

Document Number: GLM-QS-1700.1.17

Revision: Revision B

Effective Date: 12/19/2012

Expiration Date: 12/19/2017

## Glenn Safety Manual – Chapter 17

# Construction Safety and Health w/Change 2 (9/30/2015)

*Approved by: QS/Chief, Safety and Health Division*

*Distribution: BMS Library*

**NASA - Glenn Research Center  
Cleveland, OH 44135**

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

### Change Record

<b>Rev.</b>	<b>Effective Date</b>	<b>Expiration Date</b>	<b>GRC25, Change Request #</b>	<b>Description</b>
B	12/19/2012	12/19/2017	13	Bi-annual review/revision
Change 1	4/14/2014	12/19/2017	N/A	Administrative change to add front cover and change history log to comply with NPR 1400.1. Deleted “Authority for the procedures, responsibilities, and requirements in this chapter are derived from the following” and inserted “The GRC shall follow the requirements of the following” in Section 4.0 Policy.
Change 2	9/30/2015	12/19/2017	N/A	Administrative change to remove hyperlinks.

*\*\*Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

## Contents

1.0	PURPOSE.....	4
2.0	APPLICABILITY .....	4
3.0	BACKGROUND.....	4
4.0	POLICY.....	4
5.0	RESPONSIBILITIES.....	4
5.1	Contracting Officer.....	4
5.3	Contracting Officer’s Technical Representative (COTR) .....	5
5.4	Quality Assurance, Facilities Division .....	6
5.5	SHeD Construction Technical Team .....	6
5.6	Waste Management .....	6
5.7	Authority Having Jurisdiction (AHJ) .....	6
5.8	Construction Contractors, Subcontractors, Maintenance Contractors, and Prime Contractors .....	6
5.9	Building Manager .....	6
5.10	Office of Protective Services .....	7
5.11	Chief, Project Management Branch.....	7
6.0	REQUIREMENTS .....	7
6.1	Construction of Facilities (CoF) Design ( <i>NPR 8715.3, NPR 8719.7 and NPD 8820.2</i> ).....	7
6.2	Site-Specific Health and Safety Plan (HASP) ( <i>NPR 8715.3 and NPR 8820.2</i> ).....	7
6.2.1	Contractor HASP Requirements.....	7
6.2.2	SHeD Requirements .....	8
6.2.3	COTR Requirements .....	8
6.3	Hazard Communication ( <i>29 CFR 1926</i> ).....	8
6.3.1	Contractor Requirements.....	8
6.3.2	SHeD Requirements .....	8
6.3.3	COTR Requirements .....	8
6.4	Occupational Safety and Health Administration (OSHA) Competent Person Verification ( <i>29 CFR 1926</i> ).....	8
6.5	Contractor Training Requirements ( <i>29 CFR 1926</i> ) .....	8
6.6	Inspection ( <i>NPR 8715.3 and NPD 8820.2</i> ).....	9
6.6.2	COTR and/or Quality Assurance (QA) Technician Inspections .....	9
6.7	Emergency Response Procedures .....	9
6.7.1	Lewis Field.....	9
6.7.2	Plum Brook Station .....	10
6.8	Mishap Investigation ( <i>NPR 8621.1</i> ) .....	10
6.9	Signs, Signals and Barricades ( <i>29 CFR 1926</i> ).....	10
6.10	Final Inspection ( <i>NASA–STD–8719.9 and NPR 8715.3</i> ).....	10
7.0	RECORDS.....	10
8.0	REFERENCES .....	10
	APPENDIX A.—DEFINITIONS AND ACRONYMS.....	11
	APPENDIX B.—CoF DESIGN REVIEW PROCESS.....	13
	APPENDIX C.—SHORT-DURATION HASP TEMPLATE.....	13
	APPENDIX D.—MINIMUM CONTENT FOR SITE-SPECIFIC HEALTH AND SAFETY PLANS.....	15
	APPENDIX E.—GENERAL SAFETY AND HEALTH SPECIFICATION.....	17
	APPENDIX F.—Health and Safety Plan (HASP) SUBMITTAL PROCESS FLOWCHART .....	27

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

## Chapter 17—Construction Safety and Health

*NOTE: The current version of this chapter is maintained and approved by the Safety and Health Division (SHeD). The last revision date of this chapter was December 2012. The current version is maintained on the Glenn Research Center (GRC) intranet within the BMS Library. Approved by Chief of Safety and Health Division.*

### 1.0 PURPOSE

This chapter describes policies and minimal safety and health requirements for all construction activities at the NASA Glenn Research Center (GRC) at Lewis Field (LF) and Plum Brook Station (PBS). Persons engaged in construction activities shall perform work carefully and safely; meet or exceed the minimum safety and health requirements defined herein; and comply with Federal, State, and local codes and standards where required, including NASA Agency and Center policies and procedures.

### 2.0 APPLICABILITY

The responsibilities and requirements in this chapter apply to all GRC civil servant and contractor employees, other Government agency employees, visitors, and other organizations who perform construction activities within the confines of GRC. This chapter also applies to supply contracts for construction services.

### 3.0 BACKGROUND

Construction work includes many inherently hazardous tasks and conditions, such as work at height, excavations, exposure to dust and noise, power tools and equipment, confined spaces, and electricity. Construction workers make up about 8 percent of U.S. workers, but 22 percent of the fatalities—the largest number of fatalities reported for any industry sector. The policies set forth in this chapter were developed to help reduce the level of risk for construction workers.

### 4.0 POLICY

This document describes the responsibilities and requirements for construction activities at GRC. The GRC shall follow the requirements of the following:

- Title 29 Code of Federal Regulations 1926: Safety and Health Regulations for Construction
- NPR 8820.2: Facility Project Requirements
- NPD 8820.2: Design and Construction of Facilities
- NPR 1800.1: NASA Occupational Health Program Procedures
- NPR 8715.3: NASA General Safety Program Requirements
- NPR 8719.7: Facility System Safety Guidebook
- NPR–8719.11: Safety Standard for Fire Protection
- ANSI A10 – Construction Safety Series

### 5.0 RESPONSIBILITIES

#### 5.1 Contracting Officer

The Contracting Officer shall be responsible for the following:

- Enforcing contractor compliance with all Federal, State and local codes and regulations, and compliance with all NASA Agency and Center policies
- Ensuring that the Safety and Health Division (SHeD) has reviewed all construction of facilities (CoF) project designs prior to the bid proposal process

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

- Ensuring that contractors submit a site-specific health and safety plan (HASP) and provide a copy to SHeD for concurrence; and ensuring that the plan is reviewed and concurred with prior to issuance of Notice to Proceed
- Ensuring that all construction contracts contain appropriate safety clauses; see Appendix F
- Coordinating matters regarding proposed safety requirement deviations with the SHeD construction technical lead
- Establishing safety performance elements to be evaluated in contracts where appropriate
- Consulting with SHeD to determine the level of safety professional oversight that shall be required in the construction contract

## **5.2 Project Manager**

The Project Manager shall be responsible for the following:

- Coordinating with SHeD development of safety requirements and objectives for efforts to be contracted, and advising the Contracting Officer of specific contract performance safety concerns or issues
- Ensuring that the authority having jurisdiction (AHJ) and SHeD review all proposed NASA-owned, controlled, or operated facility configuration changes and construction work change orders that have potential life safety, fire protection or safety impacts
- Ensuring that NASA Procedural Requirements are incorporated in all project designs and implemented
- Developing safety requirements and objectives that are clearly delineated in the specifications; and providing specific tasks to the contracting officer for incorporation in the contract, as required
- Ensuring that all construction contracts contain appropriate safety clauses: see Appendix F
- Including SHeD at the beginning of project planning and design, and through the preparation of drawings and specifications processes.
- Participating in the final safety inspection of the work prior to contract completion and occupancy by personnel

## **5.3 Contracting Officer's Technical Representative (COTR)**

The COTR shall be responsible for the following:

- Providing oversight for construction activities, and ensuring that construction contractors comply with all safety and health requirements
- Participating in the design process
- Ensuring that a preconstruction conference is scheduled, conducted, and that the results are documented
- Conducting regular construction meetings
- Providing SHeD with a copy of each contractor's written, site-specific HASP for acceptance prior to issuance of Notice to Proceed
- Coordinating with NASA operations personnel all activities involving hazardous work area access, mechanical and electrical equipment shutdowns, and certification or operational testing
- Enlisting the support of SHeD to ensure compliance with the Glenn Hazard Communication Program throughout the performance of the contract
- Coordinating and participating in contractor construction site inspections
- Ensuring that final inspections include a SHeD representative

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

- Providing, upon request, a copy of the contractor’s daily inspection report to SHeD
- Ensuring that SHeD reviews proposed significant changes to contracts where facility safety is impacted
- Exercising stop work authority when required
- Provide a list of active construction projects to SHeD on a weekly basis

#### **5.4 Quality Assurance, Facilities Division**

Quality assurance technicians provide oversight and verification that the contractor is adhering to the concurred task specific health and safety plan at the construction site.

#### **5.5 SHeD Construction Technical Team**

The SHeD construction technical team provides construction safety compliance oversight for all construction activities planned or performed including the following:

- Participating in onsite visits and pre-bid conferences to ensure that potential bidders understand safety provisions
- Assisting the Contracting Officer in evaluating prospective contractors’ performance and safety records
- Conducting reviews and providing technical guidance throughout the design process, beginning with project planning and design including preparation of drawings and specifications
- Assisting the contracting officer in evaluating performance and safety record
- Assisting the Contracting Officer as appropriate to apply any special safety provisions to grants or cooperative agreements
- Providing technical advice on matters involving construction safety
- Performing safety, health, and environmental compliance inspections on active construction projects

#### **5.6 Waste Management**

Waste Management is responsible for providing technical guidance and oversight on waste management, recycling, and waste reduction, including preparing waste manifests.

#### **5.7 Authority Having Jurisdiction (AHJ)**

The AHJ is responsible for formally monitoring fire protection compliance efforts during the various phases of the projects. Following a review and acceptance of fire/life-safety documentation applicable for a given facility, the AHJ issues each occupancy permit.

#### **5.8 Construction Contractors, Subcontractors, Maintenance Contractors, and Prime Contractors**

As per NPR 1800.1, construction contractors, subcontractors, maintenance contractors, and prime contractors engaged in construction activities shall meet or exceed the minimum safety and health requirements and shall comply with all other Federal, State, and local codes and standards where required, including NASA Agency and Center policies and/or procedures. Where there is any discrepancy in the regulations, the more stringent rule shall apply.

#### **5.9 Building Manager**

The building manager serves as the point of contact between building occupants and outside organizations by:

- Providing pertinent information related to building activities, locations of rooms and personnel, etc. that could affect occupants’ work routines
- For area clearance work Notifying building occupants of outages (electric, construction activities, water, steam, chilled water, sewer, etc.)

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

- Reporting any construction activities occurring without authorized, site-specific health and safety plans to SHeD.

### **5.10 Office of Protective Services**

Office of Protective Services personnel ensure that NASA contractor employees, other Government agency employees, visitors, and other organizations that perform construction activities within the confines of GRC are properly badged.

### **5.11 Chief, Project Management Branch**

The Chief, Project Management Branch ensures that project managers comply with policies and procedures outlined in this chapter.

## **6.0 REQUIREMENTS**

Construction safety requirements have been established to protect the life, health, and physical well-being of all GRC employees, contractor employees, visitors, and other Government agency employees; to ensure the safety of the public from hazards, incidents, and/or operations from construction activities; to prevent damage of property, supplies, and equipment; and to prevent accidents that might interrupt work, thereby delaying NASA programs and/or negatively affecting NASA property.

### **6.1 Construction of Facilities (CoF) Design (NPR 8715.3, NPR 8719.7 and NPD 8820.2)**

CoF project managers shall include SHeD at the beginning of project planning and design, and through the preparation of drawings and specifications processes. In addition, the AHJ shall be involved when the project includes fire protection /life safety issues. SHeD involvement shall be formally documented at the following two points:

- Signatures of the SHeD construction technical lead on the Project Requirements and the Concept Requirement documents
- Responses to SHeD comments and questions

A CoF project design team will not issue a Request for Proposal or an Invitation for Bid without the above referenced documentation. This process is further illustrated in Appendix B.

Question re: shaded boxes

### **6.2 Site-Specific Health and Safety Plan (HASP) (NPR 8715.3 and NPR 8820.2)**

#### **6.2.1 Contractor HASP Requirements**

Contractors shall perform the followings:

- Submit a written site-specific HASP to the COTR before any construction work is performed. The contractor or the COTR shall submit the HASP to SHeD for acceptance (see Appendix B). If the prime contractor is writing the HASP for a subcontractor, the subcontractor shall submit documentation to the Prime contractor concurrence with the HASP and ability to comply with all controls and personal protective equipment requirements specified by the prime contractor, on company letterhead. This documentation shall be kept at the work site and be made available for review upon request. The Notice to Proceed shall not be granted unless the HASP has been accepted.
- Identify hazardous operations and chemicals related to the work to be performed in the HASP. The plan shall also describe methods and procedures that will be used to ensure a safe work environment, and how the contractor intends to protect both the health and safety of GRC and contractor employees, and Government property and equipment. The contractor shall also provide current material safety data sheets (MSDSs) for all hazardous materials and chemicals brought onsite. Hazardous Waste Operations and Emergency Response (29 CFR 1910.120) has specific requirements for HASPs. The HASP content outline in Appendix D provides further guidance on the content of site-specific HASP. Appendix C provides an example for a short-duration task.

**Printed copies are uncontrolled and are not to be used for operational purposes.**

Glenn Research Center Glenn Safety Manual	Title: Construction Safety and Health	
	Document No.: GLM-QS-1700.1.17	Rev.: Revision B

- Designate a site health and safety officer and/or safety manager who will ensure compliance with contract safety and health requirements for each prime contract
- Include, to the extent specified in the contract, safety responsibilities in subcontracts (All prime contractors shall monitor and document their subcontractors' activities to ensure compliance with all required safety and health regulations.)
- Coordinate all operations that involve safe access to hazardous work areas, shutdowns of mechanical and electrical equipment, testing, and interaction between the contractor and NASA operations personnel with the COTR
- Provide fire extinguishers and other safety equipment as required, ensure that employees are trained in their proper use, and provide documented proof that employees have been trained upon request

### 6.2.2 SHeD Requirements

Review, concur, and comment on contractor HASPs within 5 days for initial submittal; 2 days for resubmittals. **Error! Reference source not found.** is a flow chart that illustrates the HASP review and acceptance process.

### 6.2.3 COTR Requirements

The COTR, or designee, reviews the contractor-submitted HASP and verifies that it accurately depicts the project scope of work and reviews requested resubmittals to verify that SHeD comments have been addressed. The COTR shall not issue the Notice to Proceed until the HASP has been concurred by both SHeD and the COTR.

## 6.3 Hazard Communication (29 CFR 1926)

### 6.3.1 Contractor Requirements

Contractors shall ensure that MSDSs for each chemical stored at construction sites are located onsite and are available upon request

### 6.3.2 SHeD Requirements

SHeD shall review and accept proposed chemicals and materials to be brought onsite by contractors and shall provide contractors with MSDS for chemicals and materials owned by NASA at the construction work site

### 6.3.3 COTR Requirements

COTRs shall verify and enforce that chemicals are stored properly by onsite contractors and that the MSDS are kept at the construction site

## 6.4 Occupational Safety and Health Administration (OSHA) Competent Person Verification (29 CFR 1926)

Contractors shall designate a competent person(s) for each planned operation in compliance with Occupational Safety and Health Administration (OSHA) standards and Environmental Protection Agency (EPA) regulations. Scaffolding shall not be erected, moved, dismantled, or altered except under the supervision of a trained, competent person.

## 6.5 Contractor Training Requirements (29 CFR 1926)

Contractors are responsible for ensuring that employees meet the following training requirements as required, and to the extent specified in the contract:

- Developing motivation, awareness, training, and certification programs in safety matters (including regularly scheduled safety meetings for supervisors, foremen, and other employees); documenting safety-related training in accordance with 29 CFR 1926 and OSHA requirements
- Recognizing and avoiding unsafe conditions and practices

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

- Emergency procedures, including plans, routes, assembly locations, and procedures to summon help utilizing emergency notification telephone numbers and systems Hazard communications, blood-borne pathogens, chemical safety, GRC-specific hazards that may be encountered, and the procedures for employees that are required to enter confined and enclosed spaces (see the GRC Safety Manual)
- Proper use of fire extinguishers
- Site-specific safety orientation to all new employees (currently a PowerPoint presentation)
- Site-specific HASP requirements and signing the HASP to document training
- Industry-recognized, competent person, fall protection training for employees who work at 6 feet heights or greater.

## **6.6 Inspection (NPR 8715.3 and NPD 8820.2)**

The contractor shall provide access to contractor activities and/or operations to the Contracting Officer, SHED, Headquarters review teams, Federal compliance safety and health officers, and EPA compliance officers. . The contractor shall provide access to SHED and the COTR for announced and unannounced reviews of contractor operations.

### **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 job site to ensure that the site and work practices are safe and done in accordance to the contractor's site specific HASP. Documentation shall be maintained at the job site. The Contractor shall close all self- and GRC-generated inspection findings in a timely manner.

SHED shall conduct frequent inspections of construction sites to verify site safety and compliance with applicable regulations. Inspections shall be documented and disseminated in the SHETrak database.

### **6.6.2 COTR and/or Quality Assurance (QA) Technician Inspections**

The COTR and/or QA technician shall conduct and document frequent inspections to verify safety and compliance with applicable regulations, and verify that contractors close findings in the SHETrak system in a timely manner.

## **6.7 Emergency Response Procedures**

### **6.7.1 Lewis Field**

In the event of fires, explosions, chemical spills, illness, injuries, and other emergencies, dial 911 from any internal telephone. A Lewis Field dispatcher will answer your call and dispatch the appropriate personnel and/or equipment. If you do not have access to an internal telephone, call 216-433-8888 from a cell or other external phone.

If an emergency occurs, be prepared to relay the following information to the dispatcher:

- Location of the emergency
- Nature of the emergency (fire, medical, chemical, etc.)
- Number of persons injured

Remain on the line with the dispatcher until he or she releases you.

For nonemergency response, dial 216-433-2088.

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

### 6.7.2 Plum Brook Station

In the event of fires, explosions, chemical spills, illness, injuries, and other emergencies, dial 911 from any internal telephone. A PBS dispatcher will answer your call and dispatch the appropriate personnel and/or equipment. If you do not have access to an internal telephone, call 419-621-3222 from a cell or other external phone.

If an emergency occurs, be prepared to relay the following information to the PBS dispatcher:

- Location of the emergency
- Nature of the emergency (fire, medical, chemical, etc.)
- Number of persons injured

Remain on the line with the dispatcher until he or she releases you.

For nonemergency response, dial 911

### 6.8 Mishap Investigation (NPR 8621.1)

The contractor shall report all accidents including near misses to the COTR, report using NASA Incident Reporting and Information System (IRIS), and initiate an investigation within 24 hours. For more information, refer to Glenn Safety Manual, Chapter 21, Mishap and Close Call Reporting, Investigating, and Recordkeeping.

Report safety data on mishaps, close calls, and lessons learned as required by the contract, in NPR 8621.1, NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Recordkeeping, and in accordance with GRC and OSHA requirements. Contractor mishap investigations will be conducted in accordance with procedures as specified in the contractor's safety plan. NASA may conduct an independent mishap investigation based on the severity and requirements in NPR 8621.1. The Contracting Officer or the COTR will evaluate and verify implementation of corrective actions.

### 6.9 Signs, Signals and Barricades (29 CFR 1926)

The contractor shall ensure that all construction signs are clearly displayed while construction is underway and contain company name, subcontractor names, and contractor emergency contacts. The contractor shall remove signs promptly when the project is completed. (Orange construction signs shall contain the company name, subcontractor name, and the NASA COTR with phone number).

The contractor shall ensure that all construction sites are barricaded as required In Glenn Safety Manual, Chapter 29, Safety Barricades.

### 6.10 Final Inspection (NASA-STD-8719.9 and NPR 8715.3)

Inspections including operational readiness, operational readiness review, test readiness review, pre-final, and final inspections) shall include a safety and/or health representative.

All safety and health issues will be documented, resolved, or adequately controlled prior to acceptance, activation, and operation.

## 7.0 RECORDS

The following records are generated:

- SHeD inspection documentation in the SHETrak database

SHeD inspection documents will be generated in the SHETrak database by contractors or COTR? Or something like this if only a sentence? Also what are the consequences if this doesn't happen?

## 8.0 REFERENCES

Document number	Document name
ANSI A 10	Construction Safety Services

**Printed copies are uncontrolled and are not to be used for operational purposes.**

Glenn Research Center Glenn Safety Manual	Title: Construction Safety and Health	
	Document No.: GLM-QS-1700.1.17	Rev.: Revision B

29 CFR 1926	Safety and Health Regulations for Construction
NPD 8820.2	Design and Construction of Facilities
NPR 1800.1	NASA Occupational Health Program Procedures
NPR 8621.1	NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping
NPR 8715.3	NASA General Safety Program Requirements
NPR 8820.2	Facility Project Requirements
NASA-STD-8719.7	Facility System Safety Guidebook
NASA-STD-8719.11	Safety Standard for Fire Protection

Add other documents numbers and names here from previous citations if ok to do so?

#### APPENDIX A.—DEFINITIONS AND ACRONYMS

**Authority having jurisdiction (AHJ).**—Individual(s) at GRC responsible for implementing the fire safety provisions of NPR 8715.3, and having the authority to approve and/or concur with associated installations, procedures, and equipment. The AHJ is appointed by the Center director.

**Construction.**—Any activity that results in new buildings, structures, and facilities, or modifications to existing buildings, structures, and facilities, such as alterations and repairs; routine institutional maintenance; work on utility systems, process piping, facility equipment, and research hardware; painting or decorating

**Construction of facilities.—(CoF)**

**Contracting Officer.**—Authorized representative for administering contracts

**Contracting Officer's Technical Representative (COTR).**—Individual designated by the contracting officer to act as his or her authorized representative in administering a contract

**Environmental Protection Agency (EPA)**

**Experience modification rate (EMR)**

**Glenn Research Center (GRC.—Lewis Field and Plum Brook Station**

**Hazardous Waste Operations and Emergency Response (HAZWOPER)**

**Health and safety plan (HASP)**

**Hot work.**—Any operation requiring the use of a flame-producing device, an electrically heated tool, or a mechanical tool that can produce sparks or heat to provide an initiation stimulus (see Chapter 28 the of the Glenn Safety Manual, Hot Work Authorization)

**Incident Reporting and Information System (IRIS)**

**Material safety data sheet (MSDS)**

**NASA Policy Directive (NPD)**

**NASA Procedural Requirement (NPR)**

**Occupational Safety and Health Administration (OSHA)**

**Site-specific HASP.**—A plan developed to identify and ameliorate safety and health hazards at a specific location such as a construction site; the plan describes hazards that are likely to be encountered and develops procedures to either eliminate or control the hazards (see attached sample template).

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

**Work stoppage authority.**—Authority to immediately stop all work being performed at a job site; usually invoked when a situation of imminent danger exists that could result in serious injury to workers and/or personnel

**Printed copies are uncontrolled and are not to be used for operational purposes.**



<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title: Construction Safety and Health</b>	
	<b>Document No.: GLM-QS-1700.1.17</b>	<b>Rev.: Revision B</b>

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 – 8: Self explanatory</p> <p>Block 9: 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 10: Identify all known or suspect hazards associated with each respective task or procedure listed in block 8.</p> <p>Block 11: Identify appropriate actions to reduce or eliminate the hazards identified in block 10. Control measures listed below are in order of preference</p> <ol style="list-style-type: none"> <li>1. Engineering controls (the most desirable method of control)</li> <li>2. Substitution. For example, switching to a less hazardous chemical.</li> <li>3. Administrative controls. For example, limiting exposure by reducing work schedule.</li> <li>4. PPE (least desirable method of control)</li> </ol> <p>Block 12: Identify any PPE that is required for each respective hazard identified in Block 10.</p> <p>Block 13: Identify any coordination issues that may present additional hazards.</p> <p>Block 14: The Daily Site Safety Coordination Review must be reviewed and approved by the Prime Contractor.</p> <p>Block 15, 16: 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"> <li>1. Nature of the accident, injury or illness</li> <li>2. Location of the accident, injury or illness including building number and area</li> <li>3. Contact person</li> <li>4. Additional hazards specific to the work site.</li> <li>5. Stay on the phone until the NASA Emergency Dispatcher releases the caller.</li> </ol> <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-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 25%;">Signature</th> <th style="text-align: left; width: 25%;">Date</th> <th style="text-align: left; width: 25%;">Signature</th> <th style="text-align: left; width: 25%;">Date</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>	Signature	Date	Signature	Date	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Signature	Date	Signature	Date																		
_____	_____	_____	_____																		
_____	_____	_____	_____																		
_____	_____	_____	_____																		
_____	_____	_____	_____																		

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

#### **APPENDIX D.—MINIMUM CONTENT FOR SITE-SPECIFIC HEALTH AND SAFETY PLANS**

Following are requirements for safety and health policy and program documents as well as minimum requirements for the site-specific HASPs. Each plan shall be job-specific and shall also address unusual or unique aspects of the project or activity for which it is written. HASPs shall reflect each employer's corporate safety and health program.

1. Signature sheet: title, signature, and phone number of the following:
  - a. Plan preparer
  - b. NASA representative (person who reviews HASP to verify that scope of work is complete)
  - c. NASA safety and health designee (person who reviews document for compliance with OSHA; reviews for impacts on adjacent NASA occupants)
2. Prime contractor information
  - a. Name, address and phone?
  - b. Contract or task number
  - c. Project name
  - d. Accurate project description and location
  - e. Accident experience (provides information such as experience modification rate (EMR), OSHA 300 forms, and corporate safety trend analysis)
3. Copy of the current corporate/company safety and health policy statement.
4. Responsibilities and lines of authority
  - a. Identification and accountability of personnel responsible for safety at corporate and project level
  - b. Lines of authority
5. Competent person name of designee, on company letterhead for each planned operation, in compliance with OSHA standards and Environmental Protection Agency (EPA) regulations)
6. Subcontractor information
  - a. Identification of subcontractors
  - b. Means for controlling and coordinating subcontractors
  - c. Safety responsibilities of subcontractors.
7. Training
  - a. List of mandatory training and certificates that are applicable to this project (e.g., confined space, crane operator, respiratory protection, Hazardous Waste Operations and Emergency Response (HAZWOPER), etc.) and list of any requirements for periodic retraining and/or recertification
  - b. List of requirements for supervisors and employee safety meetings (attendees, when held, who will conduct, etc.)
8. Safety and health inspections
  - a. Person who will conduct safety inspections (e.g., project manager, safety professional, supervisor)
  - b. Inspector's training/qualifications, frequency of inspections, process to record inspections, deficiency tracking system, follow-up procedures, etc.

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

- c. Any external inspection/certifications that may be required
- 9. Safety and health expectations, incentive programs and compliance
  - a. Brief description of the company's safety incentive program
  - b. Policies and procedures regarding noncompliance with requirements
- 10. Accident reporting: 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
- 11. Procedures and programs
  - a. Emergency response procedures including posting of emergency phone numbers
  - b. Spill plans
  - c. Hazard communication program, including location of MSDSs, employee training records, and of hazardous materials inventories (approx. quantities and a site map) that will be brought onto NASA property by both contractors and subcontractors
- 12. Job hazard analysis and controls documenting the following (see HASP outline in the construction eRoom for more details):
  - a. Steps to accomplish the project
  - b. Hazards associated with each step
  - c. Controls associated with each step
  - d. Personal protective equipment required for each step

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

**APPENDIX E.—GENERAL SAFETY AND HEALTH SPECIFICATION**

**Printed copies are uncontrolled and are not to be used for operational purposes.**

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

GRC2012

SECTION 01 35 26.98

GENERAL SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

The requirements of this Section apply to, and are a component part of, each section of the specifications.

1.2 REFERENCES

The documents listed below are incorporated by reference into this contract as if fully rewritten herein.

CODE OF FEDERAL REGULATIONS (CFR)

10 CFR 20	(1991) Standards for Protection Against Radiation
29 CFR 1910	(1996) Occupational Safety and Health Standards
29 CFR 1926	(1996) Safety and Health Regulations for Construction

CORPS OF ENGINEERS (COE)

COE EM-385-1-1	(1981; Rev 1984) Safety and Health Requirements Manual
----------------	--

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

NASA NHB 1700.1	(1993) (V1-B) NASA Safety Policy and Requirements Documents
NASA NPR 8621.1	NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping
NASA NPR 8715.3	NASA General Safety Program Requirements
GLM-QS-1700.1	Glenn Research Center, Safety Manual
GLM-QS-1800.1	Glenn Research Center, Occupational Health Programs Manual

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-06 Test Reports

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

GRC2012

Records shall be submitted in accordance with paragraph entitled, "Gas Protection," of this section.

#### SD-07 Certificates

Statements shall be submitted for the following items in accordance with paragraphs entitled, "Safety Plan" and "Protection Plan," of this section.

Site Specific Health and Safety Plan G  
Protection Plan G

Add training certifications for fall protection competent person.

#### 1.3.1 Site Specific Health and Safety Plan

Contractor shall submit a site specific safety plan to the Contracting Officer for approval within 10 working days after award of contract and it shall be approved prior to notice to proceed. Compliance to the safety plan is mandatory. A copy of this approved plan shall be maintained on the construction site..

The Site Specific Health and Safety plan shall include, as a minimum, the following:

- a. Health and Safety program objectives.
- b. Description of work.
- c. Methods to attain safety objectives.
- d. Responsibility of key personnel for the Contractor.
- e. List of subcontractors and their competent persons.
- f. Safety meetings, surveys, inspections, and reports.
- g. Identification of safety hazards and mitigation plan to allow for safe conduct of work. If the hazard cannot be mitigated, include specific PPE that shall be worn.
- h. Emergency plan including emergency number and muster locations.
- i. Lists of key personnel to be contacted in times of emergency.
- j. Program to show compliance with Federal OSHA Safety and Health Standards 29 CFR 1910 and 29 CFR 1926 and various safety requirements of NASA NPR 8715.3. This shall include an overall site Fall Protection Plan that demonstrates that the requirements and criteria for fall protection in construction workplaces covered under 29 CFR part 1926 will be met for every activity taking place during the project.
- k. Methods to comply with the requirement for immediate reporting of mishaps to the Contracting Officer in accordance with NASA NPR 8621.1. This document is available at:  
[http://nodis3.gsfc.nasa.gov/displayDir.cfm?Internal\\_ID=N PR 8621 001B](http://nodis3.gsfc.nasa.gov/displayDir.cfm?Internal_ID=N_PR_8621_001B) &page name
- l. Procedures for emergency actions to be taken to secure dangerous

SECTION 01 35 26.98 Page 2

September 21, 2012

**Printed copies are uncontrolled and are not to be used for operational purposes.**

GLM 1700.1.17

Verify current version before use at  
<https://knowledge.share.grc.nasa.gov/bmslibrary>

Page 19 of 27

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

GRC2012

conditions, to protect personnel, and secure work areas in the event of accident or an act of nature.

- m. Procedures for securing the mishap site so that the area remains secure until arrival of a safety investigator. Mishap site will remain secured until released by the Contracting Officer.
- n. Provide MSDS sheets for all chemicals which will be used. Methods for handling and storage shall be identified.
- o. Identify the competent person and the competent person for specific activities as required by 29 CFR 1926.
- p. The Health and Safety plan shall be reviewed and signed by all site personnel.
- q. Daily documented site safety inspections shall be performed and documented.
- r. A C-979 Fall Prevention Plan form shall be completed if the workers are working at a height of 6 feet or greater.
- s. If the prime contractor is writing the HASP for a subcontractor, then the subcontractor shall submit documentation on company letterhead indicating that they concur with the HASP and are able to comply with all controls and personal protective equipment requirements as specified by the prime contractor.

#### 1.3.2 Protection Plan

Structures, utilities, sidewalks, pavements, and other facilities immediately adjacent shall be protected against damage.

#### 1.4 SAFETY SUPERVISION

Contractor's Safety Supervisor shall ensure that:

- a. NASA fall protection requirements are included in work instructions where NASA employees and/or contractors will be working in situations that require fall protection.
- b. Ensure that anyone who is identified as a qualified person (per ANSI/ASSE Z359.0-2007, paragraph 2.109) to serve as a subject matter expert in support of the Center's Fall Protection Program has been trained by an industry-recognized trainer, NASA-recognized trainer/training center, or NASA-developed training program equivalent to ANSI and OSHA compliant training (Ref: ANSI/ASSE Z359.2 -2007 Section C.5).
- c. For each situation that requires fall protection, ensure that there is a competent person (per ANSI/ASSE Z359.0-2007, paragraph 2.27) assigned responsibility for the immediate application of fall protection work where fall protection is required whose education and training has been administered by an industry-recognized trainer, NASA-recognized trainer/training center, or NASA-developed training program equivalent to ANSI and OSHA compliant training.
- d. Construction personnel are performing work in compliance with the

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

GRC2012

approved site specific health and safety plan.

#### 1.4 GENERAL SAFETY PROVISIONS

The GRC Safety Manual, GLM-QS-1700.1, is available online at <http://smad-ext.grc.nasa.gov/shed/pub/gsm/gsm-manual.pdf>.

The GRC Occupational Health Programs Manual, GLM-QS-1800.1, is available on-line at <http://smad-ext.grc.nasa.gov/shed/pub/ohpm/ohpm-manual.pdf>

These documents are incorporated by reference into this contract as if fully rewritten herein.

The Contractor and all subcontractors are subject to applicable federal, state, and local laws, regulations, ordinances, codes, and orders relating to safety and health in effect on the date of this Contract.

During the performance of work under this Contract, the Contractor shall comply with procedures prescribed for control and safety of persons visiting the project site. Contractor is responsible for his personnel and for familiarizing each of his subcontractors with safety requirements. Contractor shall advise the Contracting Officer of any special safety restriction he has established so that Government personnel can be notified of these restrictions.

All contractor and subcontractor employees shall sign the HASP to document that they understand and will comply with the contents.

Contractor shall comply with the requirements of NASA NPR 8715.3. This document is available at [http://nodis3.gsfc.nasa.gov/displayDir.cfm?Internal\\_ID=N\\_PR\\_8715\\_003C\\_&page\\_name=main](http://nodis3.gsfc.nasa.gov/displayDir.cfm?Internal_ID=N_PR_8715_003C_&page_name=main)

The contractor shall protect workers who may be exposed to a fall of six feet or greater to a lower level for construction activities. This requirement is more stringent in some cases than that required by 29 CFR 1926, such as for steel erection.

#### 1.5 SAFETY LOCKOUT/TAGOUT PROCEDURES

Contractor shall ensure that each employee is familiar with and complies with these procedures and 29 CFR 1910.147.

Contracting Officer will, at the Contractor's request, apply lockout/tagout red locks and tags and take other actions that, because of experience and knowledge, are known to be necessary to make the particular equipment safe to work on.

No person, regardless of position or authority, shall operate any switch, valve, or equipment that has an official lockout/tagout red lock and tag attached to it, nor shall such tag be removed except as provided in this section.

No person shall work on any equipment that requires a lockout/tagout red lock and tag unless he, his immediate supervisor, project leader, or a subordinate has in his possession the stubs of the required lockout/tagout red lock and tags.

A supervisor who is required to enter an area protected by a lockout/tagout red lock and tag will be considered a member of the protected group

SECTION 01 35 26.98 Page 4

September 21, 2012

**Printed copies are uncontrolled and are not to be used for operational purposes.**

GLM 1700.1.17

Verify current version before use at  
<https://knowledgeshare.grc.nasa.gov/bmslibrary>

Page 21 of 27

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title: Construction Safety and Health</b>	
	<b>Document No.: GLM-QS-1700.1.17</b>	<b>Rev.: Revision B</b>

GRC2012

provided he notifies the holder of the tag stub each time he enters and departs from the protected area.

Identification markings on building light and power distribution circuits shall not be relied on for established safe work conditions.

Before clearance will be given on any equipment, the apparatus, valves, electrical circuits, or systems shall be secured in a passive condition with the appropriate vents, pins, and locks.

Pressurized or vacuum systems shall be vented to relieve differential pressure completely.

Vent valves shall be tagged and locked open during the course of the work.

Where dangerous gas or fluid systems are involved, or in areas where the environment may be oxygen deficient, system or areas shall be purged, ventilated, or otherwise made safe prior to entry.

#### 1.5.1 Tag Placement and Removal

Lockout/tagout red locks and tags shall be completed in accordance with the regulations in Chapter 9 of the GRC Safety Manual, GRC-MQSA.001 and attached to any device which, if operated, could cause an unsafe condition to exist.

#### 1.6 ACCIDENT TREATMENT AND RECORDS

Contractor shall post emergency first aid and ambulance information at project site.

Emergency response shall require the Contractor to call 911 on a NASA phone or 216 433-8888 on an outside line.

#### 1.7 FIRE PREVENTION AND PROTECTION

Open-flame heating devices will not be permitted except by approval in writing from the Authority Having Jurisdiction (AHJ) at GRC. Approval for the use of open fires and open-flame heating devices will not relieve the Contractor from the responsibility for any damage incurred because of fires.

Burning trash, brush, or wood on the project site shall not be permitted.

All hot work operations shall comply with NASA GRC Safety Manual, Chapter 28, Hot Work Authorization. Prior to hot work, a C-7a Hot Work Authorization Permit shall be issued by the Safety, Health and Environmental Division. Immediately prior to hot work operations, a C-7b form and associated inspection shall be completed by the responsible person.

Contractor shall discontinue burning, welding, or cutting operations 1 hour prior to the end of the normal work day. A workman shall remain at the site for 1 hour after discontinuing these operations to make thorough inspection of the area for possible sources of latent combustion. The Contractor shall be equipped with the appropriate fire extinguishers and shall be trained in the proper use of fire extinguishers. Any unsafe conditions shall be reported to SHED. (Telephone: (216) 433-2088)

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

GRC2012

#### 1.9 ELECTRICAL

Contractor shall appoint an individual responsible for the electrical safety of each work team to restrict entry to dangerous locations to those authorized by him jointly with the Government.

#### 1.10 UNDERGROUND UTILITIES

A Confined Space Entry Permit, NASA C-199, as per Chapter 16 of the Glenn Safety Manual is required before any Contractor personnel enters a manhole. Contractor shall contact the Contracting Officer for support services by calling (216) 433-8888 at least 72 hours in advance.

Contractor shall be responsible for removing water and debris before commencement and during execution of work in manholes.

#### 1.11 RADIATION SAFETY REQUIREMENTS

License Certificates for radiation materials and equipment shall be submitted by the Contracting Officer for all specialized material and equipment per Chapter 9 of the Glenn Occupational Programs Manual.

Operations performed by the Contractor which utilize nuclear density gauges shall be included in the HASP.

Workers shall be protected from radiation exposure in accordance with 10 CFR 20. Standards for Protection Against Radiation

Loss of radioactive material shall be reported immediately to the Contracting Officer.

Actual exposure of the radiographic film or unshielding the source shall not be initiated until after 5 p.m. on weekdays.

In instances where radiography is scheduled near or adjacent to buildings or areas having limited access or one-way doors, no assumptions shall be made as to building occupancy. Where necessary, the Contracting Officer will direct the Contractor to conduct an actual building entry, search, and alert. Where removal of personnel from such a building cannot be accomplished and it is otherwise safe to proceed with the radiography, a fully instructed employee shall be positioned inside such building or area to prevent exiting while external radiographic operations are in process.

#### 1.12 FACILITY OCCUPANCY CLOSURE

Streets, walks, and other facilities occupied and used by the Government shall not be closed or obstructed without written permission from the Contracting Officer.

#### 1.13 DIGGING, TRENCHING, AND/OR EXCAVATION

Prior to performing any excavation work or any surface penetrations on any ground surface, the Contractor shall obtain from the Facilities Division an Excavation Permit. The Contractor shall comply with GRC Safety Manual, Chapter 35, Digging, Trenching and Excavation Procedure. Excavations greater than 4 ft in depth may be considered to be 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

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title: Construction Safety and Health</b>	
	<b>Document No.: GLM-QS-1700.1.17</b>	<b>Rev.: Revision B</b>

GRC2012

spaces follow:

-Below 4 and 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 to be permit-required confined spaces and the requirements of the Glenn Safety Manual, Chapter 16, Confined Space Entry, shall be in effect.

Employees who work in or around excavations must be provided training according to their work activities.

#### 1.14 GAS PROTECTION

Contractor shall have one or more employees properly trained in operation of gas testing equipment and formally qualified as gas inspectors who shall be on duty during times workmen are in confined spaces. Their primary functions shall be to test for gas and operate testing equipment. Unless equipment of constant supervisory type with automatic alarm is employed, gas tests shall be made at least every 2 hours or more often when character of ground or experience indicates gas may be encountered. A gas test shall be made before workmen are permitted to enter the excavation after an idle period exceeding one-half hour.

Readings shall be permanently recorded daily, indicating the concentration of gas, number and location of drilled piers, point of test, date, and time of test.

All gas detection equipment shall be calibrated as per the manufacturer's requirements. Documentation of this calibration shall be made available to the Government upon request.

Special requirements, coordination, and precautions will apply to areas that contain a hazardous atmosphere or, by virtue of their use or physical character, may be oxygen deficient. The contractor shall not enter a confined space that is oxygen deficient or may be immediately dangerous to life and health.

#### 1.15 ROOFING AND COATING

At the beginning of each work day the Contractor shall check with the Contracting Officer before proceeding to work on the roof to ensure safe work conditions.

#### 1.17 HIGH NOISE LEVEL PROTECTION

Operations performed by the Contractor that involve the use of equipment with output of high noise levels (jackhammers, air compressors, and explosive device activated tools) shall be scheduled for after duty working hours. Use of any such equipment shall be approved in writing by the Contracting Officer prior to commencement of work.

#### 1.18 LASER

Operations performed by the Contractor which utilize lasers shall be included in the HASP. For further requirements, see GRC Occupational Health Program Manual Chapter 13, "Laser Safety," at <http://smad-ext.grc.nasa.gov/shed/pub/ohpm/ohpm13-laser.pdf> .

SECTION 01 35 26.98 Page 7

September 21, 2012

**Printed copies are uncontrolled and are not to be used for operational purposes.**

GLM 1700.1.17

Verify current version before use at  
<https://knowledgeshare.grc.nasa.gov/bmslibrary>

Page 24 of 27

Glenn Research Center Glenn Safety Manual	Title: Construction Safety and Health	
	Document No.: GLM-QS-1700.1.17	Rev.: Revision B

GRC2012

1.18 SEVERE STORM PLAN

In the event of a severe storm warning, the Contractor shall:

- a. Secure outside equipment and materials and place materials possible to damage in protected locations.
- b. Check surrounding area, including roof, for loose material, equipment, debris, and other objects that could be blown away or against existing facilities.
- c. Ensure that temporary erosion controls are adequate.

1.20 CONFINED SPACE

Comply with the requirements in Chapter 16 of the GRC Safety Manual, 29 CFR 1910.146.

Prior to a permit required confined space entry, a confined space permit C-199 form shall be submitted for approval from SHED. All contractors involved with entry into or working in confined spaces shall have training in confined space entry.

- a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See SHED for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee.
- b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained.
- c. Manholes and excavations require continuous atmosphere monitoring with audible alarm for toxic gas detection and low oxygen levels.
- d. Include training information for employees who will be involved as entrant attendants for the work.
- e. Entry Permit. Use C-199, completed by the qualified person. Post the permit in a conspicuous place close to the confined space entrance.

1.21 MISHAP INVESTIGATIONS

Refer to the Glenn Safety Manual, Chapter 21. If a mishap occurs during the project that requires investigation per Chapter 21, the mishap site, which may include the entire construction work area, may be secured by NASA and not released to the Contractor for up to 75 working days. **Contractor shall not be entitled to additional payment for any expenses incurred as a result of the investigation.** Contractor shall submit a schedule recovery plan once the site is release back to the Contractor showing how the remaining work will be accomplished within the current contract period. If the Contractor determines the schedule cannot be recovered within the current contract period, a contract extension may be negotiated at no cost

<b>Glenn Research Center Glenn Safety Manual</b>	<b>Title:</b> Construction Safety and Health	
	<b>Document No.:</b> GLM-QS-1700.1.17	<b>Rev.:</b> Revision B

GRC2012

to the Government.

#### 1.21 FALL PROTECTION

It is NASA's policy to provide fall protection for any walking working surface where a person is exposed to a fall to a lower level. Fall protection programs shall focus on eliminating, mitigating, and/or controlling the fall hazard before an individual is exposed to the hazard.

a. Fall protection programs shall protect workers who may be exposed to a fall six feet or greater to a lower level for all construction activities.

b. "Fall hazards" from any height to lower level shall require protection if the work is over a collateral hazard (e.g. moving machinery, chemicals, electrical hazards, impalement hazards).

Competent person: For each situation that requires fall protection at GRC, there is a competent person (per ANSI/ASSE Z359.0-2007, paragraph 2.27) assigned responsibility for the immediate application of fall protection work where fall protection is required whose education and training has been administered by an industry-recognized trainer.

Written Fall Protection Plan: specific fall protection requirements, including rescue plans, shall be developed and submitted to NASA for approval, using the C-979 Fall Prevention Plan form, as an appendix to the Health and Safety Plan.

#### PART 2 PRODUCTS

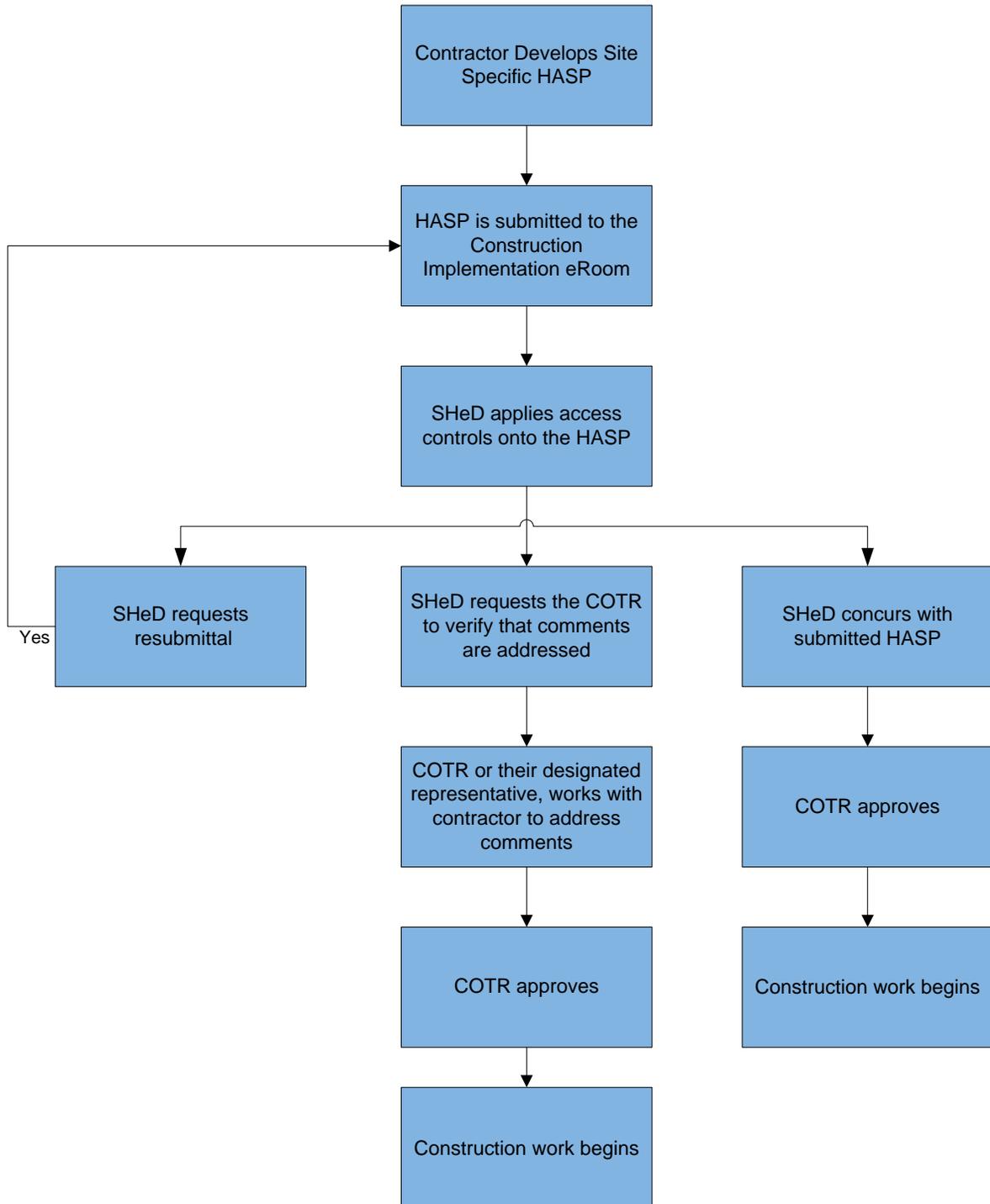
Not Used

#### PART 3 EXECUTION

Not Used

-- End of Section --

**APPENDIX F.—HEALTH AND SAFETY PLAN (HASP) SUBMITTAL PROCESS FLOWCHART**



**Printed copies are uncontrolled and are not to be used for operational purposes.**