

Work Standards and Safety Handbook

Renown Health
Facilities Services

Editor: Patty Evans

Second Edition
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To the User:

There is nothing more important than safety at Renown Health. Safety of our patients, visitors, staff, contractors and vendors is essential to our mission and operation. I encourage everyone to learn and demonstrate safe practices in everything you and those around you do at Renown Health.

There can be no shortcut or compromise to safety. Remember, creating a safe environment is everyone's job and we invite you to communicate your ideas on how we can make Renown Health work sites even safer. In this way, we can all contribute in providing for continuous improvement processes in promoting not only a safe environment, but also one that is equally efficient and effective.

Complementary to our commitment to safety is our dedication to high and always improving work standards. The best of industry and healthcare standards are represented in work standards to ensure the highest quality workmanship, materials and safety. These standards give us a template to follow during

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work at Renown in order to achieve consistent results relative to both quality and safety.

Safety is one of nine standards of conduct every employee must follow. This handbook can help you learn safety standards at Renown Health. Get to know its contents and make it as an important a tool in your toolbox as any hand tool. Use it daily whenever you have questions about standard forms or procedures to be followed.

Yours in safety,

President/CEO
Renown Health System

Renown Health Network

Our Purpose

Make a genuine difference for the many lives we touch by optimizing our patients' healthcare experience.

Our Fundamentals

People

A great place for great people to do great work.

Service

Anticipate customer needs and exceed expectations in a compassionate manner.

Quality

Provide excellence by doing the job right the first time.

Stewardship

Maximize the use of available, finite resources to meet the current and future needs of the community.

Standards of Conduct

Attitude

Our attitude is the foundation of a healthy and healing environment. Every day we are faced with new challenges. We recognize that we have a choice regarding the attitude we embrace.

Appearance

Our appearance represents Renown and reflects respect for our customers. Our manner and expression convey our concern for and willingness to serve our customers. We take pride in our facility and do our part to maintain an uncluttered and litter free workplace.

Communication

The goal of communication is understanding each other. We are committed to listening attentively to our customers so that we understand their needs clearly. We pay close attention to both verbal and non-verbal language.

Courtesy

We represent the Renown team not only while at work but whenever we are identified as Renown employees and contractors (or working at Renown). Everyone deserves to be treated with courtesy, dignity, and respect.

Customer Waiting

At Renown we recognize that our customers' time is very valuable. We strive to provide our customers with prompt service, always keeping them informed of delays and making them comfortable while they wait.

Privacy

We ensure our customers' right to privacy and dignity. We maintain a secure and trusting environment, treating customers' information as confidential. Our concern for privacy helps to promote peace of mind and to lessen their anxiety.

Sense of Ownership

Renown's success directly depends on the day-to-day choices and actions of each of us. We take pride in what we do and feel responsible for the outcomes of our efforts. We recognize that our work is a reflection of all of us.

Commitment to Co-workers

As Renown employees and contractors, we are connected to each other by our common purpose: serving our customers and community. Our co-workers are our team members. We rely on our team members, and they rely on us.

We hold each other accountable to provide great service in a courteous, respectful, professional, helpful, and efficient manner.

Safety

Safety is a fundamental part of our job. All Renown employees and contractors are responsible for ensuring a secure, accident-free environment. Accidents result from actions and attitudes that we can eliminate.

INTRODUCTION

Purpose and Scope

This handbook is designed to provide a quick reference to safety standards and expectations of work observed at Renown Health. It contains standards, references, sample forms and labels generally used throughout our facilities. Care must be taken to check for any local variations between facilities. This can be done typically by checking with the Director of Facilities, the local Facility Manager and/or the local Department Director, Manager or Site Coordinator.

Safety is built around core competencies in the use of tools, techniques and awareness of the environment. Contractors and workers will be held accountable to follow the guidelines in this book.

Audience

This handbook is designed for Renown staff, contractors, sub-contractors and others working in Renown owned and/or operated facilities. This includes work authorized by Renown or by Renown tenants authorized to approve work at their sites.

Due to the array of possible scenarios and contracting arrangements, this handbook refers to Renown and "Company" interchangeably. However, nothing in this handbook shall preclude a contractor from assuming their regulatory responsibilities in following this handbook. For example, "Company" may in many cases

refer to the Contractor where it is the primary responsibility of the Contractor to comply. For instance, each contractor shall have a written Hazard Communication Program for their contractors, separate from Renown. Renown has a Hazardous Communication Program not only for our staff but also for each contractor.

Disclaimer

While this handbook attempts to provide a comprehensive guide of current hospital and regulatory standards, where a more restrictive, more current or stringent standard or code applies, it must be followed.

Acknowledgements

The idea and initial content for this handbook was generated from the following sources:

- ARCO Field Safety Guide
- Philadelphia Children's Hospital Contractor's Training Program
- George La More, Providence Alaska Medical Center (PAMC) Safety Officer
- Frances Jones, PAMC EOC Program Coordinator
- Renown Ad Hoc Environment of Care Committee
- Comments and Suggestions

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Please forward any comments or suggestions to improve the format or content of this handbook to:

Renown
Process and Projects
Administration, I2
1155 Mill Street
Reno, Nevada 89502

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**Work Standards & Safety Handbook
Amendment Procedure**

If you believe that an amendment to this “Work Standards & Safety Handbook” would be appropriate, please submit a brief proposal to the Renown Facilities Department explaining the nature of the suggested addition, revision, or deletion.

The Facilities Department will coordinate a review of the proposed amendment. If the suggestion is accepted, the amendment will be prepared and distributed to all departments, as appropriate and included in the next issue of the “Work Standards & Safety Handbook”.

Introduction to the Renown “Work Standards & Safety Handbook”

Safety is identifying, eliminating or minimizing occupational injury and health risks.

Management has the principal responsibility for safety, and all employees and contractors share an obligation for safety.

A. Guiding Principles:

- Injuries and occupational illnesses are preventable.
- Safety is fundamental to the conduct of our business.
- Employee involvement, feedback, and recognition are fundamental to safety.
- Safe behavior is doing the job correctly.
- Workplace risks will be reduced in the following priority:
 1. Engineering controls;
 2. Administrative controls and operating practices;
 3. Personal protective equipment.
- Management is responsible for visibly and consistently establishing safety as a priority.
- Management is responsible and accountable for the safety of employees, contractors, and the general public.
- Employees and contractors are responsible and accountable for their actions.
- Employees and contractors have an

obligation, without fear of reprisal, to notify management of apparent hazards, and they have the right to receive timely and adequate responses.

B. Leadership Safety Expectations

The Leadership at each work group or area is responsible for the safety of work activities.

Work activities will be accomplished with safe operations. Leaders are expected to:

1. Set an example for employees to follow.
2. Know the job and have a thorough knowledge of the hazards associated with each operation.
3. Communicate safe work practices to each employee.
4. Hold and document periodic safety meetings.
5. Thoroughly investigate and report all injuries, near misses, and incidents, and ensure that corrective action has taken place.
6. Perform daily safety surveys to ensure that safe conditions exist and that safe practices are being followed.
7. Ensure that employees know how to report all injuries and unsafe conditions or practices.
8. Know, support, and inform employees of Renown Health policies and procedures.
9. Ensure that all new employees receive safety orientation prior to reporting to any work assignment.
10. Ensure that all employees receive applicable training in work practices necessary to safely perform their work.

C. Individual Safety Expectations

The success of any safety program is based upon the individual having a positive attitude toward safety and injury prevention. The individual is expected to:

1. Be responsible for the safe performance of the job, both for your personal safety and that of fellow workers. This includes the proper use of personal protective equipment, safety equipment, and adherence to safe work practices.
2. Report every injury, near miss, and incidence of fire or property damage to your Supervisor.
3. Take necessary actions to stop or correct unsafe practices or conditions and, if appropriate, report them to your Supervisor.
4. Actively participate in safety meetings.
5. Assist in the investigation of injuries as requested by the Supervisor.
6. Become familiar with the contents of this "Work Standards & Safety Handbook," Renown Policies, and pertinent standard operating procedures.
7. Be competent and fully-informed on the use of products, tools and equipment prior to use.

Safety Infringement Policy

- It is Renown's policy that employees and contractors will work safely at all times. There are instances when disciplinary action is appropriate to ensure the business operates in a safe and professional manner.
- Working safely is a condition of employment. Employees and contractors who fail to observe proper standards of conduct, or who willfully violate Renown's rules and/or act in an unsafe manner will be subject to appropriate disciplinary action, which may include dismissal at the discretion of Renown.
- For details of the safety infringement policy, please refer to the appropriate existing Renown Health System (Renown) or Contractor Company Disciplinary policies.

Note: Always be familiar with site-specific safety requirements.

A. General Safety Rules (for maintenance and construction- related areas)

No job is so important that you cannot take time to do it safely.

1. No work shall be started on any unit or equipment without the knowledge and consent of the person responsible for the area and the Plant Operator or C.E. Supervisor as needed.
2. All personnel shall immediately take necessary action to correct any unsafe

- actions or conditions and, if applicable, report them to the responsible Supervisor.
3. No equipment shall be operated unless the operator has received proper training on that equipment and certification obtained, if applicable.
 4. All equipment shall be positioned in such a manner that ensures the equipment's exhaust does not remain around or enter buildings.
 5. Compressed air shall not be applied to clothing or personnel.
 6. Finger rings, metal-banded wristwatches and other conductive items shall not be worn when performing work on live electrical systems. Loose clothing, loose accessories, and unrestrained long hair shall be controlled when working around rotating machinery.
 7. Fire extinguishers, alarm boxes, fire doors, air packs, eye-wash stations and all other emergency equipment must be in good working order and kept clear of obstruction.
 8. Only compressed air shall be used for pneumatic tools.
 9. Fire systems/points must be deactivated before work in an area likely to produce dust, heat, etc. Deactivation can be done through the Plant Operator.
 10. Personnel involved in work outside a facility shall have 2-way radios or other means of communication in their possession at all times.

11. Running in work areas, except during an emergency, is prohibited.
12. When ascending or descending stairways, use the handrail and take one step at a time.
13. Before non-routine work occurs, the work leader will be responsible for conducting a job safety orientation for all members involved in completing the work.
14. Always know a safe emergency exit path from your work location.
15. Fighting and horseplay are strictly prohibited on Renown property.
16. Illegal substance and alcohol use is prohibited on Renown property. All personnel must notify their Supervisor if taking prescription medication that may inhibit their job performance.
17. Tool/equipment must be under direct control at all times.
18. Radios, boom boxes, MP3 players, and other noise devices are prohibited.
19. Care must be taken to minimize disruption of occupied areas.
20. Extreme care must be taken to minimize dust, or release of noxious or toxic fumes.
21. Personnel shall report to Plant Operator and/or Asbestos Coordinator prior to conducting any work that may disturb asbestos.
22. Contractors and staff may not use Renown equipment or tools without permission by Director of Facilities or Plant Operator.

B. Injury/Illness/Incident Reporting and Investigation

1. All injuries and illnesses requiring medical treatment beyond minor first aid, or which result in lost or restricted workdays shall be immediately reported to the Hospital Project Manager. This includes OSHA recordable injuries and illnesses.
2. The contractor shall conduct an injury/illness investigation and submit a completed investigation report to the Director of Facilities within five working days of the incident.
3. Minor injuries, non-injury incidents or other occurrences that have a reasonable potential to result in or contribute to a significant safety concern must be immediately reported to the Hospital Project Manager.

C. Cellular Phones and Two-way Radios
– Examples

1. The use of cellular phones, two-way radios, and combination cellular phone/ radio units are restricted and only used for transmission in case of emergency in patient care or in highly instrumented areas within the following locations (the only exceptions are SpectraLink and Nextel phones):
 - Critical Care Units
 - Emergency Department
 - Intensive Care Units
 - Labor and Delivery

- Telemetry Units
- Ortho/Neuro
- Post Anesthesia Care Unit
- Surgery

The use is restricted to avoid the interference with the operation of medical devices.

2. Before entering the areas described above, all cellular phones will be turned off and not kept in standby mode. Some cellular phones transmit periodically in "standby" or "on" mode even when no conversation is taking place, and therefore must be in the "power off" mode.
3. When entering the areas described above, two-way radios will only be used to receive communication. Radio transmission is discouraged and shall be restricted.
4. Receive only devices, such as one-way pagers are permitted. Two-way pagers (answer back capabilities) can transmit, so they shall be turned off or not worn in the above areas.
5. Caution will be taken when using portable communication devices in other hospital areas.
 - a. Users will exercise caution around medical equipment that may be affected by EMI. (i.e. lab equipment, patient monitors, telemetry systems, pacemakers, etc.)
 - b. Users will maintain a distance of 6 feet or greater from medical

devices when operating cell phones, Blackberry's or similar devices.

- c. Users will maintain a distance of 25 feet or greater from medical devices when operating two-way radios

6. During a disaster the Incident Commander may suspend these restrictions.

D. Use of Elevators

1. Construction personnel are permitted to use only those elevators designated by the Hospital Project Manager.
2. Do not use a designated elevator if it is in use by patients, employees or for the transportation of hospital supplies.
3. Construction personnel must immediately exit an elevator if it is called for a medical emergency.
4. Construction personnel shall take reasonable steps to protect and clean the elevators used during construction daily.
5. Debris carts shall be covered in elevator shafts and throughout the hospital.

E. Daily Check-ins/Check-outs

1. All contractors (and subs) staff must sign-in, obtain badges (if not issued a permanent badge), obtain keys; coordinate work; note work sites and work to be done prior to the start of work each day unless other procedures have been approved by the Director.
2. Provide Materials Safety Data Sheets (MSDS) or other product information to Plant Operator or the Construction

3. All contractors' (subs) staff must check-out daily; return badges and keys, as appropriate; note work done; and provide after-hours contact phone numbers.
4. Submit "as-builts" for work done including ductwork; piping; cabling valves; on the day the work is complete, etc.
5. Submit any O&M; product warranties; parts and spares upon the day of installation to Plant Operator.

F. Work Coordination with Duty Control

1. File any Utility Disruption Request or notice—if not submitted prior to the Renown Construction Manager.
2. Obtain any Work or Hot Work Permits.
3. Request any disarming/re-arming of fire control devices or systems.
4. Check with Facilities for other coordination.

G. Reporting Daily – as they occur

1. Safety hazards
2. Work place injuries
3. Unusual occurrences – refer to policy
4. Utility/system failures
5. Lock-out/Tag Outs
6. New products, equipment or materials on site including MSDS sheets and new

equipment entry forms (submit new equipment entry form).

7. Products, equipment or materials on site that are being replaced and disposed of or transferred to another area. (use equipment transfer or disposal form).
8. Participation in fire drills is expected.

H. Close-outs (End of Work)

1. Assumed and stated warranties — assumed 1 year from Beneficial Occupancy.
2. Punch lists — work completed within 90 days or 30 days after warranty work.
3. As-built copies - copy for off site use, originals must stay on site!
4. O&M — must be provided BEFORE hand-over/first operation.
5. Invoicing within 90 days
6. Pay net 30 days.
7. Evaluation/continuous improvement — annual and end of project.
8. Other: See Project Manager

I. Smoking

In accordance with Renown Smoking and Tobacco Use Policy, smoking or use of tobacco products is not allowed on any Renown property. Renown Policy HRM.150

J. Reporting

It is the responsibility of staff or contractors to comply with all reporting requirements listed here.

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- Reports shall be made to the person/ location noted where there is not an on-site facility manager available.
- Reports shall then be made.

K. Work Signage

All work lasting more than seven days must publicly display a "Project Notice Board" at the entry to a site if a "contained site" or in a public area or adjacent to work for an "open" or a project with many locations (i.e. cabling).

The "Project Notice Board" shall have at a minimum the following information publicly displayed:

- Project Title
- Project Reason
- Expected Start and Finish Dates
- Name, Title and Phone Numbers of:
 1. Renown Project Manager
 2. Contractor Superintendent (General)
 3. Sub-Contractor Superintendent
 - Any State, Local or other permits
 - Any ILSM, ICRA, Hot Work, Confined Space, Hot Tap, Lock-Out/Tag Out or other special work permits
 - Copy of any Disruption Request and Notices
 - Any Hazards Alerts / Present on site including MSDS sheets
 - Warning Labels and Signs

In addition, for any "contained site" there shall also be a copy of the "Inspection Log"

noting date/time, inspection/staff name issue or question raised and a space for follow up items to be noted. Log shall also contain needed daily ILSM/ICRA inspection logs duly completed. (It is expected that the site log comments shall be formally addressed and site project coordination meetings and any follow up action taken noted – or if no action, the reason why not).

L. “Contained” Site –Controlled Entry Point

All “closed sites” shall provide at a minimum the following:

- A minimum of three sets of any PPE needed to accommodate any inspection/visitor to the site (i.e. hard hats, goggles, ear plugs, etc.)
- A clean tack mat on both sides of entry – at all times
- A manometer to track negative air flow (in the construction site)
- Other safety equipment i.e. fire extinguisher
- HEPA vacuum to clean any debris
- Other

Introduction to Safety Standards/Procedures The Safety Standards/Procedures in this handbook are intended to establish defined, consistent ways of performing work in Renown facilities (hereafter referred to as “Company”) operating areas. Each employee and contractor must be familiar with these Safety Standards/Procedures, as they have a daily impact on work done. Although there is a provision to receive a variance from a Standard/Procedure, jobs should

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be structured to comply with the applicable Standards/Procedure.

All work in all Renown facilities with the exception of self contained/new facility sties provided all work is done outside an operating facility or portion thereof requires notification to the Security Dispatch office (982-5514) prior to work beginning on any shifts (i.e. 7-3; 3-11, 11-7, etc.)

For proper use or understanding of use of this handbook facilities at Renown are divided into three classes and two types of work sites:

Class 1

24x7 – These facilities are in operation 24 hours per day, 7 days per week, 365 days per year. These facilities typically have on-duty Plant/Maintenance staff on-site or on-call 24 hours per day. Work on these sites must be coordinated with on-site Plant Operator prior to start of work on any shift. Facilities in this category include:

- Renown Health, 1155 Mill Street
- Renown South Meadows, 10101 Double R Blvd
- Renown Rehabilitation Hospital, 1495 Mill Street
- Renown Skilled Nursing
- 850 Harvard Way (the hospital operators are there)

Class 2

Day Use – Clinical Operations

These facilities operate a limited number of hours

per day, five or six days per week, often 7 a.m. to 7 p.m. These facilities support invasive and non-invasive patient care. These facilities typically do not have on-site Plant Operator. Prior to work beginning during facility operating hours, Renown Plant Operator must be. Facilities in this category include but are not limited to:

- 975 Ryland
- 910 Vista
- 75 Pringle
- 10101 Double R Blvd (clinic at South Meadows)
- Fernley Clinic
- Other

Work in Class 1 or Class 2 facilities while they are in operation can seriously affect patient care and require extra coordination prior to any work beginning.

Class 3

Day Use Office /Administrative Operations. These facilities operate a limited number of hours per day, mostly five days per week. They typically have limited or no patient care. (Daily check in/check out procedures are required in ALL classes)

There are two types of work sites at Renown. They are:

- Contained Sites
These are sites that are fully secured on all sides for the purposes of construction. Examples include new facilities prior

to operation; work within a room or department that is not operational or work can be started and completed prior to operations resuming.

- Open Sites

These are sites where the work is done in a functioning department, unit, space whether during or after hours. Examples include plumbing repairs, stringing cable, carpeting, painting in functioning units.

***Note:** The term Standard/Procedure is used to describe safety rules in this text.

*Any variation from a Safety Standard/Procedure requires written approval according to the variance procedure.

* No work may be initiated without notification and permission of the person in charge of the area.

* Any individual may invalidate a work permit at any time that they consider the conditions or work methods to be unsafe.

A. Titles (under review/refinement)

Due to the range of activities, facilities and types of work, it is important readers' understand the use of the following titles that refer to Renown or contractor staff as applicable.

Position titles may vary within operating areas. At times there may be more than one individual within a position category. When this occurs, responsibilities defined in the Safety Standards and Procedures should be assigned to specific

individuals and communicated to all affected parties, prior to initiating work. For the purpose of this handbook, the following are example titles of positions for the defined responsibilities:

1. Unit Operator:
This title refers to the person responsible for the area in which the work is permitted, such as Department or Unit Manager, Supervisor or Site Coordinator.
2. First-Line Supervisor/Project Engineer:
This title refers to the Supervisor responsible for the area in which the work is permitted, such as the Shift Supervisor, or designee.
3. Plant Operator (Duty Room Operator)
This title refers to the central point of contact for the facility in which the permitted area for the work is located.
4. SPOC:
The Single Point of Contact (SPOC) for permits and general fieldwork.
5. Issuing Authority:
The Supervisor or Unit Operator who requested the work contained in a work authorization and is accountable to ensure the area and equipment are safe for work.
6. Person Doing Work:
This title refers to the person to whom the work authorization (and any permit needed) is issued. This person is responsible for insuring that all precautions stipulated on the work permit are followed.
7. Initiator/Requestor:

The Initiator/Requester is the person who initiates or requests the work authorization (or permit that may be needed). This may or may not be the person doing the work.

8. **Company Representative:**
An individual, either Company or sub-contractor, who has been designated by Company management as a Company representative for the purpose of initiating permits.
9. **Safety & Health Group:**
It is recognized that not all work sites have full time Facility Department coverage or that Facility Department availability may be minimal. When this is the case, Facility Department responsibilities as required by the standards/procedures of this Safety Handbook may be redistributed to line management or other qualified personnel.
10. **Designee***
The person designated by the Unit Operator or first line Supervisor to perform their permitting duties.

***Note:** When work is accomplished under the provision of delegated authority (a designee), the individual delegating the authority remains ultimately responsible. Also, designees shall sign for the delegating authority as in the following example: John Doe for Jane Smith.

B. Work Authorization:

Work at Renown is controlled by work authorizations and, for many types of work, also by various work permits. Work authorizations are typically PO's (Purchase Orders), WO's (work orders), PM's (Preventive Work Orders) and contracts. A list of permit and special procedures is listed below.

All work undertaken in Renown facilities must be authorized in advance. Work authorizations can take a number of formats. These include:

- Work orders issued by Renown
- Purchase Orders/or Purchase Requisitions
- Service Contracts
- Construction Contracts
- Service Agreements
- P Card

A copy of work authorizations or work authorization numbers shall be kept at the work site and/or each work on "open or sites not contained to a given work area." Work authorizations shall be provided immediately when requested by a WHS staff member.

In an emergency, work may be authorized verbally. A work authorization shall be documented as soon as possible after the emergency subsides to document the work.

In addition to work authorizations, a number of activities also require a special permit. That shall be approved, on file, at the Renown Boiler House, located on the Mill Street Campus, with a copy on site or with the workers for the following

activities:

- ILSM (Interim Life Safety Measure) when any life safety system exist or similar will be compromised for more than four (4) hours total.
- ICRA (Infection Control Risk Assessment) for any work possibly creating dust especially in a patient care area.
- Hot Work for any work with a gas flame or possibly creating a fire hazard (see OSHA)
- Lock Out/Tag Out for any work on or around energized equipment.
- Confined space for any work in a confined space (see OSHA)
- State/Local Regulatory Permits i.e. building permits (no permit, no work)
- Regulatory Clearances – asbestos – assume required unless otherwise stated

C. General Permitting Rules

1. Workers performing work must have a copy of all applicable work authorizations and permits for the work being performed, in possession or posted at the work site. Work permits include: authorizing work permit (i.e., work order, PM, PO, contract); or any special permits (I.E., Hot work; confined space; Lock Out/Tag Out; ILSMS; ICRAS, etc.).
2. Any individual may invalidate a work authorization or permit at any time if they consider the conditions or work methods to be unsafe. Anyone stopping work in this manner will inform the

- Person Doing Work, remove the site copy of the authorizations or permits and return it to the Issuing Authority, giving their reasons for this action. In such instances, the Issuing Authority will inspect the work site and decide whether the authorizations or permits should be revalidated.
3. When an emergency alarm or emergency announcement is made, stop all work, disconnect all electrical equipment, and turn off all gas cylinders. Do not resume work until notified by the Unit Operator or an "all clear" announcement is made on the overhead paging system. If the condition is in the permitted area and evacuation is required, the affected work authorization or permit becomes invalid and must be reissued or revalidated by the Issuing Authority when the area is cleared for work again.
 4. It is the responsibility of the Unit Operator or Issuing Authority to "safe out" and prepare the work area. The Person Doing Work is responsible for ensuring the work is preformed in a safe manner.
 5. The work authorization or permit is a formal form. Mark items should be "not applicable" (N/A) as appropriate. No line should be left blank on a work authorization or permit. A copy shall be displayed at the site or in the workers possession. A copy shall be kept in the Renown Plant Control Room. A copy

- or original shall be kept by the Unit Operator/Issuing Authority.
6. Work is restricted to the scope and time duration stated on the work authorization or permit. If not stated, work authorizations or permits are valid until job completion, but shall not extend beyond the end of the shift in which they are issued unless otherwise stated on the work authorization(s) or permit(s).
 7. A work authorization or permit must be renewed by the Unit Operator/Issuing Authority for any changes to conditions, job scope, or time duration.
 8. One of the main purposes of the work authorization or permit is communication. It is the responsibility of all personnel involved to ensure adequate communication takes place so the work can be performed safely. If work to be done impacts more than one area, all affected areas shall be informed.
 9. All work done under a work authorization or permit shall be completed within the time stated. All work authorizations or permits must be revalidated if work is not started within 4 hours of the time noted on the work authorization or permit or if there is a break in the work of 4 hours or more. Revalidation consists of the Unit Operator verifying that the conditions of the work authorization or permit are still applicable and it is safe to work. The

- Unit Operator will then initial the work authorization or permit, record the time, and allow work to commence.
10. If work authorizations or permits are in effect at the time of Plant Operator crew change or when Operators assume different areas of responsibilities during a shift, there are two options:
 - a. The outgoing Plant Operator and the incoming Plant Operator jointly review the job and the incoming Plant Operator signs the work authorization or permit signifying they are aware of the work and have assumed responsibility for the area.
 - b. Work authorizations or permits are closed out until the oncoming crew has changed out and has checked out the affected areas. The incoming Operator then revalidates the work authorization or permit or issues a new work authorization or permit to the workers.
 11. When work is completed, the person Doing Work will contact the Plant Operator/Control Room. The Issuing Authority will inspect the area for completion, safety, and cleanliness. The Person Doing Work returns the hard copy to the Plant Control Room or SPOC and closes out the work authorization or permit by signing the work authorization or permit copy of record.

Work Standards and Safety Handbook

12. The following shall be retained for a period of time as mandated by law but in all case not less than 2 years: Master Cards, Energy Isolation Lists, Worker Log, the copy of record of all work authorizations or permits and the hard copy of the confined space permits.
13. Nothing in these standards/procedures precludes a contract company or individual from performing their own atmospheric tests, installing their own lockout devices, or otherwise verifying the safety of the equipment.

D. Special Procedures and Permits

1. General Safety and Operational Requirements
2. Construction Equipment Requirements

All Contractors/Subcontractors and their staff shall:	
CONTACT	ACTIVITY/DOCUMENT
Contact Construction Project Management 982-4208	Sign in / Call in – provide description of work, areas, utilities impacted
	Obtain any keys needed
	Obtain any staff badges
	Notify of any active fire watches
	Check out end of each shift (provide emergency contacts)

	Utility Disruption Requests
	Hot Work Permits
	Fire System Deactivation
	Fire System Re-activation Lock out/Tag out Permits
	Confined Space Entry Permit
	ICRA
	ILSM
Provide Copies to: Renown Project management 1155 Mill Street	As-Built
	Equipment OEM Manuals
	New Equipment Entry Form
	New MSDS sheets

E. Site Specific Permitting Guidelines

The information below describes the procedures for obtaining permits in various operating areas that were in place at the time of this handbook's development. It is subject to change as improvements are made in how we do our business. The Plant Operator of the facility or the SPOC will be the reference on permitting guidelines if assistance is needed.

F. Facility Work

Work permits for any work in or around a Renown facility are to be obtained through the Construction Project Manager.

G. Utility Shutdowns

1. Contractor personnel are not permitted

- to shut down any utility systems.
2. All utility shutdowns must be requested through the Construction PM. (Fig. 1)
3. Utility shutdowns are required for work on the systems listed in section "H" below.
4. Disruption Notices, to the maximum extent practicable, shall be requested at least 72 hours in advance.

H. Utility Shutdowns Requiring Disruption Notices

1. Electrical, including UPS (Uninterruptible Power Supplies)
2. Plumbing (domestic water and waste systems)
3. Medical Gas and Vacuum Systems
4. Infection Control (including isolation rooms)
5. Chilled water
6. Steam or heating hot water
7. Pneumatic Tube
8. Natural Gas
9. Heating, Ventilation, and Air-Conditioning
10. Security: CCTVs, Duress, radios, Halo, Wanderguard
11. Communication --intercom (sector and greater), P.A., telephone, fire alarm
12. Computer -any server or greater
13. Other --see Project Manager

Site Safety

A. Introduction:

In addition to the other procedures/precautions

in this manual, the following general safety precautions should be followed when working in an office environment. However, there may be site-specific procedures or requirements for your work location. Be sure to check with the Safety Officer.

B. Orientation:

Personnel reporting to any site for the first time shall receive a safety orientation.

C. Precautions:

1. All personnel shall be familiar with the location of the fire alarm pull stations and fire extinguisher nearest to their workstation.
2. All personnel shall become familiar with the appropriate evacuation route(s) for their workstation. Evacuation routes for each floor and building area are clearly marked. Use the stairwell closest to your area to evacuate.
3. During fire alarms, staff shall make last-minute searches of their areas to ensure all personnel are evacuated. Help staff by clearing the area quickly, and aid them if requested. If staff requests that you leave an area, do so! If a door is closed, check carefully for high temperature or smoke before opening. Close all doors on your way out.
4. Follow R. A. C. E.
Rescue persons in immediate danger
Alarm pull at pull station
Confine the fire by closing doors &

windows

Extinguish and/or evacuate

5. During evacuations, do not use elevators. Use the stairwells, following the exit signs and evacuation maps located in the area. Take your wallet, purse and keys and dress appropriately. Evacuate to your assigned assembly area.
6. Personnel with a disability/condition that would preclude their ability to evacuate shall inform staff or Security.
7. Become familiar with the proper procedures to follow during any type of emergency and participate in all evacuation/disaster/fire drills.
8. Keep all passageways, entryways, aisles, storerooms, service rooms, and work areas clean, orderly, and sanitary, and well maintained, with no obstructions. Eliminate all tripping hazards from the work place. Aisles and hallways should provide unobstructed movement and immediate access for fire protection personnel and equipment.
9. Keep flammable or combustible material and residue to a minimum. Store these materials in approved metal safety cans and storage cabinets. When disposing of flammables, combustibles or hazardous materials ensure that all appropriate safeguards and regulations are followed.
10. Report spills immediately to the Security Department by calling 7777, from any Renown phone.
11. Erect barricades around hazardous areas.

Never disregard a barricade even though the danger may not be apparent.

12. Safely stack material/boxes (no closer than 18 inches from sprinkler heads). Do not block fire exits, fire extinguishers, electrical control panels, etc.
13. File drawers and desk drawers should not be left open. Do not overload top drawers or shelves so that files or bookcases can tip over. Keep heavy files in lower drawers. Secure file cabinets and bookcases to wall or each other.
14. To avoid creating an electrical hazard, do not overload circuits. Check with Facilities Services Department prior to acquiring any non-standard office electric equipment (small appliances, space heaters, electric kettles, etc.). Routinely check the condition of power cords and plugs for any damage.
15. Always use an approved ladder or stool to get articles out of reach from the floor. Do not use a swivel chair or other makeshift device to reach high places.

Unit Work Standard/Procedure

A. Purpose/Scope

1. The Unit Work Standard/Procedure ensures that the person in charge of any area or equipment is aware of all work done in their unit.
2. These are specific sign-in procedures for access to facilities as outlined in the General Safety Rules section of this handbook. Verbal permission, at a

minimum, is required for access to all operating areas, with the exception of the Duty Operator. Routine access to worksites will not require a Work Permit.

3. All personnel shall also notify the Security Services when they are leaving the area and/or sign out.
4. The following work requires a Work Permit:
 - a. ILSM (Interim Life Safety Measurement)
 - b. ICRA (Infection Control Risk Assessment)
 - c. Hot Work
 - d. Lock Out /Tag Out
 - e. Hot Tapping (the portion of work exclusive of hot work)
 - f. Radiography
 - g. Entry into confined spaces with non-hazardous atmospheres (Examples of such confined spaces that could fall under the Unit Work Standard/ Procedure include vessel skirts, inlet air plenums, soffits, and process heaters after the fuel gas is blinded and all other potential energy sources are isolated).
 - h. Cable Pulling
 - i. Utility Shutdowns (i.e. Disruption Notices)
5. The following is a list of examples of routine work that does not require a Work Permit. This list is subject

to periodic revision as activities are approved or deleted as required. People performing this routine work will still have to sign in for personnel accountability purposes in facilities or with the SPOC or obtain verbal clearance via radio:

- a. Snow removal on normal roads and pads
- b. Potable water delivery
- c. Sewage pick-up
- d. Fueling Vehicles
- e. Waste dumpster pick-ups
- f. Delivery or pick-up of equipment (e.g. heaters) or materials
- g. Checking running equipment (e.g. HVAC units)
- h. Security rovers
- i. Visual inspections only either inside or outside various areas (e.g. above ceiling tiles, shafts)
- j. Monthly inspections (Self Contained Breathing Apparatus' (SCBA), vibration readings, etc.)
- k. Routine sampling by personnel
- l. Other activities as identified and approved

B. Permit Initiation

1. Permits may be requested or initiated by anyone and will be done with Project Manager.

C. Responsibilities

1. Person / Supervisor requesting the permit:
 - a. Inspect the work area. During new construction or other cases where work is not taking place adjacent to operating units, the Department Manager, Unit Leader or Unit Operator may waive site inspection at their discretion. A signature is still required on the Work Permit to verify the Unit Operator's knowledge of the scheduled work.
 - b. Ensure the equipment and area have been properly prepared and are ready for the safe performance of the work.
 - c. Ensure that utility lines to be demolished and/or removed are properly identified and marked.
 - d. Check placement and condition of safety equipment.
 - e. Make necessary tests for flammable and/or other hazardous conditions.
 - f. If hydro testing, see specific duties in the Hydrostatic Testing Standard/ Procedure.
 - g. List/check special precautions as necessary.
 - h. Show the Persons Doing Work the locations of the nearest communications equipment and applicable safety devices.
 - i. Sign the Permit after the above conditions have been met.
 - j. Ensure that the hard copy of the Permit has been posted at the work

- location or with the person doing the work if it cannot be posted at the job site and a copy is at Renown Plant.
- k. Prevent an operation from being performed that has the potential to cause the area or equipment to become unsafe while the permit is in effect.
 - l. Monitor the work as it progresses and perform gas checks as appropriate to ensure the conditions of the permit are not changing.
 - m. Advise relief Duty Plant Operators of any permit in effect.
 - n. Inspect the work site after any interruption has occurred prior to resuming work
 - o. After the work is completed, inspect the work area and adjacent areas to determine that they are in a safe condition.
2. Duty Control Room Operator: (Renown Plant Operator)
- a. See Specific duties under the Hot Tapping Sections of this handbook.
 - b. Communicate to all personnel in the area if radiography (x-ray) is in progress.
 - c. Notify the Unit Operator when the permit is closed out.
3. First-Line Supervisor:
- a. See specific duties under Hot Tapping and Hydrostatic Testing Sections of this handbook.

- b. Determine and specify when the standby person and/or entry log is necessary when non-hazardous confined space entry work is to be performed.
4. Person Doing Work:
- a. Read, understand and follow the conditions listed on the Unit Work Permit.
 - b. Post the hard copy of the Unit Work Permit at the work area or with the person doing the work, if it cannot be posted at the job site.
 - c. Advise other workers of any special precautions or conditions pertaining to the job.
 - d. Survey the area to confirm safe working conditions. Know where the nearest telephone, fire alarm, emergency communication system, fire extinguisher, safety shower, first aid kit, etc., are before starting work, and know how to use them, if appropriate.
 - e. If Hydro testing, see specific duties in the Hydrostatic Testing Standard/ Procedures.
 - f. If performing work in a confined space with a non-hazardous atmosphere, verify energy isolation as applicable, and post the hard copy of the permit at the entrance to the confined space.
 - g. Be constantly aware of conditions in the immediate work area, and

be ready to stop work if conditions change. Do not resume work without approval of the Unit Operator.

- h. Clean up and secure the work area after completion of work each shift. At the end of the shift or upon completion of the work, whichever comes first, notify the duty operator, return the permit to the Control Room or designated location, and sign the closeout portion on the permit copy of record. If the job is incomplete or the person or crew temporarily leaves the unit, the Person Doing Work must notify the Unit Operator.

5. Standby Person (For a Confined Space Entry with a

Non-Hazardous Atmosphere):

Note: The standby person requirement and/or the entry log requirement may be waived by the First Line Supervisor for situations where these extra precautions are not deemed necessary.

- a. Read and understand the Permit
- b. Remain outside the confined space entryway at all times during entry operations.
- c. The Standby Person shall not enter a space until they are relieved by another qualified standby person. Once relieved, they may become an entrant.
- d. Be knowledgeable of and be able to

- recognize potential hazards.
 - e. Maintain an accurate log of all persons in the confined space.
 - f. Monitor activities inside and outside of the confined space to determine if it is safe for the persons making entry to remain in the space.
 - g. Maintain effective and continuous contact with persons inside the confined space and have a means of communication with the Unit Operator.
6. Special Considerations:
Preparations for entry into a confined space with a non-hazardous atmosphere under the Unit Work Permit, shall include energy isolation as appropriate in accordance with the Energy Isolation Standard/Procedure and include proper PPE (Personal Protective Equipment).

Safety Standard Variance Procedure

- A. Although the mandatory provisions of the handbook are usually appropriate, not every situation can be anticipated. A variance will ensure that proper planning and review is conducted prior to performing work, which cannot be done within the limits of the Safety Standard/Procedures.
- B. A variance is a deviation from practice or an acknowledgment that the system or equipment in question, by nature of its design or construction, is not covered or only partially covered by the "Work Standards & Safety Handbook" or procedures.

- C. The variance procedure applies only to variances from Company standards. No variance from Federal, State or Local requirements can be granted through this procedure.
- D. It is the responsibility of the first line Supervisor or Project Manager in charge of the work to be performed to initiate the variance request. The description of work to be done, intended dates of performance, options considered, safety precautions, and other pertinent information must be documented for circulation to approving parties.
- E. Approving parties, designated by management, shall verify their concurrence and knowledge of the work by signature. Questions and suggestions shall be directed to the variance initiator. Approving parties shall perform their review in a timely manner and route the variance request to the next higher level or to the next organization.
- F. A copy of the approved variance will be returned to the Supervisor or Project Manager in charge of the work. A copy of the approved variance shall be readily available within the appropriate work area or attached to a work permit if applicable. The original approved variance will be forwarded to the Renown Safety Department.

General Safety Requirements

A. Personal Protective Equipment (PPE)

1. Eye and Face

- a. Appropriate eye and face protection is required where there is a potential for injury from flying particles, metal sparks, radiation, chemicals, or any other identifiable or suspected eye or face hazard. This shall include while personnel are in vehicles on gravel roads unless otherwise exempted by Company Policy.
- b. All eye protection must meet the requirements of ANSI Z87.1. Safety glasses shall have side shields.
- c. Gas permeable and soft contact lenses will be permitted in Renown operated property provided the individual also wears applicable eye protection where required. Hard shell contact lenses are not permitted.

2. Respiratory Protection

- a. When engineering and administrative controls cannot effectively control exposure to airborne contaminants, respirators shall be used.
- b. Affected employees shall use respiratory protection in accordance with the Renown Respiratory Protection Program.

3. Head Protection

- a. Personnel shall wear hard hats while

performing construction, or in other areas where an overhead hazard is or could be present.

- b. Personnel shall wear hardhats which comply with ANSI Z89.1 "American National Standard Protective Headwear for Industrial Workers." These are Class B hard hats. Metal hard hats are not allowed.

4. Foot Protection

- a. Employees shall wear protective footwear when working in process areas or other areas where there is danger of foot injuries due to falling or rolling objects, or objects piercing the sole, or where exposed to electrical hazards.
- b. Safety footwear shall meet the requirements of ANSI Z41 "American National Standard for Personal Protection Protective Footwear" and any additional standards associated with the person's job, i.e. chemical exposure.
- c. Shoes with heels are recommended for personnel whose jobs require them to climb ladders with round rung steps.

5. Electrical Protective Devices

- a. Personal protective devices for electrical workers shall comply with the following requirements:
- b. ASTM F-496 Specification for in service care if Insulating Gloves and Sleeves

- c. ASTM F-479 Specification for in service Care of Insulating Blankets
 - d. ASTM F-478 Specification for in service Care of Insulating Line Hose and Covers
6. Hand Protection
- a. Employees shall use appropriate hand protection when hands are exposed to hazards such as skin absorption of harmful substances, lacerations, abrasions, punctures, and chemical or thermal burns.
7. Hearing Protection
- a. Employees shall use hearing protectors when exposed to noise greater than 82 dBA. Double hearing protection (ear plugs and muffs) is required when exposed to noise levels exceeding 100 dBA.
 - b. Signs will be posted in areas exceeding 82 dBA indicating hearing protection is required, and signs will be posted in areas exceeding 100 dBA indicating double hearing protection (ear plugs and muffs) is required.
 - c. All employees exposed to noise of 85 dBA or above (82 dBA 12 hour equivalent) on the job will be included in the Renown and/or Company Hearing Conservation Program.
 - d. Audiometer testing and screening, noise monitoring and employee training will be conducted in

accordance with the Renown and/or Company Hearing Conservation Program.

8. Protective Clothing

- a. Employees shall wear protective clothing, including fire retardant clothing (FRC), as appropriate to ambient conditions.
- b. Chemical protective clothing shall be worn when there is potential for exposure to chemicals that may cause skin irritation or damage on contact or may exert a toxic effect after absorption through the skin.

B. Electrical

1. Only qualified and authorized personnel shall repair, install or adjust electrical equipment. Operate only those switches that the employee is trained to use.
2. When electrically driven equipment becomes unsafe to operate, it shall be locked and tagged out immediately.
3. A Hot Work Permit is required to install or use non explosion-proof temporary lighting in a classified area.
4. Inspect all extension cords or plugs connected hand tools for any sign of damage or missing parts prior to use. Tag defective appliances and turn in for repair.

5. All portable electric tools and lights shall be used with ground fault circuit interrupters (GFCIs) or be included in an assured grounding program. Low voltage lights may be used in lieu of lights with GFCI's.
6. Always maintain the minimum NEC required clearance in front of all switchgear and motor control centers for access (at least 4 feet recommended). If these clearances are not present, the switchgear area must be appropriately marked with warning labels. These spaces must be kept clear and must not be used as storage area.
7. When electrical work is required in spaces with restricted clearance, the following shall be adhered to:
 - a. equipment in the area should be de-energized or,
 - b. if equipment must be kept energized, a safe work plan shall be developed, approved by the responsible Supervisor and followed.
8. Equipment operating within 15 feet of any power distribution system line, structure, guy wire or switchyard require prior clearance by the appropriate Company Supervisor.
9. Only a qualified electrician may bring a conductive object closer than 15 feet to unguarded energized overhead lines.
10. Only authorized personnel shall be permitted in electrical distribution switchgear rooms and enclosures.

11. Power distribution switchgear, bus plugs and large breakers shall be operated only by qualified personnel.
12. After a circuit is de-energized by a circuit protective device, the circuit may not be manually re-energized until it has been determined by electrical personnel that the equipment and circuit can be safely energized. The repetitive manual re-closing of circuit breakers or re-energizing circuits through replacement of fuses is prohibited. Address ground fault relay indication promptly.
13. Motor overloads may be reset once, after an operator has checked the motor for any unusual conditions, such as hot bearings, motor, etc. Notify facility electrician of the trip.
14. Motor starts per hour shall not exceed the manufacturer's specifications.
15. Any feeder and branch circuit trips shall be brought to the attention of the Supervisor and facility electrician.
16. Authorized power plant operators may open and close the switchgear used as part of the routine plant operation.
17. All electrical work shall be done in accordance with the appropriate edition of:
 - a. National Electrical Safety Code (ANSI C2)
 - b. 29 CFR 1910 (Code of Federal Regulations, Occupational Safety and Health)
 - c. National Electrical Code (NFPA 70)

18. Any work directly on energized circuits (480 volts or higher) requires two qualified electrical personnel. (The use of test equipment with insulated probes is not considered work "directly on" energized equipment.)
19. Whenever possible, electrical cables and/or extension cords should be overhead and not laid on the ground or deck.
20. Portable ladders, used for electrical work, shall have non-conductive side rails or insulated steel.

C. Barricades

1. Always have barricades erected around hazardous areas. Post a highly visible sign at the barricade identifying the hazard.
2. Permission for entry into barricaded areas must be granted by the person in charge.
3. Identify any opening or gate for egress.
4. Appropriate lighting shall be provided at all times.
5. Mark open holes or excavations well to adequately warn personnel in the event the hazard should later be filled or covered with snow.
6. Floor openings shall be properly guarded to prevent tripping and falls.

D. Signs

1. Danger signs shall be used where an immediate hazard exists.

2. Caution signs must be used to warn against potential hazards.
3. Accident prevention tags shall be used as a temporary means of warning employees of an existing hazard such as defective tools, equipment, etc.
4. Barricades shall be installed and maintained as needed to ensure effectiveness.
5. If the construction work results in changes to the emergency egress path, the contractor is responsible for providing all temporary signs and evacuation maps that are needed to direct the Hospital occupants to the emergency exits.

E. Fall Protection

1. Each employee on a walking/working surface with an unprotected side or edge which is six feet or more above a lower level shall be protected from falling by use of a guard rail system, safety net system, or personal fall arrest system.
2. Work on roofs with slopes less than or equal to four in 12 (vertical to horizontal) with unprotected sides and edges six feet or more above lower levels shall require fall protection such as:
 - a. guard rail systems (OSHA 29CFR 1926.500)
 - b. personal fall arrest systems
 - c. combination of warning line system and guard rail system, personal fall arrest system, or safety monitoring

system

- d. safety monitoring system alone, on roofs 50 feet or less in width.
- 3. Work on roofs with slopes greater than four to 12 with unprotected sides and edges six feet or more above lower levels shall require fall protection in the form of a guard rail systems with toe boards, safety net system, or personal fall arrest systems.
- 4. A full body harness is required for protection from falls. Staff using a harness must be trained in its use. Body belts are not acceptable as part of a personal fall arrest system (exemption: this does not apply to belts used as body positioning devices). Additionally, only locking type snap hooks shall be used.
- 5. Personal fall arrest systems shall be inspected prior to each use for wear, damage, and other deterioration and defective components shall be removed from service.
- 6. Personal fall arrest systems and components subjected to impact loading shall be removed from service immediately.

F. Ladders

- 1. Selection
 - a. The side rails of through or side-step ladders shall extend at least 36 inches above the top of the landing platform.
 - b. The use of wooden ladders is prohibited.

- c. Make certain the ladder is strong enough for its intended use by reviewing the load rating on the ladder.
 - d. Choose a ladder that is long enough so you can work safely. Inspect the ladder before you use it. Look for loose or damaged rungs, steps, rails, braces, missing screws, hinges, bolts, nuts or other hardware. Report deficiencies to your Supervisor, and remove from service.
 - e. Be sure straight ladders have safety feet.
 - f. Never use a defective ladder.
2. Using Ladders:
- a. Use a barricade or set of cones to prevent unexpected collisions. Lock or block any adjacent door.
 - b. When blocking an emergency exit, ensure the ladder is continually attended. Whenever the worker leaves the area, clear the emergency exit path.
 - c. Keep the area around the ladder base uncluttered.
 - d. Avoid tilting by resting your ladder base on a solid, level surface.
 - e. Ensure stepladders are fully open and spreaders are locked before use.
 - f. Position a straight ladder at a four-to-one ratio. That means the base of your ladder is 1 foot away from

the wall or other vertical surface for every 4 feet of the ladder's height to the upper support point.

- g. When you use a ladder to climb onto a roof or platform, allow your ladder to extend at least 3 feet beyond the roof edge or other support point.
 - h. To avoid shifting, tie down straight ladders as close to the support point as possible.
 - i. Never lean a ladder against an unstable surface.
 - j. When working from a ladder:
 - i. hold on with at least one hand
 - ii. only reach or lean so that your belt buckle remains between the ladder rails
 - iii. maintain your balance by centering the body between the ladder rails.
3. Climb and descend
- a. Face the ladder and use both hands.
 - b. Carry tools in a tool belt or lower them with a hand line.
 - c. Check ladder rungs and the bottoms of your shoes for slippery substances.
 - d. Do not climb higher than the second tread from the top on a stepladder or the third rung from the top on a straight ladder.
 - e. Climbing devices, cages or platforms are required for fixed ladders over 20 feet in height.
 - f. Use the ladder climbing device, if provided.

G. Scaffolds

1. Scaffolds shall be constructed and inspected by qualified personnel. Scaffolds shall be verified complete before use. (See OSHA CFR 1926 support L, 29CFR 1912.28)
2. Never use makeshift arrangements to reach high working areas.
3. Manufactured scaffolds shall be erected in accordance with the manufacturer's directions.
4. Safe scaffolds will have:
 - a. A sound footing capable of carrying the maximum intended load.
 - b. Guard rails on all open sides; top rails 43 inches above work platform surface, mid-rail 21 inches above the work surface.
 - c. Toe boards on all sides.
 - d. Side screens on side adjacent to passageways or thoroughfares to guard against falling materials or tools.
 - e. Decking in good condition and with a safety factor of four times the maximum load.
 - f. Planking not extending less than six inches nor more than 12 inches beyond their end supports, unless otherwise secured from being dislodged.
 - g. An access ladder secured to the scaffold with minimum required clearances between ladder rungs and away from obstacles that interfere

- with the safe use of the ladder.
- h. Supports, poles, legs or uprights which are plumb and securely braced at appropriate levels.
- i. Been braced and secured at appropriate internals.
- j. A height not exceeding three times the shortest dimension of the base, without being secured to the adjacent structure.
- k. An area around and underneath blocked off and monitored.

H. Scaffolding & Swing Stages

1. Contractors must comply with OSHA Standards 29 CFR 1926, Subpart L and 29 CFR 1910.28.
2. All areas in the vicinity of the base of the scaffold or swing stage must be blocked off and monitored to restrict entry by non-construction personnel.
3. When a swing stage is not in use it must be stored far enough above the ground to prevent entry by unauthorized persons. Cables and ropes must be secured and no material may be left hanging out of the unit.
4. Each scaffold and swing stage must be inspected daily to ensure safety; prompt corrective action is required.

I. Forklifts & Pallet Jacks, etc.

1. The contractor must provide his own equipment.
2. The contractor shall ensure all equipment operators are competent and certified.
3. Contractors shall ensure workers and property are kept safe.
4. Staff must wear appropriate Personal Protective Equipment (PPE) (i.e. steel toed shoes) when operating.

J. Heavy Equipment

1. The operation of heavy equipment such as cranes, graders, dozers, and rubber-tired loaders or trucks rated over two tons Gross Vehicle Weight will only be done by qualified equipment operators who are assigned to operate such equipment.
2. General rules of operation include:
 - a. The unit will always be operated in accordance with the manufacturer's instructions.
 - b. Equipment operators will always assure that the unit can be operated safely by making a complete functional check before using the unit to lift or load.
 - c. Equipment operators are responsible to ensure the work area is free from obstructions or hazards.
 - d. If the continued safe operation of the unit is questionable, the activity shall cease until such time as the Supervisor in charge has resolved the concern.

- e. The equipment operator shall complete a daily safety checklist for each piece of equipment operated.
- f. All equipment deficiencies shall be reported to the appropriate maintenance group.
- g. White lights which illuminate to the rear shall not be used while traveling on roadways, except during snow removal.
- h. Forklifts shall travel with forks as close to the floor or road as practical whether loaded or unloaded. (See additional requirement above.)
- i. Forks are to be left on the ground when not in use.

K. Mobile Cranes/Side Booms

1. Only one properly trained person shall signal a crane operator.
2. The crane operator shall never start machine movement until the signalman is within sight and hand signals are understood. The operator must obey an emergency stop signal given by anyone.
3. All cranes shall have load charts and boom angle indicators located at the crane operator's position.
4. All cranes shall have anti two-block devices.
5. A weight indicator shall be available to

determine the weight of an unknown load prior to lifting.

6. Crane mats or timber pads shall be used under outriggers when operating near the edge of roads, pads, or on soft unstable surfaces.
7. The operator must be in the cab any time there is a load suspended from the hook.
8. A lifting plan is required before making picks over live lines.
9. Never lift in-service lines without Operations and Engineering approval.
10. Cranes with booms extended across lines shall not be left unattended.
11. Man baskets or other personnel lifting devices shall be used as a last resort and only after completing a preloaded trial lift. (See additional requirements above.)

L. Rigging/Lifting

1. Rigging and signaling shall be done by properly trained personnel only.
2. Inspect all rigging equipment before use each time by a competent person. Do not use defective lifting equipment.

3. Never attempt to pick up a load beyond the capacity of the hoisting and rigging equipment being used. Know the weight of the load before lifting.
4. Never stand or walk under suspended loads.
5. Do not pass suspended loads over people standing or working below.
6. Suspended loads shall be attended at all times.
7. Avoid hand contact with the load. Tag lines should be used.
8. Riding the hook or load is prohibited.
9. Avoid sharp bends in slings and protect them from abrasion. Do not abuse slings.
10. Do not tie knots in sling chains, rope slings, or wire cables to shorten them. Do not place bolts or other material between links of a chain to shorten or splice it. Never repair chains with bolts or by welding.
11. All hoisting equipment shall have the safe working load limit posted on the bridge, monorail, and other primary components.
12. All cranes shall be inspected and tested at regular intervals according to accepted codes and requirements.
13. When using a chain hoist, check for a current inspection marking and do not exceed the indicated hoist load rating.
14. Decreasing the angle between the sling and the horizontal increases the stress on the sling and the sling capacity is de-rated. Refer to the proper rigging tables for the capacity of slings. The angle shall

- never be less than 30°.
15. Do not choke a wire rope sling on itself; use a shackle.
 16. Every crane shall be given a basic functional test prior to use.
 17. Never rig from process lines without Operations and Engineering approval. Never rig from electrical conduit or gas line.
 18. Lifting over occupied areas of the Hospital must be reviewed and approved by the Hospital Project Manager and Safety Officer.
 19. Rated load capacities, operating procedures, hazard warnings and instructions shall be conspicuously posted.
 20. A competent person shall inspect the equipment before each use and correct deficiencies promptly.
 21. No part of the equipment or its load shall operate within 10 feet of power lines.
 22. Equipment must be appropriately equipped to alert low flying aircraft and Air Ambulances such as Lifeguard helicopters.

M. Tools

Many accidents associated with tool use can be prevented if the following rules are observed:

1. Keep all tools in good condition.
2. Inspect couplings, hoses and hose connections of pneumatic tools each

time you use them. Make sure they are in good condition and properly attached. The use of hose whip checks is highly recommended.

3. Disconnect electric and air tools from their power source when using the chuck key or when not in use.
4. Keep grinding wheels in good operating condition. The gap between the grinding wheel, the tool rest, and the tang must never exceed 1/8 inch. Do not grind on the side of a grinding wheel.
5. Always use the right tool for the job.
6. All fixed and portable tools that are designed to have guards shall have guards in place.
7. Keep all tools under close supervision or secured/locked away.

N. Noise/Vibration/Fumes

1. Minimize impact on occupied areas.
2. Minimize loud, resonant noise.
3. Minimize vibrations and duration.
4. Minimize/re-direct caustic, toxic or noxious fume.
5. Proper PPE must be worn.

Hazardous Materials

A. Safe handling, Use and Storage of Compressed Gas Cylinders

1. All compressed gas cylinders must be stored in designated areas; upright with safety caps in place and secured to prevent tipping.

2. Personnel whose jobs require the handling of cylinders under pressure shall observe the following rules:
 - a. When moving cylinders, use a "gas" cart carrier and secure the cylinder, or get help.
 - b. Cylinders moved by a crane or derrick must be secured in a basket or similar device. Use of slings or ropes wrapped around cylinder is prohibited.
 - c. Never drop cylinders or let them strike each other violently.
 - d. Compressed gas cylinders must be legibly marked for purpose of identifying the gas content, either by chemical or trade name.
 - e. Empty cylinders must be marked "empty" or "MT" with a wired tag or stick-on label. Valves must be closed tightly and the valve protection cap installed. Do not write on sides of cylinders with chalk or markers.
 - f. Secure cylinders to prevent movement during transportation.
 - g. Valve protector caps shall not be modified or used to lift cylinders.
 - h. Only use non-ferrous cylinders near MRIs.

3. Using Cylinders
 - a. Fuel gas cylinders shall be used in an upright position. All cylinders shall be secured to prevent movement.
 - b. Valve protector caps shall be kept on

- cylinders at all times, except when in service.
- c. Threads on a regulator or union shall correspond to those on the cylinder valve outlet. Do not force or modify connections.
 - d. Never use a cylinder of compressed gas without a pressure-reducing regulator attached to the cylinder valve or manifold header.
 - e. Use the regulators and pressure gauges only with gases for which they are designed and intended.
 - f. Always close the cylinder valve before attempting to stop leaks between the cylinder and regulator.
 - g. Leaky cylinders shall not be used.
 - h. When transporting Self Contained Breathing Apparatus' and Skat Pak's in vehicles, make sure they are in a proper carrying case.
 - i. Never permit sparks, molten metal, electric currents, excessive heat or flames to contact cylinder or attachments.
 - j. Never use oil or grease as a lubricant on valves or attachments to oxygen cylinders.
 - k. Do not handle oxygen equipment with oily hands or gloves.
 - l. Compressed gas cylinders, with the exception of breathing air, fire extinguishers, and small volume aerosol cans (for example, dye penetrant), shall not be taken into

confined spaces.

- m. All oxygen/acetylene cutting torches shall have a flash back arrestor installed in each regulator and a check valve installed on each torch/ hose connection.

4. Storage/Maintenance of Cylinders

- a. Oxygen cylinders shall not be stored within 20 feet of combustible gas cylinders or near any other substance where an accelerated fire could result, unless protected by a wall at least five feet high having a fire resistance rating of at least 30 minutes.
- b. No more than the equivalent of 12 "E" cylinders may be stored in the same area.
- c. Cylinders shall be secured and stored in a safe, well-ventilated place. Smoking and other sources of ignition are prohibited.
- d. Empty and full cylinders shall be stored separately, with empty cylinders plainly identified to avoid confusion.
- e. Secure cylinders individually with chain, cable or wire. Do not use rope.
- f. Ensure all gas cylinders are secured before performing any maintenance on them.

B. Storage of Materials

- 1. Materials and tools may only be stored

in a designated area approved by the Director.

2. Tools must be kept securely stored in non-combustible/locked carts or non-combustible boxes/room.
3. Materials shall be piled or stacked safely.
4. Use blocks to prevent material from rolling.
5. Cross-tie bags and sacks when stacking, store lumber on stable foundation and cross-tie at intervals. Use racks or chocks to store pipe or bar stock.
6. Do not lean sheet metal against walls or columns, but store on edge in racks or on sleepers.
7. Do not store stacked material within 18 inches of a sprinkler head.
8. Use or storage of Class A materials in classified areas should be kept to a minimum.

C. Removal of Trash and Debris

1. Trash and debris must be removed from construction sites on a daily basis; dust swept and HEPA vacuumed.
2. An enclosed cart must be used to move trash and debris through the hospital corridors.
3. Open containers covered with plastic or cloth are not acceptable.
4. Wet down construction debris prior to removal from the construction site. The contractor must ensure that water does not leak from containers and will correct all leaks or spills that occur.

5. Carts used to haul debris shall have their wheels wiped down immediately upon leaving the construction zone.
6. All sites shall be equipped and maintained with tack mats at all entities to "track off" all dust/debris.

Handling and Sampling Flammable Liquids and Other Hazardous Materials

A. General

1. Always read labels before using any product. Always refer to the MSDS before handling any chemical.
2. When handling or sampling corrosives, flammable, gases, poisons, and other hazardous materials, use appropriate goggle, gloves, face shield, apron, respirator, and other necessary personal protective equipment. Safety glasses shall not replace goggles when handling hazardous materials.
3. A safe means of egress shall be maintained at all times when working with hazardous materials.
4. Know the location of safety showers, eyewash stations, and other safety equipment prior to starting work.
5. Use sample containers compatible with the type of product collected and potential pressure.
6. Any receptacle containing flammable liquids (drip cans, secondary containers,

buckets, drums, etc.) that could develop a static charge shall be properly affixed with a bonding cable or hose and properly bonded prior to transfer of contents.

7. No flammable fluid transfers shall be started prior to the proper bonding of both receptacles and in accordance with the Flammable and Combustible Fluid Transfer Standard/Procedure, where applicable.
8. Non-metal secondary containers are prohibited for flammable liquids except for Nalgene bottles up to one gallon used for taking samples and shakeouts and where required by analytical procedures. Ensure all secondary containers are labeled.
9. Only personnel who have been trained in the proper handling of hazardous sample containers shall transport these containers.

B. Hazard Communication and Chemical Safety

1. All hazardous chemicals must have a Material Safety Data Sheet (MSDS) posted on the construction job board.

3. All contractors must have a hazard communications program in place, which complies with the OSHA Standard 29 CFR 1926.59.
4. All contractors must supply their own protective equipment when using hazardous chemicals.
5. The Hospital's written Hazard Communications Program is available for review by the contractors thru the project manager.
6. MSDS sheets for all chemicals used and stored in the Hospital are available in each Department using or on-line thru the Dolphin Software System. Contractors can request copies of MSDS for chemicals that they may encounter while working at the hospital.

C. Medical Gas and Vacuum Systems

1. The medical gas and vacuum system in the hospital is a utility that is essential to the health of our patients.
2. Construction personnel are never permitted to shut off medical gas or vacuum system valves.
3. Lock-out/tag-out procedures must be followed.
4. Contractors should assume that vacuum lines are contaminated with blood and body fluids and follow their blood borne

- pathogen exposure control plans.
- 5. If medical gas is detected after a shutdown, stop work immediately.
- 6. Medical gas lines must be labeled.

D. Light Ballasts and Fluorescent Lamps

- 1. Construction personnel who remove fluorescent light fixtures must examine the ballasts to determine if they contain Polychlorinated Biphenyl (PCBs). The Safety Officer can assist with this determination.
- 2. If ballasts are found to contain PCBs, the Construction Project Manager must contact the Environmental Services Department to arrange for proper disposal of the ballasts.
- 3. PCB containing ballasts cannot be disposed of as normal trash.

E. Penetration Sealing

- 1. Ceiling tiles must be put back in place immediately but not less than at the end of the day.
- 2. When filling holes in floors, walls, trays, and ducts, use approved materials rated for the application with approved sealant appropriate to use/locate. Contractors and staff shall only use approved STI caulk, sealants or devices. Smoke/fire and occupancies shall be identified and sealed appropriately.
- 3. Construction personnel must be in compliance with the Company's Barrier Management Program at all times.

F. Prohibited Equipment

1. Radiant heaters with open elements >212 degrees.
2. Any open flame or space heater.
3. Any heater without a "tip-over safety switch."

G. Asbestos and Lead

1. The Project Manager shall identify for the construction personnel all areas of known asbestos or lead based paint.
2. Prior to the start of any construction project, perform an asbestos and lead surveillance survey. Construction cannot commence without written clearance.
3. During the course of construction if suspected asbestos or lead paint or material is found, personnel must stop work until such time that written clearance can again be provided.

H. Renown Campus Hazards:

1. ASBESTOS: Older areas in flooring; insulation; mastics...
2. LEAD: "Red iron" painting; imaging shielding...
3. CADMIUM: Cancer Therapy smelting
4. MERCURY: test equipment/offices; lights
5. RADIOACTIVE: -Cancer Therapy; Radiology; Pharmacy
6. CHEMICAL –Throughout...
7. BIOLOGICAL –Throughout...
8. HIGH MAGNETIC FIELD – near MRI modules

I. Hazards Information Availability:

1. ASBESTOS -plans, files. O&M Program in Facilities
2. LEAD -policy, O&M
3. MSDS – online
4. Others: in department safety plans ask within each department

J. Clearance/Testing Required:

1. Asbestos/Lead
2. Lights Ballasts
3. Sanitary Sewers/Sumps
4. Work on Medical Gas and Vacuum Systems
5. Fume Hoods/Biological Safety Cabinets/ Exhaust Ductwork
6. Work in Laboratories; Operating Rooms; Isolation Rooms; and other sensitive areas

K. Hazard Surveillance Program

1. Used to monitor safety on construction sites
2. Done by Infection Control; Safety; Construction Manager; and Others
3. Compliance checked with all aspects of the safety program is reviewed
4. A weekly report is submitted to the Construction Manager or general contractor
5. Infractions must be rectified immediately
6. Repeated infractions are cause for dismissal

L. Storage of Hazardous Chemicals

1. Storage quantities must be limited to daily use.
2. Flammable liquids in excess of one gallon must be stored in rated cabinets or safety cans that comply with NFPA 30.
3. Oily waste and rubbish must be stored in UL listed, OSHA compliant safe storage cans. Material must be removed from the hospital on a daily basis. Materials may not be put into hospital dumpsters, drains, or waste bins.
4. Flammables and corrosives must be stored separately.

M. Disposal of Hazardous Waste

1. Hazardous waste is any material that causes harm to humans or the environment when disposed of improperly.
2. Construction waste examples include, but are not limited to:
 - a. Concrete sealers
 - b. Mastics
 - c. Paint thinner
 - d. Lead shielding
 - e. Asbestos
 - f. Many Others
3. Construction personnel are responsible for the removal of all hazardous waste on a daily basis.
4. Disposal of hazardous wastes via the drain lines is prohibited.

5. Hazardous waste may only be disposed of in designated area dumpsters.
6. If hazardous waste, such as contaminated soil is discovered during construction, construction personnel must immediately notify the construction superintendent and stop work.

N. Radiation

1. Never cross a radiation barrier.
2. Contact the Safety Officer or a Plant Operator if you encounter a radiation barrier and are unclear on the location of the danger area.
3. The 2 mR zone is always posted with "CAUTION Radiation Area STAY OUT" signs.
4. The 100 mR zone is coned and posted with "CAUTION HIGH Radiation Area STAY OUT" signs.
5. Contractors shall not work in areas that are labeled with the radioactivity symbol without the knowledge and approval of the Hospital Project Manager.

O. MRI Rooms

1. Always assume MRI magnets are in operation.
2. Never bring any ferrous item, tool or equipment into an MRI room.
3. Always contact local technicians before performing any work in a MRI room.

A. Work in Laboratories

1. Construction personnel are not permitted to begin work in any clinical laboratory areas without written clearance from the Safety Department.
2. If construction personnel find any items in a laboratory that they believe could be dangerous to their health or safety, such as chemicals or infectious waste, they must stop work and contact the construction superintendent immediately. The construction superintendent will contact the Hospital Project Manager who will be responsible to ensure review of the site.

B. Work on Sanitary Sewer and Laboratory Waste Lines

1. Blood and body fluids are routinely disposed of into the Hospital's sanitary sewer and laboratory waste lines.
2. Contractors must have approval from the Hospital Project Manager prior to work on these lines.
3. Construction personnel must wear protective clothing as required by their firm's blood borne pathogen exposure control plan when working on drain lines.
4. If mercury is found when disassembling a drain, work must stop until a safety clearance is given.
5. When new drain lines are installed they

must remain capped until connections are made into the sanitary lines.

6. When any plumbing lines (drain, supply, or vent) are demolished or installed, all pipe ends must be capped immediately after the breaks are made.
7. Medical gas pipes shall be capped until immediately prior to use.

C. Fume Hood, Biological Safety Cabinets and Exhaust Ductwork

1. Construction personnel are not permitted to perform any work on or in fume hoods, bio-safety cabinets, and isolation /negative pressure rooms or their associated filters or ductwork until written clearance is obtained.
2. A Utility Shutdown Request is required to work on any fume hood, bio-safety cabinet, or exhaust ductwork.

Infection Control

Infection Control during Construction

A. Housekeeping/Grounds/Security/Fire Safety

1. All passageways, entryways, aisles, stairs, storerooms, service rooms, and work areas shall be kept:
 - a. clean and unobstructed;
 - b. free of ice, or treated with sand, etc., to prevent slipping injuries
2. All waste and debris shall be removed from the work area and recycled or disposed or properly on a regular basis.

3. Spills shall be reported and cleaned up promptly in accordance with environmental and safety guidelines.
 4. Aisles shall be clear and unobstructed to allow for immediate access with fire protection equipment.
 5. Cords, cables, or hoses should be routed overhead or underneath the grating rather than across doorways or walkways.
 6. The area around buildings and unit operating areas shall be kept clean and free of unnecessary materials.
 7. Flammable and combustible liquids in buildings or operating areas shall be kept to a minimum and stored in approved storage containers.
 8. Rags and waste containing combustible or flammable materials shall be put into approved metal safety waste cans with lids immediately after use. Waste cans shall be emptied daily.
 9. Waste food receptacles shall be emptied daily and kept clean and sanitary. No food or drink waste shall be stored or disposed of in electrical/mechanical rooms or where combustibles are prohibited.
- B. Precautions include, at a minimum:
1. Methods to control dust and debris, including barrier walls, "cubes"; traffic and debris dust control, ventilation systems, air filtration and walk-off mats.

2. Decontamination and cleaning of areas impacted by the construction project.
3. Daily cleaning of the work site at the end of each shift.
4. Flushing of stagnant water in pipes, tanks, etc. that has been standing more than five days. Flushing shall exceed five minutes.
5. Compliance with Infection Control Procedures must be checked daily. This is the minimum!
6. Failure to follow the established precautions may result in the shut down of the project.

C. Waterborne Infection Control during Construction

1. Water soaked materials in place or in storage may mold. Remove items if left more than three days.
2. Not flushing water lines may encourage bacteria growth if left stagnant more than five days.
3. Not capping pipes including, medical gas, can allow entry/growth of mold/bacteria. Cap pipes until installation.
4. These types of activities pose special risks to our patients who may not be able to fight infection.

D. Airborne Infection Control during Construction: Dust

1. Disturbance of ceiling tiles may need wetting and bagging to control dust.
2. Demolition may require barriers and

- HEPA filtered exhaust. Pulling cable may require barriers. "Cubes" may be required in sensitive areas.
3. Sanding/drywall require dust collectors/ HEPA vacuums.
 4. Water soaked materials may grow mold if they are left more than three days and aerosolize their spores. Soaked materials shall be removed.
 5. Not flushing water lines may encourage bacteria if left stagnant more than 5 days. Flush all lines at least 5 minutes before re-use.
 6. Not capping pipes, including med gas, may allow entry or growth of debris/mold/bacteria. Cap pipes until installation.
 7. These types of activities pose special risks to our patients who may not be able to fight infection.

E. Interim Life Safety and Infection Control

Whenever construction modifies normal evacuation routes for fire, alternate plans must be in place.

1. The requirements for the documentation of infection control procedures overlap with Interim Life Safety.
2. Prior to the start of any construction activities each project must be reviewed for Interim Life Safety Measures and Infection Control Precautions.

3. In many cases, a formal Infection Control (ICRA) permit is required for each that details the exact precautions that are necessary.
4. Formal permits are required to be posted in public view, adjacent to the work activity/entry.

F. Barrier Standards

In order to assist compliance with the fire and infection control standards, contractors must erect and maintain appropriate fire and/or dust control barriers with regular pressure difference as listed below:

1. Dust/asbestos tight – negative to occupied areas
2. Entry/exits – equipped with tack mats
3. Debris carts – wipe downs/debris covered
4. Exhaust air – filtered negative air
5. Dust control – particulate monitoring
6. Pipes – capped until installed

Fire Protection

A. Response Procedures:

1. Fire Protection System Impairments
Fire detection and suppression systems are a critical element of the Hospital's Life Safety Program and must be maintained at all times.
2. Disarming a fire/life safety system or component(s) must be requested through the Plant Operator prior to any work on these systems including:

- sprinkler system
- heat and smoke detection systems
- electronic alarm and annunciation system
- all fixed fire extinguishing systems including, halon, carbon dioxide, wet or dry chemical systems.

B. Fire Protection System Disarming

1. The Plant Operator will re-enable the impaired points of the life safety system at the time specified on the request to disarm the system or eight hours, whichever is first.
2. If the construction personnel need to extend the impairment period beyond hours, they must contact the Plant Operator.

C. Prevention of False Fire Alarms

1. False fire alarms disrupt patient care and disturb our patients and their families.
2. The construction superintendent is responsible for reviewing all aspects of work to assess the potential for accidental activation of the fire alarm systems.
3. If there is reason to suspect that construction work could activate the system, the contractor must submit an impairment form so that the system can be taken off line to do the work.
4. Any costs associated with contractor caused false alarms will be passed along to the contractor --i.e. \$500 per event if alarm triggers a response from the Reno Fire Department

5. Interim Life Safety Devices

- Interim or temporary life safety devices must be put into construction areas to decrease the risk of fire and to provide added protection in the absence of all permanent devices. They include fire alarm pull stations, heat detectors, and fire extinguishers. These devices must be accessible at all times.
- Cover all smoke detectors in the area of hot work.
- Immediately replace interim life safety devices damaged during construction.

6. Penetration Sealing

- Ceiling tiles must be put back in place immediately but not less than the end of the day/shift whichever is first.
- When filling holes in floors, walls, trays, and ducts, use approved materials rated for the application with approved sealant appropriate to use/ location.
- The activity must be in compliance with the Barrier Management Program at all times.

D. In case of fire, the following procedure should be used:

- Rescue self/others
- Activate alarm/ summon help
- Confine fire and smoke by closing doors and openings
- Evacuate or if possible, extinguish the fire

E. Suppression Equipment Available

1. Fire extinguishing methods at Renown facilities include, but are not limited to:
 - a. Fire Extinguishers
 - b. Some portable fire extinguishers are of primary value on only one class of fire; some are suitable on two or three classes. None is suitable for all four classes of fire.
 - c. Class of Fire Extinguishers
Class A – Paper/Wood
Class B – Liquids/Grease
Class C – Electrical
Class D – Metal
2. Water
 - a. Fire hydrants/hose
 - b. Automatic Sprinkler System
 - c. Fire Response Vehicles
3. Gaseous Agents
 - a. Extinguishers
 - b. Fixed Systems
4. Carbon Dioxide (CO₂) is in many cases replacing Halon 1211 in the form of portable extinguishers where a clean extinguishing agent is required. CO₂ extinguishes fires primarily through oxygen depletion.
5. Foam
6. Every employee is responsible for understanding the type of suppression and associate alarm systems in their work area.
7. Detection Equipment Available
8. Numerous types of fire, smoke, and gas detectors are installed in Renown

facilities. Employees are responsible for understanding the type of detection and associated alarms in their work area.

F. Evacuation/ Emergency Procedures

All Renown facilities have specific emergency and evacuation procedures. If you are not sure as to your specific role or action, check with facility management prior to proceeding with any work.

Hot Work Standard/Procedure

A. Purpose/Scope

The Hot Work Standard/Procedure minimized the potential of fire or explosion in classified areas by requiring a Hot Work Permit. This applies but it not limited to:

1. open flame, welding, burning, or grinding within 75 feet of a classified or occupied area,
2. the use of non-intrinsically safe electrical tools and instruments in a classified area,
3. work on electrical circuits including the opening of explosion proof boxes or junctions boxes in a classified area,
4. the use of spark producing devices in a classified area,
5. hot work on portable and mobile containers which contain or have contained flammable or combustible materials,
6. impedance thawing,
7. stress relieving of piping and/or
8. the use of impact wrenches.

B. Hot Work Permit

Hot Work Permit is required for mobile heaters, open flame, stationary trucks, cranes and other mobile equipment operating within 10 feet or over of a classified or occupied area.

1. Hot Work Permits are valid for the day of the issue only! A separate Hot Work Permit must be obtained for any additional days.
2. Hot work conducted in areas not addressed by this standard/procedure (e.g. non-classified areas) may be performed under a Unit Work Permit. Applicable provisions of the Hot Work Standard/Procedure shall apply as appropriate.
3. Any Hot work Permits issued for operations or construction involving cutting, welding, grinding, or use of an open flame that are within 75 feet of a classified area shall require the verbal approval of the Supervisor.
4. Hot Work Permits must be posted on the job site where the hot work is taking place. They must be attached to the individual hot work devices such as welding units or acetylene tanks.

C. Objectives:

1. Ensure the work area is inspected and combustibles and flammables are isolated from the hot work.

2. Establish fire watches, when applicable.
3. Provide communication with all departments concerned.
4. Control how open flame or spark-producing equipment is used.
5. Formally document and communicate all hazardous conditions and special requirements of the work area.

D. Permit Initiation:

1. Permits may be initiated by anyone and will be done by the Plant Operator or other designated location.
2. At the discretion of local management, purchase orders or preventive maintenance may be used in lieu of completing a separate Work Permit, providing that all other provisions of the Work Permit Standard/Procedure are followed, (e.g., onsite communication, duration of permit, record keeping, etc.)

E. Responsibilities

1. Supervisor/Person requesting the permit:
 - a. Inspect the work area and adjacent areas for a distance at least 35 feet around the hot work site, including the other side of any wall or barrier and on lower floor levels, to which sparks or heat might spread.
 - b. Ensure the equipment and area have been properly prepared and are ready for the safe performance of work.
 - c. Ensure that lines to be demolished

- and/or removed are properly identified and marked.
- d. Ensure that all hollow spaces, cavities, or containers are tested and vented to permit the escape of air or gases prior to preheating, cutting, or welding.
 - e. Make necessary tests for flammable and/or other hazardous conditions immediately prior to the start of hot work or when work is suspended for more than 2 hours.
 - f. Show the Persons Doing Work the locations of the nearest communications equipment and applicable safety devices.
 - g. Check placement and condition of proper fire extinguishers and other safety equipment.
 - h. Inform fire watch of potential fire hazards.
 - i. List special precautions, as necessary.
 - j. Sign the permit after the above conditions have been met.
 - k. Ensure that the hard copy of the Hot Work Permit has been posted at the work location or with the person doing the work, if it cannot be posted at the job site.
 - l. Prevent an operation from being performed that has potential to cause the area or equipment to become unsafe while the Hot Work Permit is in effect. For example, do not allow lab samples to be taken

- while hot work is taking place.
 - m. Monitor the work as it progresses to ensure that the conditions of the Hot Work Permit are not changing.
 - n. Stop the work if a change occurs which creates an unsafe condition. Work shall not resume until a safe condition is restored.
 - o. Inspect and gas check the work area periodically.
 - p. Advise relief operators of any permit in effect.
 - q. If any process upset or emergency alarm causes the shutdown of work, re-inspect the work area prior to allowing work to be resumed.
 - r. Prior to permit closeout, inspect the work area and adjacent areas to determine that they are in a safe condition.
2. Plant Operator:
- a. Ensure that facility operations, construction or maintenance will not be adversely affected by the proposed work activities.
 - b. Notify the First-Line Supervisor (or their designee)/Construction Manager and receive their approval prior to issuing permit and starting hot work.
 - c. Sign the Hot Work Permit, certifying that the job is ready to proceed.
3. First-Line Supervisor:
- a. Ensure all participants in the Hot Work Permit process have fulfilled

- their duties and responsibilities.
- b. Be satisfied that the proper precautions for hot work have been taken.
4. Person Requesting the Permit:
- a. Read, understand, sign, and follow the conditions listed on the Hot Work Permit. (Fig. 2) Post the hard copy of the permit at the job site or with the person doing the work if it cannot be posted at the job site.
 - b. Advise other workers of any special precautions or conditions pertaining to the job.
 - c. Survey the work area to confirm safe work conditions. Know the location of the nearest telephone, fire alarm, pull station, emergency communication system, fire extinguisher, safety shower, first aid kit, etc., before starting work, and know how to use them.
 - d. Confine all sparks and slag as close to the work area as possible.
 - e. Be constantly aware of conditions in the immediate work area, and be ready to stop work and notify the Plant Operator if conditions change. Do not resume work without approval of the Plant Operator.
 - f. Clean up and secure the work area after completion of work each shift. At the end of the shift or upon completion of the work, whichever comes first, notify the

Plant Operator, return the permit to the Plant Operator or designated location, and sign the copy of record. If the job is incomplete and the person or crew temporarily leaves the unit, secure the work area and notify the Plant Operator or overhead page signals an "all clear."

- g. Strikers shall not be attached to clothing such as pant leg loops. Strikers shall be attached to the welding cylinders or carried in a toolbox or bag.
- h. When any alarm or emergency announcement is made stop all work, disconnect all electrical equipment, and turn off all gas cylinders. Do not resume any work until notified by the Unit Operator.
- i. Persons working in close proximity to any welding or cutting operations may not carry cigarette lighters, matches or any other flame-producing device.

5. Fire Watch:

Note: A dedicated fire watch is required for torch cutting, gas welding, arc welding, and grinding or as other conditions warrant.

- a. Observe an area of at least 35 feet around the hot work site, including the other side of any wall or barrier and lower floor levels, and maintain the area free of combustibles,

- tripping hazards, debris and swept clean.
- b. Hot work occurring within 35 feet of combustible materials requires a one-hour fire watch.
- c. All ceiling, wall and deck penetrations within 35 feet of the hot work must be tightly covered to prevent the passage of sparks
- d. Fire resistant shields must be used to protect combustible walls, ceilings and roofs
- e. If hot work is performed on any metal walls, partitions, ceilings or roofs, ensure that combustible materials are removed from the other side.
- f. If hot work on pipes or other metal is in contact with combustible walls, partitions, ceilings, or roofs, then the hot work shall not be undertaken. Special precautions may be deemed necessary, such as water hose and a full time fire watch.
- g. Have no other duties assigned while on watch.
- h. Understand and follow the conditions listed on the Hot Work Permit.
- i. Be trained in the use of the fire extinguishing equipment provided.
- j. Understand the alarms and where and how to activate them.
- k. Notify the Person Doing the Work if any sparks are not contained at the

- work area.
 - l. Sound alarm for assistance and extinguish any small fires started by sparks or slag.
 - m. Remain on the scene from the start until 30 minutes after the completion of all welding, burning, or grinding. Inspect the work area and adjacent areas to determine that they are in a safe condition prior to departure.
 - n. Hospital Security performs a fire watch from four to 24 hours after the day's work is completed. Time is dependent on the nature of the work.
 - o. After the hot work and fire watch are completed the person completing the fire watch must sign off of the permit. A copy of the permit must be submitted and kept on file in Security prior to work proceeding.
6. Safety Department Representative:
Shall provide an independent assessment of the work area and sign the permit for any work involving:
- a. Closed containers, such as a drum or tank, prior to the start of work
 - b. Welding, burning or grinding on any process piping
 - c. Any burning, welding or grinding inside a confined space
 - d. Welding, burning or grinding on lines or equipment within the

blinded boundaries of a confined space.

E. Special Considerations

1. Welding on equipment that has not been depressurized, blinded and purged will require a written procedure from the Engineering Department. This procedure shall include location, piping or equipment specifications, non-destructive examination, stress-relieving information, and any other procedure that is deemed necessary to ensure the job can be performed safely. This procedure will be approved by the First-Line Supervisor and Project Engineer.
2. When welding on rotating equipment, be sure the ground strap is as close to the area being welded as possible.

F. Hot Work in Confined Spaces:

1. Hot work in concealed or enclosed spaces requires a four-hour fire watch.
 - When arc welding is to be suspended (unattended for a period of 30 minutes or more), all electrodes must be removed from holders and carefully located so that accidental contact cannot occur. The machine must be disconnected from the power source.
3. When gas welding or cutting, the torch valves must be closed and the gas supply to the torch positively shut off at some point inside the confined area whenever the torch is not being used for

a substantial period of time (unattended for a period of 30 minutes or more).

Where practicable, the torch and hose must also be removed from the confined space.

4. When welding or cutting is being performed in a confined space, the gas cylinders and welding machines must be left outside the confined space.
 5. After welding operations are completed, the welder must mark the hot metal or provide some other means of warning other workers.
 6. Local exhaust and/or general ventilation must be adequate to keep the amount of toxic fumes, gases, or dust below maximum allowable concentrations or appropriate respiratory protection must be utilized.
- G. Duration of Permits/Permit Close Out Permits will be in effect until job completion but will not extend beyond the end of the shift in which the permits were issued.
- H. Variances
Any deviation from this standard requires written approval according to the variance procedure.

Hydrostatic Testing Standard/Procedure

A. Purpose/Scope

1. This standard/procedure establishes

minimum requirements for the protection of personnel and property during hydrostatic testing of process and pipe systems and pressure vessels.

2. Hydrostatic testing is performed to test temporary and permanent process piping systems, component parts of systems, and pressure vessels for leaks to determine whether or not the system will withstand the service loading without failure.

B. Objectives:

1. To define the appropriate sources of specifications and codes for the performance of hydrostatic tests.
2. To provide communication and coordination between all affected personnel.

C. Hydrostatic Testing Specifications

Hydrostatic testing shall be conducted in a manner consistent with the hydro test procedure package and shall meet the hydrostatic testing specifications in the ANSI or ASME Codes and Engineering Standards. Consult the company Engineering Department for the applicable codes and standards.

D. Responsibilities.

1. First line Supervisor:
 - a. The firstline Supervisor or Project Engineer responsible for accomplishing work that involves hydrostatic testing shall ensure the

- work complies with the appropriate hydrostatic testing specifications.
 - b. Prior to commencing any operations, a site-specific hydro test procedure shall be submitted to the responsible Engineer for review and to the first line Supervisor for approval.
 - c. Assure line/vessel is properly treated with corrosion inhibitor if it remains packed with hydro test fluid.
- 2. Person Requesting the Permit:
 - a. Verify that all routes of access to the hydro test area are restricted and are clearly marked with signs stating "Danger-Hydro testing in Progress."
 - b. Verify that the special precautions section of the Work Permit is filled out as described above.
- 3. Person in Charge of Hydro Test Crew: The person in charge of the hydro test crew, as a minimum, will check and verify to the first line Supervisor or Engineer that:
 - a. All equipment used for hydro testing shall be rated for the appropriate pressure rating for the test procedure.
 - b. All test instrumentation is capable of handling the pressures that are required for the test, is correctly attached to test system.
 - c. Pressure gauges shall have been calibrated within the last 30 days.
 - d. Chart recorders shall be calibrated at least every 90 days.

- e. Dead weight testers shall be calibrated at least every 12 months.
- f. All hoses are fully secured with tie-down devices capable of withstanding the forces used in the test.
- g. Verify that the pressure relief valves on the pump have been tested and certificated within the last 12 months and that they are capable of handling the pressures needed for the test.
- h. If the hydro testing is to be accomplished outdoors in cold temperatures, verify that the test medium will not freeze at the lowest temperature to be encountered during the test period and that the lines to the deadweight machine and the chart recorder have been filled with hydraulic oil.
- i. Verify that the structure and support of vessel or piping can support the dead load of the hydro test fluid.
- j. Assure proper spill prevention procedures are followed and containment is provided.

E. Procedures

Hydro test work shall be conducted under the following rules:

1. High pressure hose connections or hard piping shall be used for connecting any attachments to the hydro test system.
2. Hydro test headers shall be equipped with independent bleed-off points.
3. All flanges shall be properly bolted and

- torqued prior to starting the test.
4. No bolts may be tightened when there is more than 50% of hydro test pressure or 1,000 psi, whichever is less, pressure on the system being tested.
 5. No pipe-threaded connections on the test system may be tightened when there is any pressure on the test system.
 6. Temporary welds, such as hydro test headers to pipelines, shall be inspected and welded per the design specification and approved welding procedures.

Fired Heater Standard/Procedure

- A. This standard/procedure is for mobile equipment used to heat air and liquids outdoors. This includes air heaters that use ducting to move the warmed air.
- B. A direct fired heater has a heat source where flame has no shielding to prevent direct contact between the flame and the air being heated. Direct fired heaters shall not be used for or near facilities. The use of direct fired heaters for other areas, such as ships is highly discouraged and not allowed without permission from the responsible Supervisor.
- C. An indirect fired heater has a heat source where the products of combustion do not come into direct contact with air being heated.

D. Fired Heater Positioning Guidelines:

1. Mobile fired heaters within 10 feet of an occupied area are subject to the Hot Work Permit Standard/Procedure. A Hot Work Permit is also required if a heater is connected to a classified area regardless of distance.
2. Indirect fired heaters used more than 10 feet from an occupied area are not subject to the Hot Work Standard/Procedure. Indirect fired heaters placed closer than 10 feet from a structure require a Hot Work Permit.
3. All ducting linking the fired heater to a work site shall be flame resistant. Flame resistant material ducting contaminated with oil or other combustible material will not be used.

It is recommended that heaters be shut down for fueling.

- E. Fired heaters are required to have emergency shutdown procedures prominently posted on the exterior of the heater.
- F. Fired heaters shall either be equipped with a 20 lb. dry chemical fire extinguisher or have one available within 50 feet while in use.
- G. Review the wind direction relative to trucks, equipment and facility layout. Monitor the prevailing wind conditions so any potential sources of hydrocarbons are kept downwind of any potential ignition sources.

- H. Operators, technicians and others responsible for the fired heater and/or area in question shall check the heater and surrounding area at least once per 12 hour shift to make sure the area is free of any fire hazards such as gas, oil or fuel leaks. This inspection requirement applies whether or not a Hot Work Permit has been issued. Some facilities may require more frequent inspections; check with the responsible facility personnel before using heaters of any kind.

Confined Space Entry Standard/Procedure A.

Confined Space Entry Program

1. Confined spaces present potential severe hazards including oxygen deficiency, toxic materials, flammable materials, engulfment and hazardous energy.
2. Each contractor that performs work in a confined space must establish and maintain an effective space entry procedure that complies with OSHA standard 29 CFR 1926.21 (b) (6) and 1910.146 when applicable.
3. Contractors working in confined spaces must submit a copy of their company's confined entry procedure prior to the start of work.
4. Contractors must provide their own equipment required for safe entry including special rescue equipment and hazardous atmosphere monitoring equipment.

B. Purpose/Scope

The purpose of this standard/procedure is to establish and maintain a safe environment for personnel entering a confined space that meets the following criteria:

1. Is large enough and so configured that an employee can bodily enter and perform the assigned work;
AND
2. Has limited or restricted means for entry and exit; AND
3. Is not designed for continuous employee occupancy;
AND
4. Has one of more of the following characteristics:
 - a. Contains or has the potential to contain a hazardous atmosphere;
 - b. Contains material that has the potential for engulfing the entrant (i.e. sand, sludge, etc.);
 - c. Has an internal configuration such that an entrant could be asphyxiated by inwardly converging wall or by a floor which slopes downward and tapers to a smaller cross-section; or
 - d. Contains any other recognized serious safety or health hazard.

5. Entry into spaces meeting the criteria listed in items 1 through 3, but DO NOT meet any of the criteria listed in item 4 shall be executed utilizing the Unit Work Standard/Procedure. Examples of spaces that could fall under the Unit Work Standard/Procedure include inlet air plenums, soffits, process heaters after fuel gas is blinded and all other potential energy sources are isolated.
6. For purposes of the standard/procedure, a hazardous atmosphere is one which may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (i.e. to escape unaided from the workspace), injury, or acute illness from one or more of the following:
 - a. Flammable gas, vapor, or mist in excess of 10% of the LEL.
 - b. Atmospheric oxygen concentration below 19.5% or above 23.5%.
 - c. Atmospheric concentration of a toxic or hazardous substance which could result in a dose in excess of the Permissible Exposure Limit for the substance and which could subsequently cause death, incapacitation, impairment of self-rescue capability, injury, or acute illness.
 - d. Any other atmospheric condition that is immediately dangerous to life or health, i.e. poses an immediate or delayed threat to life or that would

cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from the space.

Note: Entry is defined as the breaking of the plane of the opening into the space by any part of the entrant's body.

C. Renown Confined Space Entry Program Permit Spaces

1. Boilers
2. Sewers
3. Elevator/dumbwaiter pits
4. Commercial equipment - washers/dryers
5. Clinical equipment
6. Electrical vaults

D. Permit Objectives:

1. Properly identify hazards
2. Institute appropriate controls, safeguards, and actions to protect personnel.
3. Coordinate all necessary safety permits and procedures including Hot Work and/or energy isolation.

E. Permit Initiation

Permits may be initiated by anyone and will be done at the appropriate control room or other designated location.

F. Contractor Requirements:

1. Contractors who will conduct entries into confined spaces as defines in this

- standard/procedure shall be informed of the elements included in the confined space Entry Standard/Procedure, the hazards identified with respect to the space, any precautions or procedures that have been implemented for the protection of employees in or near the confined space, and the procedures that will be utilized to coordinate the entry operations between various contractors and company personnel.
2. The contractor shall be debriefed at the time of closeout of the permit regarding any new hazards confronted or created during entry.
 3. Confined space entries that are not conducted within Company structures such as storm sewers, vaults, pits, fuel tanks, etc., may be executed using the Contractor's Confined Space Entry Program, provided that:
 - a. Company personnel will not be entering the confined space,
 - b. A written concurrence between the contractor and the Company Supervisor responsible for getting the work done, and the Company Supervisor responsible for the area, is signed prior to the start of the job, and
 - c. The Contractor's Confined Space Program meets or exceeds the requirements set forth by 29 CFR 1910.146. (This certification must be included in the written concurrence document.)

G. General Considerations:

1. When entry into a confined space is required, job specific procedures shall be followed. The procedure will outline the draining, blinding, cleaning, inspection and work to be performed. The detail of the procedure will be appropriate to the job. All involved departments should review this procedure before work begins. The Safety Department does not have to sign off on the procedure, but shall be copied on the approved procedure in ample time to review it before the Confined Space Permit is required.
2. Prior to entry, the contents and hazards of the confined space should be identified. Whenever possible, tanks, vessels and piping shall be cleaned by water washing, flushing or steaming. Cleaning by hand should be limited to final clean-up unless no other cleaning process is feasible.
3. After a confined space has been depressurized, cleaned, isolated and flushed as applicable it shall be tested prior to the complete removal of any hatch, man-way, etc. A confined space is safe to open (not enter) if the concentration of flammable vapors is less than 50% of the lower explosive limit and provisions are made to vent the remaining vapor or gas to an appropriate location outside the skid or work location.

4. After a space has been opened, a "Do Not Enter" sign or tag shall be placed over all potential entry points indicating that the space is not safe for entry. This sign or tag shall remain there until a Confined Space Entry Permit has been issued. At that time, a "Safe to Enter with Restrictions" sign or tag shall be hung.
5. Adequate ventilation shall be maintained in the confined space throughout the entry operation. All ventilation equipment shall be bonded and grounded. If a blower type fan is used it must be located in such a manner that it will not introduce contaminants such as gas or toxic vapors. In addition, it should be placed in such manner that it will not prevent egress from the space. This will be verified by the Safety Personnel and monitored by the Standby Person.
6. An area immediately outside the confined space shall be made available for decontamination as necessary.
7. Retrieval systems shall be used whenever an entrant enters a confined space as covered in this section unless the retrieval system would increase the overall risk of the entry or would not contribute to the rescue of the entrant. Safety Department personnel will determine when retrieval systems are appropriate.

8. Any hot work in a location that may impact the confined space shall be approved by all parties who have authorized and signed the Confined Space Entry Permit. Any hot work performed within the blinded boundaries of a confined space shall be approved and signed off by the Safety Department and shall be referenced to the Hot Work Standard/Procedure under the hot work in a confined space section. A test of the atmosphere where the hot work is to take place shall be performed by the Safety Department and so documented on the Hot Work Permit.

H. Responsibilities:

1. Unit Operator/Issuing Authority
 - a. Ensure all pneumatic, hydraulic, thermal, electrical and mechanical energy sources have been isolated in accordance with the Energy Isolation Standard/Procedure.
 - b. De-pressure drain and purge all enclosures and process lines. Open all drain lines, gauge glasses, level control transmitters, bridles and similar equipment attached to the enclosure while purging, washing and cleaning the equipment. If the device cannot be cleaned, it shall be isolated from the enclosure.
 - c. Ensure appropriate "Do Not Enter" or "Safe to Enter" signs or tags are posted at all possible entry points.

- d. Endorse all permits affecting the Confined Space Entry Permit.
 - e. Prevent an operation from being performed, which has the potential to cause the area or equipment to become unsafe while the permit is in effect.
 - f. Monitor the work as it progresses to ensure that the conditions of the permit are not changing.
 - g. Communicate hazards to the Entry Supervisor and ensure that all personnel working under the permit are aware of the hazards present.
 - h. Ensure there is a proper handover to the oncoming Unit Operator during shift change. Note: Renewal of the permit is required every day (every 24 hours).
 - i. Test for oxygen concentration, flammability, and other hazards, in that order, prior to entry.
 - j. Ensure positive ventilation has been established.
 - k. List any other precautions and sign the permit.
 - l. Stop the work if a change occurs which creates an unsafe condition. Work shall not resume until a safe condition is restored and the Confined Space Entry Permit is revalidated.
2. Plant Operator:
- a. Ensure that the facility operations, construction and maintenance

activities will not be adversely affected by the proposed work activities.

- b. Hold copies of the permits until the work is ready to start.
- c. Debrief the contractor at the time the permit is closed out to ascertain whether any new hazards were confronted or created.
- d. Check the box on the permit accordingly and if new hazards were confronted or created either note them on the hard copy being filed or attach a description of the hazards to the permit for filing.
- e. Notify the Unit Operator when the permit is closed out. 3.
First-Line Supervisor:
 - a. Ensure the Space is safe to enter, e.g., safe-out procedures are complete and up to date and the Energy Isolation Standard/Procedure has been followed.
 - b. Sign the permit before entry is made.
 - c. Ensure that the Authorized Entrant, Standby Person(s) and Entry Supervisor have received the required training and can perform their assigned duties.
 - d. Verify the confined space entry is complete and ready to close. This includes ensuring that all personnel have exited the space and all equipment has been removed.

4. Entry Supervisor:

- a. Inform the Authorized Entrants of the hazards identified with respect to inside or outside the space, any precautions or procedures that have been implemented for the employees in or near the confined space, and procedures that will be utilized to coordinate entry operations between companies.
- b. Know hazards that may be faced during entry, including the mode, and signs or symptoms of exposure. Remain informed of hazards that may be present due to other work being performed in the vicinity of the confined space.
- c. Verify that rescue services are available and that the means for summoning them are operable.
- d. Verify by checking that the appropriate entries have been made on the permit, tests specified by the permit have been conducted, and procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- e. Remove unauthorized individuals who enter or who attempt to enter the confined space.
- f. Whenever responsibility for confined space is transferred and at intervals dictated by the hazards and operations conducted in the space,

determine that entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.

- g. Terminate entry and cancel the permit when the operations covered by the permit are completed or when a condition that is not allowed under the entry permit arises in or near the space.
- h. Suspend all operations and evacuate the confined space any time the rescue team becomes unavailable.
- i. Ensure that employees working as part of the confined space entry crew received training in their individual job responsibilities as well as the hazards associated with the confined space entry work.
- j. The Entry Supervisor shall be readily available to the confined space entry location.

Note: A determination shall be made during the pre-job planning phase of the confined space entry as to who will serve as the designated Entry Supervisor. Logical choices depending upon the complexity of the job, anticipated duration, number of entrants, etc., would include the Maintenance Supervisor, Project Engineer, Facility Supervisor, Lead or Unit Operator, Lead Maintenance Technician, or Contract Work Leader.

5. Authorized Entrant:

- a. Verify Energy Isolation as applicable.
- b. Read and understand the confined space Entry Permit and check with the Unit Operator before initial entry of the confined space. Log in and notify the Standby Person upon each entrance and exit of the confined space.
- c. Know the hazards that may be faced during entry including the mode, signs, or symptoms of exposure.
- d. Properly utilize the equipment provided for testing or monitoring, ventilation, communication, lighting, barricading, access, and personal protective clothing.
- e. Check all safety equipment prior to entry, e.g. respirators, PPE, etc.
- f. Communicate with the Standby Person as necessary to enable the Standby Person to alert Authorized Entrants of the need to evacuate the space.
- g. Alert the Standby Person whenever an Authorized Entrant recognizes any warning sign or symptom of exposure to a dangerous situation or the Authorized Entrant detects a prohibited condition.
- h. Exit from the confined space as quickly as possible whenever an order to evacuate is given, a warning sign or symptom of exposure is recognized, a prohibited condition is

detected, or an evacuation alarm is activated.

- i. Clean up and secure the work area after completion of work each shift. If the job is incomplete and the person or crew temporarily leaves the unit, the Authorized Entrant must notify the Unit Operator. Stop all work when an alarm or Emergency Announcement is made and exit the confined space. Do not resume any work until notified by the Unit Operator.
6. Standby Person:
- a. Perform no other duties that might interfere with the Standby Person's primary duty to monitor and protect the authorized entrants.
 - b. Read and understand the Confined Space Entry Permit.
 - c. Remain outside the confined space main entryway at all times during the entry operations. The Standby Person shall not enter a space until they are relieved by another Standby Person. Once relieved, they may become an entrant.
 - d. Continuously maintain an accurate log of all persons in the confined space.
 - e. Warn unauthorized persons away from the space. Advise unauthorized persons that they must exit immediately if they have entered the space, and advise the

- Entry Supervisor and the Authorized entrants if unauthorized persons have entered the authorized space.
- f. Be knowledgeable of and be able to recognize potential hazards that may be faced during the entry including the mode, signs or symptoms of exposure. Be aware of the potential behavioral effects of hazard exposure of entrants.
 - g. Post hard copies of permits related to the confined space entry and the "Safe to Enter with Restrictions" tag at the main entry of the confined space. All entrances deemed safe must have "Safe to Enter with Restrictions" tags.
 - h. Ensure that all authorized entrants are in compliance with the requirements stated on the Entry Permit.
 - i. Monitor activities inside and outside the confined space to determine if it is safe for the persons making entry to remain in the space.
 - j. Maintain effective and continuous contact with persons inside the confined space, and have a means of communication with the Unit Operator.
 - k. Order persons to immediately evacuate the confined space when a prohibited condition is detected, behavioral effects of hazardous exposure are detected, a situation

outside the confined space is detected that could endanger entrants, or if the standby person cannot safely and effectively perform all the required duties.

- l. Summon rescue and other emergency services as soon as persons inside need assistance to escape from the confined space.
 - m. Properly use any non-entry rescue equipment provided and perform any other rescue and emergency duties without entering the confined space.
 - n. At the end of the shift or upon completion of the work, whichever comes first, return the permit to the Control Room or designated location, sign the "copy of record" and be debriefed.
7. Safety Personnel:
- a. Verify that the space has been properly prepared.
 - b. Test for oxygen content, flammability, toxic materials and/or other hazards prior to entry.
 - c. After the permit is signed by the First-Line Supervisor, make the first entry into the enclosure, if necessary, to complete the safety inspections.
 - d. Coordinate any special precautions and sign the Confined Space Entry Permit.
 - e. Endorse all Hot Work Permits which might affect the Confined Space Entry Permit.

- f. Decide what restrictions will be imposed on the permit.
 - g. Ensure the appropriate procedures are followed and documented when re-classifying a confined space.
 - h. Determine whether or not a retrieval system or other emergency response equipment is required at the job site.
 - i. Ensure that emergency services are available.
8. Atmospheric Monitoring:
- a. The space being entered must be tested for oxygen content, flammable gas, toxic gasses and other potential contaminants.
 - b. During the tests all forms of forced air ventilation must be shut down.
 - c. The following test sequence will be followed while performing atmospheric monitoring.
9. Test Sequence:
- a. Oxygen Content
Entry into a space with less than 19.5% oxygen will require a SCBA or airline respirator with an escape bottle. Entry into an atmosphere with an atmosphere containing more than 23.5% oxygen is not allowed.
 - b. Flammable Gas
No entry will be made into any space where atmosphere contains more than 20% of the lower explosive limit (LEL). Flammable gas samples should be taken from points within

the space remote from openings. Where there are liquids or sludge present the samples should be taken within six inches of the surface as well as at the top of the space and intermediate points.

Note: In Company facilities, no work is permitted in a confined space after initial cleanout unless LEL is 3% or lower.

10. H₂S Entrance into spaces where the concentration of H₂S is greater than 1ppm shall be in accordance with the H₂S Standard/Procedure.
11. Other Toxic Contaminants
 - a. Other potential contaminants must be tested for as deemed appropriate by the nature of the confined space and the anticipated hazards. These can include, but are not limited to: pH, NORM, toxic gasses other toxic substances.
 - b. Periodic monitoring shall take place every 12 hours at a minimum. More frequent testing may be required as indicated on the Confined Space Entry Permit.
12. Duration of Permits/Permit Close Out
 - a. Permits will be in effect until the job is complete but will not exceed past the end of the shift during which they were issued.
 - b. If a change in any of the conditions listed on the permit results in an unacceptable condition, work must

cease and the permit becomes invalid. Prior to the re-initiation of work activities the Confined Space Entry Permit must be revalidated by the Entry Supervisor and the Plant Operator.

- c. If at any time during the permit Rescue or Emergency Services become unavailable, all work in the confined space shall be suspended and all occupants shall evacuate the confined space. After Emergency Services become available, work may continue as long as the confined space conditions have not changed, and the space is re-evaluated prior to resuming work by the Entry Supervisor and Plant Operator.

Variations: Any deviation from this policy requires a written approval as outlined in the established variance procedure.

Energy Isolation Standard/Procedure

A. Purpose/Scope

1. The Energy Isolation Standard/Procedure (EIS) establishes the minimum requirements for providing worker safety while servicing or performing maintenance on equipment that must be isolated to prevent the unexpected release of energy. This standard/procedure ensures that proper controls are maintained to prevent personal injury or damage to property or

the environment. (See OSHA CFR1910.47)

Note: All opening and/or blinding operations must be done in accordance with the Process Opening/Blinding Standard/Procedure.

2. This standard/procedure does not cover:
 - a. Normal production operations performed on a routine or regular basis provided that the energy source is under the sole control of the person performing the work. Examples of normal operations include but are not limited to: replacing pressure gauges and pilots, balancing Make-Up Air Units, changing orifice plates, changing PSVs, and venting through a valve.
 - b. Hot tap operations if continuity of service is essential and shutdown is impractical.
 - c. Work on cord connected electrical equipment where startup is controlled by unplugging of the equipment, and is under the control of the person doing the work.
3. Documents Used:
 - a. Energy Isolation List (EIL; either on Master Card or separate sheet)
 - b. Worker Log (either on Master Card or separate sheet)
 - c. Safe Out Procedures (as required)

B. General Requirements

1. The Energy Isolation Standard/Procedure is based on a systematic set of procedures

to ensure that energy is properly isolated before work and remains isolated during work.

2. All workers are required to do three things to satisfy this Energy Isolation Standard/Procedure before starting work. This is required for both the Normal and the Lockbox lockout.
 - a. Review the Energy Isolation List.
 - b. Install or have the Designated Worker install the appropriate worker locks or tags.
 - c. Sign in on the Worker Log.
3. Energy isolation shall address the points listed below and shall contain specific instructions for isolating all forms of energy associated with equipment. This may be done by using existing Safety Standards, SOPs, manufacturer's instructions, generic procedures or special procedures.
 - a. Preparation for shutdown.
Identification of all energy sources and means for their control.
 - b. Shutdown of the equipment or process
 - c. Isolation of the equipment or process from the energy source.
 - d. Application of energy Isolation Devices.
 - e. Release of all stored or residual energy.
 - f. Verification of the energy isolation prior to start of work

4. In non-process facilities without designated "Unit Operator," the worker is responsible for ensuring that the equipment is properly isolated. The worker shall install a personal or group lock as required. Only one lock per worker or work group is required.
5. The operations lock will be considered the control lock and shall be the first lock on and the last lock off. Personnel working on isolated equipment shall be protected by either a personal lock or a group lock, in addition to the control lock. In process facilities, there will usually be two locks on all isolation locations: the operations control lock and the worker's personal lock. In cases where the Operator is performing the work there only has to be one lock, but it must be the worker's personal lock.
6. If isolation device is protecting more than one job covered by Separate Master Cards/ EILs, then a lock or tag for each job must be placed on this common isolation device. Control can then be maintained on one job even though work has been completed on another.
7. If an energy isolating device is incapable of being locked out, a tag must be attached at the same location that a lockout device would have been attached, e.g., a manual block valve can have the handle removed and a tag installed at the handle attachment location.
8. Whenever tags are used in lieu of locks, the Master Card number shall be recorded on

the stubs placed into the Master Card with the other associated documents.

9. It is permissible to temporarily re-energize equipment in order to ensure proper repair and adjustment before returning to service. Check with the operator before re-energizing any equipment. The re-energization of the equipment shall require the Operator to oversee the following:
 - a. Ensure that it is safe to re-energize this equipment and that other equipment or systems are not adversely impacted.
 - b. Clear the equipment of tools and materials
 - c. Remove employees from the equipment area.
 - d. Remove the lockout or tagout devices as necessary.
 - e. Energize and proceed with testing and adjustment
 - f. De-energize all systems, isolate the equipment from the energy source and re-apply lockout tagout devices.
10. Make sure that vehicles cannot be operated when maintenance is being performed. Some methods to make vehicles safe are: remove keys; disconnect battery; set brakes and block wheels; block moving hydraulic pumps or pistons/rams; and block any raised truck bed that may drop or move when hydraulic pressure is bled off.

11. It is the duty of each person working on equipment to ensure their own safety by keeping their locks or tags on the energy source while working on equipment unless a group lock has been installed for their work group and is under the sole control of the group's designated worker.
12. If a lock is readily identifiable to the worker or group performing the work, then a tag does not need to be installed with the lock. However, if a lock is not identifiable to the worker or group doing the work, then a Danger tag shall be attached to the lock with the name of the worker or group.
13. In addition to these energy isolation requirements, all energy isolation activities at power generation and distribution facilities or on associated distribution lines are also regulated by CFR 1910.146 subparts R & V. Procedures used to comply with these standards can be found in a separate document located at the Central Power Station (CPS). Prior to performing any energy isolation activities at the CPS or on associated distribution lines, additional training and the authorization of the CPS Supervisor is required.

C. Responsibility

1. Persons/Supervisors doing a lockout/tagout are responsible for the proper shutdown and isolation of process equipment for maintenance and construction work.
2. Operators, maintenance technicians and construction personnel shall attach proper lock-out devices, locks and tags and shall complete the appropriate sections of the Master Card, the Energy Isolation List and the Worker Log, as required.
3. Maintenance and construction crafts shall sign-in on the Worker Log when installing their locks and tags; they also shall sign off the Worker Log when removing their locks and tags. The "Designated Worker" for groups shall be indicated by a check mark next to their name on the Worker Log.
4. Operations First Line Supervisors have the responsibility for the proper preparation of process equipment for maintenance and ensuring a coordinated safe out procedure is in place and properly implemented. The Supervisor shall conduct periodic inspections to ensure the Energy Isolation Standard/Procedure is being followed.

D. Types of Energy Isolation

There are two types of Energy Isolation: Normal Lockout/Tagout and Lockbox Lockout/Tagout.

1. Normal Lockout/Tagout:
 - a. Each worker is responsible for locking and/or tagging each isolating device. The Operations First Line Supervisor will determine when a group lock is used. A group lock is justified based upon the following factors:
 - b. Complexity of equipment
 - c. Equipment is considered complex when:
 - i. A permit is required to perform the work
 - ii. A group is composed of more than one craft
 - iii. Numerous employees performing maintenance
 - iv. Cumbersome and burdensome to use personal locks
 - v. Physical size and extent of the equipment
 - vi. Inaccessibility of the energy isolating devices
2. Lockbox Lockout/Tagout:
 - a. The Lockbox Lockout is almost identical to the Normal Lockout/Tagout except that the workers lock-up in a lockbox the unique key(s) to the energy isolation locks and tag stubs from devices that cannot be locked. In this way, workers do not have to install a lock or tag on every energy isolation device, just one lock on the lockbox. This ensures the safety of the persons doing the work during special situations or large jobs.

- b. A "Lockbox Lockout/Tagout" situation will be determined by the Operations First Line Supervisor and shall be designated on the Energy Isolation List. In this case, the Designated Operator will be the sole person responsible for the installation and removal of uniquely keyed locks and tags on all devices. The key(s) for the unique keyed locks and tag stubs for devices that cannot be locked will be placed in a Lockbox that is then locked by individuals and groups wanting to perform work under the Lockbox/ Lockout/Tagout. By locking up the unique key(s) and tag stubs, it is not possible to re-energize equipment without the workers first removing their lock from the lockbox.

E. Lockout Procedures

Procedures for both types of energy isolation are listed below.

Note: Nothing in this standard/procedure shall preclude anyone from adding their own personal lock and tag to any device if they so desire.

Prior to initiating work:

1. The worker or Designated Worker, contacts and coordinates with the Plant Operator.
2. Person/supervisor initiating lock/tagout:
 - a. Isolates equipment per appropriate procedures.
 - b. For all work:
 - 1) Applies multiple lockout device.
 - 2) Applies a control lock and tag if

the device is lockable or just a tag if not lockable.

- 3) Verifies all energy is restrained or otherwise brought to a zero energy state.
 - 4) Verifies isolation by attempting to start from every location.
 - 5) If the work to be performed is on or near electrical circuits or electrical equipment, then a qualified electrician must verify that the circuit is de-energized.
- c. Records, initials and dates all devices on the Energy Isolation List/Master Card when each device is isolated.
 - d. For a lockbox lockout, put in a lockbox the unique key(s) to the energy isolation locks and tag stubs from devices that cannot be locked, and use a multi-locking device with an operations log and tag on the lockbox.
 - e. Verifies with the Designated Worker that all personnel performing work have signed in on the Worker Log. 3. Worker or Designated Worker:
 - a. Reviews Energy Isolation List with the Unit Operator.
 - b. Verifies isolations done per the energy isolation list.
 - c. Applies personal or group locks or tags to all energy isolation devices. For a Lockbox Lockout, applies the personal or group lock to the lockbox.

- d. Signs in on the Worker Log. The Designated Worker will verify that all personnel in their group understand the energy isolation and have signed in on the Worker Log. The Designated Worker shall be indicated by a check mark next to their name on the Worker Log.
4. The Operations First Line Supervisor is responsible for ensuring that all conditions of Energy Isolation Standard/ Procedure have been followed.
5. Shift or Crew Changes:

In all cases where one worker is leaving and a new worker arriving, a lock shall remain in place on the energy isolation device. The lock can be either a personal lock or a craft lock.

 - a. Outgoing Unit Operator
 - i. Communicates to the oncoming i. the types and locations of energy isolation devices and
 - ii the hazards involved if these devices are removed.
 - b. Outgoing Worker or Designated Worker Communicates to the incoming Worker or Designated Worker:
 - i. the types and location of energy isolation devices and
 - ii. the hazards involved if these devices are removed.
 - c. Signs out on the Worker Log. The Designated Worker shall verify that

all personnel in their group that do not intend to stay on the job have also signed out on the Worker Log.

- i. Replaces their personal locks and/or tags with craft locks if the in-coming worker is going to install their own locks or leaves locks and/or tags in place if the in-coming worker is going to use the same locks.
- d. In-coming Worker or Designated Worker:
 - i. Verifies isolations with the Unit Operator according to the Energy Isolation List.
 - ii. Installs personal or group locks and/or tags on all energy isolation devices if the original locks were removed or obtains keys or combination from alternate if original locks remain in place.
 - iii. Sign in on the Worker Log. The Designated Worker shall verify that all personnel in their group understand the energy isolation and have signed in on the Worker Log. The Designated Worker shall be indicated with a check mark next to their name on the Worker Log.
- e. When work is complete: Worker or Designated Worker:
 - i. Notifies Plant Operator that Work is completed.
 - ii. Remove personal and group

- locks (and craft locks if installed) and/or tags.
 - iii. Signs out on the Worker Log. The Designated Worker shall verify that all personnel in their group have also signed out on the Worker Log.
 - iv. Notifies the Worker alternates across shift or crew change that it is no longer safe to work as the energy isolation devices have been removed.
- f. Plant Operator
- i. Verifies that all Worker locking devices and/or tags have been removed and all personnel have signed out on the Worker Log.
 - ii. Removes all control locks & tags.
 - iii. Dates and initials Energy Isolation List.
 - iv. Ensures personnel and equipment are clear and it is safe to place the equipment in service.
 - v. Returns equipment to service.
 - vi. Ensures the Master Card, Energy Isolation List and the Worker Log are filed per the facility's administrative requirements.

F. Means of Energy Isolation

The recommended means of isolating for electrical, pneumatic, hydraulic, and other energy sources are as follows, in order of preference:

1. Electrical Energy Sources
 - a. On electrical equipment or circuits with a potential of 48 volts or higher, the electrical supply will be turned off and locked out in accordance with the following:
 - i. Opening circuit breakers to provide energy isolation.
 - ii. If the work to be performed is on or near electrical circuits or equipment, then once the power is off, a qualified electrician shall confirm that there is no power to the load side of the breaker. The operator will then apply a lock and tag and fill out the Energy Isolation List.
 - iii. Electrical equipment rated above 480 volts shall be isolated by a qualified electrician during safe outs.
 - b. When the tagout option is used for electrical isolation such as a circuit breaker that cannot be locked out, a qualified electrician shall isolate the energy source by:
 - i. Removal of an isolating circuit element, or
 - ii. Racking out a breaker.
 - c. The following wiring disconnect procedure may be used when it is not possible to physically lockout an electrical isolation device:
 - i. The electrician disconnecting the

- power source will test the circuit to assure it is de-energized. The wires will be disconnected, properly terminated and tagged so they do not constitute a hazard.
- ii. The electrician shall tag the disconnect switch with a DANGER tag and log it into the EIL.
 - iii. The operator and worker(s) shall attach a tag on the outside of the MCC cubicle or disconnect switch just as they would install a lock if the switch was locked out.
 - iv. Under no circumstances will wiring be reconnected if there is another person's tag in place. Each person must remove their own tag just as they would remove their own lock, as specified under Control of Locks/Tags and Keys.

Note: Treat all disconnected neutral conductors, ground conductors and bonding jumpers as energized.

2. Pneumatic, Hydraulic Energy Sources
 - a. Disconnection- Physically disconnecting, i.e., removing part of the system and isolating both open ends.
 - b. Double block and bleed.

- c. Single block valve. Automatic valves should not be used as isolation valves unless they are rendered inoperable and brought to a zero energy state.
3. Mechanical Energy Sources
- Isolation can be with locks, chains, pins, blocks, cribbing, mechanical disconnection or by removal.

Note: For all devices not capable of being locked out, tagging will be acceptable if it offers personnel safety equivalent to a locked out condition. An example of this is removing the handle from a manual block valve and tagging the valve at the handle attachment location.

Control of Locks, Tags and Keys:

A. Types of Locks

1. Control Locks: Locks used by Operations personnel and commonly referred to as "Operations Locks" or "Operators' Locks." These Operations Control Locks shall always be the first lock on a multiple lockout device and the last lock off in process facilities- this protects the process or the equipment. There are two types of Control Locks used by Operations personnel; they are: a. Uniquely Keyed Locks: a set of locks that has only a single key that is controlled by a Designated Operator. Use of these locks is mandatory for Lockbox Lockout situations and

in instances where the Operator actually performs the work on the equipment. These locks may be used for Normal Lockout situations if desired.

- b. Operator "Craft" Locks: keyed or combination locks used by Operators and each Operator has a key or knows the combination to the locks. These locks may be used for Normal Lockout situations as the first lock on to secure equipment- see the following craft locks description for further details. An Operator craft lock should also be used during a Lockbox Lockout situation to lock the Lockbox. This procedure ensures that the Operator has control over access to the key for the uniquely keyed locks.
2. Personal Locks:
Locks used exclusively by an individual for his or her own personal protection when performing work. Only the individual controls the keys to these locks. At Renown all locks used for personal protection must be keyed.
3. Group Locks:
 - a. Locks used by specific crews, crafts, contractors, departments or other groups working under the same work permit, which afford a level of protection equivalent to that of using personal locks. Group locks

may be either keyed or combination. Group locks are controlled by a Designated Worker and eliminate the need for each individual worker to install personal locks. When there is more than one worker in a craft or work group, then one worker may be selected as the Designated Worker responsible for the coordination and integrity of the energy isolation for the group. The Designated Worker shall install locks, maintain worker accountability and coordinate with the Unit Operator and the persons in their group. Procedure for lockouts, and crew or shift changes are the same whether for one individual worker or a Designated Worker for a group of individuals working together.

- b. The Designated Worker is required to account for all affected employees before the equipment is released from the lock out status utilizing the Worker Log.

4. Craft Locks:

- a. Locks may be used by a particular craft that may be keyed alike (or combination) and all members of the craft may have a key (or the combination) to the locks. Craft locks may not be the only lock used for worker protection. A separate personal lock or group lock must

be installed when working on the equipment. The craft lock can be left on the equipment when the craft wants to keep the equipment locked out, but do not intend to work on it personally. Examples are during shift changes or when waiting on parts or materials. The craft lock keeps the equipment from being unintentionally energized. The craft lock does not act to protect the worker; only the worker's personal lock or a properly used group lock protects the worker.

b. Crafts locks shall be identified as follows:

- Operations Control Lock
Orange
- Electrical
Yellow
- Mechanical
Brown
- Instrumentation
Green
- Projects/Contractors

White w/company name 5.

Lockbox:

A Lockbox is a lockable box into which the unique key(s) from a set of uniquely keyed locks is inserted. Each worker then places their lock on the lockbox to prevent the key from being removed while they are working on the equipment. Thus, workers only need to install one lock on the lockbox instead

of a lock or tag on each energy isolation device. Lockbox is located in Duty Control.

6. Lock or Tag Removal:
 - a. Removal of another person's lock or tag can only be authorized by the Supervisor.
 - b. The operations First Line Supervisor shall assume full responsibility and ensure that the procedures below are followed:
 - i. attempt to contact the individual identified with the lock or tag, and if unsuccessful,
 - ii. contact the Supervisor of the individual identified with the lock or tag,
 - iii. ensure the safety and integrity of the equipment to be reenergized before removing the lock or tag,
 - iv. remove the lock or tag;
 - v. notify the worker before he/she resumes work at the facility that their personal lock, group lock, or tag has been removed.

Defeated Safety Devices Standard/Procedure

A. Purpose/Scope

The purpose of this standard is to establish a procedure to authorize, record and monitor all defeated safety devices by means of a master log.

B. Objectives

Ensure adequate communication during times when safety devices are inoperative.

C. Defeated Safety Device(DSD) Log

A master log shall be maintained in the designated facility location specifying date, tag number, device defeated, how defeated, reason and authorization.

D. Responsibilities:

1. Person/Supervisor initiating the work:

- a. At the beginning of each shift, initial the master log to acknowledge awareness of the devices being defeated and length of time out of service.
- b. Shall notify Supervisor, defeat or give permission to defeat the safety device, and record in the master log as soon as possible.
- c. Attach a "Danger Do Not Operate" tag to the device or control panel. The tag shall identify the defeated device, reasons why defeated, operator's name, and date. When instrumentation readouts or indicators are affected, a "Danger Do Not Operate" tag shall also be posted at those locations.
- d. Inform the persons doing the work on the defeated device of its status.
- e. Ensure all safety devices are returned to normal operating condition prior

to completing the job.

- f. Record the date when the safety device was returned to service on the Master Log.
2. Plant Operator:
Be aware of the status of any defeated safety device and how it may affect the overall operation. Log and report to next shift.
 3. Operations First Line Supervisor:
 - a. Initial the Master Log daily to indicate awareness of the devices being defeated and the length of time out of service.
 - b. Be responsible for operating with a safety device that has been defeated. Ensure that impact to process safety as well as personnel safety and health is acceptable.

E. Duration

1. The Operations Superintendent's signature shall be required on the Master Log if a device is defeated for 90 days, and will be required every 90 days thereafter.
2. The Safety Officer's signature shall be required on the master log after 120 days and every 120 days thereafter.

F. Special Considerations

1. Continuous operation of a facility with a defeated fire suppression/detection system/alarm system such as Halon, gas detection, etc., requires the approval of the Director.
2. Jumpers that impact safety devices shall be recorded on the master defeated safety device log.

Note: Continuous operation is defined as any 12-hour period from the time the system became inoperable.

Structural Penetration Standard/Procedure

A. Purpose/Scope

1. This standard/procedure shall be followed to minimize potential safety hazards when it is necessary to make penetrations in building floors, walls, partitions, soffits, ceilings, and roofs.
2. This standard/procedure applies throughout all Company operations.

B. Objective

Institute safeguards, appropriate controls, and actions to protect personnel and equipment.

C. Responsibilities

1. The person/supervisor initiating the work, or other person responsible for the area, shall review and approve the exact location of all structural penetrations permitted by a Work Order, Job Order,

Unit Work Permit, or Hot Work Permit. The permit or work order shall be specific in stating that a penetration is to be done.

2. The Supervisor responsible for the work shall ensure that appropriate as-builts are made

D. Special Considerations

1. Inspection methods should be used to ensure that there are not any obstructions, such as conduits or structural members, in the area to be penetrated.
2. All insulated metal clad walls, panels and ceilings shall be cut or penetrated by sawing, drilling or grinding. The use of a torch or similar hot cutting equipment is prohibited.
3. Steel floors or deck plates shall not be penetrated with a torch or other means of hot cutting, without providing clear access to subfloor or soffit areas. Cold cutting procedures shall be employed when access to subfloor or soffit is not possible.
4. Penetrations of fire-rated walls, floors, and ceilings will be sealed in accordance with Engineering Standards so as to maintain the rated fire integrity of the barrier. For additional information, consult the Facility Department or Project Contractor.

5. If a structural member is to be cut or penetrated, the Facility Engineer or Structural Engineer shall evaluate the work to confirm that structural integrity is maintained.

Excavating, Trenching, & Drilling Standard/ Procedure

A. Purpose/Scope

1. This standard/procedure defines administrative requirements that shall be followed to authorize excavation, trenching, burying, pile driving, conductor and VSM drilling, non-routine snow or ground removal, and any other operations which could damage covered or buried cables and utilities.
2. This work must be coordinated with the Facilities Project Manager who will determine the potential impact to the hospital.
3. Routine snow removal and maintenance grading in established areas such as roadways, parking lots, and around facilities shall not require an Area Civil Work Request.
4. Non-routine snow removal is defined as first time snow removal in areas which are not normally kept open for daily traffic and which are not obviously clear of above ground pipes, cables, or hazardous obstructions.

B. Objectives

1. Ensure adequate communication between all personnel prior to excavation, digging, trenching, shoring, drilling, or clearing. HVOSM guidelines must be followed.
2. Institute a formal, consistent, and documented procedure.
3. Ensure surveyed as-builts and formal documentation of all changes are completed.

C. Permit Initiation

1. The Company First Line Supervisor or Project Engineer responsible for getting the work done will initiate the Area Civil Work Request (ACWR).
2. A readable drawing specifically showing all underground work to be done shall be attached to the ACWR, when initiated.
3. The Permit Initiator shall attach the completed ACWR to the appropriate Work Permit.

D. Responsibilities

1. Seven days prior to digging in the street surrounding the hospital, the contractor must contact the local Utility Locate Service.
2. The inspection and approval signatures required are outlined below and shall be obtained in the order in which they are shown on the form.

3. Electrical Representative:
 - a. Shall verify that no electrical or control cables will be affected by the proposed activity.
 - b. Shall verify that all electrical or control cables within 15 feet of the project area are clearly marked for location and depth.
 - c. Shall be responsible for verifying that any energized cables within 15 feet of the project area are de-energized, unless a central shop or facility electrician is on-site for the work activity.
4. Communications Representative:
 - a. Shall verify that no communications cables will be affected by the proposed activity.
 - b. Shall verify that all communications cables within 15 feet of the project area are clearly marked for location and depth.
5. Facility Engineering Representative:
 - a. Shall verify that no pipelines, liners, or other utilities will be affected by the proposed activity.
 - b. Shall review that all buried pipelines, liners, or other utilities within 15 feet of the project area are clearly marked for location and depth.
6. Surveying Contractor:
 - a. Shall verify that the project area has been marked properly, if applicable, and that there are not conflicts with buried items in the area.
 - b. Shall coordinate as-built scheduling

with the contractor.

- c. Shall ensure that the drawings/
manuals are updated and kept
current.

7. Safety Department:

Shall review and add any safety
precautions.

8. First Line Supervisor:

- a. Shall review all precautions taken to
ensure there are no conflicts in the
project area.
- b. Shall sign the ACWR, acknowledging
their familiarity with the work and
the steps taken to avoid unplanned
contact with existing utilities.
- c. Shall ensure all remarks and
expectations have been addressed.

9. Once all the signature above have been
obtained, the Company Representative
directly responsible for the work and the
Person Doing the Work will sign the
ACWR, The ACWR form shall be kept on
site at all times during the work and a
copy shall be attached to the
appropriate Work Permit.

10. If underground utilities are disturbed, the
contractor must immediately contact the
Renown Facilities Project Manager.

E. Special Considerations

1. For excavations six feet or more in depth,
perimeter barricades, guardrail systems, or
covers shall be provided to protect
personnel. Open drilled holes (VSM's,
module pilings, conductors, etc.,) shall be

- covered with plywood covers at least 1 1/8 inches thick with handles, cones, and appropriate warning markings.
2. Walkways shall be provided where employees or equipment are required to cross over excavations. Guardrails shall be provided where walkways are 6 feet or more above lower levels.
 3. No power equipment excavation operation shall be permitted within three feet of any buried cable, or other utility unless it has been de-energized and physically located by hand excavation methods.
 4. No power equipment excavation operation shall be permitted within three feet of any buried pipeline, pit/curtain liner or other non-energized utility unless it has been physically located by hand excavation methods.
 5. The Safety Department shall evaluate all excavations deeper than four feet for confined space entry requirements.
 6. The walls and faces of all excavations in which personnel are exposed to danger from moving ground shall be guarded by shoring, sloping or an equivalent means in accordance with applicable regulation.
 7. The Fire Department shall be notified by Operations of any excavation which may impede access to facilities. Alternate traffic routing shall be provided where possible.

8. Prior to backfilling a trench or excavation where new utilities or items are installed, the surveying contractor shall be contacted. The trench shall be as-built showing location, depth, and description of buried items before backfilling is allowed.
9. All buried items, utilities, etc., shall be entered into the appropriate manual for documentation.

F. Utility Shutdowns

1. Construction personnel are not permitted to shut down any utility system.
2. All utility shutdowns must be requested through the Hospital Project Manager and/or the Duty Operator.
3. Utility Shutdowns are required for work on the following systems:
 - a. Electrical including UPSs
 - b. Plumbing (domestic water and waste systems)
 - c. Medical Gas and Vacuum
 - d. Infection Control chilled water
 - e. Steam or heating hot water
 - f. Pneumatic Tube
 - g. Natural Gas
 - h. Heating, Ventilation, and Air-Conditioning
 - i. Security- HALO, CCTV, Duress, radios, Wanderguard
 - j. Communication- intercom (sector and greater) P.A., telephone, fire alarm

- k. Computer- Any server or greater
- l. Other- see Project Manager

Hot Tapping and On-line Plugging of Equipment in Service Standard/Procedure

A. Purpose/Scope

1. This standard/procedure establishes requirements that will be followed to authorize hot tapping or plugging of operating equipment or lines that are currently in service, after it has been determined that the continuity of service is essential and shutdown is impractical.
2. Penetration of a line with a hot tap machine, whether in service or safely purged, is subject to this standard/procedure.

Note: In addition to the listed requirements below, all hot tapping and on-line plugging of equipment in service will be done in accordance with the Unit Work or Hot Work Standard/Procedures.

B. Objectives:

1. Ensure adequate communication between the Operating Department and maintenance or construction personnel prior to performing the hot tap.
2. Institute a formal, consistent, and documented standard/procedure.

C. Hot Tap Package Review and Permit Initiation 1.
To perform a hot tap or plugging of on-line equipment, a written package will be required from engineering.

This package shall include location, piping, or equipment specification, non-destructive examination, stress relieving information, and any other procedure deemed necessary to ensure the job can be performed safely. It will also include completed copies of the bit travel calculation sheets, wall thickness information, connection and block valve hydro test charts. The package will be approved by the First Line Supervisor, the next higher level Supervisor, Safety Department, and an Engineering representative.

2. A Hot Work Permit will be initiated and a copy of the Hot Tap Package will be attached to the Permit.

D. Responsibilities

1. Plant Operator:
 - a. Issue the appropriate Permit in accordance with the appropriate Standard/Procedure.
 - b. Verify that the location of the hot tap is correct.
2. First Line Supervisor:

Ensure all participants in the hot tapping process have fulfilled their duties and responsibilities.
3. Plant Operator:

Ensure that facility operations, construction and/or maintenance will not be adversely affected by the proposed work. Sign the Permit.

4. Person Doing the Work:
 - a. Ensure the equipment to be worked on is ready and that the work can proceed safely.
 - b. Confirm completion of hot tap bit travel calculations.
 - c. Ensure there is adequate clearance for the hot tap machine.
 - d. Ensure that the pressure and temperature of the line to be tapped does not exceed the rated pressure and temperature of the hot tap machine.
5. Safety Department:
 - a. Verify that reviews and approvals were obtained for the hot tap procedure and that the connection valve was hydro tested.
 - b. Check the work area for potential hazards and add any special precautions to the permit.

E. Variances

Any deviation requires written approval as defined by the Variance Procedure.

Off Site/Off Campus/Exterior of Building

Transportation

A. Vehicle Safety:

1. Vehicle safety covers all aspects of vehicle operation, including observing speed limits, passing safely, obeying traffic signs, using seatbelts and safety glasses, yielding right-of-way to emergency

vehicles and heavy equipment, remaining at the scene of an accident, following restricted travel and foul weather procedures.

- a. Drivers shall observe all posted speed limits and drive according to conditions.
- b. Citations shall be issued for traffic violations. The violator's Supervisor shall be notified and disciplinary action may result.
- c. Passengers and drivers in any vehicle equipped with seatbelts are required to wear them while operating or riding in that vehicle. Seatbelts are also mandatory while operating a private vehicle if it is used in the course of company business.
- d. Headlights shall be illuminated whenever the vehicle is being driven.
- e. All vehicle accidents shall be investigated. If persons are involved in an accident, they shall immediately notify the Security Department, or local authorities and their supervisors as soon as possible.
- f. A valid driver's license is required to operate any vehicle or equipment on a lease that would require such a license to be operated on public roadways. If requested by Security you must provide your license within 24 hours of the request.
- g. Personnel are not allowed to ride on/in truck beds.

h. Drivers must be competent and have a valid and current drivers license. 2. Safe Driving Rules:

- a. Observe all road signs. Construction signs may change frequently, and traffic patterns may have been altered.
- b. Do not follow too closely.
- c. Signal your intentions allowing other drivers time to react.
- d. Keep your turn signal lights, brake lights, headlights, and windows clean.
- e. Be alert to the restrictions imposed by heavy clothing.
- f. Keep the vehicle in good condition. Report all deficiencies to Facilities Department.
- g. Perform a radio check prior to departure from campus.
- h. Vehicles shall slow down and be prepared to stop when approaching emergency vehicles displaying flashing lights.

B. Travel by Helicopter

1. The helicopter pilot is in complete charge of the aircraft and passengers at all times during flight operations.
2. Smoking is not permitted in the helicopter or the landing pads.
3. Keep clear of the helipad until the helicopter has landed. The helipad is not to be used as a staging area for passengers or equipment.

4. When boarding or leaving the helicopter, passengers are not to enter the rotor blade arc until the pilot has signaled that it is safe to do so.
5. Under no circumstance shall any passenger walk under the tail rotor or tail boom. When it is necessary to walk around the helicopter, the trip is to be made within sight of the pilot and around the front of the aircraft only.
6. Keep a firm grip on lightweight articles when walking to and from a helicopter.
7. Keep the seatbelt fastened at all times unless otherwise directed by the pilot.
8. Do not change seats or move around while airborne without the pilot's permission.
9. Any injured person shall be accompanied by someone other than the pilot, who shall be responsible for patient care and monitoring during the flight.
10. Passengers shall receive an emergency briefing prior to flight.
11. Do not distract the pilot with unnecessary conversations or actions.
12. Never throw anything out of the helicopter because of possible damage to rotors.
13. Passengers shall not be aboard the aircraft during refueling.
14. Wear appropriate warm clothing and footwear for the weather, or transportation may be denied.

D. Travel by Fixed Wing Aircraft

1. Wait to approach the aircraft until notified by crew to do so.
2. Wear appropriate warm clothing and footwear for the weather, or transportation may be denied.
3. Listen to the preflight briefing and be familiar with the emergency procedures.
4. Wear appropriate hearing protection.
5. Smoking is prohibited on all flights.
6. All travelers on flights are subject to security procedures used by all commercial air carriers.

Appendix

Contract Work Leader
Construction Project Manager
Construction Superintendent
Designated Worker
Facility Supervisor
First Line Supervisor
Hospital Operations Group
Hospital Project Manager
Issuing Authority
Lead Unit Operator
Operator Crew
Outgoing Worker
Project Engineer
Project Manager
SPOC
Standby Person
(Work) Supervisor

Other Terms

Security Dispatch
Plant Control Room
Fire Control Center
Work Permit
Hospital or Department Safety Coordinators

Glossary ACWR: Area

Civil Work Request ANSI: American

National Standards Institute Appointed:

Assigned specific responsibilities by

the employer or the employer's representative.

Approved: Approved for a specific purpose, environment, or application described in a particular standard/procedure requirement. Suitability of equipment for a specific purpose may be determined by a nationally recognized testing laboratory such as Underwriters or Factory Mutual.

Authorized: Appointed by a duly constituted administrative or regulatory authority.

Barricade: A structure set up across a route of access to obstruct the passage. Equipment used as barricading devices are: manhole covers, railings with toe board, etc.

CFR: Code of Federal Regulations

Classified area: Facilities where hydrocarbons are handled, processed, or stored are classified according to specifications set forth in the NFPA National Electric Code and API Recommended Practices.

You should know that an area classification extends 10 feet beyond the exterior wall or roof of a building, fan exhaust, vent, low point drain, high point vent or flanges.

From the National Electrical Code, 1993:

Class I, Division 1. A Class I, Division 1 is allocation : (1) in which ignitable

concentrations of flammable gases or vapors can exist under normal operating conditions; or (2) in which ignitable concentrations of such gases or vapors may exist frequently because of repair or maintenance operations or because of leakage; or (3) in which breakdown or faulty operation of equipment or processes might release ignitable concentrations of flammable gases or vapors, and might also cause simultaneous failure of electrical equipment.

Class I, Division 2, A Class I, Division 2 is a location: (1) in which volatile flammable liquids or flammable gasses are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in the case of abnormal operations of equipment; or (2) in which ignitable concentrations of gases or vapors are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operation of the ventilating equipment; or (3) that is adjacent to a Class I, Division 1 location, and to which ignitable concentrations of gases or vapors might occasionally be communicated unless

such communication is prevented by adequate positive-pressure ventilation from a source of clear air, and effective safeguards against ventilation failure are provided.

Cold cutting: The cutting of any line with a Wachs saw, powered hacksaw, or any other device, which is non-sparking.

Cold tapping: The drilling of a line or equipment after it has been depressured, blocked, and opened to atmosphere.

Combustible fluids: Fluids with a flash point at or above 100° F.

Copy of record: The copy of safe work permits that the Company requires to be filed for a specified period of time.

Designated Worker: A worker who oversees or leads a group of servicing/maintenance workers. For non-process facilities, the Designated Worker is responsible for the implementation of the EIS and coordination with all workers in the group. For process facilities, the Designated Worker is responsible for coordination of the EIS with the Unit Operator and all workers in the group.

Direct-fired heaters: Open flame contained within a portable device with a fuel source used for heating. This includes salamanders, blow torches, natural gas and LP gas heaters.

Duty Operator: Assigned staff in Renown Control Room for each shift.

Energy isolation device: A device capable of isolating the energy source from a worker.

Energy isolation list: A form used to identify and record all devices used to isolate potential sources of energy prior to servicing or performing maintenance on any equipment or machinery.

Energy source: Electrical circuits, hydraulic systems, pneumatic systems, gravity systems, mechanical systems, chemical reactions and storage systems capable of producing energy.

Fire zone: An enclosed area covered by one zone of a fire or gas detection system

Flammable fluids: Fluids with a flash point below 100° F.

Flash point: The minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid within the vessel as specified by appropriate test procedure and apparatus.

Group: A number of individuals working under a designated employee. More than one craft can work together as a group if the energy isolation procedures are under the responsibility of the designated employee. A group is not a number of individuals working separately under different Master Cards/EILs.

Hot tapping: A method of adding a branch connection to a pressurized line without removing the line from service. The hot tapping procedure includes the attachment weld, hydrostatic test, and drilling of the pipe or other equipment.

Indirect fired heater: A contained fire heated medium, normally fan assisted, used for area heating. This includes kerosene heaters, catalytic heaters, and boilers.

Intrinsically safe: A condition in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air.

Isolation procedures: Isolation procedures contain instructions for isolating all forms of energy associated with equipment for the protection of personnel during servicing and maintenance procedures.

LEL: Lower Explosive Limit

Lock-out: The placement of a lock on an energy isolating device to ensure the energy source and equipment being controlled cannot be operated. Locks used must also positively identify their user.

Lock-out device: A mechanism which provides a positive means of control and accommodates multiple locks.

Master Card: An envelope used to log information, retains stubs from all two-part tags associated with locks and tags, and provide the most current status of process and other equipment that has been secured. It is an envelope with an Energy Isolation List printed on one side and Worker Log form printed on the other. It is always maintained in a location central to the process or equipment under control. A separate Master Card or EIL shall be completed for each job.

Means of egress: A continuous and unobstructed way of exit travel from any point in a building or structure to a public way. Means of egress consist of three parts: the way of exit access, the exit, and the way of exit discharge.

NEC: National Electrical Code

NFPA: National Fire Protection Association

On-line plugging: On-line plugging includes operations to stop flow in existing process equipment and/or piping. For example, placing an in-line stopple.

Qualified: A person who by reason of training, education and experience is knowledgeable in the operation to be performed and is competent to judge the hazards involved.

Safety device: Any operational device that safely controls the release of pressure, temperature, liquid levels, flow, etc., and protects the integrity

of the equipment, preventing catastrophic failures.

Shift: For the purpose of Safety Handbook, the term "shift" refers to a daily work period of 8 hours or 12 hours, depending on the specific Company job/role.

Tag-out devices: A prominent means of warning and it's attachment device, which must be substantial enough to prevent inadvertent or accidental removal. Tag-out devices must be non-reusable, attached by hand, self-locking, and capable of withstanding no less than 50 lbs. pull.

Trained: Knowledgeable in a specific subject material through lectures, testing, hands-on activities, results documented.

UL: Underwriter's Laboratory

Worker log: A form used to record all individuals working under an energy isolation.

Zero energy state: A condition in which all potential sources of energy are eliminated.

Applicable Policies and Procedures

All contractors and sub-contractors shall be familiar and comply with all of the policies listed below prior to the start of work. It is the responsibility of the contractor or sub-contractor to obtain the information from the policy and procedure binder kept in the Facility Department.

Emergency Contact Numbers

For Hospital emergencies..... 982 -6666
Maintenance and Security 982 -7777
Central Plant 982 -5686

Call 911
for emergencies "off-site"
(non-hospital) Renown properties.