Chapter 10.1 Safety and Health Requirements for Designing, Constructing, and Operating Facilities

10.1.1 Applicability of this chapter

10.1.1.1You are required to follow this chapter if you:

a. Design, construct, alter, repair, or operate facilities at JSC or JSC field sites. This includes design and construction to modify existing facilities.

b. Oversee facility operations as a line manager or facility manager.

c. Paragraph 10.1.14 lists the responsibilities of directors, the Facility Management and Operations Division, the Safety and Test Operations Division, Occupational Health, and the Environmental Office.

10.1.2 Standards for facility design and operations

The following standards apply to facility design and operation. Use the latest edition unless otherwise noted below. If there are conflicts among any of the standards, follow the most stringent of the requirements.

For . . .	***Follow these standards . . .***
General facility design or operations	29 CFR 1910, “Occupational Safety and Health Standards, General Industry,” specifically: 29 CFR 1926, “Occupational Safety and Health Standards, Construction Industry” International Building Codes NPR 8715.3, “NASA General Safety Program Requirements,” Chapter 8 NPR 8820.2F, “Facility Project Requirements” NASA-STD-8719.7, “Facility System Safety Guidebook” JPD 8820.3, “Facility Configuration Management Program” JPR 8553.1, “JSC Environmental Management System Manual” JPR 8550.1, “JSC Environmental Compliance Procedural Requirements” Other chapters in this JPR or standards in 29 CFR 1910 that apply to the facility NASA Facilities Design Guide, August 2012
Fire Safety	Public Law 91-596 (OSHA Act), 29 CFR 1910 and 29 CFR 1926 Public Law 100-678 (Section 6), “Compliance with Nationally Recognized Standards” NASA-STD-8719.11, “Safety Standard for Fire Protection;” this document doesn’t detract from National Fire Protection Association codes and standards

	National Fire Protection Association standards, latest edition; you are encouraged, but not required, to use National Fire Protection Association "recommended practices" in the National Fire Codes FM Loss Prevention data sheets Uniform Fire Codes with Houston amendments UL Standards
Fault tolerance requirements for safety-critical systems	Other chapters in this JPR or standards in 29 CFR 1910 that apply to the facility; NPR 8715.3, paragraph 1.7
Designing or operating certain facility systems	ANSI/ASME A17.1, "American National Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks," as amended American Society of Heating and Refrigeration Engineers standards American Society of Mechanical Engineers Boiler and Pressure Vessel Safety Code JPR 1710.13, "Design, Inspection, and Certification of Pressure Vessels and Pressurized Systems" ANSI/Illuminating Engineering Society standard RP-7, "Standard Practice for Industrial Lighting" (Advisory) ANSI/Illuminating Engineering Society standard RP-1, "Standard Practice for Office Lighting" (Advisory) Other chapters in this JPR or standards in 29 CFR 1910 that apply to the facility system

10.1.3 General requirements to follow when designing and constructing facilities

10.1.3.1Facility designers and organizations owning facilities shall follow the requirements below for new facilities and modifications to existing facilities:

a. Make sure representatives from both the Safety and Test Operations Division and Occupational Health attend all pre-design and project reviews. Make sure the facility manager is involved with and approves any facility modifications.

b. Never modify an existing facility unless you coordinate with the Center Operations Directorate.

c. Reference all codes and standards for the facility design in the drawings and specifications so the general construction contractor and subcontractors will know which requirements to follow.

d. Control safety, health, and environmental hazards in the facility design by one or more of the following:

(1) Making sure all standards, codes, and requirements applicable to the facility are incorporated into the design, specifications, and drawings, to include those in paragraphs 10.1.4 and 10.1.5. This method is best for standard facility systems, such as electrical, fire, and plumbing, and for standard work areas, such as office areas.

(2) Planning the location, design, and layout of the facility carefully and considering what operations will occur in the facility and what maintenance will be required. This

includes a Facility Safety Management Plan, as described in paragraph 8.6 of NPR 8715.3, "NASA General Safety Program Requirements."

(3) Doing preliminary hazard analyses and follow-on hazard analyses on the facility or parts of the facility as described in Chapter 2.3, "Hazard Analysis." Hazard analyses should begin when you develop the early design concepts and continue as you develop more design details. You shall do hazard analyses on all building areas.

(4) Following the requirements in JPD 8820.3, "Facility Configuration Management Program."

e. Do an environmental review before or during the design phase as described in JPR 8550.1, "JSC Environmental Compliance Procedural Requirements."

f. Design and install ventilation systems to meet American Society of Heating, Refrigerating and Air Conditioning (ASHRAE) STD 62.1-2016, "ASHRAE Standard: Ventilation for Acceptable Indoor Air Quality" ASHRAE 62.1-2013, and ASHRAE STD 55-2013, "Thermal Environmental Conditions for Human Occupancy," and National Fire Protection Association (NFPA) standards. These standards require designers to:

(1) Make sure the design supplies ventilation air throughout the occupied space.

(2) Maintain acceptable indoor air quality throughout the occupied space even when the air supply is reduced when the area is occupied, such as in variable air-volume systems.

(3) Use either the ventilation rate procedure or the indoor air quality procedure in designing the system, and document assumptions. You can find the procedures in the ASHRAE standards cited above.

(4) Control temperature and humidity to limit microbial growth.

(5) Supply outside air for ventilation in volumes to meet ASHRAE STD 62.1-2013 requirements.

(6) Make sure the outside air used for ventilation meets National Primary Ambient-Air Quality standards in 40 CFR Part 50.

(7) Install duct detection and shutdown relays where required by the NFPA.

g. Avoid designing obstructions or projections into an aisle or passageway if possible. If they are necessary, call for them to be marked or flagged. Pointed, sharp, or jagged obstructions or projections shall be covered and maintained with resilient material. Follow NFPA 101, 29 CFR 1910, and 29 CFR 1926.

h. Follow these requirements for emergency showers and eyewashes:

(1) Meet or exceed ANSI Z358.1 (current version).

(2) Install emergency showers and eyewashes in laboratories and other areas where hazardous chemicals, acids, or other corrosive substances are handled, used, stored, and transported.

(3) Locate emergency showers and eyewashes in accessible locations requiring no more than 10 seconds to reach. Keep the path of travel free of obstructions that may inhibit the immediate use of the emergency equipment. Provide personal eyewash bottles only to supply immediate flushing until a plumbed or self-contained eyewash can be reached.

Personal eyewash bottles support plumbed and self-contained units but never replace them. You shall inspect and maintain personal eyewash bottles per the manufacturer's requirements.

(4) Provide adequate drainage and a nonslip floor surface.

i. Make sure the design of clean rooms and laminar-flow clean work stations that contain cleaning facilities using flammable or toxic fluids are evaluated and approved by Occupational Health and the Safety and Test Operations Division.

j. Follow the "Buy Quiet and Quiet by Design" requirements in Chapter 7.1.

10.1.4 Requirements to follow when operating facilities and equipment

10.1.4.1 Employees operating any facility at JSC or JSC field sites shall:

a. Follow all safety, health, and environmental requirements applicable to the operation. See other chapters of this JPR.

b. Develop facility operating instructions based on facility mission and operational requirements.

c. Develop procedures for hazardous operations in the facility that:

(1) Contain enough detail to identify residual hazards and cautions.

(2) Are conspicuously marked on the title page with a statement that the document contains hazardous procedures and strict adherence is necessary for safety and health.

d. Follow the configuration management requirements applicable to facility operations from JPD 8820.3.

e. Follow these requirements for emergency showers and eyewashes:

(1) Meet ANSI Z358.1 (current version).

(2) Flow test plumbed emergency showers and eyewashes weekly in routinely occupied areas to prevent water contamination and to make sure they work. Document the flow tests. The occupants of the lab or area of the eyewash or shower are responsible for the weekly flow tests.

(3) If the unit fails to work properly, tag the unit out until repairs can be made and provide an equivalent unit.

(4) For areas not normally occupied, such as mechanical rooms and Center Operations Directorate (COD) support services area, the workers entering the area shall do a flow test before starting work if the shower or eyewash has not been tested within the last 6 days.

(5) If the unit fails the test, the work shall not proceed until the unit is repaired and in good working order or a temporary unit is provided.

(6) Self-contained emergency showers or eyewashes shall have a water supply for at least 15 minutes of flow without refilling.

(7) Inspect and maintain emergency showers and eyewashes per the manufacturer's requirements.

(8) Facility personnel shall inspect and maintain the personal eyewash bottles per the manufacturer's requirements. Personal eyewash bottles don't meet the requirements for plumbed or self-contained eyewashes, but can be used initially.

f. Make sure elevators are inspected yearly by someone who is competent and independent of the organization doing the elevator maintenance. Immediately report any defects to the Safety and Test Operations Division and Work Control.

g. Follow these requirements for heating, ventilation, and air conditioning (HVAC) systems:

(1) Make sure the HVAC runs only when the building is occupied and the building is flushed by the ventilation system before people arrive unless other requirements forbid it.

NOTE: Other requirements that HVAC systems run continously in certain situaitons take precedence over 10.1.4.1.g(1).

(2) Schedule maintenance activities interfering with HVAC when the building is unoccupied or, if occupied, clear it with the facility manager at least 48 hours to a week before the shutdown. Inform the facility manager and occupants when you schedule these activities.

(3) Maintain appropriate pressure relationships between building areas. For example, loading docks are a frequent source of exhaust odors. Keeping the rooms surrounding the loading docks under positive pressure prevents odors from being drawn into the building.

(4) Make sure intake ducts are not next to sources of vapors, fumes, or mists, or to the exhaust ventilation ducts of that building or other buildings.

(5) Never use chemicals around air intakes as the odor will enter the facility.

(6) Avoid re-circulating air from areas that are sources of contaminants, such as maintenance areas, chemical storage areas, and laboratories.

(7) Compare makeup air quantities and ventilation rates to building design, building use, and ASHRAE STD 62.1-2016. Make adjustments as necessary. Keep in mind that increasing ventilation rates to meet ASHRAE standards may exceed the capability of HVAC equipment to condition the air in Houston's hot and humid climate.

(8) Inspect all equipment regularly (per maintenance schedule) to make sure it is in good working order. Maintain dated records of maintenance inspections and repairs.

(9) Maintain all equipment guarding per Occupational Safety and Health Administration (OSHA) and American National Standards Institute (ANSI) standards.

(10) Use checklists when conducting HVAC maintenance inspections to make sure all components are inspected. Document any changes in function, capacity, or operating schedule.

(11) Take steps to prevent microbiological growth, such as bacteria, mold, or mildew, in HVAC components exposed to water, such as drain pans, coils, cooling towers, and humidifiers. Call Occupational Health and the site work control (x32038) with any questions about these issues.

h. Follow these requirements for cooling towers:

(1) Clean the cooling towers regularly. As a general rule cooling towers shall be cleaned at least once every 3 months. Clean them less frequently if performance data show it is acceptable, but at least every 6 months. Performance data may require more frequent cleaning.

(2) When a cooling tower has been shut down for a long time, do routine cleaning and disinfecting just before starting the equipment. Wear appropriate PPE when doing the work and maintain safety requirements if the area is a confined space or if fall protection is required.

(3) Use chemicals sparingly. Add chemicals to the water at a rate sufficient only to maintain predetermined chemical concentrations. Keep the total bacteria count below the acceptable level.

(4) Use an appropriate bleed-off. Bleed off water at a rate based on total dissolved solids, chlorides, or other appropriate parameter of the circulating water. Check the bleed-off rate during regular maintenance inspections.

10.1.5 Fire safety requirements for facility design

10.1.5.1Facility designers shall make sure JSC facilities meet all applicable fire safety requirements that apply. The following requirements apply as well as the standards in paragraph 10.1.4 above:

a. Before designing any changes to any existing facilities, make sure a comprehensive fire protection engineering survey and preliminary hazard analysis is done to identify any fire safety problems in the facility. Correct these problems in the new design.

b. Use less stringent requirements or other fire protection methods if a thorough fire protection engineering study shows there is at least an equal level of fire protection as provided by the above standards. Approval from the Safety and Test Operations Divisionis required when using less stringent requirements.

c. Use these documents as guidelines to help resolve fire protection issues:

(1) FM Loss Prevention data sheets.

(2) National Fire Protection Association, “Fire Protection Handbook.”

(3) Society of Fire Protection Engineering, “Handbook of Fire Protection Engineering.”

(4) National Fire Protection Association, “Industrial Fire Hazards Handbook”

(5) OSHA 29 CFR 1910 and 29 CFR 1926.

10.1.6 Requirements for installing new local exhaust ventilation systems

10.1.6.1Follow these requirements when installing new local exhaust ventilation systems, such as exhaust hoods:

a. Consult Occupational Health and the Safety and Test Operations Division early in the planning and design or selection of a new exhaust hood and do a preliminary hazard analysis.

b. Consider the kinds of chemicals to be used, the quantity of the chemicals, and the conditions for the use of the chemicals.

c. Use a local exhaust ventilation system to protect workers from airborne contaminants, such as fumes, vapors, or dust. Make sure the local exhaust ventilation system used is effective in removing contaminants from the work area and exhausts the contaminants outside the building.

d. Report the installation of any new local exhaust ventilation system or modification of an existing system to Occupational Health for evaluation before starting up the system and to the Safety and Test Operations Division before installation for approvals.

e. Special Note for Perchloric Acid Hoods: Heated perchloric acid produces vapors that condense and form explosive perchlorates. Construct designated perchloric acid fume hoods with materials that won't readily react with perchloric acid and make sure the hood has wash-down capabilities. Designate perchloric acid hoods with a sign reading: Perchloric Acid Only Coordinate the design with the Safety and Test Operations Division.

10.1.7 Requirements for constructing facilities

10.1.7.1Employees who do or oversee any construction at JSC shall follow 29 CFR 1926, "Occupational Safety and Health Standards, Construction Industry," and 29 CFR 1910, "Occupational Safety and Health Standards, General Industry." Use EM 385-1-1, "U.S. Army Corps of Engineers Safety and Health Requirements," as a guide. EM 385-1-1 is mandatory for U.S. Army Corps of Engineers projects. Non-resident construction contractors must meet the requirements of the JSC *Specifications Kept Intact (SPECS-IN-TACT)* submaster "01 41 00 00 80 CONTRACTOR SAFETY AND HEALTH PROGRAM" for activities at JSC. The following general requirements also apply:

a. Construction shall also follow JSC's construction safety, occupational health, and environmental requirements in the paragraphs below.

b. Pre-award meetings shall review JSC fire, occupational safety, occupational health, security, and operations requirements of the contract and include both the prime contractor and subcontractors. The Safety and Test Operations Division, Occupational Health, and Environmental Office attend these meetings as required.

c. Construction supervisors shall control the construction site, workers, and visitor access, especially with regard to safety and health. See paragraph 10.1.11 for more information.

d. Visitors shall have the permission of the construction supervisor in charge to enter the site.

e. You shall inform all organizations that may be involved with or affected by the construction or hazards that may result to include the Facility Manager, Safety and Test Operations Division, Occupational Health, and Environmental Office.

f. Safety and Test Operations Division, Occupational Health, and Environmental Office personnel shall be on the construction access list.

g. The organization doing the construction shall:

(1) Post all required OSHA notices, emergency telephone numbers, and a list of telephone numbers to call in case of an accident.

(2) Post all environmental notices and follow all environmental requirements, such as storm water controls and permits.

(3) Report all accidents and incidents immediately, including spills or discharge of toxic or hazardous material, by dialing JSC's emergency number (x33333 or (281) 483-3333) and to the person designated by the contracting officer, Safety and Test Operations Division, Occupational Health, and the Environmental Office.

(4) Maintain the site exactly as it was before the accident or incident and keep on site all personnel involved or who have knowledge of the accident or incident at the scene.

(5) Complete and post all necessary permits and forms.

h. The construction contractor shall meet the following requirements of Chapters 9.1 and 9.2:

(1) Provide Material Safety Data Sheets (MSDSs)/Safety Data Sheets (SDSs) to Occupational Health before construction begins.

(2) Provide a list of hazardous chemicals, including number and size of containers to be used, to Occupational Health before construction begins.

(3) Remove all hazardous materials from JSC at the end of the construction.

10.1.8 Safety oversight at construction sites

10.1.8.1Prime construction contractors shall adhere to the following requirements and enforce them with any subcontractors:

a. Appoint a contractor safety monitor who has the safety and health knowledge to be responsible for the overall safety of construction operations. This person is empowered to stop unsafe operations and enforce corrective action.

b. Have OSHA-competent safety supervisors and alternate supervisors to make sure workers know and follow all safety, health, and environmental requirements for the project. Supervisors shall always:

(1) Be dedicated to supervising and overseeing safety.

(2) Have a copy of the safety and health plan and any special written safety and health procedures on site and readily available.

(3) Be present or appoint a dedicated safety monitor to be present during hazardous operations or conditions, as required by the plan. Conduct a hazard analysis before conducting a hazardous operation and have it approved by the Safety and Test Operations Division and Occupational Health.

(4) Ensure simultaneous tasks don't result in workers entering hazardous areas where entry is prohibited by hazard analysis, the Safety and Health Plan, or OSHA or NASA requirements - for example, entering an area with overhead work and the potential for falling objects.

c. Appoint someone to be responsible for safety and health during activation of the completed project.

10.1.9 Construction safety meetings

10.1.9.1Construction at JSC shall include a pre-work safety meeting with construction employees and regular safety meetings at least every 2 weeks. Document the subject and attendees. This includes briefing missing employees on the content of the meeting. Construction contractors shall:

a. Coordinate these meetings with the COD Facility Management and Operations Division.

b. Cover at least the following in the meetings:

(1) Individual responsibility for occupational safety, occupational health, and environmental safety, to include wearing PPE, mishap reporting, emergency information and who to contact, chemical waste storage, and dumping waste products.

(2) Specific hazards of the jobs being done and applicable OSHA and other safety standards associated with the phase of work in progress.

(3) Guards, barricades, and other devices designed to protect workers, the on-site contractor, government employees, and the public.

(4) Other areas deemed important, JSC construction managers, or the Safety and Test Operations Division, Occupational Health, and the Environmental Office

10.1.10 Hazardous operations during construction

10.1.10.1 Construction work involving any hazardous activities shall:

a. Follow the requirements in Chapter 5.8, “Hazardous Operations: Safe Practices and Certification.” This includes getting the necessary permits and making sure workers are certified, as required for work at JSC, Sonny Carter Training Facility, or Ellington Field. Signatures and approvals for permits shall follow Chapter 5.8 with these exceptions:

(1) The JSC COD Construction Office, construction manager, or contractor safety and health representative may sign the “Responsible Safety Representative” signature block.

(2) The JSC COD Construction Office or construction manager may sign the “Fire Warden” signature block for new construction when there are no fire wardens or facility manager.

(3) The COD Construction Office, the construction manager, and the occupational safety and occupational health groups shall approve any entry into a confined space.

(4) Permits shall have all required signatures.

(5) Follow Chapter 6.9, “Entering Confined Spaces and Controlled Areas.”

b. Make sure only competent, trained workers do hazardous tasks under competent supervision.

c. Assign an OSHA-required competent person to all excavations and trenching operations.

d. Assign a qualified electrical worker to all electrical work.

e. Follow other chapters of this JPR as required, such as:

(1) Chapter 8.2, “Lockout/Tagout Practices”

(2) Chapter 5.6, “Personal Protective Equipment”

(3) Part 7, “Health Protection Practices”

(4) Part 12, “Asbestos Control Requirements”

10.1.11 Protecting the work area

10.1.11.1To protect the construction employees; NASA-JSC Project Management Team members; other JSC civil servants; contractors and subcontractors; consulting employees; and visitors in and around the work site, construction contractors shall:

a. Post signs at all construction or maintenance entrances notifying anyone who enters this project site as to who is allowed on this site; where to report when entering the site, if a sign-in is required; what PPE is required and when it is to be used; and any other job site requirements (i.e., authorized construction and JSC inspection personnel only).

b. Make sure the project site follows all OSHA, Environmental Protection Agency (EPA), NFPA, and NASA-JSC Safety and Health requirements.

c. Conspicuously post emergency contact numbers for key project personnel on the sign.

d. Make sure fixed barriers meet the requirements in the OSHA standards for guardrails, 29 CFR 1910 and 29 CFR 1926, or be, at a minimum, substantial supported orange (nylon or plastic) barricade fencing with metal posts 8 feet on center and meet the guardrail standard strength (minimum 200-pound direct pressure on top tail, as illustrated in the OSHA standard). You may also use sections of chain-link metal fencing as an alternative, provided they are supported by substantially anchored posts.

e. Establish adequate entrances to meet the current National Fire Protection Association and OSHA-required access, egress, and life safety codes.

f. Substantially support all barriers and provide for adequate means of access or egress.

g. Make sure barriers do not create tripping hazards for personnel having to access or egress these hazardous or secured areas.

h. Make sure barriers at excavations or trenches are an adequate distance back on the outside perimeter of the spoil pile or an adequate set distance from the excavation opening so that support posts and barrier do not fail if a person falls against the barrier. The minimum distance from the excavation opening is 2 feet, unless the ground is unstable or the side wall is undercutting or fissured.

i. Use barrier tape only for temporarily blocking interior facility room entrances or hallways where hazardous work is being performed. Barrier tape shall be a minimum of 4-feet back from the work area to provide workers with an adequate access area.

j. Make sure entrances have at least two rows of tape set at the height requirements for handrails (42-inch top tape and 24-inch mid tape line).

k. Make sure barrier tape and enclosures required by OSHA for specialized work (i.e., asbestos, dust barriers, hazardous waste locations, electrical, and others) meet applicable OSHA requirements.

l. Safety, occupational health, environmental, and security personnel may use temporary barriers to temporarily cordon off hazardous areas or areas required for investigation.

m. Make sure railings and decking are free of all splinters, projecting nails, or other hazards that could produce injuries.

n. Use reinforced metal plate type rebar caps and place them on all protruding rebar that presents a hazard to workers, regardless of height. Maintain the caps throughout the length of the hazard exposure.

o. Make sure all hazard warning devices mentioned before and others used on the project work site are colored or painted using brilliant contrasting colors and reflective panels (when required) meeting the most recent ANSI requirements.

p. Make sure safety vests for flagging personnel meet current U.S. DOT's Manual on Uniform Traffic Control Devices (MUTCD) and required ANSI/ISEA 107-1999 Standard for High Visibility Apparel – Class II requirements for daytime use and ANSI/ISEA Class III requirements for nighttime work.

q. Make sure flags, warning signage, hand signaling devices, cones, barricades, and other devices meet the U.S. DOT/MUTCD requirements for daytime or nighttime operations.

r. Label tag-faded or discolored fluorescent cones and signage not meeting these requirements as "Hazardous-Do Not Use." Repair them or remov them from service.

10.1.12 Safety inspections and approvals at construction sites

10.1.12.1 Employees who oversee a construction site at JSC shall:

a. Inspect the site at least weekly for hazards and failures in following safety, health, or environmental requirements. Document any identified hazards. See Chapter 2.4, "Routine Inspections," for more information.

b. Make sure users inspect lifting equipment and scaffolds daily. See Chapter 8.5, "Lifting Operations and Equipment Safety," and Chapter 8.7, "Ladders, Scaffolds, and Elevated Platforms: How To Work With Them Safely," for more information.

c. Have the Safety and Test Operations Division and COD inspect and approve all cranes at least 48 hours before a lift.

d. Submit lift plans and have them pre-approved by the Safety and Test Operations Division and COD. Submit noncritical lift plans at least 48 hours before the lift and before any lifting operations. Submit critical lift plans at least 72 hours before a lift and before any lifting operations. See Chapter 8.5, "Lifting Operations and Equipment Safety," for more information.

e. Use fall protection, if required, and:

(1) Establish and implement a company Fall Protection Program. See Chapter 8.8 "JSC's Fall Protection Program" for more information.

(2) Inspect the equipment before and after each use.

(3) Maintain the equipment in proper working order and make sure any equipment used to stop a fall was not damaged in any way. See Chapter 5.6, "Personal Protective Equipment," for more information.

f. Construction sites may also be inspected by:

(1) The director or directorate safety committee that is or will be responsible for the facility at least monthly.

(2) The Safety and Test Operations Division, Occupational Health, and Environmental Office (if applicable) periodically. These inspections may be announced or unannounced.

(3) OSHA, EPA, and the Texas Commission on Environmental Quality (TCEQ) unannounced visits. These agencies will issue citations and take necessary action for any violations. Compliance officers are present on site at varying times and may inspect your site. Immediately notify the Center operations project manager's office and the Safety and Test Operations Division if OSHA compliance personnel arrive at your site. Notify the Environmental Office if EPA or TCEQ personnel arrive at your site.

10.1.13 Approval for facility operations

10.1.13.1 Before operating a new or modified facility, it shall be approved by one of the following:

a. An operational readiness inspection, if required by Chapter 10.3, "Facility Readiness Reviews for Hazardous or Critical Facilities."

b. Acceptance inspections and tests of the facility and fire protection systems by the Facility Management and Operations Division and the Safety and Test Operations Division.

10.1.14 Responsibilities for designing or building facilities

a. An ***organizational director*** at JSC is responsible for:

(1) Making sure facility designs meet the requirements in JPD 8820.3.

(2) Making sure any facility modifications done or contracted by your organization are coordinated with COD.

(3) Making sure an environmental review is done before or during the design phase as described in JPR 8550.1, "JSC Environmental Compliance Procedural Requirements."

(4) Submitting the drawings and specifications for facility modifications not overseen by the Facility Management and Operations Division to the Safety and Test Operations Division and Occupational Health for review and approval. This will avoid delays.

b. The ***Facility Management and Operations Division*** is responsible for:

(1) Making sure facility designs meet the requirements in JPD 8820.3.

(2) Making sure an environmental review is done before or during the design phase as described in JPR 8550.1, "JSC Environmental Compliance Procedural Requirements."

(3) Sending drawings, specifications, and other design documents on any new construction or facility modification to the Safety and Test Operations Division and Occupational Health for review and approval.

(4) Making sure the responsible facility manager reviews and approves any facility modification project before advertising it for award of a contract.

(5) Making sure the Safety and Test Operations Division and Occupational Health approve the drawings, specifications, and other design documents before advertising a construction project for award of a contract.

(6) Making sure necessary inspection and testing occur during critical phases of any construction project, whether it is new construction or a facility modification, and the Safety and Test Operations Division and Occupational Health concur.

(7) Making sure all required fire protection systems and features are installed, tested, and functioning properly as defined in contract specifications before final payment and the Safety and Test Operations Division and Occupational Health concur.

c. The ***Safety and Test Operations Division and Occupational Health*** are responsible for reviewing and approving by signature the drawings and specifications of all construction projects. The Environmental Office shall review and approve by signature the drawings and specifications of all construction involving an environmental issue.