. in actual length, excluding heliports.
 - (2) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway no more than 3,200 ft. in actual length, excluding heliports.

(3) 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in paragraph (d) of this section.

(c) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) or (b) of this section.

(d) Any construction or alteration on any of the following airports and heliports:

- (1) A public use airport listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;
- (2) A military airport under construction, or an airport under construction that will be available for public use;
- (3) An airport operated by a Federal agency or the DOD.
- (4) An airport or heliport with at least one FAA-approved instrument approach procedure.

(e) You do not need to file notice for construction or alteration of:

- (1) Any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation;
- (2) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device meeting FAA-approved siting criteria or an appropriate military service siting criteria on military airports, the location and height of which are fixed by its functional purpose;
- (3) Any construction or alteration for which notice is required by any other FAA regulation.
- (4) Any antenna structure of 20 feet or less in height, except one that would increase the height of another antenna structure.

Mail Processing Center
 Federal Aviation Administration
 Southwest Regional Office
 Obstruction Evaluation Group
 2601 Meacham Boulevard
 Fort Worth, TX 76193
 Fax: (817) 321-7765
 Phone: (817) 321-7750

Website: <https://oeaaa.faa.gov>

INSTRUCTIONS FOR COMPLETING FAA FORM 7460-1

PLEASE TYPE or PRINT

ITEM #1. Please include the name, address and phone number of a personal contact point as well as the company name.

ITEM #2. Please include the name, address and phone number of a personal contact point as well as the company name.

ITEM #3. New Construction would be a structure that has not yet been built.

Alteration is a change to an existing structure such as the addition of a side mounted antenna, a change to the marking and lighting, a change to power and/or frequency, or a change to the height. The nature of the alteration shall be included in ITEM #21 "Complete Description of Proposal".

Existing would be a correction to the latitude and/or longitude, a correction to the height, or if filing on an existing structure which has never been studied by the FAA. The reason for the notice shall be included in ITEM #21 "Complete Description of Proposal".

ITEM #4. If Permanent, so indicate. If Temporary, such as a crane or drilling derrick, enters the estimated length of time the temporary structure will be up.

ITEM #5. Enter the date that construction is expected to start and the date that construction should be completed.

ITEM #6. Please indicate the type of structure. DO NOT LEAVE BLANK.

ITEM #7. In the event that obstruction marking and lighting is required, please indicate type desired. If no preference, check "other" and indicate "no preference" DO NOT LEAVE BLANK. NOTE: High Intensity lighting shall be used only for structures over 500' AGL. In the absence of high intensity lighting for structures over 500' AGL, marking is also required.

ITEM #8. If this is an existing tower that has been registered with the FCC, enter the FCC Antenna Structure Registration number here.

ITEM #9 and #10. Latitude and longitude must be geographic coordinates, accurate to within the nearest second or to the nearest hundredth of a second if known. Latitude and longitude derived solely from a hand-held G P S instrument is NOT acceptable. A hand-held GPS is only accurate to within 100 meters (328 feet) 95 percent of the time. This data, when plotted, should match the site depiction submitted under ITEM #20.

ITEM #11. NAD 83 is preferred; however, latitude and longitude may be submitted in NAD 27. Also, in some geographic areas where NAD 27 and NAD 83 are not available other datum may be used. It is important to know which datum is used. DO NOT LEAVE BLANK.

ITEM #12. Enter the name of the nearest city and state to the site. If the structure is or will be in a city, enter the name of that city and state.

ITEM #13. Enter the full name of the nearest public-use (not private-use) airport or heliport or military airport or heliport to the site.

ITEM #14. Enter the distance from the airport or heliport listed in #13 to the structure.

ITEM #15. Enter the direction from the airport or heliport listed in #13 to the structure.

ITEM #16. Enter the site elevation above mean sea level and expressed in whole feet rounded to the nearest foot (e.g. 17'3" rounds to 17', 17'6" rounds to 18'). This data should match the ground contour elevations for site depiction submitted under ITEM #20.

ITEM #17. Enter the total structure height above ground level in whole feet rounded to the next highest foot (e.g. 17'3" rounds to 18'). The total structure height shall include anything mounted on top of the structure, such as antennas, obstruction lights, lightning rods, etc.

ITEM #18. Enter the overall height above mean sea level and expressed in whole feet. This will be the total of ITEM #16 + ITEM #17.

ITEM #19. If an FAA aeronautical study was previously conducted, enter the previous study number.

ITEM #20. Enter the relationship of the structure to roads, airports, prominent terrain, existing structures, etc. Attach an 8-1/2" x 11" non-reduced copy of the appropriate 7.5 minute U.S. Geological Survey (USGS) Quadrangle Map MARKED WITH A PRECISE INDICATION OF THE SITE LOCATION. To obtain maps, contact USGS at 1-888-275-8747 or via internet at "<http://store.usgs.gov>". If available, attach a copy of a documented site survey with the surveyor's certification stating the amount of vertical and horizontal accuracy in feet.

ITEM #21.

- For transmitting stations, include maximum effective radiated power (ERP) and all frequencies.
- For antennas, include the type of antenna and center of radiation (Attach the antenna pattern, if available).
- For microwave, include azimuth relative to true north.
- For overhead wires or transmission lines, include size and configuration of wires and their supporting structures (Attach depiction).
- For each pole/support, include coordinates, site elevation, and structure height above ground level or water.
- For buildings, include site orientation, coordinates of each corner, dimensions, and construction materials.
- For alterations, explain the alteration thoroughly.
- For existing structures, thoroughly explain the reason for notifying the FAA (e.g. corrections, no record or previous study, etc.).

Filing this information with the FAA does not relieve the sponsor of this construction or alteration from complying with any other federal, state or local rules or regulations. If you are not sure what other rules or regulations apply to your proposal, contact local/state aviation's and zoning authorities.

Paperwork Reduction Work Act Statement: This information is collected to evaluate the effect of proposed construction or alteration on air navigation and is not confidential. Providing this information is mandatory or anyone proposing construction or alteration that meets or exceeds the criteria contained in 14 CFR, part 77. We estimate that the burden of this collection is an average 19 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB control number associated with this collection is 2120-0001. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, AES-200.

Spill Control Forms

Spill Occurrence Report

NASA GLENN RESEARCH CENTER/LEWIS FIELD

21000 Brookpark Road

Cleveland, Ohio 44135

(To be filled out by NASA GRC EEMO)

NAME OF FACILITY: _____

NAME OF OPERATOR: _____

DATE OF SPILL: _____ TIME: _____

DATE OF INITIAL FACILITY OPERATION: JANUARY 23, 1941

LOCATION: _____

MAXIMUM STORAGE CAPACITY: _____ NORMAL DAILY THROUGHPUT: _____

MATERIAL SPILLED: _____ AMOUNT: _____

CAUSE: _____

CORRECTIVE ACTION TAKEN: _____

PLANS FOR PREVENTING RECURRENCE: _____

SPILLAGE ENTERED: NO WATERWAY AFFECTED: _____

STORM SEWER _____ ABRAM CREEK _____ OR ROCKY RIVER _____

SANITARY SEWER _____ INDUSTRIAL WASTE SEWER _____

PAVED AREAS _____ GRASS / GRAVEL AREAS _____

SECONDARY CONTAINMENT (EXPLAIN) _____

April 20, 2015

Emergency Notification Checklist Spill Control

NASA GLENN RESEARCH CENTER AT PLUM BROOK STATION
6100 COLUMBUS AVENUE, SANDUSKY, OHIO 44870

Name of Reporter: _____ Telephone: _____

Location: _____

Type of Incident: Oil Spill Chemical Spill
 Fire Injury/Medical

Time of Incident: _____ Date of Incident: _____

Name and Quantity of Materials Involved: _____

Source/Cause (if not known, do not speculate): _____

Expected Duration/Magnitude of Ongoing Release (if applicable): _____

Weather Conditions: _____

Corrective Actions Taken to Remove/Mitigate Incident: _____

Possible Hazards (Environmental or to Human Health) outside Facility: _____

Extent of Injuries, Property Damage, and/or Environmental Damage (if known): _____

Spillage Entered:

Storm Sewer _____ Stream _____

Sanitary Sewer _____ Paved Areas _____

Grassed Areas _____ Secondary Containment: _____

Other: _____

Pathways by which Public may be Affected (if applicable): _____

Plans for Preventing Recurrence: _____

Comments: _____

April 20, 2015

Statement and Acknowledgment – SF 1413

STATEMENT AND ACKNOWLEDGMENT	OMB Control Number: 9000-0014 Expiration Date: 12/31/2017
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PAPERWORK REDUCTION ACT STATEMENT: Public reporting burden for this collection of information is estimated to average .05 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspects of this collection of information, including suggestions for reducing this burden, to U.S. General Services Administration, Regulatory Secretariat (MVCB)/IC 9000-0014, Office of Governmentwide Acquisition Policy, 1800 F Street, NW, Washington, DC 20405.

PART I - STATEMENT OF PRIME CONTRACTOR

1. PRIME CONTRACT NO.	2. DATE SUBCONTRACT AWARDED	3. SUBCONTRACT NUMBER
4. PRIME CONTRACTOR		5. SUBCONTRACTOR
a. NAME		a. NAME
b. STREET ADDRESS		b. STREET ADDRESS
c. CITY	d. STATE	e. ZIP CODE
c. CITY	d. STATE	e. ZIP CODE
6. The prime contract <input type="checkbox"/> does, <input type="checkbox"/> does not contain the clause entitled "Contract Work Hours and Safety Standards Act -- Overtime Compensation."		
7. The prime contractor states that under the contract shown in Item 1, a subcontract was awarded on the date shown in Item 2 to the subcontractor identified in item 5 by the following firm:		
a. NAME OF AWARDING FIRM		
b. DESCRIPTION OF WORK BY SUBCONTRACTOR		

8. PROJECT	9. LOCATION
10a. NAME OF PERSON SIGNING	11. BY (Signature)
10b. TITLE OF PERSON SIGNING	12. DATE SIGNED

PART II - ACKNOWLEDGMENT OF SUBCONTRACTOR

13. The subcontractor acknowledges that the following clauses of the contract shown in Item 1 are included in this subcontract:

Contract Work Hours and Safety Standards Act - Overtime Compensation (If included in prime contract see Block 6)	Construction Wage Rate Requirements
Payrolls and Basic Records	Apprentices and Trainees
Withholding of Funds	Compliance with Copeland Act Requirements
Disputes Concerning Labor Standards	Subcontracts (Labor Standards)
Compliance with Construction Wage Rate Requirements and Related Regulations	Contract Termination - Debarment
	Certification of Eligibility

14. NAME(S) OF ANY INTERMEDIATE SUBCONTRACTORS, IF ANY

A		C
B		D

15a. NAME OF PERSON SIGNING	16. BY (Signature)	17. DATE SIGNED
15b. TITLE OF PERSON SIGNING		

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION IS NOT USABLE

STANDARD FORM 1413 (REV. 4/2013)
Prescribed by GSA/FAR (48 CFR) 53.222(e)

Storm Water Pollution Prevention Plan Forms

Storm Water Pollution Prevention Plan (SWP3) Concurrence

NASA Glenn Research Center
 Storm Water Management Program - Construction
 Storm Water Pollution Prevention Plan (SWP3) Concurrence
 Ohio EPA General Construction Permit

Location/Facility Name **Date Submitted for Review**

NASA FD Project Manager **Phone #**

Prime Contractor (Responsible for SWP3 Implementation) **Phone #**

NASA EMO Reviewer Name **Phone #**

In conformance with the requirements set forth in the form Notice of Intent (NOI) for Coverage Under Ohio EPA General NPDES Permit (Form EPA 4493) a storm water pollution prevention plan (SWP3) has been prepared. The project shall not create a soil disturbance until Ohio EPA issues a permit number.

Completion of this form constitutes an understanding that the Prime Contractor hereby assumes site responsibilities formally managed by the NASA Facilities Division.

SWP3 Completion Signatures:

NASA FD Project Manager **Date:**

NASA FD Civil Systems Manager **Date:**

Prime Contractor Representative and Title **Date:**

NASA EMO SWP3 Reviewer **Date:**

The completed form will be managed by the EMO and filed with the specific project's records.

Revised 10/14/16

GRC Construction Storm Water Site Inspection Form and Storm Event Site Inspection Checklist

PROJECT NAME:
PRIME CONTRACTOR:

PERMIT #:
APPROVAL DATE:

GRC Construction Storm Water Site Inspection Form

INSPECTIONS SHALL BE CONDUCTED ONCE EVERY 7 DAYS AND WITHIN 24 HOURS OF 0.5" OR GREATER OF RAINFALL AND/OR 2" OF SNOW MELT.

INSPECTION DATE: _____ INSPECTOR NAME: _____

INSPECTOR TITLE/QUALIFICATIONS: _____

PROJECT LOCATION (if multiple areas are to be inspected): _____

WEATHER INFORMATION:

- Weather since last inspection: _____

- Estimated last storm event duration (min) and rainfall amount (inches): _____ / _____
- Had any stormwater discharges from the site occurred (yes/no): _____
- If yes, describe discharge and where onsite it was observed: _____

SILT FENCING / DIVERSIONS	YES	NO	N/A
1. Silt fencing is entrenched at least 6" into the ground and backfilled and compacted?			
2. Silt fencing is pulled tight so it will not sag when water accumulates behind it?			
3. Ends of silt fencing are brought up slope from the rest of the silt fencing?			
4. Are all sections of silt fencing free of gaps, tears, and/or damage?			
5. Is the silt fencing able to control the run-off from the drainage area?			
6. Is silt and sediment more than a third of the way up the visible silt fencing height?			
7. Are other diversionary BMPs utilized working properly?			
8. Are other diversionary BMPs needed to keep sediment on site?			

INLET PROTECTION	YES	NO	N/A
1. Are all inlets receiving run-off from the construction site protected?			
2. Are the inlet windows (where applicable) also protected?			
3. Does water pond around the inlet when it rains?			
4. Has accumulated sediment been removed on a frequent basis?			
5. Are high amounts of sediment accumulating at the protected inlet?			
6. Is ponding in the area due to the inlet protection a potential flooding concern?			
7. Is the inlet protection free of holes, tears, and other damage?			

CONSTRUCTION ENTRANCE	YES	NO	N/A
1. Is the construction entrance sized to prevent tracking of sediments off-site?			
2. Is the construction entrance becoming overburdened with sediment?			
3. Is sediment leaving the construction entrance when it rains?			
4. Are any repairs or the addition of more stone needed?			
5. Are the adjacent streets to the construction entrance being kept clean?			

PROJECT NAME:
PRIME CONTRACTOR:

PERMIT #:
APPROVAL DATE:

SEDIMENT TRAPS, PONDS, and BIORETENTION GARDENS **YES NO N/A**

1. Is concentrated flow of run-off being directed to a sediment trap or pond?			
2. Is the pond or trap able to adequately retain the run-off being directed to it?			
3. For sediment traps, are the stone spill ways holding up and not overburdened?			
4. Is it time to clean-out the sediment pond/trap to restore it to its original capacity?			
5. Has removed sediments been disposed of properly or seeded if kept onsite?			
6. Is the bioretention garden being protected from sediment during installation?			

TEMPORARY STABILIZATION **YES NO N/A**

1. Are there any areas that are disturbed, but will lie dormant for more than 14 days?			
2. Have all dormant, yet disturbed areas been temporarily stabilized as required?			
3. Are there any soil stockpiles that will lie dormant for more than 14 days?			
4. Have these stockpiles been covered or actions to temporarily stabilize started?			
5. If seeded, has the temporary stabilization been established adequately?			
6. Are there any areas that require re-seeding, re-mulching, or re-tarped?			
7. If out of the growing season, have other stabilization measures been utilized?			
8. Are there any areas of washout that may need additional erosion controls?			

PERMANENT STABILIZATION **YES NO N/A**

1. Are there any areas at final grade?			
2. Has the soil been properly prepared to accept permanent seeding (per spec)?			
3. Has rainfall or manual watering been adequate to establish grass?			
4. Have slopes been reinforced with adequate erosion controls?			
5. Are there any areas that require repairs and reseeded?			
6. Has the area reached full stabilization (or 70% stabilization)?			
7. Are there any areas of washout that may need additional erosion controls?			

NON-SEDIMENT POLLUTION CONTROLS **YES NO N/A**

1. Is the concrete washout properly retaining the concrete slurry and water?			
2. Does the concrete washout still have adequate capacity?			
3. Is the concrete washout being kept covered to minimize rainwater accumulation?			
4. Are dumpsters being properly utilized for the wastes generated?			
5. Are the dumpsters located in their designated locations?			
6. Are there any leaks of chemicals or other liquids coming from the dumpsters?			
7. Is any of the heavy equipment leaking fluids such as hydraulic oil or fuel?			
8. Are spill kits visible onsite where hydraulic equipment or fuels are used and stored?			
9. Are spill kits adequately stocked?			
10. Are fuels, oils, and chemicals stored at least 9 feet from inlets and ditches?			
11. Is dewatering of water from trenches and excavations necessary?			
12. If yes, has EMO been contacted to verify where the water may be discharge to?			

NOTES OF REPAIRS AND MAINTENANCE NEEDED: _____

NASA GRC Pre-Notice of Termination (NOT) Sign-Off Form

NASA Glenn Research Center
Storm Water Management Program
GRC Pre-Notice of Termination (NOT) Sign-Off Form

Location/Facility Name **Ohio EPA Issued Permit #**

NASA Project Manager Name **Phone #**

Prime Contractor Supervisor Name and Company Name **Phone #**

EMO Inspector Name **Phone #**

In conformance with the requirements set forth in the document Notice of Termination (NOT) of Coverage Under Ohio EPA General NPDES Permit (Form EPA 4493, Rev. 6/14) , disturbed soils throughout the construction site have been successfully stabilized, all temporary erosion & sediment control measures have been removed, and storm water discharges associated with the construction project have ceased.

Completion of this form constitutes an understanding that the NASA Facilities Division Civil Systems Manager hereby reassumes site responsibilities formally managed by the Facilities Division Project Manager and Prime Contractor.

Site Completion Signatures:

Facilities Division Project Manager/ Contracting Officer Representative Signature

Facilities Division Civil Systems Manager Signature

Prime Contractor Supervisor Signature

The completed form will be managed by the EMO and filed with the specific project's records.

Revised: 5/3/17

Environmental – Storm Water Inspection Report

NASA Glenn Research Center Environmental - Storm Water Inspection Report

Project Name and Location:	
Project ID:	Contractor(s):
NASA Project and Construction Managers:	

<p>NPDES Permit – Mandatory Items The following items, if checked, indicate the presence of a non-conformance that shall be corrected immediately upon notice. Corrective and Preventive Action Reporting may be warranted.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> If required, SWP3 was not onsite and available for review during the site inspection <input type="checkbox"/> If required, contractor has inadequately maintained records of weekly and storm event inspections <input type="checkbox"/> Insufficient and/or lack of sediment /erosion controls to prevent sediment loss from leaving project site <input type="checkbox"/> Observance(s) of concrete washout and/or concrete slurry being allowed to enter storm inlet <input type="checkbox"/> Observance(s) of direct purging of sediment and/or contaminated water to storm drainage structure <input type="checkbox"/> Fuel tanks and drums of toxic materials are stored within 9 feet of a catch basin
--	---

Items marked below with an X are minor non-compliances with Ohio EPA NPDES Permit #3GQ0067*CG and applicable to the Ohio EPA Construction General Permit for the project. Corrective actions normally have a period of time to correct (i.e., 1 to 10 days based on severity)

<p>1. Construction Entrances</p> <ul style="list-style-type: none"> <input type="checkbox"/> Construction entrances are not installed to minimize off-site tracking of sediment onto roadways <input type="checkbox"/> Traffic leaving the site is dropping mud or leaving dirt trails <input type="checkbox"/> Geotextile fabric is not placed under the stone driveway <input type="checkbox"/> Roads are not swept immediately after sediment or mud has accumulated <input type="checkbox"/> Gravel drive is not maintained and replaced when sediment laden <input type="checkbox"/> Culvert pipe has not been installed to allow run-off to flow across the drive when the drive has been placed over a ditch <p>2. Storm Inlet Protection</p> <ul style="list-style-type: none"> <input type="checkbox"/> All inlets susceptible to sediment infiltration are not protected to prevent sediment from leaving site <input type="checkbox"/> Accumulated sediment around the inlet has not been removed on a timely basis <input type="checkbox"/> Water does not pond around the inlet when it rains <input type="checkbox"/> Curb inlet protection does not cover the entire grate and curb window <input type="checkbox"/> Yard inlet protection does not encircle the entire grate <input type="checkbox"/> Inlet protection is not properly entrenched or anchored so water does not pass under it <input type="checkbox"/> Inlet protection fabric is not properly supported to prevent sagging <p>3. Non-Sediment Pollution Control and Truck Wash Out Area</p> <ul style="list-style-type: none"> <input type="checkbox"/> Waste and packaging are not disposed of in a dumpster <input type="checkbox"/> Sediment is not being swept back to the site instead of the storm inlets <input type="checkbox"/> Stockpiles of soil and gravel are not stored 3 meters from inlets <input type="checkbox"/> Proper dewatering methods are not used at excavation sites <input type="checkbox"/> Concrete washout area is not present or being properly maintained <input type="checkbox"/> Washings are not contained on site within a bermed area until they harden and allowed to enter a ditch or storm inlet 	<p>4. Silt Fence Applications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Silt fence is not installed with the holding posts on the downslope side <input type="checkbox"/> Silt fence is knocked down <input type="checkbox"/> Silt fence is not properly trenched at least 6" into the ground <input type="checkbox"/> Silt fence trench is not backfilled to prevent runoff from undercutting the fence <input type="checkbox"/> Fence is not pulled tight so it won't sag when water ponds behind it <input type="checkbox"/> Ends of the silt fence are not brought upslope to prevent run-off from going around the ends <input type="checkbox"/> Built-up sediment is not being removed when it has reached one-third the height of the fence <input type="checkbox"/> The silt fence is not controlling an appropriate amount of area <p>5. Temporary Soil Stabilization</p> <ul style="list-style-type: none"> <input type="checkbox"/> All disturbed areas that will be dormant for 14 days or longer have not been seeded, mulched, or strawed <input type="checkbox"/> Soil stockpiles that will be dormant for 14 days or longer have not been seeded, mulched, or covered with a tarp <input type="checkbox"/> Stabilization has not been started within 7 days of the date the area became inactive <input type="checkbox"/> For areas within 50 feet of a waterway, the stabilization was not started within 2 days of the date the area became inactive <input type="checkbox"/> If using straw mulch, it has not been spread over the entire disturbed area in a consistent and even layer <input type="checkbox"/> For slopes, straw is not properly secured with netting, or straw matting has not been used <input type="checkbox"/> Bare spots, washouts, and/or areas of unhealthy growth are not being repaired or replaced <p>6. Permanent Soil Stabilization</p> <ul style="list-style-type: none"> <input type="checkbox"/> Proper soil preparation has not been completed prior to final seeding <input type="checkbox"/> Final seeding and mulching has not been applied at the appropriate rate to achieve 70 % soil stabilization <input type="checkbox"/> Bare spots, washouts, and/or areas of unhealthy growth are not being repaired or replaced <input type="checkbox"/> When rainwater has been inadequate, the seeded areas have not been manually watered until vegetation is established
Remarks: <i>(Use reverse side for additional observations and follow-up information)</i>	

Inspector Name and Title:	Date of Inspection	Time of Inspection
---------------------------	--------------------	--------------------

Updated 5/3/17

FOR REFERENCE ONLY

Printed copies are uncontrolled and may not reflect current information.

NASA Glenn Research Center
Environmental - Storm Water Inspection Report

Additional Remarks and Follow-up information:

Observance(s)	Follow-Up Findings/Corrections

Updated 5/3/17

APPENDIX C.—WASTE DISPOSAL DOCUMENTATION

Index

- Non-Solid Waste Manifest (Lewis Field Only)
- Non-Solid Waste Manifest (Plum Brook Station Only)
- Manifest Instructions
- Environmental Compliance Plan
- Facility/Transporter Request Form

Non-Solid Waste Manifest (Lewis Field Only)

**Glenn Research Center Non-Solid Waste Manifest
Original – Not Negotiable**

Contractor: _____
Project/Location: _____
Contract/Task Number: _____

Page ____ of ____	GRC Manifest Number: _____	Date: _____
-------------------	----------------------------	-------------

From Shipper: NASA Glenn Research Center, Waste Management MS 6-4 Street: 21000 Brookpark Road City: Cleveland State: Ohio Zip code: 44135 Contact Telephone: 216-433-2124	To Receiver: _____ Street: _____ City: _____ State: _____ Zip Code: _____ Contact Telephone: _____
---	--

Item Number	Basic description	quantity (pounds)	Volume (yards)	Container type

Route: _____

Shipper Name (print): _____ Signature: On Behalf of NASA GRC, _____ Date: _____ Transporter Name: _____ Telephone Number: _____ Vehicle License: _____ Shipment is properly secured and covered for transport: Yes _____ (driver initial) Driver Name (print): _____ Signature: _____ Date: _____ *Receiver Name (print): _____ Signature: _____ Date: _____ *Note to Receiver: Return <u>White</u> to NASA at address listed above

Additional Information: _____

<u>WHITE</u> - RETURN TO NASA <u>GREEN</u> - RECEIVER COPY <u>YELLOW</u> - TRANSPORTER COPY <u>PINK</u> - WMT COPY <u>GOLD</u> - NASA SECURITY
--

Non-Solid Waste Manifest (Plum Brook Station Only)

**Glenn Research Center Non-Solid Waste Manifest
Original – Not Negotiable**

Contractor: _____
Project/Location: _____
Contract/Task Number: _____

Page <u> 1 </u> of <u> 1 </u>	GRC Manifest Number: _____	Date: _____
-------------------------------	----------------------------	-------------

From	To
Shipper: NASA Plum Brook Station, Environmental Engineer Street: 6100 Columbus Ave City: Sandusky State: Ohio Zip code: 44870 Contact Telephone: (419) 621-3234	Receiver: _____ Street: _____ City: _____ State: _____ Zip Code: _____ Contact Telephone: _____

Item Number	Basic description	quantity (pounds)	Volume (yards)	Container type

Route: _____

Shipper Name (print): _____ Signature: On Behalf of NASA GRC, _____ Date: _____ Transporter Name: _____ Telephone Number: _____ Vehicle License: _____ Shipment is properly secured and covered for transport: Yes _____ (driver initial) Driver Name (print): _____ Signature: _____ Date: _____ *Receiver Name (print): _____ Signature: _____ Date: _____ *Note to Receiver: Return <u>White</u> to NASA at address listed above

Additional Information: _____

<p align="center"> <u>WHITE</u> - RETURN TO NASA <u>GREEN</u> - RECEIVER COPY <u>YELLOW</u> - TRANSPORTER COPY <u>PINK</u> - WMT COPY <u>GOLD</u> - NASA SECURITY </p>
--

Manifest Instructions

NON-SOLID WASTE MANIFESTING (NSWM) PROCEDURE

1. The Prime Contractor (PC) shall complete a Facility and Transporter Request Form for each material which will be removed from the site and submit their request to Waste Management (WM) via email. Recipient Site requests must be submitted fifteen business days prior to shipment.
 2. WM will investigate each site and transporter and respond to the request within ten business days.
 3. Approvals/Disapprovals will be sent via email to the PC and cc the Construction Manager (CM) and/or Project Manager (PM).
 4. A NSWM will be obtained by the PC from WM for materials leaving the Center which do not require a Uniform Hazardous Waste Manifest, a Non-Hazardous Manifest or a Bill of Lading. This can only occur after a recipient site location has been approved.
 5. The PC shall complete the sections highlighted in Appendix B of the NSWM before submitting the NSWM back to WM.
 6. WM will review the draft NSWM.
 - a. If approved, the PC can then request blank manifests to complete (no more than 100 will be issued at a time). The manifests shall be returned to WM for civil servant signature.
 - b. If not approved WM shall contact the PC for corrections.
- Note:** All soil manifests shall be accompanied with a Soil Determination Checklist (NASA C-133). This is required for signature.
7. Upon completion, WM shall submit the NSWM for signature.
 8. After the manifest has been signed, WM will notify the PC via email.
 9. WM shall maintain the NSWM at Building 215.
 10. The PC shall give advanced written notice (24 hrs.) as to the quantity (limited to 25 per material), receiving facility location, and type of material to be shipped the next day.
 - a. In the event that a project requires more than (25) manifests on any given day:
 - i. The PC shall notify WM at the beginning of this process
 - ii. Be prepared to return completed manifests and manifest receipt from prior request before additional manifests are released
 11. WM shall prepare the order for pick-up, the morning of shipment.
 12. WM shall prepare a Manifest Receipt for each order and supply a copy to the PC. See Appendix A.
 13. The Transporter shall weigh in and weigh out for each shipment. The driver will print and sign his/her name, write-in the vehicle's license number, date, and initial that the shipment has been covered and secured. Any changes/corrections to the form require approval from WM.

14. The PC will then peel Page 4 and Page 5. The Security Force will retain Page 5 and return Page 4 to WM (see 17). The driver shall take the completed NSWAM to the Recipient Site. The driver shall retain Page 3.
15. The Recipient Site shall sign the NSWAM acknowledging the site has received the material. The Recipient Site will retain Page 2 and mail Page 1 back to WM using the Shipper Address on the NSWAM.
16. At the end of each shipping day, the contractor shall call the recipient facility(s) and confirm the number of loads received. The contractor will then send a confirmation email to WM documenting the number of shipments that went out and notify WM of any discrepancies with the receiving facility.
17. All used manifests from the prior day need to be returned to WM in B215 before more manifests will be issued. If material is not shipped on a daily basis, used manifests need to be returned by the end of the week or first thing Monday morning. The weight slips are to be returned with the manifest.
18. WM shall sign the Manifest Receipt, date stamp the receipt. If requested, WM shall provide a copy to the PC upon receiving return manifests.

All requests and approvals shall be submitted via email copying the CM.

Environmental Compliance Plan

ENVIRONMENTAL COMPLIANCE PLAN (ECP)

Project name: _____ Contract number: _____

Project location and description:

Project Environmental Impact Description:

Project schedule:

Project points of contact:

NASA Project Manager: _____ phone: _____

Inspector: _____ phone: _____

Quality Assurance: _____ phone: _____

Prime Contractor: _____ phone: _____

Environmental Media to be impacted by this project:

- Clean Air Act (CAA)
- Clean Water Act (CWA)
 - Storm Water Pollution Prevention Plan (SWP3)
- Toxic Substance Control Act (TSCA)
 - Asbestos
 - Polychlorinated Biphenyls (PCB's)
- Resource Conservation Recovery Act (RCRA)
 - Solid Waste
 - Hazardous waste
 - Non-hazardous waste
 - Used Oils
 - Non-Solid Waste
 - Impacted soils
 - Recyclable materials
 - Construction and Demolition Debris
- Other (Bureau of Underground Storage Tanks, (BUSTR), Regional Sewer District)
 - Describe: _____
- Onsite receiving and storage of hazardous and/or non-hazardous materials
 - Will require up to date inventories and inclusion in the GRC Chemical Inventory

Project Derived Solid Waste Management Plan

The following Project Derived Solid Waste Management Plan is designed to ensure compliance with U.S. Environmental Protection Agency (USEPA), Ohio Environmental Protection Agency (OEPA), local regulations, and NASA policy.

A Non-Solid Waste Manifest can be obtained from Waste Management for materials such as impacted soils, asphalt, concrete, construction and demolition debris (C&DD), etc. (see below for more). A list of licensed C&DD facilities can be found on the OEPA web site. Please note that even though a facility may be licensed, this does not necessarily mean that they are approved.

Solid Waste is defined in 40 CFR 261.2. Typical materials generated onsite and treated as solid waste are: asbestos (non-friable and friable) from gaskets, insulation, transite panels, etc., and treated lumber used in construction. Non-hazardous solid waste generated onsite will need analytical data, waste characterization (profile), site acceptance, and a copy of the proposed Uniform Non-Hazardous Waste Manifest four weeks prior to shipment. A list of licensed Solid Waste facilities can be found on the OEPA web site. Please note that even though a facility may be licensed, this does not necessarily mean that they are approved.

Hazardous waste is defined in 40 CFR 261.3. To ensure compliance, a separate written procedure may be required when generating hazardous waste. Examples of hazardous waste generated onsite include empty containers with residues, spent solvents, PPE, paint brushes, rollers, drop cloths, abatement wastes, and off-spec chemicals. Hazardous waste generated onsite will need analytical data (MSDS in case of spent product containers), waste characterization (profile) and Land Disposal Restriction Forms (LDR), site acceptance, and a copy of the proposed Uniform Hazardous Waste Manifest four weeks prior to shipment. Shipments of hazardous waste must arrive at their destination the same day they leave GRC. Please schedule shipments with receiving facilities accordingly.

Manifests need to be returned in timely manner. All used manifests from the prior day need to be returned to WM in B215 before more manifests will be issued. If material is not shipped on a daily basis, used manifests need to be returned by the end of the week or first thing Monday morning. The weight slips are to be returned with the manifest. At the end of the project, ALL manifests (used and unused) are to be turned in.

The management of Uniform Non-Hazardous Waste and Uniform Hazardous Waste Manifests will be determined before the start of the project. On smaller projects, manifest documents may be coordinated by Waste Management, while larger scale jobs may need an onsite coordinator.

NOTE: Required documentation must be submitted to Waste Management Program Office a minimum of (10) working days prior to scheduled off-site shipment date; materials to be delivered to Central Chemical Storage Facility (CCSF), Building 215, must be scheduled a minimum of (1) working day prior to delivery with Waste Management Program personnel.

Solid Waste to be generated:

Requires NASA GRC Non-Solid Waste Manifest; include approximate volumes and/or pounds, soils require GRC Soil Determination Checklist:

- Asphalt pounds cubic yards
- C&DD pounds cubic yards
- Concrete pounds cubic yards
- Metal pounds cubic yards
- Non-treated wood pounds cubic yards
- Soil pounds cubic yards
- Stone pounds cubic yards

Requires analytical data, waste characterization, site acceptance and Uniform Non-Hazardous Waste Manifest:

- Asbestos Containing Material (describe): pounds cubic yards
- Solid waste (trash) pounds cubic yards
- Treated wood pounds cubic yards

Requires analytical data, waste characterization, site acceptance and Uniform Hazardous Waste Manifest:

- Describe:
- Hazardous waste pounds cubic yards

Managed On-site

- Cardboard pounds cubic yards
- Lamps ea
- Ballasts ea
- Batteries ea
- Hazardous Materials (describe): pounds cubic yards

Hazardous waste generated and stored at the construction site prior to off site shipment or delivery to the Central Chemical Storage Facility, Building 215, must comply with all applicable RCRA requirements concerning hazardous waste (40 CFR 261).

APPROVALS:

Toxic Substance Control Act (TSCA)

Print name _____ sign _____ date _____

Resource Conservation Recovery Act (RCRA)

Print name _____ sign _____ date _____

Facility/Transporter Request Form

Facility and Transporter Request

Please fill out the request form in its entirety. Failure to do so will cause delays in the submittal process. This form is required for each material to be shipped off site. Please remember to copy your QAT on emails regarding this project.

Project Name:	Contract Number:
NASA Project Manager:	
Telephone:	
NASA Inspector / CM:	
Telephone:	
Material to be shipped:	
Recipient Facility:	
Recipient Facility Mailing Address:	
Telephone Number:	
Point of Contact:	
Alternate Recipient Facility:	
Recipient Facility Mailing Address:	
Telephone Number:	
Point of Contact:	
Point of Contact:	
Estimated quantity and how it was determined:	

Transporter Information	
Transporter Name:	
EPA ID Number (If applicable):	
Mailing Address:	
Telephone Number:	
Point of Contact:	
Alternate Transporter Name:	
EPA ID Number (If applicable):	
Mailing Address:	
Telephone Number:	
Point of Contact:	
Alternate Transporter Name:	
EPA ID Number (If applicable):	
Mailing Address:	
Telephone Number:	
Point of Contact:	

APPENDIX D.—PRECONSTRUCTION MEETING DOCUMENTS

Index

- GRC 621 – Preconstruction Conference Agenda & Checklist
- GRC 699 – Notice of Preconstruction Conference
- GRC 9417 – Preconstruction Conference
- Standard Form 1413 – Statement and Acknowledgment

GRC forms are available online: <https://nef.nasa.gov/>

GRC 621 – Preconstruction Conference Agenda and Checklist

 National Aeronautics and Space Administration		<h2 style="margin: 0;">Preconstruction Conference Agenda and Checklist Project Management Branch (FDP)</h2>	
Contract/Task Number	Project ID Number	Time	Date
Contractor		Building	Meeting Room
Job Title			
Project Location Building _____ Room _____		Scheduled Start Date	Completion Date _____ Days after NTP
<p>I. Agenda</p> <ul style="list-style-type: none"> A. Introduction (Attendees) B. Project Description/Goals C. Security and Badge Requirements D. Environmental Aspects E. Safety and Health Requirements F. Contract Administration G. Technical Aspects H. On-site Work Implementation I. Other 			

II. Checklist			
A. Introduction (Attendees)			
*Complete prior to meeting.			
Contractor's Representatives	Office Telephone	NASA Representatives	Office Telephone
Company	Emergency Telephone	Construction Manager (CM)	
Owner	Inspector		
Project Manager	Project Manager		
Field Superintendent	Contracting Officer		
Other(s)	Safety Representative		
	Building Manager		
	Facility Manager(s)		
	Waste Management Representative		
	System Manager(s)		
	Occupational Health Representative		
	FD Environmental Health and Safety Coordinator		
B. PROJECT DESCRIPTION/GOALS			
*Section to be completed by CM prior to meeting. Use Summary of work from Spec. Section. If specs. are not listed, generate short summary of work. Include critical shutdowns, and schedule goals.			
C. SECURITY AND BADGE REQUIREMENTS			
<input type="checkbox"/> Explain NASA Security Procedures _____			
<input type="checkbox"/> Distribute GRC 9975 Forms (Registration and ID Badge Request _____)			

D. ENVIRONMENTAL ASPECTS	
<input type="checkbox"/>	Dust controls (<i>Demolition, concrete cutting</i>) _____
<input type="checkbox"/>	Toxic fumes controls/ventilation (<i>Lead-based paint, welding/grinding, chemical use, CO</i>) _____
<input type="checkbox"/>	Suspect Asbestos Containing Material (ACM), inform Inspector–NASA will test _____
<input type="checkbox"/>	Asbestos removal (<i>Read Asbestos Summary of Work at meeting.</i>) _____
<input type="checkbox"/>	Spill response phone number (216) 433-8888 PBS (419) 621-3222 _____
<input type="checkbox"/>	Storm Water Pollution Prevention (SWPP) measures (<i>Silt fencing, inlet protection, soil stabilization</i>) _____
<input type="checkbox"/>	Agency Notifications (EPA, ODH, USACE) _____
<input type="checkbox"/>	Initial inspection of SWPP measures prior to construction _____
<input type="checkbox"/>	Waste disposal/Profiles/Manifests/Waste storage _____
<input type="checkbox"/>	Other environmental considerations (<i>Bald Eagle, Indiana Bat, Wetlands</i>) _____
Remarks:	
E. SAFETY AND HEALTH REQUIREMENTS	
<input type="checkbox"/>	Emergency telephone number 911 from internal NASA phone _____
	Mobile phone (216) 433-8888–Lewis Field _____
	Mobile phone (419) 621-3222–Plum Brook _____
<input type="checkbox"/>	Hot Work/Fire Prevention _____
<input type="checkbox"/>	Daily Site Safety Inspections _____
<input type="checkbox"/>	OSHA Regulations/Formal Inspections _____
<input type="checkbox"/>	Traffic Impacts/Barricade Requests/Parking _____
<input type="checkbox"/>	Electrical Applications Safety Permit _____
<input type="checkbox"/>	Electrical Hazards (LO/TO) _____
<input type="checkbox"/>	Ground Fault Circuit Interrupter (for all electrical equipment) _____
<input type="checkbox"/>	Special Testing (Pneumatic testing, radiography, compaction) _____
<input type="checkbox"/>	Housekeeping Debris/Removal _____
<input type="checkbox"/>	Sanitation _____
<input type="checkbox"/>	Daily Site Coordination Review (CM/Superintendent) _____
<input type="checkbox"/>	Safety Equipment at job site (Fire extinguishers, First Aid Kit with eye wash, etc.) _____
<input type="checkbox"/>	Health and Safety Plan (Required on job site) _____
<input type="checkbox"/>	Hard hats, safety glasses, work boots: Required at all times _____
<input type="checkbox"/>	Other PPE _____
<input type="checkbox"/>	Construction Laser (Usage, training, daylight hours only) _____
<input type="checkbox"/>	Fall Protection (Required at 6 feet and above) _____
<input type="checkbox"/>	Ladders and Scaffolding (Proper use of tie-offs and daily inspections) _____
<input type="checkbox"/>	Designate Construction Zone (Signage and demarcation tape) _____
<input type="checkbox"/>	Confined Space Entry (Permit, atmospheric monitoring) _____
<input type="checkbox"/>	CO monitoring (<i>Operation of combustion equipment indoors</i>) _____
<input type="checkbox"/>	Illumination/Temp. Lighting _____
<input type="checkbox"/>	Safety Training Records _____
<input type="checkbox"/>	Evacuation Procedures (Muster points, head count) _____
<input type="checkbox"/>	Weekly Job Safety Meeting (required) include in Safety Plan _____
<input type="checkbox"/>	SDS's maintained on site with HASP. _____

F. CONTRACT ADMINISTRATION	
<input type="checkbox"/> Schedule of Values/Cost Breakdown (line items for O & M manuals as-built drawings and punch list shall be 2% each) bond and submittals	<input type="checkbox"/> Contractor Property Pass
<input type="checkbox"/> Health and Safety Plan (prior to field work start)	<input type="checkbox"/> Buy American Act–Constructions Materials (FAR 52.225-5)
<input type="checkbox"/> Performance and Payment Bonds (prior to field work start)	<input type="checkbox"/> Contractor to provide Daily Superintendent Report
<input type="checkbox"/> List of subcontractors, Standard Form 1413 completed for all subcontractors	<input type="checkbox"/> Payroll Records (Certified payrolls required)
<input type="checkbox"/> Submittals (Shop drawings, catalog cuts, schedule) (Process; Government turn around is 10 days.)	<input type="checkbox"/> Labor Provisions, Davis Bacon Act
<input type="checkbox"/> Project Schedule (Prior to field work start)	<input type="checkbox"/> Apprentice Papers, 3/1 Journeyman to Apprentice
<input type="checkbox"/> Priority of Work	<input type="checkbox"/> FAR/NAA FAR Clauses, incorporated by reference and full text
<input type="checkbox"/> NASA Representatives Authority (Non-conformance, safety issues, can stop work)	<input type="checkbox"/> Working hours/ after hours notification requirements
<input type="checkbox"/> Differing Site Conditions Procedure	<input type="checkbox"/> NASA Construction Area Sign
<input type="checkbox"/> Use of Request for Information (RFI)	<input type="checkbox"/> Weekly Construction Progress Meetings (Establish)
<input type="checkbox"/> Request for Proposal Procedures (RFP)/Change Order Procedures	
<input type="checkbox"/> Contract Close Out Procedures (Identify 30 days in construction schedule for acceptance process)	
G. TECHNICAL ASPECTS	
<input type="checkbox"/> Certification requirements (Welding) _____	
<input type="checkbox"/> Items of concerns (long lead items, occupied spaces, research impacts, coordination, etc.) _____	
<input type="checkbox"/> Demolished tagged equipment listing (All tags turned over to Government) _____	
<input type="checkbox"/> Quality Assurance (Field measurements) _____	
<input type="checkbox"/> Testing (Pneumatic/hydraulic/radiographic location) _____	
<input type="checkbox"/> HASP, red-lines, required job site documents _____	
<input type="checkbox"/> Bogus bolts/fasteners, foreign made/counterfeit not acceptable. NASA reserves the right to perform Q/A tests. _____	
Remarks:	

H. ON-SITE WORK IMPLEMENTATION	
<input type="checkbox"/>	Daily contact with NASA representative _____
<input type="checkbox"/>	Superintendent (100% on Center/On-site at all times) _____
<input type="checkbox"/>	Material delivery, contractor is responsible to receive (communicate with Main Gate) _____
<input type="checkbox"/>	Permits (ex. Crane, Area Clearance, Fall Protection, Hot Work, Confined space, etc.) _____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	Contractor's Isolation Planning, Process _____ Identifying isolation valves, breakers, etc., to be submitted and approved by CM prior to start of work.
<input type="checkbox"/>	Protection of building occupants and/or equipment.
<input type="checkbox"/>	Completion date _____
Remarks/other job related concerns: Daily inspection report by contractor, check in with Inspector every a.m., all communications through NASA CM.	
I. OTHER	
Prepared by _____	
	(CM Signature) _____
	Date _____
cc:	
/Bldg. Manager/	
/Safety Office	
/Office of En. Programs/	
/Contr. Spec/	
FDP /Project Manager/COTR/	
FDP /URD Manager	
FDP /Alt. COTR/	
FDP /Branch File	
Contractor	

GRC 699 – Notice of Preconstruction Conference

National Aeronautics and
Space Administration
John H. Glenn Research Center
Lewis Field
Cleveland, OH 44135-3191



Reply to Attn of: **FDP**

Date _____

TO: Distribution

FROM: FDP/Project Management Branch

SUBJECT: Notice of Preconstruction Conference

Contract Number _____ Amount \$ _____

Company: _____

Meeting Date: _____ Time: _____ Building: _____ Room: _____

Construction Manager: _____ Telephone Number _____

Description: _____

Environmental issue: Asbestos Lead Other _____

Subject contract activity will commence in the near future. Your attendance at this meeting is required to insure safe, effective, coordinated performance by the contractor. If you are not available at the above time, you are requested to send an alternate who can represent your interest.

Please be prepared to offer a short narrative on your interest/responsibility on this project and any pertinent project related comments on contract performance expectations. I.e., environmental should be knowledgeable on scope of related overview on the Health and Safety Plan expectations. Construction manager should discuss daily shift and work-related items, etc. and any other project matters.

Questions in this regard should be directed to the Construction Manager.

Construction Manager

Distribution:

QS/Safety/

FE/Environmental/

CH/Procurement/

Building Managers/

/(Move Coordinator is required)/

/System Managers/

/Project Managers/

FDO/Operations Management Branch/

/COR/

/CM/Inspector/

/Branch File/

GRC 9417 – Preconstruction Conference

National Aeronautics and
Space Administration

John H. Glenn Research Center
Lewis Field
Cleveland, Ohio 44135



Date: _____

Reply to Attn of: FDP

Contractor Name:

Contractor Address:

City, State, Zip code:

Subject: Contract

Prior to commencing the contract work, you will be contacted by this office to arrange a Preconstruction Conference. This is an extremely important meeting. You will meet the NASA/GRC personnel who will be monitoring your daily work. You will be afforded the opportunity to ask questions, whether they be of technical, administrative, or safety nature. Because the goal of the Preconstruction Conference is to achieve a mutual understanding of the requirements, it is appropriate that you bring your key personnel. We ask that your designated field superintendent, responsible for daily direction of on-site work, be in attendance.

You are requested to bring to the Preconstruction Conference the following items:

1. Progress schedule GRC 622 is attached for your use; one original and four copies are required.
2. A list of your subcontractors; an original and six copies are required. Please identify any minority subcontractors with an asterisk. (If none, please indicate.)
3. Statement and Acknowledgment, Form SF-1413, is attached for your use. Completion of this form is required for each subcontractor, prior to proceeding with their work.
4. Your monetary contract breakdown which will be used for your progress payments, GRC 302, is attached for your use. One original and four copies are required.
5. Your Safety and Health Plan, for approval as required under Part 1.1 of Section 01500, "Safety and Health Requirements," is needed prior to proceeding with the work.
6. Apprentice papers, as appropriate.
7. Welder's certification papers, as appropriate.
8. Electrician resume(s) reflecting qualifications for safe, skillful work on:
 - a. High Voltage Systems
 - b. Low Voltage Systems

Construction Manager

3 Enclosures:
GRC 622-5 copies
GRC 302-1 set
SF-1413-1 copy

Standard Form 1413 – Statement and Acknowledgment

STATEMENT AND ACKNOWLEDGMENT					OMB Control Number: 9000-0014 Expiration Date: 12/31/2017	
<p><small>PAPERWORK REDUCTION ACT STATEMENT: Public reporting burden for this collection of information is estimated to average .05 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspects of this collection of information, including suggestions for reducing this burden, to U.S. General Services Administration, Regulatory Secretariat (MVCB)/IC 9000-0014, Office of Governmentwide Acquisition Policy, 1800 F Street, NW, Washington, DC 20405.</small></p>						
PART I - STATEMENT OF PRIME CONTRACTOR						
1. PRIME CONTRACT NO.		2. DATE SUBCONTRACT AWARDED		3. SUBCONTRACT NUMBER		
4. PRIME CONTRACTOR				5. SUBCONTRACTOR		
a. NAME				a. NAME		
b. STREET ADDRESS				b. STREET ADDRESS		
c. CITY		d. STATE	e. ZIP CODE	c. CITY		d. STATE e. ZIP CODE
6. The prime contract <input type="checkbox"/> does, <input type="checkbox"/> does not contain the clause entitled "Contract Work Hours and Safety Standards Act -- Overtime Compensation."						
7. The prime contractor states that under the contract shown in Item 1, a subcontract was awarded on the date shown in Item 2 to the subcontractor identified in item 5 by the following firm:						
a. NAME OF AWARDING FIRM						
b. DESCRIPTION OF WORK BY SUBCONTRACTOR						
8. PROJECT				9. LOCATION		
10a. NAME OF PERSON SIGNING			11. BY (Signature)		12. DATE SIGNED	
10b. TITLE OF PERSON SIGNING						
PART II - ACKNOWLEDGMENT OF SUBCONTRACTOR						
13. The subcontractor acknowledges that the following clauses of the contract shown in Item 1 are included in this subcontract:						
Contract Work Hours and Safety Standards Act - Overtime Compensation (If included in prime contract see Block 6)		Payrolls and Basic Records		Withholding of Funds		Disputes Concerning Labor Standards
Compliance with Construction Wage Rate Requirements and Related Regulations		Construction Wage Rate Requirements		Apprentices and Trainees		Compliance with Copeland Act Requirements
				Subcontracts (Labor Standards)		Contract Termination - Debarment
				Certification of Eligibility		
14. NAME(S) OF ANY INTERMEDIATE SUBCONTRACTORS, IF ANY						
A		C				
B		D				
15a. NAME OF PERSON SIGNING			16. BY (Signature)		17. DATE SIGNED	
15b. TITLE OF PERSON SIGNING						

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION IS NOT USABLE

STANDARD FORM 1413 (REV. 4/2013)
Prescribed by GSA/FAR (48 CFR) 53.222(e)

FOR REFERENCE ONLY

Printed copies are uncontrolled and may not reflect current information.

APPENDIX E.—HEALTH AND SAFETY PLAN (HASP) TEMPLATE

Index

- Health and Safety Plan Template
- Daily Job Hazard Analysis (JHA) for Lewis Field
- Daily Job Hazard Analysis (JHA) for Plum Brook Station

Health and Safety Plan Template

Minimum Information for Site-Specific Health and Safety Plan (SS HASP)

The following are requirements for a safety and health policy and program document. These are the minimum requirements for the SS HASP; however, each plan shall be job-specific and shall also address any unusual or unique aspects of the project or activity for which it is written. The HASP shall reflect the employer's corporate safety and health program.

1. Signature Sheet. Title, signature, and phone number of the following:
 - a. Plan Preparer
 - b. NASA Representative: Review HASP to verify that scope of work is complete.
 - c. NASA Safety and Health Designee: Review document for compliance with OSHA. Review for impacts on adjacent NASA occupants.
2. Contractor Information
 - a. Prime Contractor
 - b. Contract or task number
 - c. Project Name
 - d. Accurate project description and location
 - e. Contractor accident experience. Provide information such as experience modification rate (EMR), OSHA 300 forms, corporate safety trend analysis
3. Statement of Safety and Health Policy. Provide a copy of the current corporate/company Safety and Health Policy statement.
4. Responsibilities and lines of Authorities
 - a. Identification and accountability of personnel responsible for safety, at both corporate and project level
 - b. Lines of Authority
5. Subcontractors. Provide the following:
 - a. Identification of subcontractors
 - b. Means for controlling and coordinating subcontractors
 - c. Safety responsibilities of subcontractors
6. Training
 - a. List mandatory training and certificates that are applicable to this project (e.g., confined space, crane operator, respiratory protection, HazWOPER, etc.) and any requirements for periodic retraining/recertification.
 - b. Identify requirement for supervisory and employee safety meetings (who attends, when given, who will conduct, etc.).
7. Safety and Health Inspections. Provide details on the following:
 - a. Who will conduct safety inspections (e.g., Project Manager, safety professional, supervisors), inspector's training/qualifications, frequency of inspections, process to record inspections, deficiency tracking system, follow-up procedures, etc.
 - b. Any external inspection/certifications that may be required

8. Safety and Health Expectations, incentive programs, and Compliance.
 - a. A brief description of the company's safety incentive program
 - b. Policies and procedures regarding noncompliance with safety requirements
9. Accident Reporting. The contractor shall identify who, how, and when the following will be completed:
 - a. Exposure data
 - b. Accident investigations, reports and logs
 - c. Immediate notification of major accidents
10. Plans, Programs, and Procedures
 - a. Emergency Response Plans
 - i. Procedures and posting of emergency phone numbers
 - b. Spill plans
 - c. Hazard Communication Program. Provide location of MSDS, records of employee training and inventory of hazardous materials (including approximate quantities and a site map) that will be brought onto Government property by Contractor and subcontractors.
11. Hazard Analysis and Controls. The following information is provided as a guide for conducting a site specific hazard analysis. The hazard analysis is dependent on the scope of work associated with each project, this list is at a minimum the hazards that need to be considered when writing a Site Specific Health and Safety Plan. The site specific HASP shall include an analysis of the hazards and controls for all aspects of the project, including any unusual or unique aspects of the project.

1. Asbestos

- Materials are considered asbestos, or ACM (asbestos-containing materials), unless labeled "Does Not Contain Asbestos" or lab data indicates it does not contain asbestos. Applicable building materials include, but are not limited to, thermal system insulation, floor tile, mastic, ceiling tiles, roof flashing, roof felts, joint compound, and Transite.
- Do not disturb asbestos containing building material (cutting, grinding, etc.)
- Typical locations: floor tile/mastic, pipe insulation, ceiling tile/mastic, joint compound, roof flashing, roof felts, Transite panels, and insulation on wiring.
- If deteriorated asbestos is found, notify NASA's CM immediately.
- Asbestos shall be disposed of properly.
- Abatement or disturbance of ACM shall be done by a licensed contractor (Federal, State, and local regulations as applicable)
- Identification of the impacts of ACM on projects is most often determined as part of the project design.
- OSHA 29CFR1926.1101
- See Chapter 2, "Asbestos," of the Occupational Health Programs Manual

In the HASP:

- Method of removal

- Engineering controls
- If respiratory protection is required, provide a written Respiratory Protection Program (see “Respiratory Protection”)
- Medical surveillance documentation
- Fit testing documentation
- Training documentation
- Disposal plan
- Permits
- Exposure monitoring
- Clearance monitoring
- Specific personal protective equipment (PPE)

2. Barricading

- Barricading is required during construction to protect NASA contractors and employees from hazard exposure and to provide safe and reasonable pedestrian and vehicular accessibility to the Center’s facilities.
- If road or lane closure is required, notify NASA’s COTR 30 days prior to beginning road closure activities.

In the HASP:

- List the types of barricading pertaining to specific areas. Barricading must be in place to block the passage of persons or vehicles through a construction area, warn individuals of possible or existing hazards, or provide guidance in the redirection of traffic.
- Include an approximate duration.
- Include a sketch of proposed barricade layout, if feasible. Otherwise, include a description of the area.
- If road closure is required, list the specific location(s) of the road to be blocked, the street name, the control devices used to block the road, the duration of the blockage, protection of construction zone hazards during non-working hours, and use of flagger(s) trained in accordance with the American Traffic Safety Services Association (ATSSA) flagger training program.
- See Chapter 29, “Safety Barricades,” of the Glenn Safety Manual.

3. Biological

- Biological hazards can exist when tying into an existing sanitation line, removing animal nests and/or excrement, or when working on mold remediation projects.

In the HASP:

- Description of work and hazard
- List training.
- List the engineering controls that will be used.
- List specific PPE that will be worn. If respirators are required, submit in accordance with the “Respiratory Protection” section.

5. Chemical/Flammable Hazards

- OSHA regulates specific chemicals. Commonly encountered issues related to OSHA regulated material in a construction site include silica (cement work, sandblasting, and tuck pointing), hexavalent chromium (welding of stainless steel, paints), cadmium (plated bolts, silver brazing), lead (paints, lead products), arsenic (as contaminant in lead), and mercury (fugitive and paints). Note that paints are considered chemical-containing materials, as are adhesives, cleaners, solders, solvents, fuels, acids, and caustics.
- Personal exposures, e.g., inhalation and dermal hazards for workers and surrounding building occupants, shall be addressed.
- Address potential for indoor air quality complaints from adjacent NASA employees and plans to minimize potential for complaints.
- Examine whether less hazardous substitutes are available.
- Chemicals need to be managed through Chemical Management and the HAZCOM program: <http://smad-ext.grc.nasa.gov/emo/gov/cm.htm>

In the HASP:

- Submit MSDS.
- List engineering controls, including nuisance odor controls.
- Specific PPE (gloves – state manufacturer and glove material; glove selection – based on performance data from the manufacturer)
- Exposure assessment where applicable
- If respirators are required, submit in accordance with the “Respiratory Protection” section.
- Quantity of chemical to be used and stored onsite.
- Disposal plan, including waste chemicals, containers, contaminated equipment, cleaning materials, spent PPE, and open containers of product chemicals.

6. Confined Space Entry (Permit Required)

- Determine if workers will be entering a confined space as defined in Chapter 16 of the Glenn Safety Manual, “Confined Space Entry.”

In the HASP:

- Identify the location of the entry and the work to be performed. Employers involved in confined space entries shall have had formal OSHA confined space entry training within the last 2 years.
- All chemicals shall be listed and MSDS sheets shall be supplied for all chemicals that will be used in the confined space.
- List specific engineering controls to be used (ventilation, etc.).
- List specific PPE that will be worn. If respirators are required, submit in accordance with the “Respiratory Protection” section.

- A Confined Space Entry Permit shall be obtained and located onsite prior to entry. All NASA procedures defined in Chapter 16, “Confined Space Entry,” of the Glenn Safety Manual shall be followed.
- List general emergency response procedures for evacuations and rescues.

7. Crane/Aerial

- Applies to any lifting device used to raise personnel, materials, or equipment.
- Lifting devices include, but are not limited to, mobile cranes, hoists, slings, overhead cranes, man lifts, elevated work platform, and self-propelled elevating devices.

In the HASP:

- Describe the task.
- List the type of lifting devices that will be used at the construction site.
- List the certified operator(s) for each device located at the site.
- Describe the barricading plan to prevent access or travel under the elevated work load.
- Use of a mobile crane or overhead crane to raise personnel is considered a Critical Lift.
- Consult Chapter 20, “Cranes and Lifting Devices,” of the Glenn Safety Manual for critical lift criteria.

9. Demolition

- The removal of existing materials, equipment, systems, structures, etc., presents potentially hazardous working conditions.
- Demolition introduces the possibility of abatement issues beyond the hazards and controls normally associated with a construction project. Some hidden hazards to be aware of may include asbestos, mercury, lead materials, unusual odors, animal waste or nesting hazards.

In the HASP:

- Identify what specifically will be removed at the site and the method that will be used for removal.
- Identify any hazardous materials present, such as lead paint, asbestos, dust, etc.
- List procedures to eliminate or contain identified hazards and address personnel exposure issues and removal of construction debris from GRC.
- If respiratory protection is required, submit in accordance with the “Respiratory Protection” section.
- Disposal Plan, including any hazardous materials as well as construction debris, recyclable materials, and spent PPE.

10. Discharging Down Sewers

- GRC has two water permits requiring the control of discharges to all storm and sanitary sewer lines.
- Never flush anything to the above-mentioned lines without obtaining written permission from the Environmental Management Branch.

To request to discharge effluents, provide the following information:

- MSDSs for any chemicals that are proposed to be discharged into the sewer system.
- Describe the source and location of the discharge
- Describe the type(s) and location(s) of sewer lines to be impacted.
- Describe the method that will be used to discharge the effluent.
- Provide the quantity of effluent to be discharged.

11. Egress

- All occupied facilities, and construction sites, must provide for the safe egress of individuals should evacuation be required.
- Egress includes, but is not limited to, egress from buildings, roofs, trenches, and any construction site.

In the HASP:

- Describe the egress plan and how it will be implemented.
- Describe how each contractor employee will be trained for egress.
- Describe the devices (signage, cones, etc.) that will be used to direct pedestrian traffic should emergency egress be necessary.

12. Excavations (Permit Required)

- At GRC, any digging below the existing grade is considered an excavation.
- A NASA-approved Excavation Permit is required to ensure that preexisting underground utilities are identified before excavation activities commence.

In the HASP:

- List the estimated depth, width, and length of excavation or trenches. Those excavations between 4 and 20 feet in depth shall be evaluated for existing and introduced hazards.
- All excavations greater than 4 feet deep are considered confined spaces. These excavations shall be evaluated in conjunction with the COTR and the Safety Branch to determine if the excavation will be considered a Permit- Required confined space (see “Confined Spaced Entry” above).
- All excavations equal to or greater than 20 feet in depth shall be considered Permit-Required Confined Spaces. A Confined Space Entry Permit shall be onsite prior to entry.

- For excavations equal to or greater than 20 feet in depth: trenching, shoring, or benching techniques shall be designed by a Professional Engineer registered in the State of Ohio.
- List any hazardous chemicals that may be present in the soil.
- List engineering controls that will be utilized, including air monitoring equipment, methods and levels of response, if required.
- List disposal or relocation information for the excavated soil.
- Disposal Plan for soils and any additional wastes such as construction debris, recyclable materials, and spent PPE
- List specific PPE that will be worn.
 - If respiratory protection is required, submit in accordance with the “Respiratory Protection” section.
- For trenches, list any chemical use or processes (e.g., welding) that will be conducted within the trench. Include engineering controls, administrative controls, or PPE to protect employees.
- For trenches, list competent person, and method of shoring if greater than 4 feet deep (trench boxes, step-back, etc.) that will be utilized.
- Include a copy of the Excavation Permit.
- Describe storm water runoff control and trench water management plan.
- See Chapter 35, “Digging, Trenching, and Excavation Procedure,” of the Glenn Safety Manual.

13. Falls (Heights > 6 feet)

- OSHA has set a fall protection threshold of six feet; at six feet or above, fall protection criteria applies. [The six foot rule does not apply to fall protection for scaffolding. See “Scaffolding.”] Employees must be protected from fall hazards and falling objects whenever an affected employee is six feet or more above the next lower level, when within six feet of a wall lower than 42 inches plus or minus 3 inches, and when workers can fall into or onto dangerous equipment.
- Fall protection for employee(s) shall be provided and installed before the employee(s) begins the work that necessitates that fall protection is required. Assess the workplace to determine if the walking/working surface(s) on which the employee(s) is to work has the strength and structural integrity to safely support workers.

The implementation of a fall protection program requires these components:

- Evaluation of where fall protection is needed. Specifically describe the physical location where fall protection will be provided and the type of fall protection devices that will be used (a drawing/sketch is acceptable).
- Select the fall protection systems that are appropriate for the specific site.
- The Competent Person is responsible for ensuring the proper construction and installation of fall protection systems.
- Proper supervision of employees.
- Implementation of safe work procedures.

- Proper training is required in the selection, use, and maintenance of fall protection systems.

In the HASP

Provide the type of fall protection to be used, such as (but not limited to) guardrail systems, safety net systems, personal fall arrest systems, warning line systems, safety monitoring systems, controlled access zone, covers, positioning device system, fences, barricades, equipment guards, and GRC's Buddy System.

- Employee(s) must be trained in proper use of the chosen fall protection system. List the trained employee(s) utilizing fall protection devices.
- If a personal fall arrest system is to be used:
 - Identify the type of system.
 - Acknowledge that the Safety Branch needs to conduct an inspection to observe tie-off points.
 - Describe how personnel below will be protected.
- See Chapter 34, "Fall Protection," and Chapter 22, "The Glenn Buddy System," of the Glenn Safety Manual.

14. General Maintenance Checkout

- Employees need to be aware of potential hazards that may exist in the installation of new equipment.

In the HASP:

- Identify the knowledgeable person(s) performing the checkout of systems. Identify the specific checkout method and precautions that shall be in place.

15. Hand Tools/Power Tools

- Hand tools are used at most construction sites. The most common hazards are their improper use. Power tools present greater accident hazards than hand tools. Most hazards occur due to poor tool maintenance and improper handling.
- Whenever possible, use tools designed to be ergonomically correct.

In the HASP:

- Hand tools – Assure employees will be using the proper tool for each work activity.
- Power tools – Assure employees will handle power tools as required by the manufacturer.
- Describe the type of energy source for power tools (pneumatic, electrical, hydraulic).
- List the PPE that employees will wear when using hand or power tools.

- Pneumatic tools – These tools generate high noise levels list the level of hearing protection that will be required. Describe how building occupants will be protected from high sound levels.
- Ground Fault Circuit Interrupter (GFCI) shall be used for electrical power tools regardless of the energy source.

16. Hazardous Energy (Lockout/Tag Out)

- Employees are exposed to a variety of energy sources when performing construction activities.
- The identification and control of energy sources is critical to ensure a safe working environment for workers.

In the HASP:

- Identify the hazardous energy source for the project – mechanical, electrical, pneumatic, hydraulic, etc.
- Identify the authorized employee(s) who locks out or tags out equipment or energy sources.
- Identify affected employees – workers who are exposed to, or impacted by, lockout and tag out procedures.
- See Chapter 9, “Lockout/Tagout,” of the Glenn Safety Manual.

17. Hot Work (Permit Required)

- “Hot Work” applies to any operation(s) using or producing sparks, flames, or heat that may be capable of igniting combustible materials.
- Hot work on stainless steel can produce elevated levels of hexavalent chromium, which is a carcinogen. Hot work on carbon steel can produce, among other metal fumes, elevated levels of manganese. (See “Respiratory Protection,” below.)
- All welders must be trained in respiratory protection, be certified by a Physician, and pass a fit test. Documentation shall be made available upon request.
- See Chapter 28, “Hot Work Authorization,” of the Glenn Safety Manual.

In the HASP:

- Identify the activity(s) that will require a hot work permit. Identify the type of material and method that will be used for the activity.
- Identify the following:
 - Type of fire protection to be used
 - Type of materials with fill metal or welding rod MSDS(s)
 - Method of welding
 - Specific PPE and controls
 - Methods of ventilation for fume control
 - Exposure assessment

- Written respiratory protection program (see “Respiratory Protection”)
- Date of fire extinguisher training for fire watch personnel

18. Indoor Air Quality

- When feasible, mold-contaminated material will be abated in accordance with EPA recommendations. Workers remediating, cleaning, and disposing of mold-contaminated material will be required to wear a respirator and skin protection. (See “Respiratory Protection” and “Personal Protective Equipment,” below.)
- Work methods will be conducted in a manner that minimizes the generation of dust.
- Vehicles and fuel-powered equipment cannot operate near air intakes for buildings unless special measures have been taken and approved by the IHT.
- Chemicals cannot be used near air intakes of buildings unless special measures have been taken and approved by NASA.
- Doors are not permitted to be propped open for extended periods of time due to high potential for pest intrusion.
- Smoking is not permitted near air intakes.
- Special attention to housekeeping is required in dust-producing operations to minimize workplace particulate levels.
- See Chapter 12, “Indoor Air Quality,” of the Occupational Health Programs Manual.

19. Interruption of Safety System Operation (Area Clearance required)

- The stoppage of any Safety System, such as, but not limited to, smoke detection, sprinkler system, gas detection, and sensor systems, requires the approval of an Area Clearance before such systems can be shutdown and/or locked out/tagged out to perform construction or maintenance work, or the installation of equipment.

In the HASP:

- Identify the system(s) to be interrupted; obtain an approved Area Clearance from NASA prior to system shutdown/stoppage and commencement of work.

20. Ladders

- Conduct an assessment to determine if workers will be working in elevated situations. If workers will be handling materials, the use of scaffolding, aerial lifts, or man lifts may be safer. Note: Use of ladders requires three points of contact at all times unless mounting or dismounting, or unless an appropriate personal fall protection system is used in conjunction with the ladder.
- The work to be performed shall be evaluated by the contractor on a case-by-case basis to determine if the use of a portable ladder is the most feasible method of providing access to work areas.

- Efforts shall be made to reduce or eliminate the amount of time a worker works from a portable ladder.

In the HASP:

- Identify the work activity and the type of ladder(s) to be used. Each employee shall be trained to recognize the hazards present when using ladders.
- Identify the height of the ladders to be used.

21. Laser – Construction Activities (surveying, sighting, leveling, etc.)

- Compliance with the OSHA construction standard for “Non-ionizing radiation,” 29 CFR 1926.54, is mandatory.
- Laser usage has become an industry-wide tool to facilitate construction activities and provide a higher level of measurement accuracy.

In the HASP:

- OSHA-required proof of qualification for construction laser operator(s).
- Laser use procedure which addresses, at a minimum, the following issues:
 - a. Use restriction to “qualified” persons;
 - b. Efforts undertaken to minimize direct eye exposure (verify beam path prior to use, consideration of beam , termination, not positioning at eye level, prohibiting intentional direct viewing, posting of signage and use of cautions tape/cones to create an exclusion zone, etc.)
 - c. Prohibited times of use (i.e., dusk or night)
 - d. For indoor laser use, specify if and how an area is to be temporarily secured during laser use
- See Chapter 13, “Laser Safety Program,” of the Occupational Health Programs Manual.

22. Lead

- All painted surfaces must be checked well in advance of disturbance.
- No hot work shall be performed on lead-containing paint regardless of lead concentration.
- Abatement shall be performed by trained personnel.
- Demolition activities that include lead-containing materials will conform to lead in construction standard (29 CFR 1926.62).
- Work surfaces shall be decontaminated to acceptable clearance criteria, typically 40 µg/ft².
- Lead-based paint containing waste shall be disposed of properly.
- Compliance with OSHA 29CFR1926, “Lead in Construction.”

In the HASP:

- Describe the methods of removal.
- Describe the engineering controls to be used.

- Provide a written respiratory plan (See “Respiratory Protection”).
- Describe medical surveillance program.
- Describe worker training.
- Describe hygiene/decontamination.
- Describe air monitoring plan.
- Written compliance program where required.
- Describe disposal plan.
- Selection of specific Personal Protective Equipment
- See Chapter 5, “Lead,” of the Occupational Health Programs Manual.

23. Mercury

- A hazardous silver liquid metal commonly found in thermometers, mercuric switches, and manometers.
- Potential GRC locations: laboratories, drain traps, sump pumps, and low spaces in test cells. Some suspect buildings would include Buildings 16, 301, 7, 5, 23, around tunnels and their control rooms.

In the HASP:

- Describe the methods of removal.
- Describe containment techniques (ventilation, signage, barricading, etc.).
- Training
- Respirator protection program (see “Respiratory Protection”)
- Qualify the exposure assessment process used.
- Selection of specific PPE
- Disposal (qualify)
- See Chapter 6, “Elemental Mercury,” of the Occupational Health Programs Manual.

24. Noise

- NASA requirements for employee exposure to noise exceed OSHA requirements. The NASA Hearing Conservation Program has a maximum occupational exposure level, or criterion sound level, of 85 decibels on an A-weighted scale (dBA), as a time-weighted average (TWA), and an Action Level of 82 dBA TWA. Evaluation of employee exposure to noise is required when noise levels are at or above the action level. All personnel who are in areas or performing tasks where exposure to noise is greater than 85dBA, regardless of duration, shall be provided with and required to wear hearing protection. For noise exposures exceeding 100 dBA TWA, double hearing protection is required (plugs and muffs).
- See Chapter 3, “Hearing Conservation Program,” of the Occupational Health Programs Manual.
- OSHA 29CFR1926.52

In the HASP:

- Describe engineering, administrative and PPE controls that will be used to control employee exposure to noise.
- Describe controls used to prevent noise exposure to adjacent NASA building occupants.
- Selection of specific PPE

25. Painting

- Painting activities can expose personnel to organic vapors and/or particulate / flammable safety issues during application and drying.
- Odors that are created by painting activities can generate complaints from building occupants.
- Leftover product materials being left onsite, such as touch-up paint, shall be managed through Chemical Management and the HazCom Program. <http://smad-ext.grc.nasa.gov/emo/gov/cm.htm>

In the HASP:

- Provide MSDSs.
- Describe the method of application.
- Selection of specific PPE.
- Describe controls to eliminate exposure of adjacent NASA employees to excessive odors.
- Disposal Plan, including waste chemicals (paints, solvents, etc), containers, contaminated equipment, cleaning materials, spent PPE and open product containers
- Written respiratory protection program, if respirators are required (see “Respiratory Protection”)

26. Personal Protective Equipment (PPE)

- OSHA Construction Standard 1926
- General statement PPE will be worn is not sufficient.
- PPE used when hazards cannot be completely eliminated by engineering controls.

In the HASP:

- Identify the hazard(s) present or anticipated. List the specific engineering and administrative controls that will be implemented or the Personal Protective Equipment (PPE) to be worn.
- Examples of PPE include:
 1. Face and Eye protection – safety glasses, goggles, shields, welding or laser protection
 2. Head protection – hard hats to protect against impact and electrical shock and burns
 3. Hearing Protection – earplugs or earmuffs
 4. Protective footwear – safety shoes, rubber boots, slip-resistant soles

5. Special clothing – specific chemical protective clothing, hot/cold environment clothes, high-visibility clothing (traffic vests)
- Disposal plan for spent PPE
 - See Chapter 15, “Personal Protective Equipment,” of the Glenn Safety Manual.

27. Radiation (Ionizing)

- Source (Gamma) Radiography
 - a. Comply with Nuclear Regulatory Commission’s 10CFR34 “Licenses for Industrial Radiography and Radiation Safety Requirements for Industrial Radiographic Operations.”
 - b. Coordination of planned activity with site personnel (e.g., construction manager, building manager, security personnel, radiation safety officer)
- X-ray Radiography
 - a. Satisfy guidelines specified in Ohio Department of Health’s 3701:1-66-12 of the Ohio Administrative Code.
 - b. Coordination of planned activity with site personnel (e.g., construction manager, building manager, security personnel, radiation safety officer)
- Density Gauge Operations
 - a. Comply with applicable portions of the Nuclear Regulatory Commission’s 10 CFR parts 19, 20, and 30. If the source is “Naturally Occurring” or “Accelerator Produced,” satisfy similar guidelines specified in the Ohio Administrative Code.
 - b. If necessary, coordination of planned activity with site personnel (e.g., construction manager, building manager, security personnel, radiation safety officer)

In the HASP:

- Source (Gamma) Radiography
 - a. Copy of byproduct materials license (or otherwise provide to RSO)
 1. NRC license, OR
 2. NRC Reciprocity Agreement for holder of a state license
 - b. Source isotope and activity
 - c. Description of the radiography shots: type, location, number, orientation, time/length, use of shielding or collimator, etc.
 - d. Boundary and evacuation plan for performing radiography
 - e. Emergency contact numbers for the contractor’s RSO and the Glenn RSO (dispatch)
- X-ray (Radiation-Generating Equipment) Radiography
 - a. Copy of the device registration with pertinent state agency (e.g., the Ohio Department of Health if contractor is an Ohio-based company)
 - b. Description of x-ray tube and controller, including make, model, and operating potential to be used for specified activity
 - c. Description of the radiography shots: type, location, number, orientation, time/length, use of shielding or collimator, etc.
 - d. Boundary and evacuation plan for performing radiography

- e. Emergency contact numbers for the contractor's RSO and the Glenn RSO (dispatch)
- Density Gauge Operations
 - a. Copy of byproduct materials license
 - 1. NRC license, OR
 - 2. NRC Reciprocity Agreement for holder of a state license
 - b. If needed, consideration of how the gauge activities might impact GRC employees or other construction contractors working in the vicinity
 - c. A description of any necessary controls to be implemented during gauging operations
 - d. Description of security measures used to control access to gauge(s)
 - e. Emergency contact numbers for the contractor's RSO and the Glenn RSO (dispatch)
- Available Onsite:
- Source (Gamma) Radiography
 - a. Proof of certification of radiographer
 - b. Date of last refresher training for radiographer and assistant
 - c. All procedures and documentation required by NRC to be onsite at temporary radiography site
- X-ray (Radiation-Generating Equipment) Radiography
 - a. Proof of certification of radiographer
 - b. Date of last refresher training for radiographer and assistant
 - c. All procedures and documentation required by the pertinent state agency (such as ODH) to be onsite at temporary radiography site

28. Respiratory Protection

- A written respiratory protection program must be submitted if respiratory protection is required. Documentation includes the following:
 - 1. Training
 - 2. Medical Surveillance
 - 3. Fit Testing
- References: OSHA 29CFR1910.134 and NASA Respiratory Protection Program, Chapter 4 of the Occupational Health Programs Manual.
- Employees must be clean shaven around respirator seal.

In the HASP:

- Written Respiratory Program
- Hazard assessment / Exposure Assessment data, including MSDS for material requiring respiratory protection
- List the type(s) of respirator and cartridge to be worn
- When required, provide the procedure to comply with OSHA cartridge change schedule requirement.
- Reference: <http://www.osha.gov/SLTC/etools/respiratory/index.html>

29. Sanitation

- Employees will have the need to use facilities for the purpose of personal hygiene and sanitary measure.

In the HASP:

- Identify what facilities employees will use – portable facilities or NASA facilities. The use of NASA facilities shall be coordinated with the NASA Project Manager and the Building Manager.

30. Scaffolding

- Scaffolding, in lieu of ladders, provides a safe alternative to working at elevated heights.

In the HASP:

- Address the use of scaffolding; identify the type of scaffolding to be used and the maximum load that can be supported.
- Identify the competent person that will erect and dismantle the scaffolding.
- Identify the competent person that will perform and document inspections of scaffolding prior to each use.

31. Traffic Control

- Determine if traffic will be affected during the construction period. To protect personnel, engineering controls shall be used in hazardous areas.

In the HASP:

- List the type of controls to be used to control traffic. For road/lane closures, flagmen shall be used if required.
- See Chapter 19, “Vehicle and Pedestrian Safety,” of the Glenn Safety Manual.

32. Utility Service interruption (Area Clearance required)

A stoppage, no matter what the time duration, of any utility service as defined by the Area Clearance Process documentation.

In the HASP:

- Identify the system(s) to be interrupted; obtain an approved Area Clearance from NASA prior to system shutdown/stoppage and commencement of work.

Daily Job Hazard Analysis (JHA) for Lewis Field

1. Project Title:		2. Location:		3. Date:	
4. Prime Contractor:			5. Competent Person:		
6. Sub Contractors:					
7. Emergency information: Dial 911 internal or Mobile Phone dial 216-433-8888					
<ul style="list-style-type: none"> • A first aid kit and a portable eye wash kit on site at all times. • Wash facilities will be the building bathrooms. • All workers shall be briefed on the emergency evacuation procedures for NASA GRC Lewis Field. • All work areas shall be clearly marked and barricaded. • Site shall be kept clear of debris throughout the day. All means of egress shall be kept free and unobstructed at all times. • Minimum work clothing shall consist of long pants, sleeved shirt (long or short sleeves), socks and safety shoes/boots (shall meet ANSI Z41). <p>All safety glasses and face protection shall meet ANSI Z87.1-1989</p>					
8. Work Activity	9 Hazard	10. Controls	11. PPE Required	12. Other Information	
13. Prime Contractor Signature:			14. Title:		15. Date:

Daily Site Safety Coordination Review

Daily Site Safety Coordination Review Instructions	Emergency Evacuation Procedures
<p>The Daily Site Safety Coordination Review shall identify the project title, location, Prime contractor, Competent person(s), sub contractors and the signature of the Prime Contractor who acknowledges that employees have read and understood the contents, have received the proper training and are qualified to perform the work project or activity.</p> <p>Blocks 1 – 7: Self explanatory</p> <p>Block 8: Identify all tasks and procedures associated with this project on the date listed that have a potential to cause injury or illness to personnel or adjacent NASA personnel and damage to property or materials. Include emergency evacuation procedures.</p> <p>Block 9: Identify all known or suspect hazards associated with each respective task or procedure listed in block 8.</p> <p>Block 10: Identify appropriate actions to reduce or eliminate the hazards identified in block 9. Control measures listed below are in order of preference</p> <ol style="list-style-type: none"> 1. Engineering controls (the most desirable method of control) 2. Substitution. For example, switching to a less hazardous chemical. 3. Administrative controls. For example, limiting exposure by reducing work schedule. 4. PPE (least desirable method of control) <p>Block 11: Identify any PPE that is required for each respective hazard identified in Block 9.</p> <p>Block 12: Identify any coordination issues that may present additional hazards.</p> <p>Block 13: The Daily Site Safety Coordination Review must be reviewed and approved by the Prime Contractor.</p> <p>Block 14, 15: Self explanatory</p>	<p>Site superintendents and crew members are responsible for developing and discussing emergency evacuation procedures and alternatives in the event of an emergency at the work site. If someone becomes ill or injured at the worksite be prepared to provide the following information to the emergency dispatcher.</p> <ol style="list-style-type: none"> 1. Nature of the accident, injury or illness 2. Location of the accident, injury or illness including building number and area 3. Contact person 4. Additional hazards specific to the work site. 5. Stay on the phone until the NASA Emergency Dispatcher releases the caller. <p>The items listed above serve only as guidelines for the development of emergency evacuation procedures.</p> <p>*****Number of Workers: *****Evacuation Meeting Location:</p> <p>Daily Site Safety Coordination Review and Emergency Evacuation Procedures Acknowledgement</p> <p>We, the undersigned site superintendent and crew members, acknowledge participation in the development of this Daily Site Coordination Review and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:</p> <p>Signature Date Signature Date</p> <p>_____</p> <p>_____</p>

FOR REFERENCE ONLY

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Daily Job Hazard Analysis (JHA) for Plum Brook Station

1. Project Title:		2. Location:		3. Date:	
4. Prime Contractor:			5. Competent Person:		
6. Sub Contractors:					
7. Emergency information: Dial 911 internal or Mobile Phone dial 419-621-3222					
<ul style="list-style-type: none"> • A first aid kit and a portable eye wash kit on site at all times. • Wash facilities will be the building bathrooms. • All workers shall be briefed on the emergency evacuation procedures for PBS. • All work areas shall be clearly marked and barricaded. • Site shall be kept clear of debris throughout the day. All means of egress shall be kept free and unobstructed at all times. • Minimum work clothing shall consist of long pants, sleeved shirt (long or short sleeves), socks and safety shoes/boots (shall meet ANSI Z41). All safety glasses and face protection shall meet ANSI Z87.1-1989					
8. Work Activity	9 Hazard	10. Controls		11. PPE Required	12. Other Information
13. Prime Contractor Signature:			14. Title:		15. Date:

Daily Site Safety Coordination Review

Daily Site Safety Coordination Review Instructions	Emergency Evacuation Procedures												
<p>The Daily Site Safety Coordination Review shall identify the project title, location, Prime contractor, Competent person(s), sub contractors and the signature of the Prime Contractor who acknowledges that employees have read and understood the contents, have received the proper training and are qualified to perform the work project or activity.</p> <p>Blocks 1 – 7: Self explanatory</p> <p>Block 8: Identify all tasks and procedures associated with this project on the date listed that have a potential to cause injury or illness to personnel or adjacent NASA personnel and damage to property or materials. Include emergency evacuation procedures.</p> <p>Block 9: Identify all known or suspect hazards associated with each respective task or procedure listed in block 8.</p> <p>Block 10: Identify appropriate actions to reduce or eliminate the hazards identified in block 9. Control measures listed below are in order of preference</p> <ol style="list-style-type: none"> 1. Engineering controls (the most desirable method of control) 2. Substitution. For example, switching to a less hazardous chemical. 3. Administrative controls. For example, limiting exposure by reducing work schedule. 4. PPE (least desirable method of control) <p>Block 11: Identify any PPE that is required for each respective hazard identified in Block 9.</p> <p>Block 12: Identify any coordination issues that may present additional hazards.</p> <p>Block 13: The Daily Site Safety Coordination Review must be reviewed and approved by the Prime Contractor.</p> <p>Block 14, 15: Self explanatory</p>	<p>Site superintendents and crew members are responsible for developing and discussing emergency evacuation procedures and alternatives in the event of an emergency at the work site. If someone becomes ill or injured at the worksite be prepared to provide the following information to the emergency dispatcher.</p> <ol style="list-style-type: none"> 1. Nature of the accident, injury or illness 2. Location of the accident, injury or illness including building number and area 3. Contact person 4. Additional hazards specific to the work site. 5. Stay on the phone until the NASA Emergency Dispatcher releases the caller. <p>The items listed above serve only as guidelines for the development of emergency evacuation procedures.</p> <p>*****Number of Workers: *****Evacuation Meeting Location:</p> <p>Daily Site Safety Coordination Review and Emergency Evacuation Procedures Acknowledgement</p> <p>We, the undersigned site superintendent and crew members, acknowledge participation in the development of this Daily Site Coordination Review and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Signature</td> <td style="width: 25%;">Date</td> <td style="width: 25%;">Signature</td> <td style="width: 25%;">Date</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table>	Signature	Date	Signature	Date	_____	_____	_____	_____	_____	_____	_____	_____
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_____	_____	_____	_____										

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APPENDIX F.—NASA MISHAP INFORMATION SYSTEM (NMIS)

Report hazards online:

<https://nmis.sma.nasa.gov/UI/QuickEntryHazard/QuickEntryHazard.aspx?q=q>



Report a Hazard

Date Hazard Was Noted* ⓘ	Time Hazard Was Noted* ⓘ	Suggested Action* ⓘ
<input type="text"/>	<input type="text" value="12:00 PM"/>	<input type="text"/>
Hazard Time Zone* ⓘ		2000 characters are remaining.
<input type="text" value="Select a Timezone ..."/>		
NASA Center* ⓘ		Is the Problem Fixed?* ⓘ
<input type="text" value="Select a Center..."/>		<input type="radio"/> Yes
		<input checked="" type="radio"/> No / Don't Know
Campus ⓘ		Do You Wish to Report Anonymously?* ⓘ
<input type="text"/>		<input type="radio"/> Yes
		<input checked="" type="radio"/> No / Don't Know
General Location ⓘ		Reporter* ⓘ
<input type="text"/>		NASA Directory Search
Specific Location ⓘ		<input type="text" value="Last Name, First Name"/>
<input type="text"/>		
200 characters are remaining.		
Hazard Description* ⓘ		
(Please be as complete and descriptive as possible, without using names)		
<input type="text"/>		
2000 characters are remaining.		
<input type="button" value="Submit"/>	<input type="button" value="Cancel"/>	

APPENDIX G.—NASA SAFETY, HEALTH, AND ENVIRONMENTAL TRAINING MATRIX

REQUIRED ENVIRONMENTAL TRAINING - Revised SEPTEMBER 2016						
	Course Title:	Required For:	Frequency:	Course Type & Length	Required by:	POC
	Environmental Management System (EMS) SATERN GRC-009-11 (changes annually)	All civil servants, resident contractor employees, temporary employees, and students.	Initial training and annual refresher.	Web-based in SATERN; 0.5 hours	GLPR 8553.1A	Mike Quintin 3-3022
	Basics of Environmental, Health and Safety Training (BEHST)	All civil servants, resident contractor employees, temporary employees, and students	New employees and volunteers	Web-based in SATERN, 1.0 hour	GRC SheD NASA GSM Ch. 4	Rowena Rice 3-6309
	RCRA Management of Hazardous Waste & Resource Conservation & Recovery Act (RCRA) SATERN GRC-4R1022	Anyone who generates, stores, manages, handles or transports hazardous waste.	Annual	Instructor-led; in house. 1 hour.	EPA, NASA EPM, Ch. 5	Mike Hovanic 3-9749
	GRC Spill Prevention, Control & Countermeasure (SPCC) and Aboveground Storage Tank (AST) SATERN ID: COURSE GRC-006-08	All civil servant, support service contractors, and students that store, utilize, and or handle petroleum based products such as hydraulic oils, lube oils, and cooking oils, solvents, and fuels. This includes fuel delivery personnel and maintenance personnel of tank or containers of stored petroleum based products.	Annual	Web-based in SATERN, 0.5 hours	EPA, NASA EPM Ch.8 & 22	Jennifer Rock 3-3354 Dean Harter 3-2553
	Storm Water Management Program, SATERN GRC-007-14	Required for grounds, facility, and janitorial personnel and their respective management. Highly recommended for all civil service, support service contractors, and students at Lewis Field.	Annual	Web-based in SATERN; 0.5 hours	USEPA, Ohio EPA, NPDES Phase II MS4 Permit: 3GQ00067*AG, NASA EPM Ch. 27	Jennifer Rock 3-3354 553
	GRC Underground Storage Tank SATERN GRC-4R1802	Personnel that handle fuels and managers of tank systems.	Upon initial assignment	On-line in SATERN; 0.5 hours	EPA, NASA GRC EPM Ch. 17	Jennifer Rock 3-3354
	HAZWOPER 8 hr Technician Annual Refresher SATERN GRC-4R1571	First Responders, Waste Management, SheD ERT members	Annual	Instructor-led; outsourced; 8 hours	OSHA, NASA	Mike Hovanic 3-9749
	HAZWOPER - 40 hr	First Responders	Upon initial assignment	Instructor-led; outsourced; 40 hours	OSHA, NASA	Mike Hovanic 3-9749
Note: HAZWOPER = Hazardous Waste Operations and Emergency Response						
REQUIRED SAFETY AND HEALTH TRAINING - Revised May 2016						

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	Course Title:	Required For:	Frequency:	Course Type & Length	Required by:	POC
-A-	Aerial Lift Platforms Course GRC-4R1702 *Prerequisite: Fall Protection for Authorized Users GRC-4R1726	All NASA and NASA Contractor Aerial Lift Platform Operators (e.g. JLGs)	Every 4 years in addition to Annual Refresher and an Annual Medical Clearance Exam	Instructor-led; 8hours	OSHA, NASA GSM Ch. 20	Robert Wallen 3-6722
	Aerial Lift Platform Annual Refresher Course GRC -4R1836	All NASA and NASA Contractor Aerial Lift Platform Operators (e.g. JLGs)	Every year	Video DVD; 15 mins	OSHA, NASA GSM Ch. 20	Robert Wallen 3-6722
	Asbestos Awareness Training	GRC CS and SSC. All maintenance, custodial or other personnel that may come in contact but do not disturb asbestos materials (asbestos dust on floor, access ceiling plenums with asbestos spray- on fireproofing, accessing pipe chases, etc.)	Annual	Instructor-led; 2 hours	OSHA, EPA, Ohio Department of Health, NASA OHPM Ch. 2	Mike Schmidt 3-5501
	Asbestos Training for Asbestos Building Inspector/ Management Planner (applies to SHEd and Facilities Division employees)	GRC CS and SSC. Employees required to collect asbestos bulk samples, evaluate asbestos hazards, collect asbestos air samples, or conduct final asbestos abatement inspections. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	Initial with annual refresher	Instructor-led; outsourced. 40 hour initial; 8 hour refresher	OSHA, EPA, Ohio Department of Health, NASA OHPM Ch. 2	Mike Schmidt 3-5501
	Asbestos Training for Asbestos Contractor/ Supervisor (applies to SHEd and Facilities Division employees)	GRC CS and SSC. Employees who supervise a NASA GRC asbestos abatement project. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	Initial with annual refresher	Instructor-led; outsourced. 40 hour initial; 8 hour refresher	OSHA, EPA, Ohio Department of Health, NASA OHPM Ch. 2	Mike Schmidt 3-5501

	Asbestos Training for Asbestos Project Designer (applies to Facilities Division employees)	GRC CS and SSC. Employees required to design an asbestos abatement project. Allows oversight of asbestos abatement project as regards to the compliance of the specifications. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	Initial with annual refresher	Instructor-led; outsourced. 24 hour initial; 8 hour refresher	OSHA, EPA, Ohio Department of Health, NASA OHPM Ch. 2	Mike Schmidt 3-5501
-B-	Barricading (Signs and Signals) Course SMA-OS-EXTW-211	Supervisors; Managers; Safety Professionals		Web-based in SATERN, 10.5hour		Carl Brown
	Basics of Environmental, Health and Safety Training (BEHST)	All GRC CS and SSC. Most recent roll-out: GRC Learning Plans August-October 2011. On all Learning Plans for new employees.	Initial, New employees and volunteer basis.	Web-based in SATERN, 1.0 hour	GRC SHeD NASA GSM Ch. 4	Rowena Rice 3-6309
	Bloodborne Pathogens,	GRC CS and SSC. Employees w/jobs involving exposure to bloodborne pathogens: - Medical Services, Employees providing First Aid or CPR, Daycare staff, Janitorial workers, Security officers, First Responders, Anyone w/potential exposure to blood or bodily fluids	Initial with annual refresher	Instructor-led; 1 hour	OSHA, NASA NPR 18001.1, NASA OHPM Ch. 11	Marne Bold 3-2870
	Building Emergency Action Plan (Course given by supervisors) - Also Covered in the BEHST SATERN Course.	All GRC CS and SSC employees	Upon initial assignment; when plan changes; when employees' assignment changes	In house: Given by supervisors/ hands- on (fire drill; tornado drill); and SATERN 0.5 hours	OSHA, Ohio Fire Code & NASA GSM Ch. 27	Employee supervisors; Dana Mulder 3-3027
	Building Evacuation Wardens' On-the- Job Training (Course given by supervisors)	GRC and SSC. All building Evacuation Wardens and alternates	Annual	In house: Given by supervisors	OSHA, Ohio Fire Code & NASA GSM Ch. 27	Dana Mulder 3-3027
	Building Emergency Evacuation: Supervisor's Role GRC-4R1586	Supervisors of Civil Servants and Supervisors of Support Service Contractors	Upon initial assignment; when plan changes; when employees' assignment changes	In house: Instructor-led; 1 hour	OSHA, Ohio Fire Code & NASA GSM Ch. 27	Dana Mulder 3-3027
-C-	Confined Space Entry Course GRC-4R0241	GRC CS and SSC. All persons involved with entry into any kind of confined spaces, including standby, entrant, entry supervisor. RECOMMENDED for COR and SHeD.	Every 2 years	Instructor-led, In-house; 3 hours	OSHA 29 CFR 1910, NASA, GSM Ch. 16	Dallas Jenkins 3-3771

	CPR/ Life Support and AED Course	First Responders, Security, designated AED responders. Employees working on electrical systems and exposed to shock hazards	Every 2 years Annually	outsourced outsourced	NPR 1800.1, NASA GRC OHPM Ch. 18 NPR 1800.1 NASA GRC OHPM Ch. 18	Mark Neading 3-3674 Tim Czaruk 3-3296
	Cranes (<i>Mobile</i>) Contact POC for course availability	GRC Civil Servants and Support Service Contractors that operate mobile cranes.	Every 4 years: in addition to a medical clearance exam.	Instructor Led; 32 hrs	ANSI, NASA GSM Ch. 20	Robert Wallen 3-6722
	Cranes (<i>Mobile</i>) Refresher Training GRC-4R1623	GRC Civil Servant and Support Service Contractors who use mobile cranes.	Annual in addition to a medical clearance exam	Video DVD; 1 hour	ANSI, NASA GSM Ch. 20	Robert Wallen 3-6723
	Cranes (<i>Overhead</i>) & Lifting Devices Safety Training GRC-4R1513	GRC Civil Servants and all Support Service Contractors that operate overhead cranes and hoists as well as riggers.	Every 4 years: in addition to a medical clearance exam	Instructor-led; NSTC or outsourced; 16 hours	ANSI, NASA GSM Ch. 20	Robert Wallen 3-6724
	Cranes (<i>Overhead</i>) & Lifting Devices Refresher Training GRC-4R1649	GRC Civil Servants and all Support Service Contractors that operate overhead cranes and hoists as well as riggers.	Annual in addition to a medical clearance exam	Video DVD; 1 hour	ANSI & NASA GSM Ch. 20	Robert Wallen 3-6725
-D-	DOT Commercial Driver Training	Drivers of buses or trucks requiring a CDL.	Medical physical required every 2 years; CDL test req'd every 4 years.	Conducted offsite with local Bureau of Motor Vehicles	DOT, NASA	Jeanine Hanzel 3-3077
-E-	"Electrical Safety What Everyone Should Know" GRC-111-11	Unqualified employees (Employees not trained as electricians but utilize electric equipment such as computers, printers, coffee pots, heaters, extension cords and surge suppressors, etc.)	Every 3 years	Web-based in SATERN. 0.5 hour.	NASA GRC GSM Ch. 8; OSHA, NFPA 70E	Tim Czaruk 3-3296
	Safe Release of Electrical Shock Victim	Employees exposed to electrical shock hazards	Annually	Web-based on SATERN. 0.5 hours	NASA GRC GSM Ch. 8; OSHA, NFPA 70E	Tim Czaruk 3-3296
	[Electrical Safety] LC Electrical Safety: Shock-Proof-Unqualified Course #: GRC-4R1343	GRC Unqualified Employees working in machine shops, equipment rooms, test cells, etc. (i.e. Engineers, Tradespersons, Janitorial Crews ...) that are not trained to work on electrical equipment but are exposed to electrical circuits/equipment operating at 50 volts or more to ground during the performance of their work.	Every 3 years	Web based in SATERN. 0.5 hours.	NASA GRC GSM Ch. 8; OSHA, NFPA 70E	Tim Czaruk 3-3296
	[Electrical Safety] Low Voltage Safety for Electrical Operators/Switchpersons Course: GRC-4R1690 Exam: GRC-4R1693	GRC CS and SSC. Personnel who perform work on the various electrical systems at GRC.	Every 3 years	Instructor-Led with web-based test at end of course; 2.5 hours	NASA GRC GSM Ch. 8; OSHA, NFPA 70E	Tim Czaruk 3-3296

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	GRC Ergonomics	All employees	Initial and refresher every three years	Video in SATERN	NASA, OHPM Ch. 15	Darlene Jackson 3-3128
	Excavation 101 Course ID: GRC-012-15	GRC CS and SSC employees that provide oversight or serve as an excavation competent person.	Initial training	Web based in SATERN. 1 hour	OSHA	Dallas Jenkins 3-3771 John DeGreen 3-8812
	Explosives Safety Management and Engineering	GRC CS and SSC. Explosives Safety Officers and reviewers of explosive facilities. Hosted by NASA HQ ESO.	Initial	Instructor-led; NSTC or outsourced; 2 - 7 days	OSHA, NFPA, NASA GSM Ch. 18 NASA STD 8719.12	David Tabayoyon 4-2345
	Explosives Safety Basics	GRC CS and SSC. Explosives Operating Engineers, Explosives Operators, and mailroom employees. Hosted by the NASA HQ ESO.	Initial, plus refresher at least every 4 years	Instructor-Led; 2-days	OSHA, NFPA, NASA GSM Ch. 18 NASA STD 8719.12	David Tabayoyon 4-2345
-F-	Fall Protection Authorized User Initial Training GRC-4R1726 Fall Protection Authorized User Refresher training	GRC CS and SSC. Construction and maintenance COTR'S and anyone who works above heights of 4 feet. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	8 hour Initial training and 4 hour refresher every 2 years	Instructor-led; 8 hour initial training Instructor -Led 4 hour refresher training	OSHA, NASA GSM Ch. 34 NPR 8715.3 ANSI Z359	Greg Frederick 3-8054
	Fall Protection Competent Person Initial Training Course GRC 4R1851 Refresher - GRC-4R1925	GRC CS and SSC. For employees designated as Competent Person in jobs where employees are exposed to fall hazards. Content covers hazards associated with falling and the steps which shall be taken to minimize these hazards. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	16 hour Initial training 4 hour refresher every 2 years	Instructor-led; 16 hour initial training Instructor led; 4 hour refresher	NASA NPR 8715.3; NASA GSM Ch. 34; ANSI Z359	Greg Frederick 3-8054
	Fire Extinguisher GRC-4R1400	Anyone who is provided a GRC owned fire extinguisher while performing hot work operations, crane operations, forklift operations, vehicle drivers, shop personnel and combustion researchers. If you are using a company owned fire extinguisher, you can use this class to meet the requirement or provide proof you've completed an OSHA compliant fire extinguisher training course.	Annually	Instructor-led; 1 hour	OSHA, NFPA & NASA GSM Ch. 31	Mark Smith 3-3608
	First Aid Course ID: GRC-4R0785	1) First Responders, designated first aid personnel, and personnel who work on high voltage electrical systems. 2) Employees working on electrical systems and exposed to shock hazards.	1) Every 2 years 2) Annually	Instructor-led; 3 hours	NASA NPR 1800.1, and NASA GSM Chapters 8 and 18, OSHA, and NFPA 70E	Mark Neading 3-3675 Doug Lehota -3-2092

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	Forklift Safety Training Course GRC-4R1532	GRC Civil Servants and Support Service Contractors who operates a forklift truck, powered industrial truck, lift truck, motorized hand truck or motorized pallet mover.	Every 3 years in addition to an annual medical clearance exam	Internal Instructor-Led; hands-on 6 hours	OSHA, NASA GSM Ch. 20	Robert Wallen 3-6725
	Forklift Safety Annual Refresher Course GRC-4R1928	GRC Civil Servants and Support Service Contractors who operates a forklift truck, powered industrial truck, lift truck, motorized hand truck or motorized pallet mover.	Annual in addition to an annual medical clearance exam	Video; 0.5 hours	OSHA; NASA GSM Ch. 20	Robert Wallen 3-6726
	-G- (no courses at this time)					
	-H- Hazard Communication Training	All employees - civil servants, tenants, resident support service contractors, temporary employees & students.	Initial, once, during new employee orientation.	Instructor-led; Web-based HAZCOM Refresher Training in SATERN	OSHA 29 CFR 1910.1200, NASA OHPM Ch. 20 & HAZCOM Program	Frank Calovini 3-2492
	Chemical Hygiene and Hazard Communication Refresher Training	Employees with routine use and potential chemical exposure.	Every 3 years	Instructor-led; Web-based HAZCOM Refresher Training	OSHA, NASA OHPM Ch. 20 &	Frank Calovini 3-2492
	Hazard Communication and Chemical Hygiene Awareness	All GRC civil servants, resident contractor employees, temporary employees, and students	Initial, at time of hire and refresher every three years	Web-based in SATERN; 0.5 hours	NASA GRC EPM Ch. 16A, 16B, and 17B; 29 CFR 1910.1200	Frank Calovini 3-2492
	Hazard Communication, Specialized	Employees with routine use and potential chemical exposure for each chemical in the work area.	Before chemical use and on request.	MSDS Review w/supervisor Time Varies	OSHA, NASA EPM Ch. 16 & HAZCOM Program	Frank Calovini 3-2492
	Hazard Communication for Specific Chemicals	Laboratory staff	Before chemical use and on request.	MSDS Review w/supervisor Time Varies	OSHA, NASA EPM Ch. 16 & Ch. 17	Frank Calovini 3-2492
	Hearing Conservation Training Initial:	GRC CS and SSC. All employees exposed to hazardous noise at specified levels* (must also be enrolled in Hearing Conservation Program (HCP)); all supervisors of employees enrolled in HCP. *in accordance with NASA NPR 1800.1b: ≥82 dBA TWA, 30 days/year or, >85 dBA TWA, one day/year. In accordance with OSHA: ≥ 85 dB TWA	Initial when first enrolled in HCP & annual refresher. A baseline audiogram also required.	Initial training is instructor-led; 1 hour. Refresher online in SATERN, 30 min.	OSHA, NASA OHPM Ch. 3	Marne Bold 3-2870

	Heartsaver/AED Training Course ID: GRC-4R1402	1) First Responders, designated first aid personnel, and personnel who work on high voltage electrical systems. 2) Employees working on electrical systems and exposed to shock hazards.	1) Every 2 years 2) Annually	Instructor-led; 3 hours	NASA NPR 1800.1, and NASA GSM Chapters 8 and 18, OSHA, and NFPA 70E	Mark Neading 3-3675 Doug Lehota -3-2092
-I-	IATA (International Air Ionizing Radiation	Employees who package hazardous See "Radiation Safety....." topics	Every 2 years	Instructor-led; outsourced	NASA & DOT	Jeanine Hanzel 3-3077 Chris Blasio 3-6520
-J-	Job Hazards Analysis / PPE Course GRC-4R1954	All supervisors and managers of employees who require the use of PPE during their tasks; the task is new; and/or has a history of injuries or death.	Every 3 years	Instructor-led; in-house 2 hours	OSHA, NASA GSM Ch. 15 and 33	Rich Miller 3-2699
-K-	(no courses at this time)					
-L-	Laboratory Standard Operating Procedure (LSOP) Training	GRC CS and SSC. All employees who work in laboratories that contain chemicals and are in the SOP Program.	Before chemical use and recommended every year.	Instructor-led; 1 hour	OSHA, NASA, NASA GRC OHPM Ch. 25 & Chemical Hygiene Plan	Frank Calovini 3-2492
	Laser Safety Training	GRC CS and SSC. Employees designated as "qualified operators" on a safety permit involving work w/ Class 3B (or higher) lasers	Initial before use and biennially thereafter	Instructor-led or on-line in SATERN; 0.75 hour	ANSI, NASA NPR 1800.1, NASA OHPM, Ch. 13	Chris Blasio 3-6520
	Laser Awareness	GRC CS and SSC. Employees designated as "qualified operators" on a safety permit and those performing institutional activities involving work w/ Class 2 or 3R (or 3A) lasers	Initial before use and triennially thereafter	SATERN; 0.5 hour	ANSI, NASA NPR 1800.1, NASA OHPM, Ch. 13	Chris Blasio 3-6520
	Lead Abatement worker training	GRC CS and SSC. Any worker that removes lead paint. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	Annual	Instructor-led; off-site. 32 hours.	OSHA & NASA OHPM Ch. 5	Mike Schmidt 3-5501
	Lockout/Tagout Training Course GRC-4R1508	GRC CS and SSC. Employees who maintain, modify, adjust, inspect, construct, or service, equipment.	Every 4 years	Instructor-led; in house; 3 hours	OSHA, NASA GSM Ch. 9	Tim Czaruk 3-3296

-M-	Mishap Investigations: The NASA "Introduction to Mishap Investigations" 4 courses in the STEP program	Members of Investigating Authority (IA) and Mishap Investigation Boards (MIB)	At least one member of IA shall take this course within 1 year of an investigation; members of .	On-line in SATERN; 4 hours Each course is 1 to 1.5 hours in length.	NASA NPR 8621.1	Jim Smith 3-2085
	Mishap Investigations: "Human Factors in Mishap Investigations"	Human Factors Mishap Investigator	Every 5 years	Online in SATERN 4 hours	NASA NPR 8621.1	Jim Smith 3-2085
-N-	Nanomaterial Health and Safety	GRC CS and SSC. All employees who use nanomaterials; all supervisors of employees who use nanomaterials	Initial and when changes in employee's job duties occur	Instructor-led; 1 hour	OSHA, NPR 1800.1; NASA GRC OHPM Ch. 23	Luz Jeziorowski 3-8790
	National Electrical Code (NFPA 70)	GRC CS and SSC. Employees who design or install electrical wiring or utilization equipment, or who design or work on or around high voltage (>600 volts) equipment or wiring. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	Every 3 years	Instructor-led; outsourced	OSHA, NFPA, & NASA GSM Ch. 8	Doug Lehota 3-2092
	National Electrical Safety Code (ANSI C2)	GRC CS and SSC. Employees who design or work on or around high voltage (>600 volts) equipment or wiring. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	Every 3 years	Instructor-led; outsourced	OSHA, ANSI & NASA GSM Ch. 8	Doug Lehota 3-2092
	Non-Ionizing Radiation Safety (Non-Laser)	GRC and SSC. Currently not due to on-site activities; for questions contact Radiation Safety Officer	When needed		ANSI & NASA OHPM, Ch. 10	Chris Blasio 3-6520
-O-	OSHA 30 Hour Construction Training Course SMA-OS-ILT-455	GRC CS and SSC. Employees, foremen, job supervisors, and anyone involved in construction operations. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	One time only	Instructor-led; outsourced; 30 hours.	OSHA, GSM Ch. 17	Christine Greenwalt 3-3105 Venessa Pellegrino

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	OSHA Regulated Chemicals	All GRC and SSC employees using OSHA-Regulated Chemicals currently used at GRC; all supervisors of employees using these chemicals. The list of pertinent chemicals includes: Acrylonitrile Arsenic, inorganic Benzene, 1, 3-Butadiene, Cadmium, Chromium VI (typically found in stainless steel; exposure issues with stainless steel welding and grinding), Formaldehyde	Initial and when chemical use changes	Instructor-led; 1 hour	OSHA, NASA NPR 1800.1, NASA GRC OHPM Ch. 24	Betty Hodgson 3-3030
-P-	Personal Protective Equipment (PPE) See Job Hazard Analysis / PPE Training. GRC-4R1954	All employees who use personal protective equipment (such as gloves, safety glasses, face shields, safety goggles, laser goggles, welding goggles, and/or helmets, safety shoes, hardhats, chemical protective clothing, fall protection, electrical protective devices, etc.) as identified through a Hazard Assessment and designated by supervisors.	Before they use personal protective equipment. Refresher training required when: • There is a change in type of PPE used or worker's job scope has been altered • The employee does not show the ability to properly use PPE	Instructor-led; in-house. 2 hours	OSHA 29 CFR 1910, NASA GSM Ch. 15 and 33.	Frank Calovini 3-2492
-Q-	(no courses at this time)					
-R-	Radiation Safety for Portable XRF Instrument with X-ray Tube	GRC CS and SSC. Employees that use the x-ray tube based, handheld X-ray Fluorescence (XRF) instrument for material identification/analysis.	Initial before use	INSTRUCTOR LED 1.0 hour and "Hands-On" SESSION 0.5 hour.	NASA OHPM Ch. 9	Chris Blasio 3-6520
	Radiation Safety Training for Radioactive Materials	GRC CS and SSC. Employees identified as "radiation workers" or using licensed radioactive sources in the course of their job	Initial before use and biennial refresher	Either instructor-led or on-line in SATERN; 4 hours or more	NRC, NASA OHPM-Ch. 8	Chris Blasio 3-6520
	Radiation Safety for X-ray and Radiation-Generating Equipment	GRC CS and SSC. Individuals using certain types of X-ray and Radiation-Generating Equipment.	Initial before use and triennially thereafter	On-line in SATERN; 1 hour	OSHA, NASA NPR 1800.1, NASA OHPM-Ch.9	Chris Blasio 3-6520
	Manufacturer's (or Equivalent) Course on Portable Nuclear Gauge Operation and Use	GRC CS and SSC. Employees who may be (1) using/operating a portable nuclear moisture/density gauge and/or (2) transporting such a gauge in a government or private vehicle or otherwise making preparations for such transportation.	Initial	Instructor-led; typically by gauge manufacturer OR company offering gauge use, repair and training services.	NRC, NASA OHPM-Ch.8	Chris Blasio 3-6520

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	Respiratory Protection	All GRC CS and SSC employees who wear a respirator (required use or voluntary use).	Prior to respirator use and annually with medical clearance & fit test.	Instructor-led; 75 minutes Refresher: 30 min.	OSHA, NASA OHPM, Ch. 4	Marne Bold 3-2870 (training); Samantha Butler 3-3175 (respirator fit tests)
	Root Cause Analysis	At least one Mishap Investigation Board members, Mishap Investigating Authority	Every 3 years	Instructor-led; 19 hours	NASA NPR 8621.1	Jim Smith 3-2085
-S-	Safety, Health & Environmental Orientation	All new civil servant employees, incoming students, and pathways interns.	One Time Only	Instructor-led; 0.5 hours	NASA	Carl Brown 3-5861
	Safety Permit training for Supervisors Course # GRC-4R1826	Supervisors of Safety permit requestors or those who would require a Safety Permit to test and operate within or on GRC facilities. This is training to use the web-based Safety Permit system.	1-time	In-house Instructor Led, 1.0 hour	GRC	Mike Dyke 3-3119
	Safety Permit Process for Non-Supervisors Course # GRC-4R1825	Safety permit requestors or those who would require a Safety Permit to test and operate within or on GRC facilities. This is training to use the web-based Safety	1-time	In-house Instructor Led, 1.5 hours	GRC	Mike Dyke 3-3119
-U-	(no courses at this time)					
-V-	(no courses at this time)					
-W-	(no courses at this time)					
-XYZ-	X-Ray Safety	See "Radiation Safety....." topics	Every 3 years			Chris Blasio 3-6520
	X-Ray Technician	Mailroom employees	Every 3 years	Instructor-led; outsourced	NASA	Jeanine Hanzel 3-3077
RECOMMENDED ENVIRONMENTAL, HEALTH, AND SAFETY COURSES						
	Course Title:		Frequency:	Course Type & Length	Recommended by:	POC
-AA-	(no courses at this time)					
-BB-	Back Injury Prevention					Supervisor
	Beryllium Hazard Awareness Training		One time only.	In-house, 0.75 hrs.	NASA, OSHA	Betty Hodgson 3-3030
	Bloodborne Pathogens Awareness		One Time Only	Video	OHPM, Ch. 11	Marne Bold 3-2870
	Bomb Threat Procedures		Every 2 years	Instructor-led; outsourced	NASA	Jeanine Hanzel 3-3077
-CC-	Chemical Inventory Management		Before chemical use	Instructor-led	NASA, EPM Ch. 15	Lisa Ramsey 3-2931

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	Compressed Gas Safety		One time only	Video		James Hritz 3-3028
	Compressed Gas Trailer		Every 4 years	Instructor-led; outsourced; 2 days	ANSI & NASA GSM Ch.7	James Hritz 3-3028
	Confined Space Entry		Every 2 years	Instructor-led, In-house; 3 hours	OSHA 29 CFR 1910, NASA GSM Ch. 16	Dallas Jenkins 3-3771
	Cryogenic Safety		Every 3 years	Instructor-led; 3 days	NASA	James Hritz 3-3028
-DD-	(no courses at this time)					
-EE-	Equipment Operation		One Time Only	On-the-job training	OSHA	Supervisor
	National Electrical Code (NFPA 70)	GRC CS and SSC. Employees who design or install electrical wiring or utilization equipment, or who design or work on or around high voltage (>600 volts) equipment or wiring. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	As requested	Instructor-led; outsourced	OSHA, NFPA, & NASA GSM Ch. 8	Doug Lehota 3-2092
	National Electrical Safety Code (ANSI C2)	GRC CS and SSC. Employees who design or work on or around high voltage (>600 volts) equipment or wiring. This course is not required to be taught by GRC personnel or be purchased / sponsored by GRC for SSC.	As requested	Instructor-led; outsourced	OSHA, ANSI & NASA GSM Ch. 8	Doug Lehota 3-2092
	Explosive Handlers and Operations Personnel Refresher Course	Explosive Handlers. A new class is being developed by the Pyrotechnics & Explosives Working Group. This class designation may be replaced. Estimated date of completion January 2015	After successfully completing training for an assignment, the worker should be qualified for a specified time as determined by the GRC Explosives Safety	Instructor-led; 5 hrs.	NASA NPR 8715.3	David Tabayoyon 4-2345
	Explosives Safety, Basics of	Explosive Handlers. Note: A new class is being developed by the Pyrotechnics & Explosives Working Group. This class designation may be replaced. Estimated date of completion January 2015	After successfully completing training for an assignment, the worker should be qualified for a specified time as determined by the safety. GRC	Instructor-led; 14 hrs.	NASA NPR 8715.3	David Tabayoyon 4-2345
-FF-	Facility System Safety Course SMA-SAFE-NSTC-0001 or more applicable local training	Personnel with facility safety responsibility and professionals involved in managing, performing, or reviewing of facility acquisitions, plans, designs, safety analyses, and operations.	One time or per updates	Instructor Lead 2 day	Not Required	Aaron Walker 3-8764

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	Fire Hazards in Oxygen Systems Course SMA-SAFE-NSTC-0052	Recommended for personnel who design, install, operate, maintain, or modify oxygen systems.	One time training	Instructor-led; 2 days	NASA GSM Ch. 5	James Hritz 3-3028
	Fire Extinguisher		Annual	Instructor-led; in-house; 1 hour	OSHA, NFPA & NASA GSM Ch. 31	Mark Smith 3-3608
	Flexible (High Pressure) Hose Safety,		Every 3 years	Instructor-led; 4 hours	NASA	James Hritz 3-3028
	-GG- (no courses at this time)					
	-HH- Hand and Power Tools			Instructor-led; 2 hrs.	OSHA	Aaron Walker 3-8764
	Health Threat Awareness (Anthrax)		One Time Only	Video; 0.5 hours	NASA	Luz Jeziorowski 3-8790
	High Pressure Systems		Every 3 years	Instructor-led; NSTC; 2 days	NASA	James Hritz 3-3028
	Hydrogen Safety		Every 3 years	Instructor-led; NSTC; 2 days	NASA GSM Ch. 6	James Hritz 3-3028
	-II- Indoor Environmental Quality		Based on SHeD	Instructor-led; 1.5 hours	OSHA, NASA GRC	Tim Fiorilli 3-3472
	-KK- (no courses at this time)					
	-LL- Ladder Safety			Videos available through the	OSHA	
	Lead Based Paint Awareness		One Time Only Before Use	Instructor-led; 2 hours	OSHA	Mike Schmidt 3-5501
	Liquefied and Compressed Gases			Video available through the Learning Center; 0.5 hrs.		
	Local Exhaust Ventilation		Based on SHeD recommendation	Instructor-led; 1 hour	OSHA	Tim Fiorilli 3-3472
	-MM- Machine Guarding,			Instructor-led; 4 hours or	OSHA	Aaron Walker 3-8764
	Mercury Awareness Hazard Communication Training		Annual	Instructor-led	OSHA	Mike Schmidt 3-5501
	Metal Working Fluids Awareness		Every 2 years, if need is determined	Instructor-led; in-house. 1 hour	NASA	Betty Hodgson 3-3030
	-NN- (no courses at this time)					
	-OO- Office Safety			Various video courses are available through the Learning Center		
	OSHA 30 Hour General Industry	Operational Safety Personnel, Supervisors Managing Safety and Health, Walking and Working Surface, including fall protection,	One time only	Instructor-led; outsourced; 30 hours.	OSHA	Venessa Pellegrino

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	Oxygen Systems: Operation & Maintenance		Every 3 years	Instructor-led; NSTC; 4 hours	NASA GSM Ch. 5	James Hritz 3-3028
-PP-	Powered Platforms			Various video courses are		Robert Wallen 3-6722
-QQ-	(no courses at this time)					
-RR-	Respiratory Protection		Based on SHed recommendation	Instructor-led; 75 minutes	OSHA, NASA OHPM,	Marne Bold 3-2870
	Risk Management		When needed	Instructor-led; 8 hours	NASA NPR 8000.4	
-SS-	Orientation to NASA Safety Culture	All civil service employees and contractor personnel not in a supervisory position (Recommended for new employees)	One Time Only	Web-based in SATERN, 1.0 hour	Recommended OSMA	Amy Bower 3-5442
	Safety Culture for Supervisors	All civil service and contractor supervisors	One Time Only	Web-based in SATERN, 1.0 hour	Recommended OSMA	Amy Bower 3-5442
	Shop Safety			Learning Center Video; 0.5 hours		Aaron Walker 3-8764
	Safety Permits		One Time Only	In-house, 1 hours or through Safety Permit Website.	NASA	Michael Dyke 3-3119
	Scaffolding User Awareness	GRC CS and SSC employees that perform work from a scaffold. Course is not intended to provide competence in scaffold design and erection.	As requested	Instructor	OSHA	Greg Frederick 3-8054
	Silica Hazard Awareness		One Time Only	In-house, 0.75 hours	NASA, OSHA	Betty Hodgson 3-3030
	Synthetic Vitreous Fiber Awareness Training		Initially and when process changes are made	Instructor-led; 1 hour	NASA NPR 1800.1	Mike Schmidt 3-5501
	System Safety Fundamentals,	Employees who design new facilities or modifications to existing facilities.	One Time Only	Instructor-led; NSTC; 5 days	NASA	Aaron Walker 3-8764
-TT-	(no courses at this time)					
-UU-	(no courses at this time)					
-VV-	(no courses at this time)					
-WW-	(no courses at this time)					
-ZZ-	(no courses at this time)					

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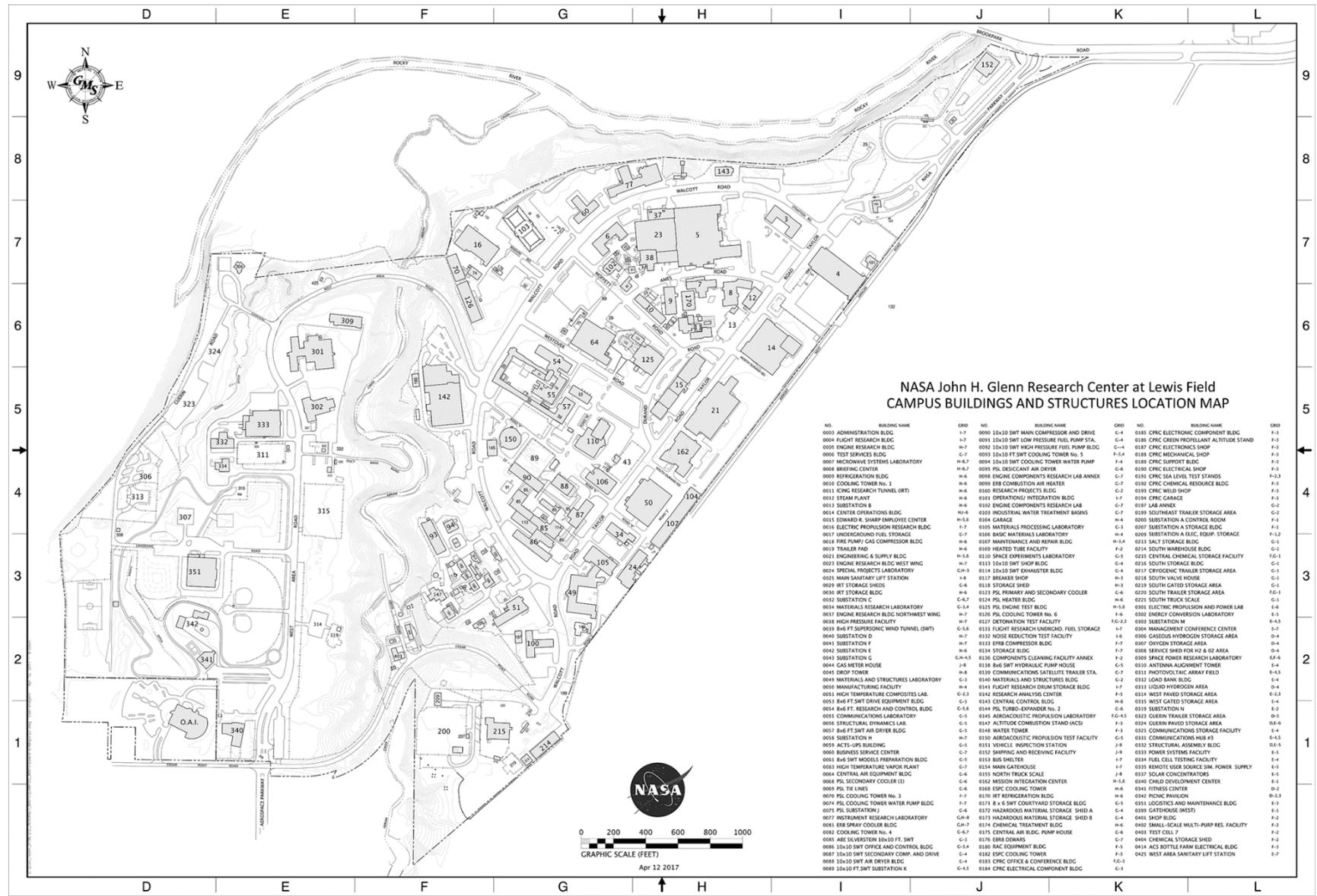
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APPENDIX H.—GLENN RESEARCH CENTER MAPS

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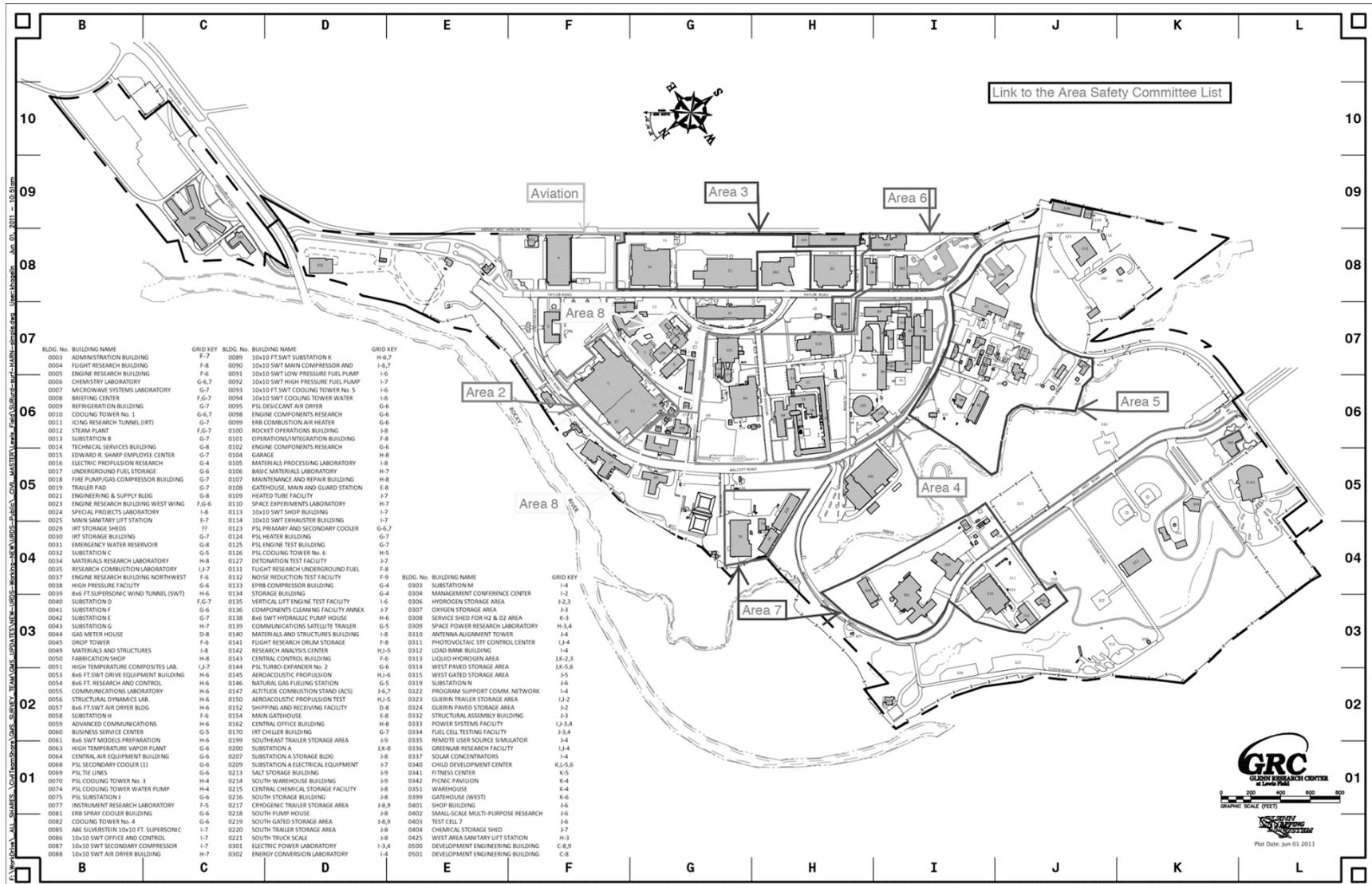
- Map of Lewis Field
- Map of Plum Brook Station

Map of Lewis Field



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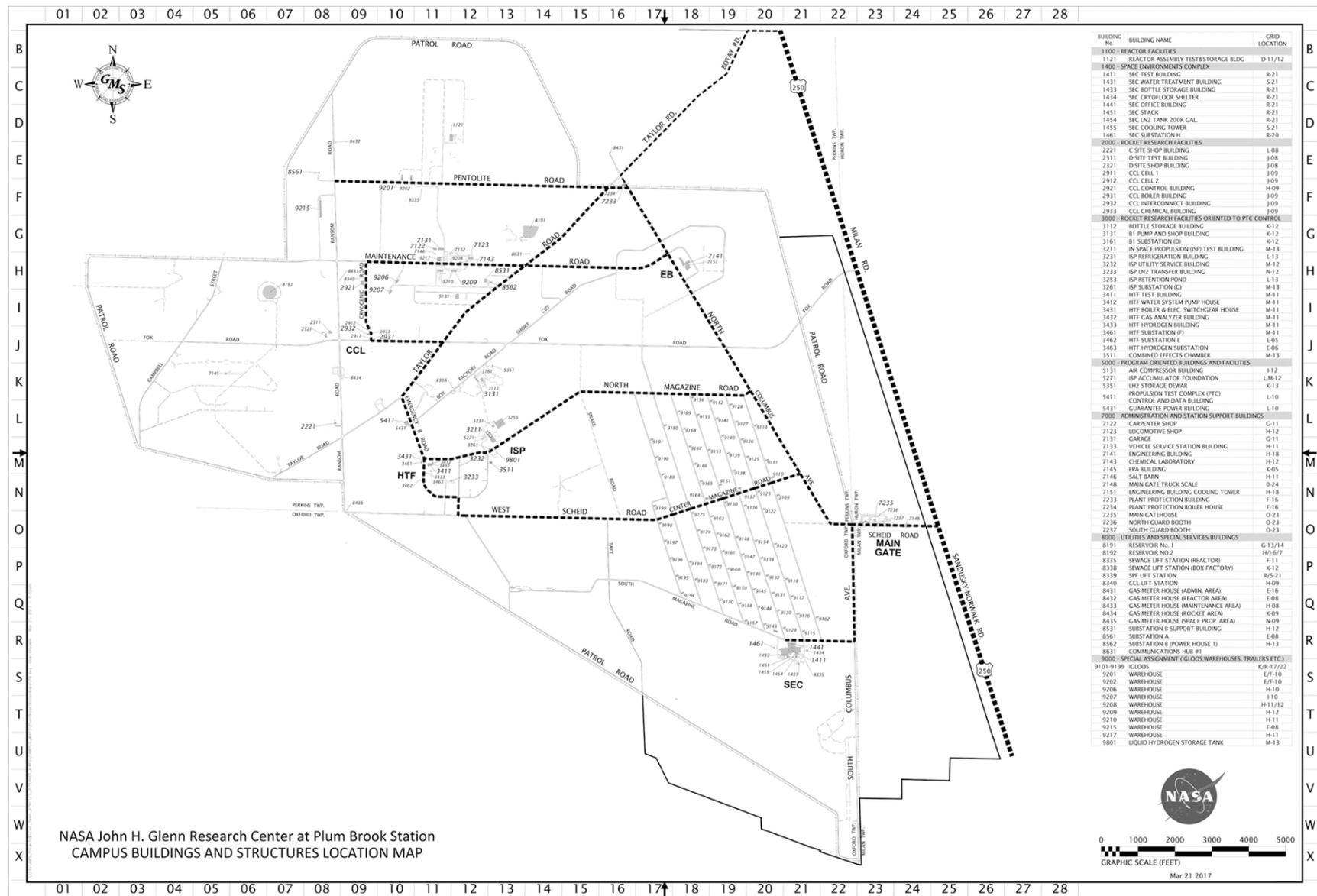
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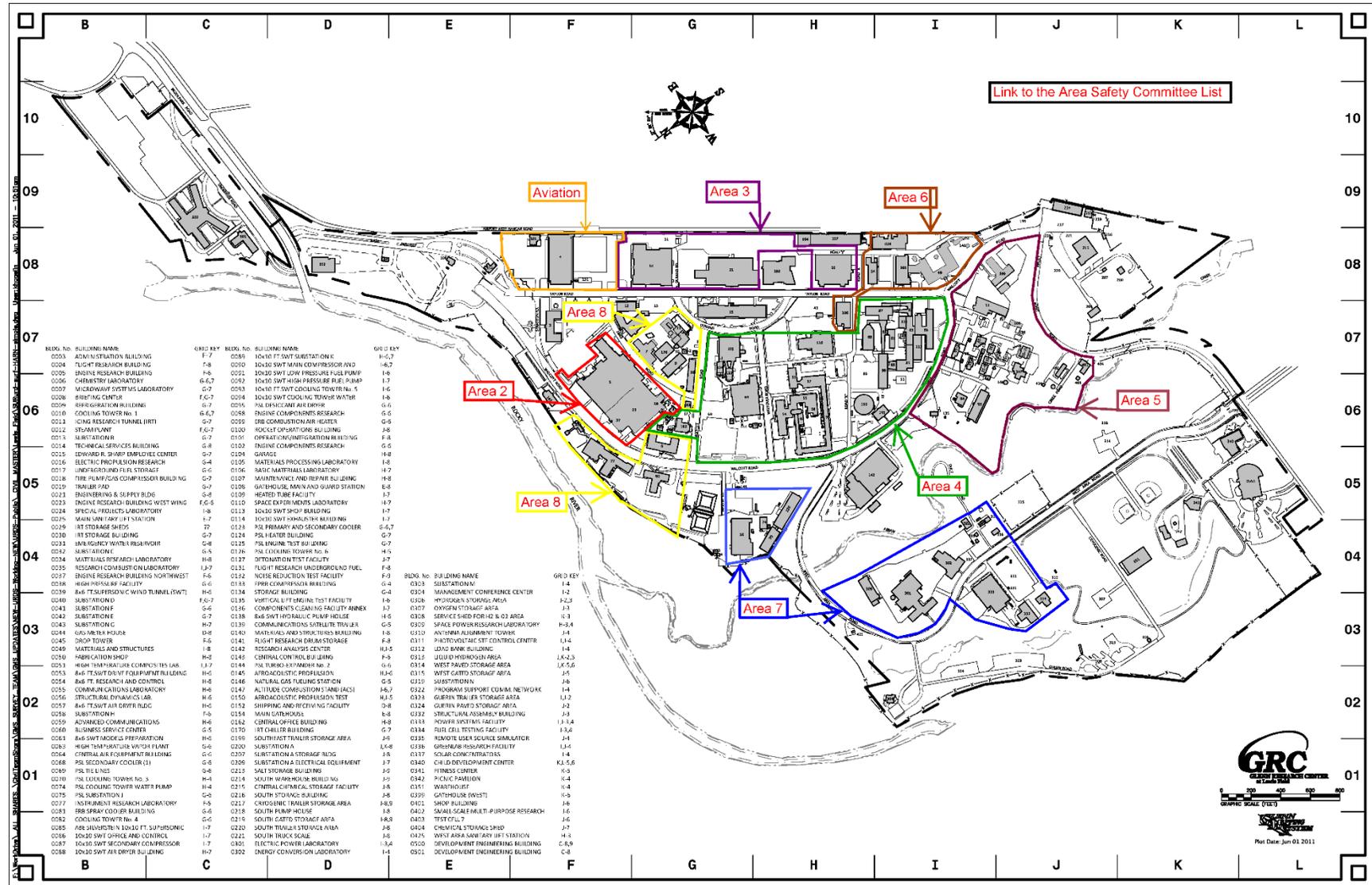
Map of Plum Brook Station



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APPENDIX I.—GLENN RESEARCH CENTER SAFETY MAP



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