

CONTRACTOR HANDBOOK

UUHC Construction Projects

F&E Project # / FM Project #: _____ / _____

Project Title: _____

Hospital Facilities & Engineering (F&E)

Project Supervisor: _____

Facilities Management (FM)

Project Manager: _____

Contractor: _____

Note: By submitting a Bid on this Project, the Contractor confirms that he/she has reviewed this Contractor Handbook, and accepts responsibility for all information contained herein. The Contractor shall verify that all current Subcontractors have reviewed the contents of this Contractor Handbook, and require all future Subcontractors to review the Handbook before beginning their portion of the Work.

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CONTRACTOR'S CHECKLIST

TO BE COMPLETED PRIOR TO PROJECT START DATE

Contractor Company: _____ Phone #: _____

Contractor's Project Manager: _____ Pager/Cell Phone #: _____

Project Name and Location: _____

Project Commencement Date: (dates will be tracked by F&E) _____

Completion Date: (dates will be tracked by F&E) _____

- | | <u>YES, NO, OR N/A</u> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 1. Contractor's Safety Manual current and in effect, Fire Impairments assessed and procedures followed, OSHA safety requirements established. | _____ |
| 2. Federal/State local required training completed by Contractor. | _____ |
| 3. Reviewed HIPPA policy. | _____ |
| 4. Proof of Security and Background Check for all employees. | _____ |
| 5. Hazardous chemicals are identified (attach page). | _____ |
| 6. Chemical inventory list and MSDSs provided for all products used. | _____ |
| 7. Chemical spills procedures provided. | _____ |
| 8. Hazardous waste anticipated? If yes, FM Project Manager and F&E Project Supervisor contacted. | _____ |
| 9. Personal Protective Equipment ("PPE") required. | _____ |
| 10. If PPE needed, available. | _____ |
| 11. Parking/staging information received. | _____ |
| 12. Permits on file. | _____ |
| 13. Proof of all OSHA required training provided to safety team, Confined Spaces Policy and procedures reviewed. | _____ |
| 14. Hot Works permit requirements, Fire Watch Log requirements, evacuation plans, smoke compartments in areas of construction, wall and floor penetrations reviewed, Interim Life Safety Measures assessed and documented. | _____ |
| 15. Hospital Infection Control guidelines reviewed.
<i>(Hospital / Patient Care Projects)</i> | _____ |
| 16. Contractor's in-service training requirements reviewed. | _____ |
| 17. Radio frequency devices discussed and understood.
<i>(Hospital / Patient Care Projects)</i> | _____ |
| 18. Construction reporting matrix reviewed. | _____ |
| 19. Proof of TB/Influenza screening for all workers. | _____ |
| 20. Equipment List (new and old/retiring) | _____ |

GENERAL INFORMATION and TELEPHONE NUMBERS

F&E Project Supervisor*: _____

FM Project Manager*: _____

**Note: "University Project Manager" as defined in the General Conditions and when used in this document shall mean both the F&E Project Supervisor and the FM Project Manager.*

Director, Facilities & Engineering: (801-581-2185) _____

Construction Manager Facilities & Engineering: (801-585-7564) _____

Infection Control: (801-587-5216) _____

Safety Officer: (801-585-2117) _____

Environmental Compliance Officer: (801-581-8805) _____

Fire Marshal: (801-585-0383, pager 801-329-0001) _____

Security: (801-581-2677) _____

Emergency Reporting: (801-581-2187) _____

CONTRACTOR'S RESPONSIBILITY

CONSTRUCTION PERSONNEL RESPONSIBILITIES

Personnel

Whenever the term "personnel" is used in this Contractor Handbook it shall mean the Contractor's employees, agents, Subcontractors, suppliers/vendors, and any other person providing services on behalf of the Contractor or any Subcontractor. In addition to the definition provided in the General Conditions, whenever the term "Contractor" is used herein, its meaning shall include "personnel."

Contractor Assumes Total Responsibility

In addition to the Contractor's responsibility described in the General Conditions (4.2.2 RESPONSIBILITY) the Contractor assumes total responsibility for its personnel while on any University of Utah Health Care property.

Contractor Responsible for Job Training

The Contractor is responsible for any specific job training with respect to work procedures in accordance with any State/Federal/Local laws (*e.g.*, as may be required for confined spaces, or hazards specific to a job, not covered by regulatory activity, as in work to be performed above any ceiling). Documentation of required certification or training in accordance with Utah Department of Occupational Safety and Health is required prior to beginning the Work.

Handbook Compliance

It is the responsibility of the Contractor to communicate all information contained in this Contractor Handbook to its personnel. Personnel found not complying with the above will be removed from the Project by the Contractor if requested by the University Project Manager (FM Project Manager and F&E Project Supervisor).

Dress Code / Conduct

University of Utah Health Care expects all companies, company employees, contract employees, and vendors who are working in any facility, building or property to present a professional image at all times.

The University of Utah Health Care DRESS CODE/CONDUCT policy must be followed at all times.

See Appendix "F": UUHC DRESS CODE / CONDUCT POLICIES & PROCEDURES.

NON COMPLIANCE WITH THE "INAPPROPRIATE BEHAVIOR IN THE WORKPLACE" POLICY WILL REQUIRE IMMEDIATE REMOVAL FROM THE SITE.

Security Issues

A security background check is required for all University of Utah Hospital employees and contractors that work in either the University of Utah Hospital or any other UUHC facility. All documents must be kept on file in the Contractor's construction office on site for review at any time by Hospital Security or its designee. All Contractors will notify the University Project Manager (FM Project Manager and F&E Project Supervisor) and check in with Building Operators (801-581-2241) when working in the University of Utah Hospital Facility.

I.D. Badges

University of Utah/UUHC ID Badges are required for all Contractors/Subcontractors while on UUHC property. I.D. badges must be worn at all times (above the sternum). I.D. badges shall be purchased by the Contractor and/or Subcontractor (Facility and Engineering store room 801-585-2456). I.D. badges will be activated at the discretion of the University Project Manager (FM Project Manager and F&E Project Supervisor).

HIPPA (THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT OF 1996)

The Contractor shall adhere to all HIPPA rules and regulations described at the following web site:
<http://www.hhs.gov/ocr/privacy/hipaa/understanding/summary/privacysummary.pdf>.

Health Screening for Construction Staff

Before any worker is permitted to work on any University of Utah Health Care project or near any patient care area, the Contractor must furnish proof of evidence that each worker has completed a TB/Influenza questionnaire on an annual basis. All documentation must be kept on file in the Contractor's construction office for review at any time by the Infection Control Director or its designee.

See Appendix "G": TUBERCULOSIS SCREENING QUESTIONNAIRE / INFLUENZA SHOT VERIFICATION FORMS

Facility Keys

Facility keys will be issued at the discretion of the University Project Management (FM Project Manager and F&E Project Supervisor). Documentation shall be kept on file both by the Contractor and the UUHC Key Shop for each key issued. The Contractor and the Contractor's personnel who have been assigned keys must ensure that these keys are kept in their possession at all times. The loss of any facility key must be immediately brought to the attention of both the FM Project Manager and F&E Project Supervisor. Every issued key must be returned at the completion of the Project.

Damage

In addition to remedial work required by the General Conditions when damage is caused by the Contractor (2.2.2 [4] CONTRACTOR REMEDIAL WORK), any damage caused by the Contractor must be immediately brought to the attention of the University Project Management (FM Project Manager and F&E Project Supervisor).

Vendor Policies

UUHC vendor policies are located at <http://healthcare.utah.edu/supplychain/vendor.html>. Items available at this site include:

1. Vendor Policy
2. Vendor Gift Policy - Frequently Asked Questions
3. Acquisition of Medical Surgical Supplies & Related Equipment
4. Vendor Letter

DOCUMENTATION AND RECORDS

General

The Contractor and its Subcontractors are required to maintain current up to date records and files as required by this Contractor Handbook, the Contract Documents, the University Project Manager (FM Project Manager and F&E Project Supervisor), and the authority(s) having jurisdiction.

Project File

The Contractor and each Subcontractor shall keep a project file at the site. Specific records must be kept readily available for inspection by various UUHC departments at any time. Records to be maintained by the Contractor / Subcontractor are described herein, and include, but are not limited to:

1. TB/Influenza Questionnaires (Project Office File)

2. Material Safety Data Sheets (Project Office File)
3. Medical Gas Piping Certifying Gas Qualifications (Project Office File and Job Site at Installation)
4. Documentation for Each Key Issued for the Project (Project Office File)
5. ILSM Documentation (Job Site File)
6. Fire Drill Records for Each Contractor / Subcontractor Employee (Job Site File)
7. Worker Hot Work Licenses (Job Site File)
8. Hot Work Authorizations / Hot Work Permits (Job Site File)
9. Contractor Handbook (Project Office File)
10. Documentation of C*Cure Access Issued (Project Office File)
11. Documentation of Background Checks (Project Office File)

MATERIALS

Contractor Furnished / Installed Materials Containing Asbestos

Only non-asbestos containing materials may be used.

IF IT IS FOUND THAT ANY CONTRACTOR FURNISHED CONSTRUCTION MATERIALS CONTAINING ASBESTOS ARE USED IN THE WORK, THE CONTRACTOR USING THEM SHALL PAY FOR ALL ABATEMENT, RE-INSTALLATION OF NON ASBESTOS CONTAINING MATERIALS, AND ANY OTHER REFURBISHMENT OF ADJACENT AREAS ASSOCIATED WITH REMOVAL AND RE-INSTALLATION.

Material Safety Data Sheets (MSDS)

MSDS sheets are required for all chemicals used. All MSDS information shall be submitted to the University Project Manager (FM Project Manager and F&E Project Supervisor) for review and approval by Environmental Health & Safety ("EH&S") prior to the commencement of a project.

Note: MSDS SHEETS MUST BE APPROVED BY UUHC AND EH&S THROUGH THE UNIVERSITY PROJECT MANAGER (SUBMIT TO BOTH THE FM PROJECT MANAGER AND THE F&E PROJECT SUPERVISOR) PRIOR TO CHEMICAL USE IN THE FACILITY.

Chemicals Used on Site

All chemicals used by contract workers must be on the approved chemical list and have an accompanying MSDS (approved as noted above). MSDS information will remain at the site and shall be accessible for use by the Contractor's personnel and UUHC staff. University of Utah employees who may be assisting/overseeing the Project shall have access to the MSDS sheets.

Hazard Communication Standard

University of Utah policy is to comply with federal, state, and local agency requirements. Contractors who work at UUHC facilities are required to comply as well. All chemicals used by the Contractor must be labeled with the appropriate warning signs in accordance with OSHA standards. If the product is transferred to another container, the new container must also be appropriately labeled.

Training in the Proper Use of Chemicals

Contract workers must be trained in the proper usage of all chemicals used on the Project. Their training must include, but is not limited to the following, and shall be in accordance with OSHA standards:

1. Where the hazardous chemical is to be used in the facility,
2. Where the MSDS book is kept,
3. Methods used to detect the presence or release of the hazardous substance,

4. Physical health hazards associated with each hazardous chemical,
5. Use and location of personal protective wear,
6. Written spill and clean-up procedures; and,
7. Proper storage and location of hazardous materials.

A COPY OF THESE TRAINING PROCEDURES MUST BE KEPT IN THE CONTRACTOR'S PROJECT FILE AND REVIEWED BY ENVIRONMENTAL HEALTH & SAFETY PRIOR TO THE COMMENCEMENT OF ANY PROJECT WHERE HAZARDOUS CHEMICALS ARE USED.

PROJECT START-UP

A pre-construction meeting will be held with the FM Project Manager and F&E Project Supervisor prior to start of construction. Items to be discussed include, but are not limited to the following:

1. Parking and Staging
2. University of Utah Health Care Procedures:
 - a. Project start up.
 - b. Utility Shutdown guidelines.
 - c. Above the Ceiling and Barrier Work Authorization. See Appendix "C"
 - d. Inspector of records/area construction advisor.
 - e. Submittals of changes to drawings/specifications and the Work.
 - f. Verified reports/closeout documentation.
See Appendix "K": PROJECT CLOSEOUT CHECKLIST.
3. Schedules and impact on surrounding departments. Care should be taken for cleaning, noise, shutdowns of systems, etc. Appropriate facilities services personnel shall be involved in any system changes and/or shutdowns.
See Appendix "I": POSTED NOTICE FORMS.
4. Special required licenses.
5. Special Inspections
6. Coordination for hazardous materials, abatement or safety procedures.
See Appendix "I": POSTED NOTICE FORMS.
7. Plans for Interim Life Safety Measures & ICRA shall include assessment, documentation, and monitoring as required by the safety or infection control teams.
See Appendices "B": INTERIM LIFE SAFETY MEASURES and "H": INFECTION CONTROL.
8. Plan for containment of all dust, aerosol, fume, and vapor producing construction procedures.
9. Written documentation of all HVAC changes to include documentation of balancing, air exchanges, and pressure differential will be submitted to Facilities and Engineering (this is in addition to the requirements for O&Ms in the General Conditions and the Supplemental General Conditions for University of Utah Projects) upon project closeout.
See Appendices "J": F&E HVAC CONTROL VERIFICATION SIGN-OFF FORM and
"K": PROJECT CLOSEOUT CHECKLIST.
10. Appropriate training, if required, will be provided and documented for construction personnel.

BUILDING ROOF / EXTERIOR WALLS

Any construction work done involving the building roof/exterior walls shall be completely water tight. A warranty shall be given to the University Project Manager (both the FM Project Manager and F&E Project Supervisor) as required in the Project Manual. Precautions must be taken to maintain worker safety while working on the roof. Campus roof access procedures are provided on the FM website.

MEDICAL EMERGENCY

If an accident occurs on University of Utah Health Care property, guidelines should be followed that have been established by the Contractor, and the University Project Manager shall be notified (both the FM Project Manager and F&E Project Supervisor).

FIRE SAFETY

Prior to each construction project, the Hospital Fire Marshal will establish an ILSM for the Project and will determine the frequency of fire drills to be conducted throughout the duration of the Project. The Contractor and its staff are expected to actively participate in the fire drill process. A series of questions will be directed to the Contractor regarding any vulnerability that the facility may be placed in due to the nature of the construction work. The Fire Marshal will answer any questions regarding the fire-safe systems within the facility. The Contractor is expected to train and keep records for all employees regarding their responsibility during fire situations or alarms.

See Appendix "A": CONTRACTOR'S RESPONSIBILITIES DURING FIRE SITUATIONS OR ALARMS.

In the event of any other emergency at University Hospital or School of Medicine ("SOM"), telephone 801-581-2187 and state the emergency and the location. For other UUHC facilities, the Contractor shall identify the UUHC emergency number needed for the Project.

INTERIM LIFE SAFETY MEASURES

The area under construction must be assessed for possible compromise to the building Life Safety System. Interim Life Safety Measures will be developed under direction of the Fire Marshal for all such items and a plan will be issued to, and kept on site by the Contractor. The ILSM plan will include specific issues, plans during impairment, responsible individuals, and schedule/times. A specific form will be used for documentation purposes, and will identify which measures will be implemented.

See Appendix "B": INTERIM LIFE SAFETY MEASURES.

CONDUITS

Appropriate conduit construction must be in place where electrical, computer or telecommunications wiring are involved per project specifications. Strict adherence to the WALL & FLOOR PENETRATIONS guidelines hereinafter must be followed.

See Appendix "C": ABOVE CEILING WORK PERMIT.

WALL AND FLOOR PENETRATIONS

Penetrations to fire or smoke barrier walls, ceilings, and floors must be repaired and filled with a UL approved fire barrier material installed in accordance with State approved codes and facility requirements.

At University Hospital facilities, fire walls and smoke barriers have been constructed throughout to comply with NFPA, and provide safe areas of refuge for patients, visitors, and staff in the event of a fire. Fire walls and smoke barriers are placed from the floor to the adjacent floor and from the exterior wall to the exterior wall. The Contractor shall ensure that penetrations to fire or smoke barrier walls or floors comply with all applicable codes.

As construction progresses, any stray opening through walls and floors found by the Contractor must be reviewed by the Fire Marshal.

Penetrations made by the Contractor and/or Subcontractor and not filled per these requirements will become a back-charge assessed to the Contractor on a time and materials basis according to market conditions at the time of discovery.

The Contractor shall review the Statement of Conditions fire drawings, issued to the Contractor by the Fire Marshal through the University Project Management (FM Project Manager and F&E Project Supervisor). The Contractor shall include wall patching in the Bid as described in the Statement of Conditions document.

The Contractor will report all existing wall or floor penetrations found to the University Project Management before Work commences (submit the report to both the FM Project Manager and F&E Project Supervisor). A photographic record of the existing penetrations shall be submitted to the FM Project Manager/F&E Supervisor prior to commencing Work.

In addition to the requirements provided in the General Conditions, the Contractor's final application for payment will not be processed until all wall and floor penetrations have been filled in accordance with the requirements stated herein, and approved by the University Project Management (FM Project Manager and F&E Project Supervisor).

If, during construction, the Contractor or any of the Contractor's personnel encounters one or more penetrations not found and reported in the photographic penetration report, seal them or obtain further instructions from the University Project Manager (FM Project Manager and F&E Project Supervisor). If any existing penetration is considered too large to be sealed by the Contractor, the Contractor shall notify both the FM Project Manager and the F&E Project Supervisor, and with the PM/PS's permission, turn in a Trouble Report with accurate information to 801-581-2241.

HOT WORK PERMITS (CUTTING, WELDING AND OPEN FLAME)

The Contractor shall obtain authorization, and permitting for any cutting, welding, seaming, or other hot work prior to the onset of work. If a permit is required, the permit must be applied for 48 hours in advance, and the record of approval will be kept on file by the Contractor. A cutting, welding or hot work permit shall be affixed by the Contractor to the area under construction, with all applicable rules followed as stated on the permit. Extreme caution is to be used

at all times during this type of work. Workers shall be licensed for all intended work, and proof submitted to the Fire Marshal on request.

Any deviation from permit requirements may be cause for immediate cessation of work at the Contractor's expense.

Fire suppression equipment must be provided by the Contractor where cutting, welding, seaming, or other hot work is conducted. Adjacent areas potentially affected by any cutting, welding, or hot work must be protected by the Contractor. Contractors shall provide their own fire suppression equipment.

A fire watch for one hour shall be in effect after completion of the hot work, or as otherwise stated on the permit.

For activities causing dust, paint spraying operations, or any other activity that might activate a smoke sensor, request the services of a UUHC alarm tech that will deprogram the sensor (call 801-581-2209). If the smoke sensor is covered with plastic, paper, or other material, the Contractor shall make sure that it is uncovered before leaving the area (this includes lunch, breaks, evenings, and weekends). If the smoke sensor must remain covered, the Contractor shall have a fire watch for that area.

If the Contractor's activities will affect the sprinkler system in any way, make arrangements with a UUHC alarm tech to deprogram the water flow device (call 801-581-2291). The Contractor shall make sure it is programmed back in service before leaving work area. If an alarm tech is not available, call 801-581-2241 – this is a 24 hour phone number. See Appendix "D": UUHC WELDING OR CUTTING PERMIT.

FIRE AND SMOKE BARRIERS SHALL BE MAINTAINED AT ALL TIMES.

Note: ANY IMPAIRMENT TO THE FIRE DETECTION OR FIRE PROTECTION SYSTEMS MUST BE APPROVED AND COORDINATED PRIOR TO THE ONSET OF WORK WITH THE FIRE MARSHAL THROUGH BOTH THE FM PROJECT MANAGER AND F&E PROJECT SUPERVISOR.

FALSE AND NUISANCE ALARMS

Per Salt Lake City ordinance, WHEN THE CONTRACTOR OR ANY OF THE CONTRACTOR'S PERSONNEL ARE KNOWN TO HAVE CAUSED A NUISANCE ALARM, THE CONTRACTOR WILL BE FINED \$500.00.

EVACUATION

In the event of a natural disaster that impacts the facility (*e.g.*, earthquake, explosion, aircraft disaster, flood, etc.) it is the Contractor's responsibility to identify the location where the Contractor's personnel will go in the event of a natural disaster.

The Contractor shall follow all exit signs, evacuation plans and procedures to properly exit the facility.

USE OF SITE

Housekeeping

In addition to the requirements for protection and clean-up in the General Conditions (4.10 USE OF SITE), the Contractor/Subcontractor is required to insure that all debris and combustible materials are removed from the job site on a daily basis.

It is the responsibility of the Contractor to ensure that all exit corridors remain clear and clean AT ALL TIMES.

All debris must be covered when transporting debris out of the facilities. Plaster, cement, paint, oil, etc. shall not be dumped in sanitary or storm drains, especially while mixing or cleaning up. In addition, construction debris may not be placed in any University of Utah facilities trash receptacle, compactor, or dumpster.

The placement of Contractor supplied dumpsters must be approved by the University Project Management (FM Project Manager and F&E Project Supervisor) prior to delivery.

Parking

Parking on-site at any University of Utah facility is at a premium and must be reserved for patients, hospital visitors, and staff. The Contractor and its personnel may only use those parking areas designated for Contractor parking established at the pre-construction meeting. At no time shall a vendor, Subcontractor, or anyone else working for the Contractor obstruct a handicapped parking space or park in a fire lane. Under no circumstances is there to be any impedance of the emergency vehicle access roadway to the Emergency Department, or the emergency vehicle parking area, no matter how temporary, without specific prior coordination with UUHC through the University Project Management (FM Project Manager and F&E Project Supervisor). Failure to comply with this parking policy may result in parking privileges being revoked.

Materials Delivery

Both the FM Project Manager and the F&E Project Supervisor shall be notified in writing prior to the delivery of any materials or supplies that will impact the on-site vehicular/pedestrian circulation or parking, or of any off-hours deliveries, to insure proper coordination with UUHC. Prior notification is also required for the use of the Hospital's, or any other UUHC facility's loading dock.

Unattended Equipment and Material

Tools and equipment are not to be left unattended in any public corridor or patient area.

Working Hours

The Contractor's daily working schedule at the site will be established at the pre-construction meeting. Both the FM Project Manager and the F&E Project Supervisor must be notified whenever a change is anticipated, allowing adequate time to coordinate with adjacent UUHC activities.

Smoking

In addition to the requirements of R392-510 UTAH INDOOR CLEAN AIR ACT, smoking and other uses of tobacco products are prohibited at all times, under all circumstances, by all people, on and adjacent to all construction sites, in the interior, and on the roofs of all University of Utah facilities. Workers may only smoke in those areas designated by the Safety Officer.

Grounds Protection

The Contractor shall provide and maintain protection for all existing lawns, trees, curbs, gutters, hydrants, light standards, drives, walks, street signs, buildings not noted for removal, etc. Damage will be repaired or the items replaced at the Contractor's expense in accordance with the General Conditions and project specifications. If any digging is required on campus, the Contractor will need to obtain a Digging Permit from the University Project Management (FM Project Manager and F&E Project Supervisor) per Article 4 of the Supplemental General Conditions the required form is available at <http://facilities.utah.edu/static-content/facilitiesmanagement/files/pdf/digging-permit-form-1-22-09.pdf>).

Elevators

The University Project Management (FM Project Manager and F&E Project Supervisor) will inform the Contractor as to which elevator(s) will be available to the Contractor and approved for use to transport materials and personnel during the Work.

Wireless Devices *(Only required on Hospital / Patient Care Projects)*

University of Utah Health Care restricts the use of radio frequency transmitting devices in all hospital / patient care facilities. These restricted devices include walkie-talkies, ham and CB radios, in some locations cellular phones. Radio frequency devices can cause interference when operated near certain electronic medical equipment. Infusion pumps, monitors, ventilators and defibrillators are known to be especially susceptible to radio frequency interference. Signs have been posted in conspicuous locations requesting that all cellular phone and other devices be set to the "OFF" position. In standby, they are still active units.

Beepers and pagers are "receive only" type instruments and are thus exempt from the provision.

Prior to beginning the Work, the Contractor shall submit specifications on hand-held radio devices for all workers to ensure that the devices do not cause interference with electronic medical equipment and compromise the safety of patients.

AM/FM Radio cassette/CD/MP3 players are not permitted at any time.

See Appendix "E": RADIO FREQUENCY INTERFERENCE.

Restroom Facilities

Access to UUHC restroom facilities is restricted to patients, visitors and hospital staff only. It is the responsibility of the Contractor to provide hand washing and restroom facilities for the Project. On a case-by-case evaluation, University of Utah Health Care may allow use of certain facilities restrooms.

ENCOUNTERING HAZARDOUS MATERIALS

In the event the Contractor encounters material on the project site which is reasonably believed to be asbestos, PCB, or any other hazardous waste or substance, the Contractor shall immediately stop Work and follow the procedures described in Article 6.2 of the General Conditions. The phone report and follow up document shall include the UUHC Environmental Compliance Officer. Work may only resume per the instructions in the General Conditions. See Appendix "I": POSTED NOTICE FORMS.

LOCK-OUT / TAG-OUT

Any work involving "lock-out/tag-out" procedures, shall be in accordance with OSHA standards.

Note: Electrical wiring must never be left uncovered or unprotected at any time.

IDENTIFICATION

All new or remodeled electrical circuits must be properly identified according to project specifications.

PLUMBING

Abandoned pipes shall be removed and capped at the main feed in accordance with the project specifications.

Pneumatic Tube System

All abandon pneumatic tube system components shall be identified and removed.

AIR CONDITIONING

When installing new duct work, old ducting shall be removed. No unused ductwork shall remain. When removing a branch of abandoned ductwork adjoining an active main, cap the branch takeoff at the main.

When eliminating pneumatic thermostats, lines shall be removed and permanently capped at the main air line and air conditioning unit.

All new ductwork shall be covered and protected from dust during transport, installation, and after installation until the mechanical system is functioning. All new and existing duct work shall be cleaned prior to activating heating and cooling systems.

MEDICAL GASSES

(Only required on Hospital / Patient Care Projects)

All construction personnel working on the medical gas system shall be certified to do so. A copy of the installers' certifications shall be given to both the FM Project Manager and the F&E Project Supervisor, and additionally kept in a Contractor's project file at the site. F&E Installer Performance Testing Form shall be filled out and retained for part of the Project Closeout Form. See appendix B

Note: Medical gas compliance certification shall be obtained by a certified third party.

SAFETY AND HEALTH INSPECTIONS

University of Utah Health Care is involved in ongoing safety surveillance. The Project may be monitored by the University Project Management (FM Project Manager and F&E Project Supervisor), Safety Officer, Director of Facilities & Engineering, and/or the Infection Control Director.

INFECTION CONTROL

Hospital and clinics construction, demolition and remodeling can pose a risk for certain hospital acquired infections in patients, especially those who are immune suppressed. Activities that disturb dust may transmit aspergillosis, a fungus found in ceiling and wall spaces where dust has accumulated. Dispersed fungal spores can be inhaled by a susceptible patient and may cause disease.

An Infection Control Construction Risk Assessment (“ICRA”) will assist in identifying and reducing patient exposure to airborne particulates or moisture from construction, renovation, or routine maintenance. The assessment provides a means to implement and monitor safety measures intended to prevent exposure during all phases of construction.

See Appendix “H”: INFECTION CONTROL.

The University Project Manager (FM Project Manager and F&E Project Supervisor) will be responsible for routinely monitoring construction and renovation areas for compliance with the University of Utah Health Care ICRA policy and adherence to the applicable procedures. Any breaches in infection control practices will be reported immediately to both the FM Project Manager and F&E Project Supervisor who will notify Infection Control.

Infection Control will identify any additional educational needs for the construction workers and/or unit staff. Both the FM Project Manager and the F&E Project Supervisor will be informed of any special educational needs. Infection Control will provide education.

Personal Cover Precautions

Construction personnel **must** observe cover precautions (*i.e.*, protect clothing from dust or other construction related contamination). This means that whenever the Contractor’s personnel are working outside, with sewer lines, above ceiling tiles, or at any job site where the Work may contaminate clothing or coveralls with materials not usually associated with a clean indoor environment, all workers must:

1. Change clothing or coveralls prior to entering or re-entering the UUHC facility. If personnel contaminate their clothing and cannot change into clean clothing, they will be denied entry into the facility.
2. Wash hands thoroughly before entering the facility.
3. Ensure that hair has not been contaminated. Hair contamination may require using a cover or washing the hair before entering the facility.

Water and Sewage Handling Precautions

Unplanned interruptions of the water supply and sewage spills are situations which require immediate recovery and remediation measures to assure the health and safety of patients, visitors, and staff. Should any planned or unplanned interruption occur, the Contractor shall follow Facilities and Infection Control procedures for restoration of service. Face protection should be worn to prevent exposure.

IF A SEWAGE SPILL OR RELEASE SHOULD OCCUR, THE FLOW SHALL BE STOPPED IMMEDIATELY. NOTIFY THE BOTH THE FM PROJECT MANAGER AND F&E PROJECT SUPERVISOR, INFECTION CONTROL, AND FACILITIES & ENGINEERING IMMEDIATELY.

APPENDIX “A”

CONTRACTOR’S RESPONSIBILITIES DURING FIRE SITUATIONS OR ALARMS

General

While working at University of Utah Health Care facilities, the Contractor shares the “higher level of responsibility” required of all University of Utah Health Care employees. This basic philosophy requires that “we protect the patients committed to our care from fire and the products of combustion.” This is accomplished by:

1. Training staff to fight fires if appropriate.
2. Establishing roles and communications.
3. Having knowledge of the fire systems involving reporting, detection, extinguishment, and compartmentalization.
4. Understanding how to maintain and monitor for a fire safe environment during construction operations.

All of the above points should be established at construction meetings prior to project start, and will be monitored during operation. The Contractor shall maintain a copy of this Contractor Handbook and train all staff on the procedures and required documentation. Sign-in documentation is required with copies to both the FM Project Manager and F&E Project Supervisor.

Fire Fighting

The Contractor shall be prepared for a fire at the construction site:

1. The Contractor shall know University of Utah Health Care fire rescue acronym.

R. A. C. E.

R – RESCUE endangered persons / patients.

A – ALARM by pull station or calling the operator at 801-581-2121.

C – CONTAIN the fire and smoke by closing all doors and windows, monitor all temporary smoke barriers.

E – EXTINGUISH the fire, if this can be done safely through the use of construction area fire extinguishers.

Note: Contractor fire extinguishers must be maintained at each site no more than 75 ft. between extinguishers and they shall be ABC. Minimum required size is 10 lb.

CONSTRUCTION SITES SHALL MAINTAIN ABC TYPE UNLESS INSTRUCTED OTHERWISE BY THE FIRE SAFETY OFFICER.

2. The Contractor shall provide serviceable fire extinguishers, and all workers must know how to properly use them.
3. Evacuation routes and procedures will be developed for each location.
4. Away from the point of fire origin, maintain location and listen for overhead page or radio instructions. The overhead page will state “Code Red” and give the location. Note the location and proximity of alarm. Upon hearing an alarm, all construction work shall be stopped and workers are prepared to follow instruction. If the fire is in the construction area, immediately stop work and follow established emergency procedures.

5. **FIRE AT CONSTRUCTION SITE:**
 - a. Immediate Response: R. A. C. E.
 - b. Direct pedestrian traffic away from construction site.
 - c. Advise fire department on site conditions and materials stored within the site.
 - d. Assist as requested.

6. The Contractor shall know the fire system employed and understand how it works.
FIRE SYSTEM KNOWLEDGE:
 - a. Understand fire/smoke compartment layout for smoke control.
 - b. Know the location of all firefighting equipment and alarms.
 - c. Access each area of construction for type(s) of alarm detection and extinguishing systems.
 - d. Be familiar with evacuation routes and plans.

THE SHUT-DOWN OR MODIFICATION OF ANY FIRE SYSTEM SHALL ALWAYS BE COMMUNICATED TO BOTH THE FM PROJECT MANAGER AND F&E PROJECT SUPERVISOR BEFORE PROCEEDING.

False and Nuisance Alarms

See FALSE AND NUISANCE ALARMS on page 14.

APPENDIX “B”

INTERIM LIFE SAFETY MEASURES (ILSM)

- a. Plan Check Analysis Sheet
- b. Spot ILSM Assessment Form
- c. Daily Interim Life Safety / Infectious Control Survey Form
- d. ILSM-ICRA Construction weekly Check Form
- e. Installer Performance Testing Form

Interim Life Safety Measures

Plan Check Analysis Sheet

Project No:

Project Description:

I. Ensuring exits provide free and unobstructed egress. Personnel shall receive training if alternative exits must be designated. Buildings or areas under construction must maintain escape facilities for construction workers at all times. Means of egress in construction areas must be inspected daily.

A. Exits will remain free and unobstructed.

B. Means of egress in construction area will be inspected daily. (Recorded on "DAILY INTERIM LIFE SAFETY SURVEY" form)

If not achievable then:

C. Identify and post alternate exiting in construction and surrounding areas.

D. Train construction personnel and staff assigned to surrounding areas.

E. Means of egress in construction area will be inspected daily. (Recorded on "DAILY INTERIM LIFE SAFETY SURVEY" form)

II. Ensuring free and unobstructed access to emergency services and for emergency forces.

A. Access to emergency services and for emergency forces will remain free and unobstructed.

If not achievable then:

B. Identify and post alternate access to emergency services and for emergency forces.

Applicable _____ Not Applicable _____

III. Ensuring fire suppression systems (automatic fire sprinkler system, kitchen hood systems, clean agent systems, etc.) are not impaired. A fire watch and temporary supplemental fire alarm panel (detection and notification) system shall be provided when any fire suppression system is impaired. Temporary systems must be inspected and tested monthly.

A. Fire suppression systems shall not be impaired.

If impaired more than 4 hours, then:

B. Provide

1. Notify Fire Marshal and F&E alarm techs
Applicable _____ Not Applicable _____
2. Fire watch
(Record of fire watch shall be part of Weekly ILSM documentation)
Applicable _____ Not Applicable _____
3. Fire watch training
Applicable _____ Not Applicable _____
4. Temporary fire alarm system
Applicable _____ Not Applicable _____
5. Test temporary system monthly
Applicable _____ Not Applicable _____
(Recorded on "MONTHLY FIRE ALARM INSPECTION AND TEST" form)

IV. Ensuring fire alarm systems is not impaired. A temporary, but equivalent system shall be provided when any fire alarm system is impaired. Temporary systems must be inspected and tested monthly.

A. Fire alarm systems will not be impaired.

If impaired more than 4 hours:

B. Provide

1. Notify Fire Marshal and F&E alarm techs
Applicable _____ Not Applicable _____
2. Fire watch
(Record of fire watch shall be part of Weekly ILSM documentation)
Applicable _____ Not Applicable _____
3. Fire watch training
Applicable _____ Not Applicable _____
4. Temporary fire alarm system
Applicable _____ Not Applicable _____
5. Test temporary system monthly
Applicable _____ Not Applicable _____
(Recorded on "MONTHLY FIRE ALARM INSPECTION AND TEST" form)

V. Ensuring temporary construction partitions are smoke tight and built of noncombustible or limited combustible materials that will not contribute to the development or spread of fire.

A. No breach of separations between exit system and construction work zone will be made during renovation work.

If separation(s) between exit systems and construction work zone are breached:

B. Provide noncombustible or limited combustible construction partitions where separation(s) between exit system and construction work zone occurs.

Applicable _____ Not Applicable _____

VI. Hot Works Permits are required for all welding, brazing, soldering, torch cutting, grinding, and installation of torch-applied roofing, or similar work that presents a high fire risk.

A. Obtain a weekly hot work permit from the Fire Marshal.

B. Provide a fire watch per International Fire Code (IFC) chapter 26 during hot work and a minimum of 30 minutes after hot work is complete.

- VII. Providing additional firefighting equipment and use training for personnel.
- A. Provide additional fire extinguishers in all project work areas so that no area is more than 75' travel distance from a portable extinguisher. Fire extinguishers shall be ABC multipurpose dry chemical type, 10 # nominal capacity, 4-A: 60-B: C minimum rating.
 - B. Fire extinguisher training required for this Project: (Recorded on "Weekly ILSM Survey" form)
 Applicable _____ Not Applicable _____
- VIII. Smoking is prohibited in accordance with MA.1.3.15 in or adjacent to all construction areas.
- A. Smoking is prohibited in all areas
- IX. Developing and enforcing storage, housekeeping, and debris removal practices that reduce the flammable and combustible fire load of the building to the lowest level necessary for daily operations.
- A. All construction debris will be removed daily.
 - B. Provide for storage of department displaced equipment and/or construction material: (Recorded on "WEEKLY INTERIM LIFE SAFETY MEASURES (ILSM) SURVEY" form.)
 Applicable _____ Not Applicable _____
- X. Conducting a minimum of two fire drills per shift per quarter.
- A. Two fire drills per quarter are required in the area of this Project if both of the following criteria are met:
 1. Construction significantly impacts exiting systems.
 Applicable _____ Not Applicable _____
 2. Construction duration will extend longer than three months.
 Applicable _____ Not Applicable _____
- XI. Other Conditions
- A. _____
 - B. _____
 - C. _____

Bill Bonn, Fire Marshal
 Office: (801) 585-0383
 William.bonn@ehs.utah.edu

Evaluation by:	Date:
----------------	-------

Spot ILSM Assessment

UNIVERSITY OF UTAH HEALTH CARE

Date: _____ Location: _____

Description: _____

Life Safety Measure Affected

- | | | | |
|------|--------------------------------------------------------------------------------|------------------------------|-----------------------------|
| I. | Exits provide free and unobstructed egress. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| II. | Access to emergency services and for emergency forces. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| III. | Fire alarm is not impaired. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| IV. | Fire suppression systems (fire sprinklers and kitchen hoods) are not impaired. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| V. | Temporary construction partitions are smoke tight and noncombustible. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| VI. | Combustible fire load of the building to the lowest level necessary. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |

COMMENT: _____

ILSM PROTECTIVE MEASURE IMPLEMENTED:

- | | | |
|----------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------|
| <input type="checkbox"/> Fire Watch | <input type="checkbox"/> Increased Surveillance | <input type="checkbox"/> Provide temporary fire detection/alarm |
| <input type="checkbox"/> Identify and post Alternate Exiting | <input type="checkbox"/> Train staff in alternate exiting | <input type="checkbox"/> Additional Fire Drills |
| <input type="checkbox"/> Provide additional fire extinguisher* | | |

*ABC Multipurpose dry chemical type, minimum 10# nominal capacity4-A: 60B: C

OTHER: _____

Interim Life Safety Measure analysis performed by: (Construction/Maintenance Supervisor & Fire Marshal)

Name

Title

Name

Title

Daily Interim Life Safety / Infectious Control Survey

Daily Interim Life Safety/Infectious Control Survey

Month: _____ Year: _____

Project Supervisor: _____ Project: _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____
Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____
Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____
Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____	Initials _____ Egress _____ Negative Air _____ Fire Ex. _____

ILSM – ICRA Construction Weekly Check

I L S M - I C R A C o n s t r u c t i o n W e e k l y C h e c k

DATE: _____ PROJECT: _____
 INSPECTED BY: _____ PROJECT SUPERVISOR: _____

I. ICRA	n/a	YES	NO	COMMENTS
a. ICRA Evaluation document is posted				
b. DUST BARRIER is established and effective				
c. Pressure/Flow INDICATOR is present				
d. NEGATIVE Pressure is established and effective				
e. TACKY MATS are in use and are effective				
f. CEILING TILES are in place outside of work site				
g. ABOVE CEILING WORK PERMIT is posted				
h. Debris is COVERED when transported				
i. Staff CLOTHING is clear of debris				
j. DUCTING is kept clean/sealed prior to installation				
II. ILSM				
a. ILSM Evaluation document is posted				
b. DAILY ILSM checks are documented				
c. Wall/floor fire/smoke BARRIERS are intact				
d. Sprinkler PIPES are free from attachments				
e. Corridors are clear of obstructions				
f. Typical EGRESS PATH is unaltered				
g. Exit SIGNAGE is effective				
h. Fire/smoke DETECTION systems effective				

i. Fire ALARMS/STROBES effective				
j. Fire EXTINGUISHER present				
k. HOT WORKS PERMIT is present				
III. SAFETY				
a. ACM Evaluation Document present				
b. Safety SIGNS posted on site.				
c. HARD HATS are worn during overhead work				
d. <u>Emergency/Visitor</u> Hard hats available on site				
e. PPE is worn when necessary				
f. LADDERS are in good repair & used properly				
g. Electrical cords in good repair				
h. TOOLS, sharps and chemicals are secured				
i. RESPIRATORY protection is adequate.				
j. LIGHTING is effective.				
k. COMPRESSED GAS CYLINDERS are secure				
l. FALL BARRIERS to protect from fall hazards				

APPENDIX "C"

Piped Gas Systems

<u>Installer Performance Testing</u> Documentation Form

Page 1 of 3
Facilities & Engineering

Testing to be performed in accordance NFPA 99C, 2005 Edition, Section 5.1.12
Use a separate form for each gas system test

Project Supervisor: _____

Installer Name: _____

Certification Card #: _____

Brazer Expiration: _____

Installer Expiration: _____

Date of Install: _____

Job Number: _____ Gas System Tested _____

Location (building & Room Number or Area): _____

Job Description: _____

Installer Performance Testing Documentation Form

1. Blow Down with dry nitrogen before station outlets are installed, Section 5.1.12.2.3.

Completed on (date/time): _____

Completed by (print): _____

Completed by (signature): _____

Witnessed by (Signature/Print): _____

2. Initial pressure test before attachment of system components and before wall closure at 1.5 times working pressure (not less than 150 psig). All joints examined for leaks with soapy water, Section 5.1.12.3.1.

Completed leak free on (date/time): _____

Completed by (print): _____

Completed by (signature): _____

Witnessed by (signature): _____

3. Standing pressure test of the completed system for 24 hours at 20% above normal operating pressure, Section 5.1.12.2.6.

Test beginning time: _____ Test beginning pressure: _____

Test ending time: _____ Test ending pressure: _____

Beginning Temperature: _____ Ending Temperature: _____

Temperature pressure correction (if any): _____

Completed by (print): _____

Completed by (signature): _____

Witnessed by (signature/print): _____

Installer Performance Testing Documentation Form

4. Piping purge test of each outlet at high flow until the purge produces no discoloration on a white cloth, Section 5.1.12.23.

Number of outlets purged: _____

Completed on (date/time): _____

Completed by (print): _____

Completed by (signature): _____

Witnessed by (signature/print): _____

5. Cross connection test before closing of walls with all gas systems other than the one being tested reduced to atmospheric pressure. System being test is pressurized with 50 psig nitrogen, and all outlets are check to assure that test gas is only at outlets from the tested system, Section 5.1.12.24

Number of outlets tested: _____

Completed on (date/time): _____

Completed by (print): _____

Completed by (signature): _____

Witnessed by (signature/print): _____

Medical Gas Requirements for Installation and Testing NFPA 99C 2005 Edition Section 5.1.12

5.1.12* Performance Criteria and Testing - Level 1 (Gases, Medical-Surgical Vacuum and WAGD).

5.1.12.1 General.

5.1.12.1.1 Inspection and testing shall be performed on all new piped gas systems, additions, renovations, temporary installations, or repaired systems, to assure the facility, by a documented procedure, that all applicable provisions of this document

have been adhered to and system integrity has been achieved or maintained.

5.1.12.1.2 Inspection and testing shall include **all** components of the system or portions thereof, including, but not limited to, gas bulk source(s), manifolds, compressed air source systems (e.g., compressors, dryers, filters, regulators), source alarms and monitoring safeguards, master alarms, pipelines, isolation valves, area alarms, zone valves, and station inlets (vacuum) and outlets (pressure gases).

5.1.12.1.3 All systems that are breached and components that are subject to additions, renovations, or replacement (e.g. new gas sources: bulk, manifolds, compressors, dryers, alarms) shall be inspected and tested.

5.1.12.1.4 Systems shall be deemed breached at the point of pipeline intrusion by physical separation or by system component removal, replacement, or addition.

5.1.12.1.5 Breached portions of the systems subject to inspection and testing shall be confined to only the specific altered zone and components in the immediate zone or area that is located upstream for vacuum systems and downstream for pressure gases at the point or area of intrusion.

5.1.12.1.6 The inspection and testing reports shall be submitted directly to the party that contracted for the testing, who shall submit the report through channels to the responsible facility authority and any others that are required.

5.1.12.1.7 Reports shall contain detailed listings of all findings and results.

5.1.12.1.8 The responsible facility authority shall review these inspection and testing records prior to the use of **all** systems to assure that **all** findings and results of the inspection and testing have been successfully completed.

5.1.12.1.9 All documentation pertaining to inspections and testing shall be maintained on-site within the facility.

5.1.12.1.10 Before piping systems are initially put into use, the facility authority shall be responsible for ascertaining that the gas/vacuum delivered at the outlet/inlet is that shown on the outlet/inlet label and that the proper connecting fittings are installed for the specific gas/vacuum service.

5.1.12.1.11 Acceptance of the verifier's report shall be permitted to satisfy the requirements in 5.1.12.1.10.

5.1.12.1.12 The removal of components within a source system for repair and re-installation, or the replacement of components like for like shall be treated as new work for the purposes of testing whenever such work involves cutting and/or brazing new piping.

5.1.12.1.12.1 Where no piping is changed, functional testing shall be performed as follows:

- (1) To verify the function of the replaced device
- (2) To assure no other equipment in the system has been adversely impacted

5.1.12.1.12.2 Where no piping is changed, in addition to tests of general function required by 5.1.12.1.12.1, testing shall be performed as follows:

- (1) Pressure gas sources shall be tested for compliance with 5.1.12.3.14.2 as applicable to the equipment type.
- (2) Medical air and instrument air sources shall be tested to 5.1.12.3.14.3.
- (3) Vacuum and WAGD systems shall be tested to 5.1.12.3.14.4.
- (4) Alarm systems shall be tested to 5.1.12.3.5.2 and 5.1.12.3.5.3.
- (5) *All* affected components shall be tested as appropriate to that specific component (e.g., a replaced dew point monitor would be tested to 5.1.3.5.15).

Installer Performed

5.1.12.2 Installer Performed Tests.

5.1.12.2.1 General.

5.1.12.2.1.1 The tests required by 5.1.12.2 shall be performed and documented by the installer prior to the tests listed in 5.1.12.3, System Verification.

5.1.12.2.1.2 The test gas shall be oil-free, dry Nitrogen NF.

5.1.12.2.1.3 Where manufactured assemblies are to be installed, the tests required by 5.1.12.2 shall be performed as follows:

- (1) After completion of the distribution piping but before the standing pressure test
- (2) Prior to installation of manufactured assemblies supplied through flexible hose or flexible tubing
- (3) At all station outlets/ inlets on installed manufactured assemblies supplied through copper tubing

5.1.12.2.2 Initial Blow Down. Piping in medical gas and vacuum distribution systems shall be blown clear by means of oil-free, dry Nitrogen NF as follows:

- (1) After installation of the distribution piping
- (2) Before installation of station outlets/ inlets and other system components (e.g., pressure/vacuum alarm devices, pressure/vacuum indicators, pressure relief valves, manifolds, source equipment)

5.1.12.2.3 Initial Pressure Test.

5.1.12.2.3.1 Each section of the piping in medical gas and vacuum systems shall be pressure tested.

5.1.12.2.3.2 Initial pressure tests shall be conducted as follows:

- (1) After installation of station outlets/inlets rough-in assemblies. Test caps shall be permitted to be used.
- (2) Prior to the installation of components of the distribution piping system that would be damaged by the test pressure (e.g., pressure/vacuum alarm devices, pressure/vacuum indicators, line pressure relief valves, manufactured assemblies with flexible hose, hose, etc.).

5.1.12.2.3.3 The source shutoff valve shall remain closed during these tests.

5.1.12.2.3.4 The test pressure for pressure gases shall be 1.5 times the system working pressure but not less than a gauge pressure of 1035 kPa (150 psi).

5.1.12.2.3.5 The test pressure for vacuum shall be not less than a gauge pressure of 415 kPa (60 psi).

5.1.12.2.3.6 The test pressure shall be maintained until each joint has been examined for leakage by means of soapy water or other equally effective means of leak detection that is safe for use with oxygen.

5.1.12.2.3.7 Leaks, if any, shall be located, repaired (if permitted), replaced (if required), and retested.

5.1.12.2.4 Cross-Connection Test. It shall be determined that no cross-connections exist between the various medical gas and vacuum piping systems.

5.1.12.2.4.1 All piping systems shall be reduced to atmospheric pressure.

5.1.12.2.4.2 Sources of test gas shall be disconnected from all piping systems except for the one system being tested.

5.1.12.2.4.3 The system under test shall be charged with oil free, dry Nitrogen NF to a gauge pressure of 345 kPa (50 psi).

5.1.12.2.4.4 After the installation of the individual faceplates with appropriate adapters matching outlet/inlet labels, each individual outlet/inlet in each installed medical gas and vacuum piping system shall be checked to determine that the test gas is being dispensed only from the piping system being tested.

5.1.12.2.4.5 The cross-connection test referenced in 5.1.12.2.4 shall be repeated for each installed medical gas and vacuum piping system.

5.1.12.2.4.6 The proper labeling and identification of system outlets/inlets shall be confirmed during these tests.

5.1.12.2.5 Piping Purge Test. The outlets in each medical gas piping system shall be purged to remove any particulate matter

from the distribution piping.

5.1.12.2.5.1 Using appropriate adapters, each outlet shall be purged with an intermittent high-volume flow of test gas until the purge produces no discoloration in a clean white cloth.

5.1.12.2.5.2 This purging shall be started at the closest outlet/ inlet to the zone valve and continue to the furthest outlet/ inlet within the zone.

5.1.12.2.6 Standing Pressure Test for Positive Pressure Medical Gas Piping. After successful completion of the initial pressure tests under 5.1.12.2.3, medical gas distribution piping shall be subject to a standing pressure test.

5.1.12.2.6.1 Tests shall be conducted after the final installation of station outlet valve bodies, face plates, and other distribution system components (e.g., pressure alarm devices, pressure indicators, line pressure relief valves, manufactured assemblies, hose, etc.).

5.1.12.2.6.2 The source valve shall be closed during this test.

5.1.12.2.6.3 The piping systems shall be subjected to a 24-hour standing pressure test using oil-free, dry Nitrogen NF.

5.1.12.2.6.4 Test pressures shall be 20 percent above the normal system operating line pressure.

5.1.12.2.6.5 At the conclusion of the tests, there shall be no change in the test pressure other than that attributed to changes of ambient temperature, as permitted under 5.1.12.2.7.6.

5.1.12.2.6.6 Leaks, if any, shall be located, repaired (if permitted) or replaced (if required), and retested.

5.1.12.2.7 Standing Vacuum Test for Vacuum System. After successful completion of the initial pressure tests under 5.1.12.2.3, vacuum distribution piping shall be subjected to a standing vacuum test.

5.1.12.2.7.1 Tests shall be conducted after installation of all components of the vacuum system.

5.1.12.2.7.2 The piping systems shall be subjected to a 24-hour standing vacuum test.

5.1.12.2.7.3 Test pressure shall be between 300 mm (12 in.) HgV and full vacuum.

5.1.12.2.7.4 During the test, the source of test vacuum shall be disconnected from the piping system.

5.1.12.2.7.5 At the conclusion of the test, there shall be no change in the vacuum other than that attributed to changes of ambient temperature, as permitted under 5.1.12.2.7.6.

5.1.12.2.7.6 Test vacuum changes due to expansion or contraction shall be permitted to be determined by means of the following pressure-temperature relationship:

- (1) The calculated final absolute pressure equals the initial absolute pressure times the final absolute temperature, divided by the initial absolute temperature.
- (2) Absolute pressure is the gauge pressure reading plus 101.4 kPa (14.7 psi).
- (3) Absolute temperature is the temperature reading plus

238°C (460°F).

(4) The final allowable gauge pressure reading equals the final allowable absolute pressure minus a gauge pressure of 101.4 kPa (14.7 psi).

5.1.12.2.7.7 Leaks, if any, shall be located, repaired (if permitted) or replaced (if required), and retested.

Verifier Performed

5.1.12.3 System Verification.

5.1.12.3.1 General.

5.1.12.3.1.1 Verification tests shall be performed only after all tests required in 5.1.12.2, Installer Performed Tests, have been completed.

5.1.12.3.1.2 The test gas shall be oil-free, dry Nitrogen NF or the system gas where permitted.

5.1.12.3.1.3 Testing shall be conducted by a party technically competent and experienced in the field of medical gas and vacuum pipeline testing and meeting the requirements of ASSE 6030, *Professional Qualifications Standard for Medical Gas Systems Verifiers*.

5.1.12.3.1.4 Testing shall be performed by a party other than the installing contractor.

5.1.12.3.1.5 When systems have not been installed by in-house personnel, testing shall be permitted by personnel of that organization who meet the requirements of 5.1.12.3.1.3.

5.1.12.3.1.6 All tests required under 5.1.12.3 shall be performed after installation of any manufactured assemblies supplied through flexible hose or tubing.

5.1.12.3.1.7 Where there **are** multiple possible connection points for terminals, each possible position shall be tested independently.

5.1.12.3.1.8 The gas of system designation shall be permitted to be used for all tests, regardless of the size of the system. This includes:

(1) Standing pressure (5.1.12.3.2)

(2) Cross-connection (5.1.12.3.3)

(3) Alarms (5.1.12.3.5)

(4) Piping purge (5.1.12.3.6)

(5) Piping particulates (5.1.12.3.7)

5.1.12.3.2" Standing Pressure Test. Piping systems shall be subjected to a 10-minute standing pressure test at operating line pressure using the following procedure:

(1) After the system is filled with nitrogen or source gas, the source valve and all zone valves shall be closed.

(2) The piping system shall show no decrease in pressure after 10 minutes.

(3) Any leaks found shall be located, repaired, and retested per 5.1.12.2.6.

5.1.12.3.3 Cross-Connection Test. After closing of walls and

completion of requirements of 5.1.12.2, Installer Performed Tests, it shall be determined that no cross-connection of piping systems exists by either of the methods detailed in 5.1.12.3.3.1 or 5.1.12.3.3.2.

5.1.12.3.3.1 Individual Pressurization.

- (A) All medical gas and vacuum piping systems shall be reduced to atmospheric pressure.
- (B) All sources of test gas from all of the medical gas and vacuum systems, with the exception of the one system to be checked, shall be disconnected.
- (C) The system being checked shall be pressurized to a gauge pressure of 345 kPa (50 psi).
- (D) With adapters matching outlet labels, each individual station outlet/inlet of all medical gas and vacuum systems installed shall be checked to determine that test gas is being dispensed only from the outlets/inlets of the piping system being tested.
- (E) The source of test gas shall be disconnected and the system tested reduced to atmospheric pressure.
- (F) Proceed to test each additional piping system until all medical gas and vacuum piping systems are free of cross connections.

5.1.12.3.3.2 Pressure Differential.

- (A) The pressure in all medical gas systems shall be reduced to atmospheric.
- (B) The test gas pressure in all medical gas piping systems shall be increased to the values indicated in Table 5.1.12.3.3.2, simultaneously maintaining these nominal pressures throughout the test.
- (C) Systems with nonstandard operating pressures shall be tested at a gauge pressure of at least 70 kPa (10 psi) higher or lower than any other system being tested.
- (D) Any vacuum systems shall be in operation so that these vacuum systems are tested at the same time the medical gas systems are tested.
- (E) Following the adjustment of pressures in accordance with 5.1.12.3.3.2(B) and 5.1.12.3.3.2(C), each station outlet for each medical gas system shall be tested using the gas-specific connection for each system with test gauge attached to verify that the correct test pressure/vacuum is present at each outlet/inlet of each system as listed in Table 5.1.12.3.3.2.
- (F) Each test gauge used in performing this test shall be calibrated with the pressure indicator used for the line pressure regulator used to provide the source pressure.
- (G) Each station outlet shall be identified by label (and color marking, if used), and the pressure indicated on the test gauge shall be that listed in Table 5.1.12.3.3.2 for the system being tested.

5.1.12.3.4 Valve Test. Valves installed in each medical gas and vacuum piping system shall be tested to verify proper operation

and rooms or areas of control.

5.1.12.3.4.1 Records shall be made listing the rooms or areas controlled by each valve for each gas.

5.1.12.3.4.2 The information shall be utilized to assist and verify the proper labeling of the valves.

5.1.12.3.5 Alarm Test.

5.1.12.3.5.1 General.

- (A) All warning systems for each medical gas and vacuum system(s) shall be tested to ensure that all components function properly prior to placing the system in service.
- (B) Permanent records of these tests shall be maintained.
- (C) Warning systems that are part of an addition to an existing piping system shall be tested prior to the connection of the new piping to the existing system.
- (D) Tests of warning systems for new installations (initial tests) shall be performed after the cross-connection testing (5.1.12.3.3), but before purging the piping (5.1.12.3.6) and performing the remaining verification tests (5.1.12.3.7 through 5.1.12.3.14).
- (E) Initial tests of warning systems that can be included in an addition or extension to an existing piping system shall be completed before connection of the addition to the existing system.
- (F) Test gases for the initial tests shall be oil-free, dry Nitrogen NF, the gas of system designation, or operating vacuum.
- (G) Where computer systems are used as substitutes for a required alarm panel as allowed under 5.1.9.2.2, the computer system shall be included in the alarm tests as modified in 5.1.9.4.

5.1.12.3.5.2 Master Alarms.

- (A) The master alarm system tests shall be performed for each of the medical gas and vacuum piping systems.
- (B) Permanent records of these tests shall be maintained with those required under 5.1.12.1.7.
- (C) The audible and non-cancelable visual signals of 5.1.9.1 shall indicate if the pressure in the main line increases or decreases 20 percent from the normal operating pressure.
- (D) The operation of all master alarm signals referenced in 5.1.9.2.4 shall be verified.

5.1.12.3.5.3 Area Alarms. The warning signals for all medical gas piping systems supplying anesthetizing locations and other vital life-support and critical care areas, such as post-anesthesia recovery, intensive care units, coronary care units, emergency suites and operating rooms shall be tested to verify an alarm condition if the pressure in the piping system increases or decreases 20 percent from the normal operating pressure for positive-pressure gases, or when the vacuum system(s) drop below a gauge pressure of 300 mm (12 in.) HgV.

5.1.12.3.6 Piping Purge Test. In order to remove any traces of particulate matter deposited in the pipelines as a result of construction, a heavy, intermittent purging of the pipeline shall be done.

5.1.12.3.6.1 The appropriate adapter shall be obtained from Contractor Handbook – April 2013

the facility or manufacturer, and high purge rates of at least 225 NI/min (8 SCFM) shall be put on each outlet.

5.1.12.3.6.2 After the purge is started, it shall be rapidly interrupted several times until the purge produces no discoloration in a white cloth loosely held over the adapter during the purge.

5.1.12.3.6.3 In order to avoid possible damage to the outlet and its components, this test shall not be conducted using any implement other than the proper adapter.

5.1.12.3.7 Piping Particulate Test. For each positive-pressure gas system, the cleanliness of the piping system shall be verified.

5.1.12.3.7.1 A minimum of 1000 L (35 ft³) of gas shall be filtered through a clean, white 0.45-micron filter at a minimum flow rate of 100 NI/min (3.5 SCFM).

5.1.12.3.7.2 Twenty-five percent of the zones shall be tested at the outlet most remote from the source.

5.1.12.3.7.3 The filter shall accrue no more than 0.001 g (1 mg) of matter from any outlet tested.

5.1.12.3.7.4 If any outlet fails this test, the most remote outlet in every zone shall be tested.

5.1.12.3.7.5 The test shall be performed with the use of oil free, dry Nitrogen NF.

5.1.12.3.8 Piping Purity Test. For each patient medical gas system, the purity of the piping system shall be verified.

5.1.12.3.8.1 These tests shall be performed with oil-free, dry Nitrogen NF or the gas of system designation.

5.1.12.3.8.2 The tests shall be for total non-methane hydrocarbons (as methane), and halogenated hydrocarbons, and compared with the source gas.

5.1.12.3.8.3 This test shall be performed at the outlet most remote from the source.

5.1.12.3.8.4 The difference between the two tests shall in no case exceed the following:

- (1) Total hydrocarbons (excluding methane), 5 ppm
- (2) Halogenated hydrocarbons, 5 ppm

5.1.12.3.8.5 A test for dew point shall be conducted at the outlet most remote from the source and the dew point shall not exceed 500 ppm or -12°C (10°F) at 345 kPa (50 psig).

5.1.12.3.9 Final Tie-In Test.

5.1.12.3.9.1 Prior to the connection of any work or any extension or addition to an existing piping system, the tests in 5.1.12.3.1 through 5.1.12.3.8 shall be successfully performed on the new work.

5.1.12.3.9.2 Each joint in the final connection between the new work and the existing system shall be leak-tested with the gas of system designation at the normal operating pressure by means of soapy water or other means safe for use with oxygen. Vacuum joints shall be tested using an ultrasonic leak detector or other means that will permit detection of leaks in an active vacuum system.

5.1.12.3.9.3 For pressure gases, immediately after the final connection

is made and leak-tested, the specific altered zone and components in the immediate zone or area that is downstream from the point or area of intrusion shall be purged per 5.1.12.3.6.

5.1.12.3.9.4 Before the new work is used for patient care, positive-pressure gases shall be tested for operational pressure, and gas concentration in accordance with 5.1.12.3.10 and 5.1.12.3.11.

5.1.12.3.9.5 Permanent records of these tests shall be maintained in accordance with 9.8.1 of NFPA 99.

5.1.12.3.10 Operational Pressure Test. Operational pressure tests shall be performed at each station outlet/inlet or terminal where the user makes connections and disconnections.

5.1.12.3.10.1 Tests shall be performed with the gas of system designation or the operating vacuum.

5.1.12.3.10.2 All gas outlets with a gauge pressure of 345 kPa (50 psi), including, but not limited to, oxygen, nitrous oxide, medical air, and carbon dioxide, shall deliver 100 SLPM (3.5 SCFM) with a pressure drop of not more than 35 kPa (5 psi) and static pressure of 345 kPa to 380 kPa (50 psi to 55 psi).

5.1.12.3.10.3 Support gas outlets shall deliver 140 SLPM (5.0 SCFM) with a pressure drop of not more than 35 kPa (5 psi) gauge and static pressure of 1100 kPa to 1275 kPa (160 psi to 185 psi) gauge.

5.1.12.3.10.4 Medical-surgical vacuum inlets shall draw 85 Nl/min (3 SCFM) without reducing the vacuum pressure below 300 mm (12 in.) gauge HgV at any adjacent station inlet.

5.1.12.3.10.5 Oxygen and medical air outlets serving critical care areas shall permit a transient flow rate of 170 SLPM (6 SCFM) for 3 seconds.

5.1.12.3.11 Medical Gas Concentration Test. After purging each system with the gas of system designation, the following shall be performed:

- (1) Each pressure gas source and outlet shall be analyzed for concentration of gas, by volume.
- (2) Analysis shall be conducted with instruments designed to measure the specific gas dispensed.
- (3)*Allowable concentrations shall be as indicated in Table 5.1.12.3.11.

5.1.12.3.12 Medical Air Purity Test (Compressor System).

5.1.12.3.12.1 The medical air source shall be analyzed for concentration of contaminants by volume prior to the source valve being opened.

5.1.12.3.12.2 Sample(s) shall be taken for the air system test at the system sample port.

5.1.12.3.12.3 The test results shall not exceed the parameters in Table 5.1.12.3.12.3.

5.1.12.3.13 Labeling. The presence and correctness of labeling required by this standard for all components (e.g., station outlets/ inlets, shutoff valves, and alarm panels) shall be verified.

APPENDIX "D"
ABOVE CEILING WORK PERMIT

UUHC Facilities and Engineering

Permit # _____

Date Issued: _____ Date Expired: _____

UUHC Department or Contractor: _____

Name (Point of Contact): _____

POC Contact info: _____

Project Name / Work Order Number: _____

(If Applicable)

UUHC Department Requesting the Work: _____

Location/Pathway of Work: (reference drawings if available)

Bldg: _____ Level: _____ Room #: _____

Description: _____

Type of Work Being Performed:

Penetrations Made: Wall Ceiling Floor

All Penetrations are sealed: YES NO

All electrical boxes have required covers: YES NO

Authorized by: _____

Date Work Completed: _____

Inspected by: _____ Date: _____

ABOVE CEILING WORK PERMIT

UUHC Facilities and Engineering

Permit # _____

Date Issued: _____ Date Expired: _____

UUHC Department or Contractor: _____

Name (Point of Contact): _____

POC Contact info: _____

Project Name / Work Order Number: _____
(If Applicable)

UUHC Department Requesting the Work: _____

Location/Pathway of Work: (reference drawings if available)

Bldg: _____ Level: _____ Room #: _____

Description: _____

Type of Work Being Performed:

Penetrations Made: Wall Ceiling Floor

All Penetrations are Sealed: YES NO

Authorized by: _____

Date Work Completed: _____

Inspected by: _____ Date: _____



Hospital Work Permit

#: _____

Building Official Review
 Required Not Required

BARRIER WORK A

Work Location/Contractor

Job Detail

Description of Work:

Contractor: _____

Contact Name: _____ Phone #: _____
 Product(s) & Product Manufacturer(s) Used: _____

Work Order Number: _____

Date Request was Submitted: _____

Dept. Contact Requesting Work: _____

Start Date & Time: _____

Building: _____ Floor: _____ Room(s): _____

Expected Completion Date & Time: _____

Is wiring to be installed/modified? Yes [] No [] If No, describe penetration type: _____

Penetrations Locations

How will the work be supported?
 (please check all that apply)

WALLS: Yes [] No [] Quantity: _____

[] Deck

ROOF/CEILING: Yes [] No [] Quantity: _____

[] Existing Casework

FLOOR: Yes [] No [] Quantity: _____

[] Existing Cable Tray

Completion Checklist

[] New Cable Tray

Actual Completed Date & Time: _____ Initials: _____

[] Existing Pipe or Conduit Rack

Penetrations Properly Labeled & Sealed? Yes [] No []

[] New Pipe or Conduit Rack

All electrical boxes have required covers? Yes [] No []

[] Wall

Were Preexisting conditions found? Yes [] No [] If yes, please describe:

[] Other, if checked please describe:

By signing this permit I affirm that I have read and understand the barrier work policy and agree to abide by all the requirements therein.

Requestor Signature: _____ Please Print _____ Signature _____ Date _____

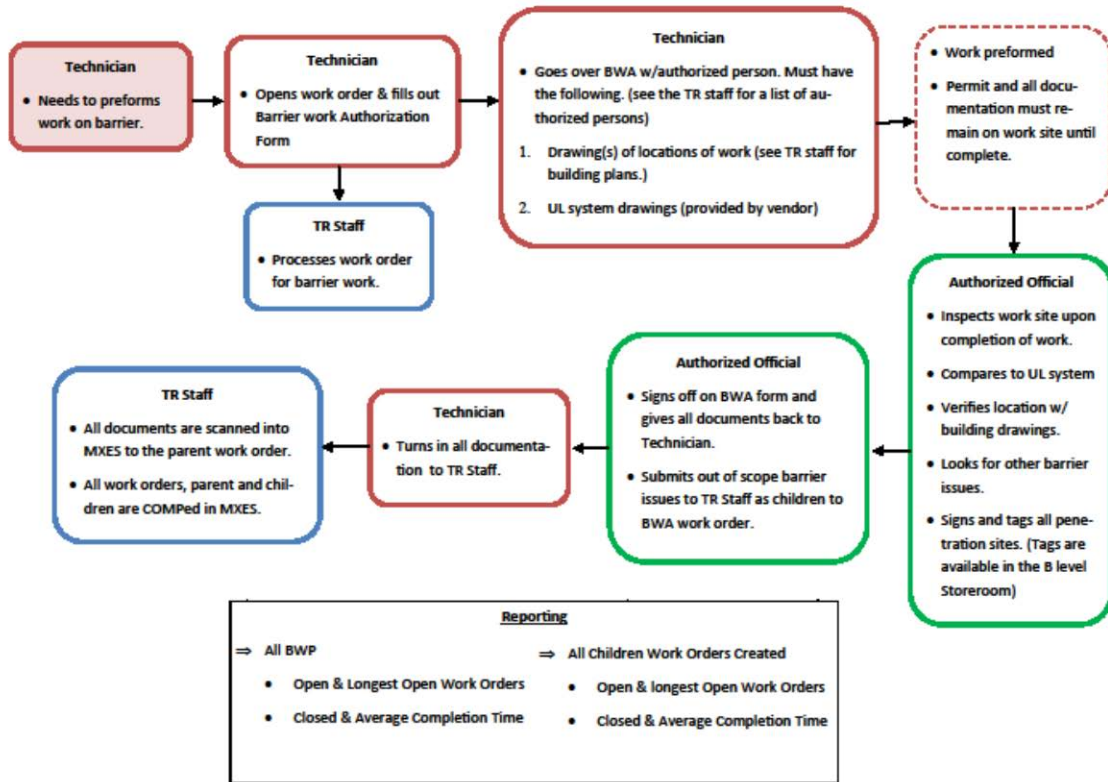
Requestors Phone: _____ Email: _____ Fax: _____

Authorization to Proceed: _____ Please Print _____ Signature _____ Date _____

Interim Inspection: _____ Please Print _____ Signature _____ Date _____

Final Inspection: _____ Please Print _____ Signature _____ Date _____

Barrier Work Flow Chart



**UNIVERSITY OF UTAH HEALTH CARE
FACILITIES & ENGINEERING DEPARTMENT
POLICIES AND PROCEDURES**

Barrier Work

Standard No: 15-2-24 Review Date: 4/6/2010

Revision Date: 02/25/2013

I. PURPOSE

To provide a comprehensive means of verifying that barrier work within UUHC is accomplished in accordance with applicable building codes and standards.

II. DEFINITION

Barrier –

1. Any rated assembly defined by the LSC or building code used within the structure to restrict the passage of smoke and/or fire. Barriers may be any vertical or horizontal structure of the building.

Barrier Work – Includes:

1. The installation and/or repair of pipes, conduits, ducts, cables, wires, pneumatic tubes, etc. That requires disruption to an existing barrier. The building code classifies these penetrations as a membrane and through penetrations.
2. It does not include construction activities which occur before the permanent ceiling is installed in identifiable and contiguous construction sites that are being renovated or in buildings under construction. In the latter cases, the barrier final inspection addresses the issues covered by this policy.

Authorized Official –

1. A person trained and authorized in writing by the UUHC, Director or Facilities to sign BWA form.

III. POLICY

- A. Installation and repair activities performed on a barrier in any and all UUHC facilities shall comply with the requirements of F&E Policy. These activities will be performed in compliance with all applicable building codes, standards and related UUHC policies, including but not limited to those identified in this policy. Specific attention is required to Infection Control Risk Assessments and interventions during construction in patient care areas with respect to barrier work activity in patient care areas and other infection control risk group areas as identified by the ICRA Policy.
- B. Installation and repair activities require a Barrier Work Authorization (BWA) to be posted at the work location or in the possession of at least one of the staff or contractor(s) on the project.
- C. Policy applies to parties performing barrier work within UUHC, including U of U, UUHC staff and outside contractors
- D. Training; Annual training shall be required for all authorized officials, documentation of such trainings shall be kept on file and reported to the Fire & Safety Committee.

IV. PROCEDURE

A. Barrier Work Authorization

1. Where barrier work activities take place the individual performing the work shall obtain a Barrier Work Authorization from the UUHC authorized person. A list of authorized persons can be obtained from the Safety Officer or Fire Marshall or Trouble Desk.
2. The Barrier Work Authorization form (BWA) must be completed and approved prior to beginning any barrier work that may cause or will result in a wall, ceiling, roof or floor penetration.
3. The individual performing the work is responsible for obtaining the BWA form.
4. The TR under the category “Barrier Work Authorization”. Shall be created for every barrier authorization form issued. The TR tracking # shall be documented on the authorization form.
5. Worker will be supplied with drawings showing the area of work, rating of existing walls, ceiling, floor and location of penetrations and proposed wiring. The worker can then identify what and where the barriers to be worked on are located.
 - a. The work will supply cut sheets of approved manufacture assemblies for all barrier penetrations to be made. The worker must list how many and what type of penetrations will be made on the barrier authorization as well as the manufacture of the material(s) used. All documentation must be supplied before the form is issued and are to be kept with the authorization form at all times.
6. The authorized representative reviews the BWA for completeness of information and approves then issues the authorization form. All fields must be completely filled out.
7. Upon receiving the BWA, the authorized worker shall display the authorization form at the work location for the duration of the work
8. All work shall be performed within the time frame indicated on the BWA form.

B. Pre-existing Condition(s) Observed During BWP (installation and/or repair):

1. All found preexisting conditions found by the work shall be reported to the authorizing official prior to the closing out of the authorization form.
2. All work orders created as preexisting conditions of the BWA form shall be children of the authorization form and entered into the CMMS prior to the closeout of the BWA form. All follow up work will be traceable to the BWA form it was created under.
3. Pre-existing conditions of primary interest include some, but not limited to the following:
 - a. Unsealed penetrations in any barrier wall.
 - b. Sleeves and conduit stub-outs in corridor walls not smoke sealed (inside of sleeve).
 - c. Open junction boxes.
 - d. Temporary wiring.
 - e. Temporary / improper supports for conduits, cables, pipes, ducts, trays, etc.

- f. Broken, damaged or stained ceiling tiles.
- g. Garbage in the overhead area.

C. Completion of BWA:

1. Upon completion of the barrier work, the individual responsible for the work completes the 'Completion Checklist' and 'Completed by' signature block and date fields on the printed BWA and turns the authorization form in to the UUHC authorized person.
2. The worker then schedules a time for the authorizing official, (if possible, the same person that issued the BWA form, to inspect all sites where barrier work was performed.
3. All penetrations should be labeled with the manufacturer of the product and the assembly used to properly stop the penetration.
4. The authorizing official will verify the labels on all penetrations and inspect all penetrations to verify that they have been completed according to the specified manufactures requirements.
5. Upon successful inspection the barrier work authorization is signed and completed by the authorizing agent and a copy is given to the worker.
6. The original BWA form is submitted to the trouble desk to complete the TR created and /or created children TR's as needed to repair pre-existing conditions found. All documentation shall be scanned and kept in the CMMS. All original documentation shall be returned to the authorizing individual for their personal records.

V. Reporting/Quality Control

A. Reporting

1. Monthly reports will be generated reporting all authorized forms issued and completed.
2. Reports will be submitted to the fire safety committee every month they meet.

B. Audit

1. Quarterly a member of the fire safety committee will be selected to perform random audits on barrier work authorization forms issued for the preceding quarter.
2. The audit will check all aspects of the paperwork to ensure the processes and procedures outlined are followed. And all penetrations shall be visibly audited as well. If the auditor is the authorizing official for any of the selected authorized forms then the fire/safety committee char will be notified and another committee member will be assigned to audit those authorized forms.
3. 10 % of all authorized forms for the previous quarter will be audited.
4. A report will be generated and reported in the next committee meeting following the end of the quarter.

Source: Department of Facilities and Engineering

APPROVAL BODY: Facilities and Engineering Department

APPROVAL DATE: 5/2/2010

POLICY OWNER: Director of Facilities and Engineering

HISTORICAL INFORMATION

Contractor Handbook – April 2013

ORIGIN DATE: April 6, 2010
REVIEW DATES: 2/25/2013, 5/2/2013
Rev. No. 2

APPENDIX "E"

UUHC WELDING OR CUTTING PERMIT



Department of
Environmental Health and Safety
THE UNIVERSITY OF UTAH



University Hospital Fire Marshal

DATE: From _____ To _____

Issued To: _____

Approved By: _____

Pre hot-works check list:

1. Hot work equipment to be used shall be in satisfactory operating condition and in good repair.
2. Hot work site is clear of combustibles or combustibles are protected.
3. Exposed construction if of non-combustible materials or, if combustible, then protected.
4. Openings are protected.
5. Floors are kept clean
6. No exposed combustibles are located on the opposite side of partitions, walls, ceilings or floors.
7. Fire watches, where required, are assigned. (see the Fire Marshal for instructions)
8. Approved actions have been taken to prevent accidental activation of suppression and detection equipment.
9. Fire extinguishers are operable and available. (A minimum of one portable fire extinguisher shall be readily accessible within 30 feet of the location where hot work is performed.)
10. If a fire watch is required have assigned individual print and sign their name below. Provide (to the Fire Marshal) check off documentation that continuous or intermittent duties were performed.

APPENDIX "F"
RADIO FREQUENCY INTERFERENCE
(Only required on Hospital / Patient Care Projects)

Radio Frequency Interference
Org Wide Chapters - Environment of Care and Life Safety
University of Utah Hospitals and Clinics Standard

PURPOSE:

It is established that electronic and electrical devices emit electromagnetic energy, as function of the device or as unintentional spurious emissions. This release of radio frequency power has been known to impact the proper functioning of medical equipment.

DEFINITION:

1. Electromagnetic Interference (EMI): Any electromagnetic disturbance that interrupts, or otherwise degrades or limits the effective performance of electronic/electrical equipment. It is often induced unintentionally as a result of the use of electronic devices.
2. Radio Frequency Emitting Device: Radio Frequency (RF) emitting devices include devices used for wireless communications, such as **2-way radios**. Some electronic devices emit RF interference as a byproduct of their function, such as "personal" DVD players and video games. Low power digital communication devices, (*e.g.* PDA, digital cell phones, laptop computers, etc.) do not emit energy in a form that interferes with medical devices.

POLICY:

1. The use of analog radio frequency emitting devices is monitored by managers and staff and is restricted where use may cause interference with medical equipment and other health care systems.
2. Security Officers are authorized to use two-way security radios only after training on their use and how they might affect patient care equipment. A minimum of a six foot separation from patient care equipment must be maintained.
3. Health care staff may use the emergency management two-way radios only after training on their use and how they might affect patient care equipment.

PROCEDURE:

1. Signs shall be posted to identify the areas where the use of communication devices is restricted.
2. It is the responsibility of each employee to enforce this policy.

APPENDIX "G"

UUHC DRESS CODE / CONDUCT POLICIES & PROCEDURES

DRESS CODE:

University of Utah Health Care expects all companies, company employees, contract employees, and vendors who are working in any University of Utah Health Care facility, building, or property to present a professional image at all times.

Safety can be greatly affected by the clothing that is worn by an individual, with this in mind; the following guideline will be followed at all times when working in any University of Utah Health Care facility, building, or property.

DRESS CODE POLICY:

Purpose

University of Utah Health Care has established a Professional Image Standard, which outlines dress and grooming guidelines to promote a consistent professional image throughout the organization and to help customers and employees feel safe, confident and comfortable.

Definition

Patient Care Area: Any area in which patients are present for clinical reasons. This includes the entrance to any unit or clinic, nursing stations, patient rooms, and reception/waiting areas.

Policy

1. This policy applies to any employee who is at work as part of his / her regular duties and is representing the organization to the public.
2. As an employee of University of Utah Health Care you are expected to maintain a professional image while working in the clinics, health care areas, office, and while attending company events, seminars, training, conferences or meetings on campus or off-site. It is vital for the safety and security of our staff, patients and their families that employees follow and adhere to the company's professional and uniform dress standards.
3. This policy outlines the minimum requirement for professional appearance. A manager/supervisor shall retain the discretion to set standards at a higher level for employees, based on patient contact or job function. Higher standards should be communicated in unit/department orientation, evaluated in performance evaluation, and reviewed annually or as appropriate.
4. Groups requesting exceptions to the policy should contact their direct managers. Final decisions will be made by the Operations Council. Individuals requesting an accommodation or exemption should contact their Human Resources Representative. University of Utah Health Care is an equal opportunity employer and is fully committed to the principle of nondiscrimination in all employment related practices and decisions.

Footwear

Work boots or steel toed shoes shall be worn on all job sites.

Personal Clothing

Clothing should be clean and in good repair. No tank tops, sleeveless shirts or shorts are acceptable. Tee shirts with advertisements or questionable artwork are prohibited. Tee with company logos are preferable. Clothing should fit properly; loose or hanging clothing can constitute a safety hazard.

In addition to the above listed guidelines all appropriate personal protective equipment shall be utilized as needed to ensure the safety of all individuals on the job site. This shall include but is not limited to: safety glasses, hard hats, gloves, dust masks, safety footwear, aprons, and all other person protective equipment that is required by rule, regulation, law, or circumstance.

Personal Hygiene

Each individual shall follow appropriate personal hygiene practices. The overuse of colognes and perfumes can be offensive and cause health related problems to our patients. This is an unacceptable situation.

CONDUCT:

It is necessary to maintain a quiet and relaxed atmosphere within University of Utah Health Care facilities for the health and well-being of the patients, visitors, and staff. To that objective, the Contractor/Subcontractor is charged to reduce noise created by their work as much as possible. For that reason, no radios, tape/CD/MP3 players are allowed in University of Utah Health Care facility or its property. Abusive, suggestive, or profane language or actions shall not be permitted or tolerated.

Patient Confidentiality

All contractors/Subcontractors are reminded that this is a health care institution and thus the confidentiality of our patients and patient information is vital. At no time will be appropriate to inquire about or discuss any patient information. Only public areas (*e.g.*, corridors, restrooms, and cafeteria) are to be entered or traversed, except areas where authorized construction work is in progress. Under no circumstances should a contractor/subcontractor employee enter a patient care, treatment, diagnostic room or any closed room without the approval of University of Utah Health Care. HIPPA guidelines are strictly enforced. The HIPPA policy is available upon request.

Violence / Weapons

“Violence” includes not only physical contact, but also threats, bullying, stalking, intimidation and other precursors to physical violence, or any other acts or speech which would cause a reasonable person to fear for his/her personal safety or the safety of persons emotionally important to him/her.

“Weapons” includes all firearms other than those carried by on-duty law enforcement officers and military personnel (firearms in privately-owned vehicles and carried by licensed person are included with the intent of this policy). “Weapons” also includes any device or thing which has a designed or incidental capability to kill or seriously injure human being, and which is brought onto University of Utah Health Care facility premises for no legitimate reason of its own, in the best judgment of University of Utah Health Care authorities.

The contractor/subcontractor will ensure all employees are aware of, and comply with this policy. Contractor/subcontractor employees who violate University of Utah Health Care violence/weapons policy may be banned from the premises and will be reported to the appropriate law enforcement authorities, as applicable.

Harassment

All persons on University of Utah Health Care facility premises, regardless of the reason(s) for their presence, are to be free from pressure or discomfort resulting from jokes, ridicule, slurs, unwanted physical contact, or any other form of harassment predicated on race, gender, sexual orientation, religion, age, national origin or ethnicity, skin color, disability, or other similar distinction. The contractor/subcontractor will ensure all employees are aware of, and comply with this policy. Contractor/Subcontractor employees who violate University of Utah Health Care harassment policy may be banned from the premises.

Drugs and Alcohol

University of Utah facilities do not tolerate either possession or use of alcoholic beverages or illicit drugs on its premises, or any Contractor/Subcontractor employee coming onto its premises under the influence of either or both alcohol and/or illicit drugs. “Alcoholic beverage” means alcohol or any alcohol-containing substance which has not been prescribed by appropriate medical authority. “Illicit drugs” means any narcotic or prescription drug which has not been prescribed by appropriate medical authority. This also includes substances which are legitimate when used appropriately, but have mind altering or other psychological effect when used inappropriately (*e.g.*, certain glues and other substances whose fumes are misused as inhalants). “Possession” means on the person, in the personal vehicle, or otherwise under the control of a given individual. “Use” means any form of bodily intake including smoking, inhaling, snorting, ingesting, injecting, or any other method of introducing the substance into the body. In the event of any question as to what is permitted under this policy, the contractor’s site supervisor will contact University of Utah Health Care for a determination. Contractor/Subcontractor employees who violate University of Utah Health Care alcohol/illicit drug policy may be banned from the premises and will be reported to the appropriate law enforcement authorities as applicable.

APPENDIX "H"
TUBERCULOSIS SCREENING QUESTIONNAIRE FORM
INFLUENZA SHOT VERIFICATION FORM

TUBERCULOSIS SCREENING QUESTIONNAIRE

OSHA REQUIRES HEALTHCARE FACILITIES TO ASSURE THAT PERSONNEL NOT PAID BY, BUT WORKING IN THE FACILITY ARE SCREENED FOR TB AND OFFERED THERAPY.

Have you had any of the following symptoms for the past 3 weeks or longer?

Cough Yes _____ No _____

Is there any drainage? Yes _____ No _____

If yes, what color is it? Yes _____ No _____

Unexplained weight loss Yes _____ No _____

Fever Yes _____ No _____

Fatigue or tiredness Yes _____ No _____

Night Sweats Yes _____ No _____

Shortness of breath Yes _____ No _____

Worker Signature: _____ Date: _____

GC Supervisor: _____ Date: _____

Referred to: _____ Date: _____

General Contractor is responsible to keep a copy on file for each worker.

INFLUENZA SHOT VERIFICATION

The influenza vaccine is required for all contractors working at University of Utah Health Care.

Date of Influenza Vaccine: _____

Worker Signature: _____ Date: _____

GC Supervisor: _____ Date: _____

APPENDIX “I”

INFECTION CONTROL

- a. Infection Prevention During Maintenance Projects
- b. Project Notification Letter
(Only required on Hospital / Patient Care Projects)
- c. Infection Control Construction Risk Assessment Form
(Only required on Hospital / Patient Care Projects)
- d. ICRA Construction Completion Checklist
(Only required on Hospital / Patient Care Projects)

INFECTION CONTROL

Infection Prevention During Maintenance Projects

1. Areas that require an Infection Control Risk Assessment (ICRA):
 - a. BMT and transplant clinic
 - b. All ICUs
 - c. All Operating Rooms/PACUs/SDS Areas
 - d. All Sterile Processing areas
 - e. Cath Lab
 - f. Pharmacy
 - g. Bronchoscopy areas
 - h. L&D/ Newborn/OBGYN
 - i. Laboratories (Microbiology/specimen processing)
 - j. All inpatient care areas / outpatient clinic areas

2. What is an ICRA?
 - a. Document needed “before” work begins in high risk areas.
 - b. Document that tells the staff what precautions need to be implemented to protect our patients.
 - c. Explains in detail the project you are asked to complete.

3. Why do you need an ICRA?

In high risk areas, we have patients that are very sick with weakened immune systems. This means that they can get sick from common organisms in our environment (water or air). These patients can get sick from organisms that travel on dust or the bio-film that may break off from major plumbing projects. Patients can die if we are not careful.

4. What are some basic infection prevention measures you can do?
 - a. Contain/prevent dust from dispersing into the air.
 - b. Wipe all surfaces if dust is present. Keep area around construction zone free of dust.
 - c. Vacuum area with HEPA filter vacuum either as you work or immediately after. Wet sanding is usually recommended.
 - d. Use construction barriers depending on what the ICRA states. Do not remove barriers until all dust is wet wiped or vacuumed from the area.
 - e. May have to have a portable HEPA air filter in the immediate area.
 - f. Flush sinks in area after major plumbing projects.

- g. Contain/cover all construction waste before transport.
 - h. Immediately replace ceiling tiles when finished. Do not open more than 1 tile per 15 feet unless Infection Control is notified. The Contractor must notify unit nursing manager if ceiling tiles are accessed.
 - i. Be aware of traffic patterns and noise you create in the area.
 - j. Store building materials in dry environment. Keep your tools clean and free of dust before going in or exiting out of the construction area.
 - k. Report any water damage or mold immediately to your supervisor.
 - l. Wear appropriate personal protect equipment as per hospital and/or company policy.
 - m. Contact supervisor if you encounter any items labeled as Bio hazardous.
 - n. Complete the ICRA Construction Completion Checklist. (See the fourth item in this Appendix "H".)
5. Who to call if you have any questions?
Call your Supervisor/Manager or Infection Control if you have any questions about the project you are asked to do.

INFECTION CONTROL

Project Notification Letter

(Only required on Hospital / Patient Care Projects)



TO: Construction Assessment Subcommittee
University of Utah Hospitals and Clinics

ATTN: Lorie Gillette, Infection Control Manager
AA217 University Hospital
Phone: 801-581-2706
FAX: 801-585-2222

FROM: (Place company name here)

SUBJECT: PROJECT NOTIFICATION

- Project Description:
- Originator Reference Number:
- Project Contact Person and Phone Number:
- Project Design Coordinator:
- Proposed Start Date:
- Proposed End Date:

Attached is a copy of the plans and description for the above noted Project along with the completed Infection Control Construction Risk Assessment Form. Please review the attached information and then indicate your final infection control risk assessment for this Project. Please fax a copy of this document to: *[enter the name of the Design Coordinator]* @ 801 587-6529 as soon as possible. Please feel free to call and/or email the Project Contact Person noted above if you require additional information

INFECTION CONTROL RISK ASSESSMENT:

- No impact to patient care areas, this notification is sufficient for our committee.
No other assessment is required unless the Project Scope changes.
- Level 1 Precautions
- Level 2 Precautions
- Level 3 Precautions
- Please send additional information: _____

(Signed)

(Date)

Work Precautions Level Determination (circle):

<i>Activity</i>	<i>Minor</i>	
<i>Risk</i>		
Low Risk	Level 1	Level 2
Medium Risk	Level 1	Level 2
High Risk	Level 2	Level 3

Negative Pressure required (circle and fill in below): Yes No

Reason negative pressure needed or not needed: _____

Work Precautions Guidelines

	<ol style="list-style-type: none"> 1. Use standard methods to minimize raising dust and to contain dust during the project.. 2. Visually inspect for mold and/or water damage before moving ceiling tile. <ol style="list-style-type: none"> 2a. If water damage or mold noted move the adjoining tile and spray the damaged tile with disinfectant & place tile in a bag. 3. Immediately replace any displaced ceiling tile, even if just going on a short break. 4. Seal holes, pipes, conduits, & punctures immediately and appropriately.
2	<ol style="list-style-type: none"> 1. Use all precautions for Level 1 above. 2. Use rigid barriers for containment, as indicated by the size/scope of the project. Complete all critical barriers for full containment before initiating construction. 3. Protect the HVAC system in areas where work is being done from soil and/or water contamination. Use temporary filters in affected HVAC systems, as indicated. 4. Establish traffic patterns for construction workers, equipment, supplies, & construction-related waste. Teach construction workers to "dust off" before leaving the work area. 5. Construction waste must be contained during transport. 6. Store unused building materials in a clean dry area; discard building materials that have gotten wet if they cannot be completely dried within 72 hours. 7. Place sticky floor mats at each entrance to the site; replace sticky mats when no longer effective. 8. Maintain proper air differentials, e.g., negative air pressure and/or clean to dirty airflow within work site. Determine if, where, and when the use of portable HEPA filtration is indicated (case-by-case basis). 9. Use frequent wet-mopping, absorbent product, and/or filtered vacuuming to maintain a clean work site. 10. Do not remove barriers from work area until project is completed and the area is cleaned using filtered vacuums. 11. Remove construction barriers carefully to minimize the spread of dirt & debris; clean if necessary after barrier removal.
Level 3	<ol style="list-style-type: none"> 1. Use all precautions for Levels 1 and 2 above. 2. Require cover clothing or dedicated construction clothing or acceptable alternative, for all persons entering and/or exiting from areas in which dust/debris is present; remove and/or clean potentially soiled clothing/covers/alternatives upon exiting the construction area. 3. Contain materials or tools if they must pass through "clean" areas or use alternative routes that avoid passing through these areas. 4. Use extreme caution to contain dust when finishing sheet rock; consider wet sponging method. 5. Monitor integrity of construction barriers at least daily; verify negative pressure, if it is required daily.

INFECTION CONTROL

ICRA Construction Completion Checklist

(Only required on Hospital / Patient Care Projects)

MUST be Completed Prior to Clinical Occupancy

Project name/description _____

Project number _____ Project supervisor _____

Date _____ Person submitting form _____

Checklist Items <i>(responsible parties identified in italics):</i>	Yes	No	N/A
Hot and cold water run through each faucet and shower for at least 10 minutes each <i>(construction/contractor and users)</i>			
Soap, towel and hand sanitizer dispensers are installed and are full/ready for use <i>(construction/contractor and environmental services)</i>			
Each "hopper" and toilet flushed a minimum of five flushes or until water is clean/clear <i>(users)</i>			
"Standard" sharps containers installed and secured <i>(construction/contractor and/or facility engineering)</i>			
OSHA Biohazard labeling on waste containers <i>(environmental services)</i>			
Legionella control system fully functioning and balanced <i>(construction/contractor and facility engineering)</i>			
Area "terminally" cleaned; there is no visible soil or contamination in area <i>(environmental services and users)</i>			
HEPA filters certified <i>(construction/contractor and/or facility engineering)</i>			
Air balancing complete, e.g., specified air exchanges verified, specified temperature and/or humidity verified, negative pressure rooms or areas verified, positive pressure rooms or areas verified <i>(construction/contractor)</i>			
Clean or change HVAC filters <i>(construction/contractor and/or facility engineering)</i>			
Air/water sampling obtained, if indicated <i>(Hospital Epidemiology and EH&S)</i>			

Fax completed form to: Lori Gillette, Hospital Epidemiology, 801-585-2222

APPENDIX “J”
POSTED NOTICE FORMS

**UNIVERSITY HEALTH CARE
FACILITIES AND ENGINEERING DEPARTMENT
POLICIES AND PROCEDURES**

ENERGIZED ELECTRICAL WORK AND ARC FLASH SAFETY

Standard No: 15-2-22 Review Date: 1/17/08 Revision Date: 3/31/2014

I. PURPOSE

- A. To provide guidelines for employee's safety when working with electrical systems, both de-energized and energized. The risks of working with energized electrical circuits and arc flash are addressed and threats to life and health are minimized.

II. REFERENCE

- A. National Electrical Code 1993 - National Fire Protection Association (NFPA)
- B. UUH&C F&E PPM 15-3-1 - Electrical Distribution System
- C. UUH&C F&E PPM 15-3-4 - Electrical Failure, Hospital
- D. UUH&C F&E PPM 15-3-5 - Electrical Failure, Building 521
- E. OSHA 29 CFR 1910.137, 1910.333 and 1910.335

III. DEFINITION

- A. UUHC: University of Utah Health Care
- B. UUHC F&E PPM: University of Utah Health Care Facilities & Engineering Policy and Procedure Manual.
- C. Buddy System: A qualified person who may assist or stand-by to provide assistance to a worker who might be harmed by electrical shock or flash.
- D. Personal Protective Equipment (PPE): Clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety glasses, fire resistant (FR) face shields, hearing protectors, gloves, fire resistant aprons, and work boots.
- E. High Voltage Gear: Clothing and other work accessories designed to create an insulation barrier against high voltage workplace hazards. Examples include: high voltage gloves, arc face shield, high voltage mat, hot probe, etc.

IV. POLICY

- A. It is the policy of the UUHC Facilities and Engineering Department to have a safe work environment for all employees who work with electrical powered equipment and electrical systems. Employees are to recognize and report problems encountered with electrical safety.

V. PROCEDURE

- A. Working with Energized Electrical Systems
 1. Prior to beginning work a general risk assessment will be performed by the electrician performing the work.
 2. F&E employees shall take every measure possible to avoid energized electrical work. Lock-out/tag-out shall be the first course of action considered every time work is performed on electrical systems.
 3. Energized Electrical work will only be performed if shutting off an electrical circuit will increase risk, or is infeasible due to equipment design or operational limitations. If the electrical circuit can be de-energized, staff are to employ lock-out/tag-out measures and de-energize the circuit.

4. If energized electrical work must be performed, determine which safety measures and PPE shall be employed from the safety measures matrix. In addition the employee will complete the Energized Work Permit and obtain the signature of the manager of the impacted area as well as the up line manager of the electrician before work is started.
5. Insulated gloves shall be worn for any work above 50 volts.
6. Protector gloves are to be worn over Class 0 insulating gloves except as follows:
 - a. Under limited use condition where small equipment and parts manipulation necessitate unusually high finger dexterity.
 - b. Extra care is needed in the visual examination of the glove and in the avoidance of handling sharp objects.

Any other class of insulating glove may be used for similar work without protector gloves if the employer can demonstrate that the possibility of physical damage to the gloves is small and if the class of glove is one class higher than that required for the voltage involved. Supervisors will periodically and randomly audit their workers to assure that this policy

is followed.

B. Safety Measures Matrix

Situation	Energized Work Annual Certification	Safety Glasses	Insulated Tools	Insulated Gloves	Buddy System	Energized Work Authorization	FR Clothing	High Voltage Gear
Live 120vac Equipment	X	X	X	X		X		
Live 120/277vac Fixture and/or Ballast	X	X	X	X		X		
Live 120/208/480vac Panel with Deadfront ON	X	X	X	X		X		
Live 120/277/277/480vac Wiring, Systems & Panel with Deadfront OFF	X	X	X	X	X	X		
Generator Maintenance and/or Troubleshooting	X	X	X	X	X	X	X	
All Transformers /Switchgear /Motor Control Centers & Generator Power	X	X	X	X	X	X	X	X
12,470 Systems	X	X	X	X	X	X	X	X

APPROVAL BODY: Facilities and Engineering Department

APPROVAL DATE: 1/16/08, Rev 3/17/2014

POLICY OWNER: Director of Facilities and Engineering

HISTORICAL INFORMATION

ORIGIN DATE: 1/17/08

REVIEW DATES:

ENERGIZED ELECTRICAL WORK AUTHORIZATION

UUHC Facilities & Engineering - Long Form

Name: _____ Date: _____

Date of work to be performed: _____ Duration of work: _____

Project Name: _____ Location of Work: _____

System or equipment voltage: _____ Amperage: _____

Names: Supervisor assigning work: _____

Electrician: _____ Buddy: _____

Electrician: _____ Buddy: _____

Explanation of Work to be Performed: _____

Have all reasonable attempts been made to de-energize the system YES NO

Reason(s) Lockout-Tag out cannot be employed: _____

Has the risk assessment for energized electrical work been performed? YES NO

Has the energized electrical work Matrix been reviewed? YES NO

Potential Hazards: _____

Justification—Deenergizing is impractical because:

1) List additional introduced hazards: _____

2) What equipment design makes it infeasible? _____

3) What operational limitations are there? _____

Precautions taken (e.g. Insulated Tools, PPE, FR clothing, etc.): _____

In case of an emergency, what is the location of the energy source (disconnect/breakers):

Authorized Electrician

Up line Manager of Electrician

Manager of department where work is occurring

Energized Electrical Work Safety Matrix

Situation	Hot Works Annual Certification	Safety Glasses	Insulated Tools	Insulated Gloves	Buddy System	Energized Work Authorization	FR Clothing	High Voltage Gloves	Arc Shield
Live 120vac Equipment	X	X	X	X		X			
Live 120/277vac Ballast	X	X	X	X		X			
Live 120/208/480vac Panel with Deadfront ON	X	X	X	X		X			
Live 120/277/277vac Wiring, Systems & Panel with Deadfront OFF	X	X	X	X	X	X			
Generator Testing	X	X	X	X	X	X	X		
All Transformers /Switchgear /Motor Control Centers & Generator Power	X	X	X	X	X	X	X	X	X
12,470 Systems	X	X	X	X	X	X	X	X	X

ENERGIZED ELECTRICAL WORK ANNUAL CERTIFICATION

UUHC Facilities & Engineering

Electrician Name: _____ Date: _____

License: _____

I am aware of the F&E Lockout-Tag out Policy YES NO

I have all necessary Lockout-Tag out devices available to me YES NO

I am aware of the potential hazards of energized electrical work YES NO

I know how to perform an energized electrical work risk assessment YES NO

Hot Work Safety Matrix

Situation	Energized Work Annual Certification	Safety Glasses	Insulated Tools	Insulated Gloves	Buddy System	Energized Work Authorization	FR Clothing	High Voltage Gloves	Arc Shield
Live 120vac Equipment	X	X	X	X		X			
Live 120/277vac Ballast	X	X	X	X		X			
Live 120/208/480vac Panel with Deadfront ON	X	X	X	X		X			
Live 120/277/277vac Wiring, Systems & Panel with Deadfront OFF	X	X	X	X	X	X			
Generator Testing	X	X	X	X	X	X	X		
All Transformers /Switchgear /Motor Control Centers & Generator Power	X	X	X	X	X	X	X	X	X
12,470 Systems	X	X	X	X	X	X	X	X	X

I have access to the F&E Energized electrical Work Authorization YES NO

I have all necessary insulated tools and personal protective equipment: YES NO

If "No", please indicate what you need: _____

Signatures:

Authorized Electrician

Date

Up line manager of Electrician



**University of Utah Healthcare
Facilities & Engineering
Utility Shutdown/Startup Procedures & 72hr Notice**

Project Name: _____

Contractor: _____

Project Number: _____

Manager: _____

Shutdown Description:

- Med Gas Electrical
 Fire System Drainage
 Hot Water Cold Water
 HVAC Other

Phone Number: _____

Supervisor: _____

Phone Number: _____

Trade Lead: _____

Phone Number: _____

Building: _____

Area: _____

Date: _____

Start Time: _____

Completion Time: _____

Utility Shutdown Risk Assessment

1. **Life Support Systems**
 - a. Does the utility serve a patient care area? Yes No
 - b. Would loss of the utility put life at risk? Yes No
2. **Infection Control Systems**
 - a. Does the utility serve an area requiring measures for infection control? Yes No
 - b. Will work on this utility expose dirt, dust or contaminate to patient care area? Yes No
3. **Environmental Support Systems**
 - a. Does the utility serve a patient care area? Yes No
 - b. Would loss of the utility result in a risk of negative impact to patient care? Yes No
4. **Equipment Support Systems**
 - a. Does the utility support patient care equipment? Yes No
 - b. Would Loss of the utility risk a negative impact on the operation of patient care equipment? Yes No
5. **Communication Systems**
 - a. Would loss of the utility system risk a negative impact on the communication systems used for patient care? Yes No

****If YES to any of the above please attach plan***

F&E Project Supervisor: _____ Date _____

Department Manager: _____ Date _____ F&E Shop Supervisor _____ Date _____

Department Manager: _____ Date _____ F&E Shop Supervisor _____ Date _____

Department Manager: _____ Date _____ F&E Shop Supervisor _____ Date _____

F&E Building Manager: _____ Date _____

***Pre Shutdown Check List:**

- Shutdown Notice
- Shutdown Review
- F&E Sign Off
- Utility disconnect Identified
- All Needed Material on Site
- Working Trades are trained
- Building Operator Notified
- Utility Shutdown
- Utility Secured

****Post Shutdown Check List:**

- All Utility Connections Check
- Utility Turned Back On
- All Utility Connections Check
- Building Operator Notified
- All Areas Cleaned
- All Areas Ready for Service

Shutdown Completed

F&E Supervisor: _____

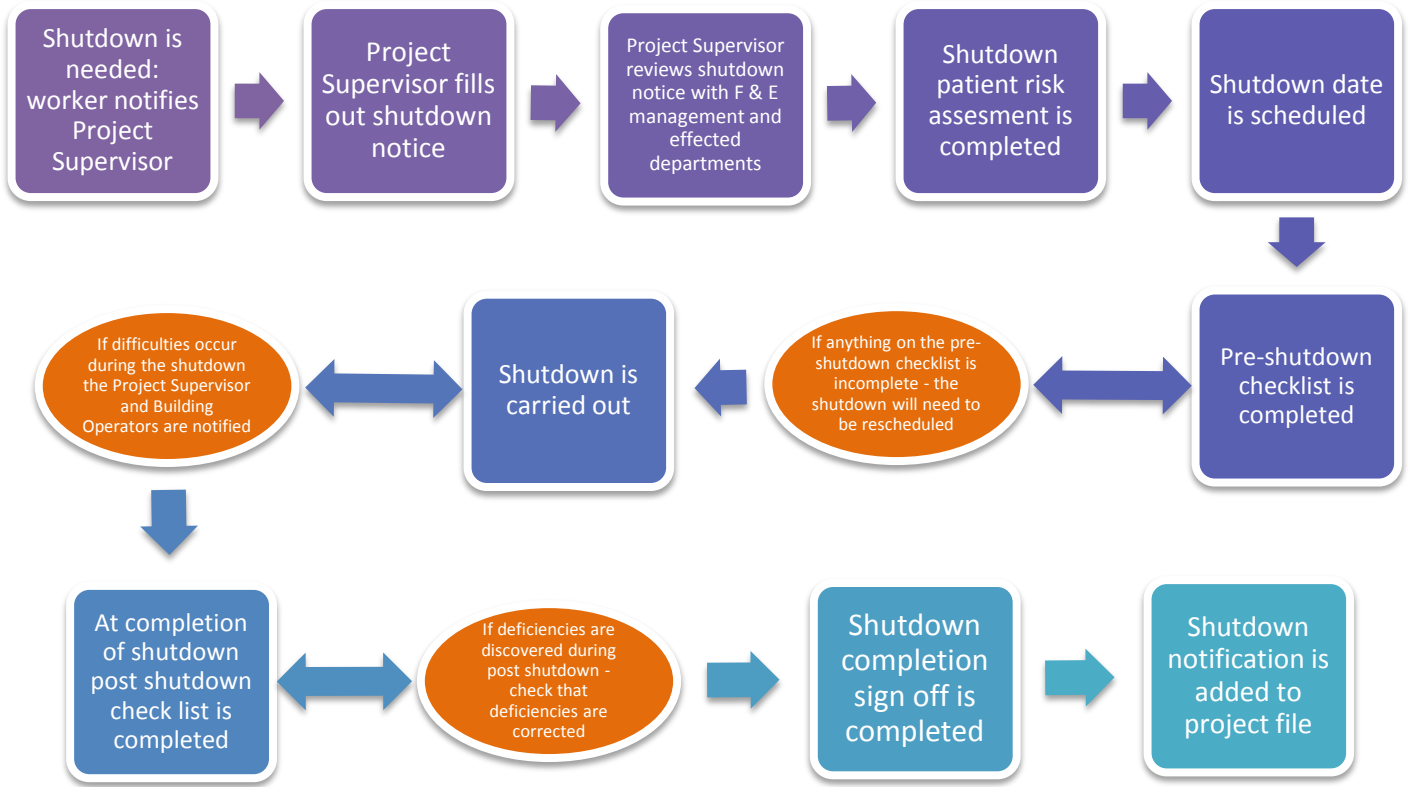
Contractor: _____

Trade Lead: _____

Date & Time: _____

***If any part of the pre shutdown check list is not completed – shutdown needs to be rescheduled.
 ** All parts of Post Shutdown checklist need to be completed before utility is turned on.**

Shutdown Process Flow Chart



“APPENDIX “L”
F&E HVAC CONTROL VERIFICATION SIGN-OFF FORM

PROJECT DESCRIPTION* _____

PROJECT # _____

HVAC CONTROL 100% COMPLETION DATE ** _____

INSTALLERS NAME _____

INSTALLERS SIGNATURE _____

CONTROL SHOP TECH NAME _____

CONTROL SHOP TECH SIGNATURE _____

PROJECT SUPERVISOR NAME _____

PROJECT SUPERVISOR SIGNATURE*** _____

* Job description, building # room #

** Front end is 100% completed

*** upon Project Supervisors verification of completion a copy of this form will be sent to F&E support services releasing payment

APPENDIX "Q"
PROJECT CLOSEOUT CHECKLIST



Project Close Out Checklist

Project Name and # _____

Supervisor _____

Designer _____

APPRC

CHANGE PROJECT TO CONCOMP	SIGNATURE	DATE
Certificate of Occupancy/Final Inspection – Project Supervisor		
Board of Health – Project Supervisor		
Test & Balance – Project Supervisor		
Medical Gas – Project Supervisor		
HVAC Controls – Project Supervisor		
Fire Clearance – Project Supervisor		
Chlorination – Project Supervisor		
Punch List Complete – Design, Project Supervisor, Job Forman		
Red Lines – Design, Project Supervisor		
Maintenance Supervisor Sign Off – Electrical, Biomed		
Maintenance Supervisor Sign Off – Carpenter, Painter, Key, Sign		
Maintenance Supervisor Sign Off – Plumbing, Mechanic, HVAC		
Supervisor Sign Off – Support Services		
Construction Manager		
Move In / ConComp – Construction Manager Assistant		

Concomp - Close 60 Days

PROJECT CLOSE OUT	SIGNATURE	DATE
Post Mortem Meeting – Project Supervisor, Design		
Project Evaluation – Construction Manager Assistant		
O & M - Building Manager Sign Off		
Training - Building Manager Sign Off		
Maintenance Training – Project Supervisor		
Vendor Follow up on Purchase Orders – Project Supervisor, Designer		
As Built Drawings Received from Architect, Engineers - Designer		
Close Project – Financial Analyst		
Final Financial Report – Project Supervisor		

