



CONFINED SPACE PROGRAM

Pursuant to 29 CFR § 1910.146
[Permit-Required Confined Spaces]

**NEW MEXICO STATE
UNIVERSITY**

Las Cruces, New Mexico

ENVIRONMENTAL,
HEALTH & SAFETY

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NEW MEXICO STATE UNIVERSITY

CONFINED SPACE PROGRAM

1.0 PURPOSE

- 1.1 This program contains requirements for practices designed and implemented to protect New Mexico State University (NMSU) employees from the hazards of entering and conducting operations in confined spaces such as sewers, storage tanks, utility tunnels or other confined spaces as identified by NMSU in accordance with definitions established by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.146.

2.0 SCOPE

- 2.1 This program is applicable to all NMSU students, faculty and staff that are required by the nature of their job to enter vessels or enclosures that are considered confined spaces under the definitions listed below.
- 2.2 Branch campuses and satellite facilities are required to implement the practices and procedures outlined in this plan including the Confined Space Pre-Entry Checklist and the Confined Space Entry Permit prior to conducting confined space entry operations. Confined spaces shall be considered permit-required confined spaces until the information obtained from the Confined Space Pre-Entry Checklist demonstrates otherwise.
- 2.3 NMSU facilities which may be categorized as permit-required confined spaces may include, but are not limited to the following areas:
 - 2.3.1 Specified areas of the service tunnel system
 - 2.3.2 Boilers, ducts, and flues at the Central Utilities Plant (CUP)
 - 2.3.3 Transformer vaults
 - 2.3.4 Manholes (Sewer, Water and Electrical)
 - 2.3.5 Enclosed tanks

3.0 DEFINITIONS

- 3.1 **Acceptable Entry Conditions** - means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

- 3.2 **Attendant or Stand-by-Person** – An individual stationed outside one or more permit-required confined spaces that monitor the entrants and the conditions in the space.
- 3.3 **Blanking or Blinding** - means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate. Double block and bleed means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.
- 3.4 **Confined Space** – Defined by OSHA 29 CFR 1910.146 as any space that:
- 3.4.1 Is large enough and so configured that an employee can bodily enter and perform work;
- 3.4.2 Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and/or
- 3.4.3 Is not designed for continuous human occupancy.
- 3.5 **Confined Space Entrant** – The individual entering the confined space.
- 3.6 **Confined Space Entry Permit** – An authorization and approval in writing that specifies the location and type of work to be done, which certifies that all existing hazards have been evaluated by the entry supervisor, and necessary protective measures have been taken to ensure the safety of each worker entering a confined space (see Attachment A).
- 3.7 **Emergency** – Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger the entrants.
- 3.8 **Engulfment** – The surrounding and effective capture of a person by a liquefied or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system, or that can exert enough force on the body to cause death by strangulation, constriction or crushing.
- 3.9 **Entrapment** – A confined space that has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or by a floor which slopes downwards by inwardly converging walls, or by a floor which slopes downwards and tapers to a smaller cross-section.

- 3.10 **Entry** – Occurs when any part of the entrant’s body breaks the plane of the entry access.
- 3.11 **Entry Supervisor** – The person (such as the foreman, shop or division supervisor) who authorized, and in most instances, supervises entry into a permit-required confined space.
- 3.12 **Hazardous Atmosphere** – Any atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to do self-rescue, injury or acute illness from:
- 3.12.1 Flammable gases at concentrations greater than 10% of the lower flammability limit (LFL);
 - 3.12.2 Airborne combustible dust at a concentration that meets or exceeds its lower explosive limit (LEL);
 - 3.12.3 An oxygen content less than 19.5% or greater than 23.5%;
 - 3.12.4 An airborne concentration of a substance that exceeds its permissible exposure limit; or
 - 3.12.5 Any other atmospheric condition that is immediately dangerous to life and health.
- NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, section 1910.1200 of this Part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.
- 3.13 **Hazardous Energy** – Any energy source (e.g. electrical, mechanical, hydraulic, pneumatic, chemical, thermal or the sudden release of stored energy) that could cause injury or death to an employee while servicing or repairing a piece of machinery.
- 3.14 **Isolation** - is the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; isolation (lockout / tagout) of all sources of energy; or blocking or disconnecting all mechanical linkages.
- 3.15 **Hot work** – Any assigned task that introduces an ignition source into a confined space (e.g. welding, cutting, brazing or soldering).

- 3.16 **Lockout / Tagout** – The control of all hazardous energies within a system prior to performing service on the system according to OSHA 29 CFR 1910.147, Control of Hazardous Energy (Lockout / Tagout) Standard.
- 3.17 **Non Permit-Required Confined Space** – A confined space that does not contain, or with respect to atmospheric hazards, have the potential to contain, any hazard capable of causing death or serious physical harm. NOTE: Permit-required confined spaces may be reclassified to non permit-required confined spaces after all potential safety and health hazards have been eliminated.
- 3.18 **Oxygen Deficient Atmosphere** - means an atmosphere containing less than 19.5 percent oxygen by volume.
- 3.19 **Oxygen Enriched Atmosphere** - means an atmosphere containing more than 23.5 percent oxygen by volume
- 3.20 **Permit-Required Confined Space** – A permit-required confined space is a confined space that has one or more of the following additional characteristics:
- 3.20.1 Contains, or has the potential to contain, a hazardous atmosphere.
- 3.20.2 Contains a material that has potential for engulfing an entrant.
- 3.20.3 Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a small cross-section.
- 3.20.4 Contains any other recognized serious safety or health hazard.
- 3.21 **Personal Protective Equipment (PPE)** – Equipment that will help prevent accidents and personal injury. PPE includes hardhats, eye protection, face shields, protective footwear, respirators, aprons, gloves, and full body suits, as necessary, dependant upon the hazards.
- 3.22 **Prohibited Condition** - means any condition in a permit –required space that is not allowed by the permit during the period when entry is authorized.
- 3.23 **Rescue Service** - means the personnel designated to rescue employees from permit spaces.
- 3.24 **Retrieval System** - means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit-required spaces.

4.0 **PROGRAM COMPLIANCE**

- 4.1 Due to the potential for serious injury and/or death, all students, faculty and staff are required to comply with this program. Failure to comply with the provisions of this program could result in disciplinary action up to and including discharge.

5.0 **DUTIES & RESPONSIBILITIES**

- 5.1 Environmental Health & Safety (EH&S) shall:
- 5.1.1 Provide training and maintain training records for the Confined Space Entry Program to individuals who are authorized by their department to make entry into any confined space.
 - 5.1.2 Manage the permit-required confined space entry program
 - 5.1.3 Maintain a comprehensive listing of both non permit and permit-required confined spaces for the main University.
 - 5.1.4 Determine initial classification of confined spaces.
 - 5.1.5 Review and evaluate effectiveness of the Confined Space Entry Program, audit work operations and documentation using retained canceled permits and revise the program as necessary to ensure that employees participating in entry operations are protected from permit space hazards.
 - 5.1.6 Investigate and document all accidents or near misses reported as a result of a confined space entry or an aborted entry attempt.
 - 5.1.7 Revise the plan as needed. Examples of circumstances requiring the review of the permit space program are:
 - 5.1.7.1 Any unauthorized entry of a permit-required space,
 - 5.1.7.2 The detection of a permit space hazard not covered by the permit,
 - 5.1.7.3 The detection of a condition prohibited by the permit,
 - 5.1.7.4 The occurrence of an injury or near-miss during entry,
 - 5.1.7.5 A change in the use or configuration of a permit space, or
 - 5.1.7.6 Employee complaints about the effectiveness of the program.
 - 5.1.8 Provide guidance for the proper selection and use of appropriate air monitoring equipment, respiratory protection and personal protective equipment to meet the requirements of this program.

- 5.2 Department of Fire & Emergency Services (DFES) will provide emergency response functions for the University, including confined space rescue.
- 5.3 University Police will provide crowd and traffic control during any emergency as requested.
- 5.4 Building Managers having facilities containing permit-required confined spaces, as specified in Attachment C-2, shall have the following duties:
 - 5.4.1 Notifying EH&S of all permit-required confined space entries in advance to ensure proper preplanning and procedural compliance.
 - 5.4.2 Inventory and identify all potential confined space work areas or facilities under their control. Notify EH&S of any space not listed on Attachments C-1 and/or C-2.
 - 5.4.3 Assure that warning signs are posted immediately outside of entrances to permit-required confined spaces, and that such signs are secured.
 - 5.4.4 Ensure employees who are required to enter those areas are trained. Records include employee name, birth date, department, date, topic, and trainer. Documentation of all training sessions must be retained by or sent to EH&S.
 - 5.4.5 In addition, the department shall provide the proper protective equipment when such equipment is necessary to protect the health and safety of the employee.
 - 5.4.6 Ensure that all permit-required confined space entry equipment is inspected and maintained.
 - 5.4.7 Enforce program compliance.
- 5.5 Entry Supervisors shall have the following responsibilities:
 - 5.5.1 Entry supervisors shall be EH&S personnel or a departmental safety officer designated by EH&S. He/she shall adhere to all requirements of the Confined Space Program and supplemental entry procedures.
 - 5.5.2 Initiate pre-planning for all permit-required confined space entries.
 - 5.5.3 Conduct employee pre-entry briefing and planning sessions and will provide hazards awareness information and comply with documentation procedures.
 - 5.5.4 Inspect all pertinent permit-required confined space entry equipment.

- 5.5.5 Perform hazard evaluation and control.
 - 5.5.6 Verify that all hazards have been identified and eliminated or controlled.
 - 5.5.7 Complete Permit-Required Confined Space Entry Permit and verify that all precautions and pre-entry procedures have been fulfilled prior to entry.
 - 5.5.8 Authorize and cancel any entry permits. Terminate entry and cancel permits in the event conditions within the space change or entrants show signs of over-exposure conditions or other conditions that cannot be verified.
 - 5.5.9 Report program violations to their immediate supervisor. Report all accidents or near misses as a result of a confined space entry or an aborted entry attempt.
 - 5.5.10 Assure that unauthorized people do not enter the confined space during the time that authorized entry is in progress. If an unauthorized person is located in a confined space, NMSU Campus Police shall be called to enforce trespass prohibitions and;
 - 5.5.11 Assure that original entry permits are filed with EH&S upon completion or termination of a Permit-Required Confined Space Entry.
- 5.6 Each and every employee is responsible for observing the permit required confined space entry procedures and duties established in this program.
- 5.6.1 Authorized Entrants shall:
 - 5.6.1.1 Observe all permit-required confined space entry procedures;
 - 5.6.1.2 Attend confined space entry training and demonstrate the knowledge necessary to conduct confined space entries safely;
 - 5.6.1.3 Understand the emergency procedures in case of an accident in a confined space;
 - 5.6.1.4 Report any deficiencies or malfunction of equipment to a supervisor;
 - 5.6.1.5 Under no circumstance enter a confined space that is suspect of having a non-respirable atmosphere, even to rescue a fellow employee;

- 5.6.1.6 Inspect and use permit-required confined space entry equipment as per the manufacturer's recommendations;
 - 5.6.1.7 Immediately exit a permit-required confined space whenever ordered to do so by an attendant or whenever a hazardous condition is detected or perceived; and
 - 5.6.1.8 Report program violations to their immediate supervisor.
- 5.6.2 Attendants shall:
- 5.6.2.1 Maintain verbal contact with (or have other suitable means of communications for high noise areas) and keep an accurate account of permit-required confined space entrants;
 - 5.6.2.2 Prevent unauthorized entry and ward off intruders;
 - 5.6.2.3 Remain in the vicinity of the permit-required confined space opening(s) at all times;
 - 5.6.2.4 Order the entrants to evacuate the permit-required confined space, if required to leave the immediate vicinity of the space;
 - 5.6.2.5 Remain alert for external and internal hazards;
 - 5.6.2.6 Immediately order the evacuation of the permit-required confined space and prevent re-entry, if a hazardous condition is detected or perceived;
 - 5.6.2.7 Have a positive means to summon emergency assistance within a timely manner to the work site (defined by OSHA as within 4 minutes) and provide emergency information to on-scene emergency response personnel;
 - 5.6.2.8 Have suitable and appropriate rescue and extrication equipment available; and
 - 5.6.2.9 Report program violations to their immediate supervisor.
- 5.6.3 Attendants may (as appropriate and prudent);
- 5.6.3.1 Monitor multiple permit-required confined space entries, so long as the openings are in close proximity, and/or

5.6.3.2 Perform multiple duties in the vicinity of the permit- required confined space, so long as a high level of entrant safety can be maintained.

5.6.4 Outside Contractors: Confined space entries involving outside contractors shall be pre-planned and coordinated by the contractor's job site supervisor, the University project manager and EH&S. Contractors shall be responsible for performing their own monitoring functions, providing employee training, and be capable of retrieval functions, including having their own rescue equipment. Training records and verification of all documentation shall be accessible to NMSU EH&S at any time.

6.0 IDENTIFICATION OF CONFINED SPACES

6.1 A list of all confined spaces at the University is maintained by EH&S (see Attachments C-1 & C-2). Departments must survey their workplace to determine if confined spaces, both non-permit-required and permit- required as defined by OSHA, are present in areas under their administrative control. Areas not identified on Attachments C-1 & C-2 must be reported to EH&S. Typical confined space hazards include atmospheric, engulfment and entrapment hazards and hazardous energies, including areas or processes that must be locked out in accordance with the University's Control of Hazardous Energy Program (Lockout/Tagout).

6.2 Each confined space will be classified by EH&S as a permit-required or non-permit-required confined space (see Attachment B). Departments must work with EH&S to ensure the list is complete. Where practical, signage will be utilized to identify all confined spaces. Employees that encounter potential non-permit or permit-required confined spaces not listed on Attachment C-1 & C-2 must notify EH&S to review and classify the space.

6.3 An area-specific alternate Entry Plan has been developed to address entry into the Heat Distribution Steam Tunnels on Main Campus (see Attachment D). Departments with similar situations may develop alternate entry plans with the assistance and approval of EH&S.

7.0 CONFINED SPACE HAZARDS

7.1 Completion of the pre-entry checklist may determine that a space presents no real danger for employees. However, until the space has been evaluated and tested, it shall be assumed to be confined and potentially dangerous. Once a space has been identified as confined, the hazards that may be present within the confined space must be identified. Before an employee enters a permit-required space, contact EH&S. EH&S will test the internal atmosphere with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee, who enters the space, or that

employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing. Confined space hazards can be grouped into the following categories:

- 7.1.1 Oxygen-Deficient Atmospheres - An atmosphere containing less than 19.5% oxygen shall be considered oxygen-deficient.
- 7.1.2 Flammable Atmospheres - A flammable atmosphere is generally the result of flammable gases, vapors, and dust mixed in certain concentrations with air, or an oxygen-enriched atmosphere (oxygen concentration greater than 22%).
- 7.1.3 Toxic Atmospheres - Toxic atmospheres may be present within a confined space as the result of one or more of the following:
 - 7.1.3.1 The toxic vapors can remain in the atmosphere due to poor ventilation.
 - 7.1.3.2 The work conducted in the confined space can generate toxic atmospheres, including welding or brazing with metals capable of producing toxic vapors, painting, scraping and sanding.
 - 7.1.3.3 Toxic vapors produced by processes near the confined space may enter and accumulate in the confined space.
- 7.1.4 Mechanical and Physical Hazards - Mechanical and physical hazards may include rotating or moving mechanical parts or energy sources that can create hazards within a confined space.

8.0 **PREVENTION OF UNAUTHORIZED ENTRY**

- 8.1 The University will take precautions to prevent unauthorized entry into confined spaces. The primary means of deterrent will be through locks and/or signage and/or training. Outside contractors working on the campus will be notified of confined spaces by the authorizing department prior to commencement of projects. An attendant or stand-by person will prevent unauthorized entry during a permit entry event. In special situations, appropriate barricades and/or banner tape will be utilized to identify and isolate confined space areas.
- 8.2 Access to heat distribution tunnels is controlled by sign-out accountability roster at Central Plant (see Attachments D & E). Access from other entry points is gated and restricted.
- 8.3 Entry into non-permit-required confined spaces shall be controlled by the NMSU Shop or Department Supervisor responsible for that area or work project.

8.4 Permits - When a permit-required confined space must be entered, a permit shall be completed and authorized by EH&S or their designated representatives prior to entry of the confined space. This permit shall serve as certification that the space is safe for entry. The permit shall contain the date, the location of the space, and the signature of the person providing the certification.

8.4.1 A permit shall not be authorized until all conditions of the permit have been met.

9.0 TRAINING

9.1 Before initial work assignment begins, employees who are required to work in permit-required confined spaces must be provided proper training. EH&S provides this training for NMSU and documents comprehension with written test scores and classroom discussion. The instructor ensures that employees have acquired the understanding, knowledge, and skills necessary for the safe performance of their duties. Supervisors must ensure that all existing, new and transferred employees receive training and information that is commensurate with their assigned job duties prior to working in and around all confined spaces.

9.2 Affected Employees Training Requirements shall include:

9.2.1 General training prior to assignment,

9.2.2 Refresher training when assigned duties change,

9.2.3 Changes to confined spaces that may present hazards not covered in previous training, and

9.2.4 Refresher training when the supervisor feels that there are inadequacies in the employee's knowledge or use of required procedures.

9.3 Authorized Entrant Training Requirements shall include:

9.3.1 Hazards associated with permit-required confined space entry, including information on the mode, signs, symptoms and consequences of exposure;

9.3.2 Proper use of equipment required for entry, including atmospheric monitoring, ventilation, PPE, lighting equipment, barriers/shields, safety equipment for entry and egress, and knowledge of rescue and emergency equipment as may be used by rescue personnel;

9.3.3 Identify isolation procedures and inform the personnel responsible for the lockout / tagout of all equipment that must be isolated and the methods to be used;

- 9.3.4 Establish communication and inform all entrants that they are required to maintain communication with the standby person. Inform standby person that he/she must maintain constant contact with all entrants. Inform personnel of the type of communication they are to use;
 - 9.3.5 Protect from external hazards by informing personnel where signs and barriers will be placed to prevent unauthorized entry and protect entrants from external hazards; and
 - 9.3.6 Place the confined space back into service by informing personnel of the steps to be taken to place the confined space back into service.
- 9.4 Attendant Training Requirements shall include:
- 9.4.1 Hazards associated with confined space entry, including information on the mode, signs, symptoms and consequences of exposure;
 - 9.4.2 Behavioral effects of hazards exposure, such as those from heat or chemical exposure (i.e. slurred speech or physical impairment);
 - 9.4.3 The process of maintaining an accurate count of entrants and ensuring that permit correctly identifies exactly who is in the space;
 - 9.4.4 The importance of remaining outside the confined space at all times during a confined space entry until relieved by another trained attendant;
 - 9.4.5 The activities and hazards associated with confined spaces;
 - 9.4.6 Requiring the immediate evacuation of the space if a prohibited condition is detected, behavioral effects of hazard exposures to authorized entrants are detected, conditions outside the space change such that entrants are endangered or if the attendant cannot perform the duties required;
 - 9.4.7 Performance of multiple tasks as long as the tasks are in close proximity and the confined space entrant safety is the first priority;
 - 9.4.8 Procedures to summon rescue and other emergency services as soon as the attendant determines the entrants need assistance to escape permit-required space hazards; and
 - 9.4.9 Prevention of confined space entry by unauthorized personnel.
- 9.5 Entry Supervisor Training Requirements shall include:

- 9.5.1 Knowledge of the hazards associated with permit-required confined space entry, including information on the mode, signs, symptoms and consequences of exposure;
- 9.5.2 Proper procedures for filling out entry permits;
- 9.5.3 Conditions in which a permit can be cancelled;
- 9.5.4 Procedures for rescue services and the means for summoning them;
- 9.5.5 Procedures to ensure that operations are consistent with the requirements of the entry permit.

10.0 **EQUIPMENT**

10.1 Many different safety equipment items are required to perform safe entries into and rescues from permit-required confined spaces. These items must be supplied, at no charge, to employees engaged in permit-required confined space entry and emergency retrieval. The extent of actual equipment required will depend on hazards present and the category of the confined space being entered. Employee training must include hands-on usage of all required equipment to such an extent that the employees become proficient in their understanding and use of the equipment, such as;

10.1.1 Ventilation fan(s)

10.1.2 Life lines

10.1.3 Retrieval equipment (for use by entry personnel and DFES)

10.1.4 Appropriate Personal Protective Equipment (PPE)

10.1.5 Air monitoring equipment

10.1.6 Lighting equipment

10.1.7 Communication equipment

10.1.8 Lockout/tagout devices

10.1.9 Barricade equipment

10.1.10 Other safety equipment required to complete the job

11.0 **ATMOSPHERIC TESTING**

- 11.1 Atmospheric testing is required for the evaluation of hazards in a permit-required confined space and verification that acceptable conditions for entry into that space exist. At a minimum, the space must be tested for oxygen, combustible gases and vapors, and toxic gases and vapors. These items can be tested simultaneously. All testing must be recorded on the Permit-Required Confined Space Entry Permit (Attachment A).
- 11.2 Testing for atmospheric hazards must be conducted prior to entry into a permit-required confined space to determine if acceptable entry conditions exist. Then, during entry into the space, monitoring must be conducted continuously or periodically to ensure that acceptable entry conditions are maintained. The atmosphere must be tested at various levels in the confined space as atmospheric hazards may be found at different levels, depending on the contaminant present and the conditions of the space. If the monitoring instrument goes into alarm or fails to operate at any time during the entry, the entry must be stopped and entrants must be removed from the space.
- 11.3 Monitoring equipment must be maintained according to the manufacturer's specifications to ensure proper operation during permit-required confined space air quality testing and personnel entry. Instrument calibration must be conducted in accordance with manufacturer's recommendations and equipment operation must be within acceptable ranges.
- 11.4 Proper atmospheric testing will be one of the most important subjects covered in employee training. Employees must become familiar with the performance and limitations of their particular monitoring equipment.
 - 11.4.1 EH&S and OFS Training & Safety can assist departments on the proper selection and usage of atmospheric monitoring equipment for confined spaces testing and entry. Such equipment is available by contacting EH&S at 505-646-3327.

12.0 **SPECIFIC PROBLEMS / HOT WORK in CONFINED SPACES**

- 12.1 Hot Work operations (welding, cutting and brazing) may create hazardous conditions and fire danger. To adequately address hazards in confined spaces, all personnel involved in such operations must adhere to the following procedures. This will help ensure compliance of applicable codes and regulations, including 29 CFR 1910.252-257, and promote a safe environment.
- 12.2 It is the responsibility of the welders, cutters, and their supervisors to ensure the following fire protection and prevention procedures are applied to all such operations.
- 12.3 Fire Prevention and Protection - Remove all sources of ignition (combustible and flammable materials) from the work area/hazard zone. If all fire hazards cannot be

removed, then appropriate shielding shall be provided to prevent sparks, slag, or heat from igniting the fire hazards.

12.3.1 A fire watch shall be provided during such activities and shall continue for a minimum of 30 minutes after the conclusion of the operation. Individuals designated for the fire watch shall have fire-extinguishing equipment readily available and must be trained in use and capabilities of such equipment.

12.4 Hot Work Area - An area that is exposed to sparks, hot slag, or radiant or convective heat as a result of the work must be inspected prior to commencing work to ensure the following:

12.4.1 Proper safety precautions/measures are taken to prevent fire danger. Inspection must confirm the work area is free of debris and that flammable liquids or vapors, lint, dust, or combustible materials / storage is not at risk of ignition from sparks or hot metal.

12.4.2 Openings or cracks in walls, floors, ducts or shafts are tightly covered to prevent passage of sparks or slag.

12.4.3 A minimum of 2-A, 20BC fire extinguisher must be readily available (contractors must provide their own fire extinguishers).

12.5 Health Safety Protection / Ventilation - Contamination and exposure provisions must be established to monitor the work area conditions of the following:

12.5.1 The material used to perform work has the potential of producing fumes that may pose exposure conditions to personnel. (Information can be obtained by reading and reviewing Material Safety Data Sheets on products used for operation.)

12.5.2 The dimension of the space vertically or horizontally confines movement of operation or restricts egress.

12.5.3 Numbers of equipment and personnel performing the operation confine movement of operation or limit egress.

12.5.4 Inadequate ventilation for work area.

13.0 **CONFINED SPACE PRE-ENTRY EVALUATION**

13.1 The first step towards conducting a safe confined space entry is planning. This will allow for the identification of all hazards, and for the determination of all equipment necessary, to complete the project.

- 13.2 Initial evaluation conducted by EH&S shall classify the space as a confined space or permit-required confined space. For a listing of confined spaces, see Attachments C-1 & C-2.
- 13.3 Reassessment of a confined space shall be performed by the entrant prior to entry to determine if any new hazards or changes would affect classification. Confined space evaluation and classification criteria are shown in Attachment B.

14.0 **CONFINED SPACE PROCEDURES**

- 14.1 Confined spaces not requiring an entry permit are identified in Attachment C-1. These spaces have been evaluated and do not require a permit or entrant for entry, provided the following statements are true.
 - 14.1.1 The space does not contain a hazardous atmosphere that could cause death or serious acute health effects,
 - 14.1.2 The space does not contain or have the potential to contain free flowing solids or liquids that could engulf an entrant.
 - 14.1.3 The space does not present a worker entrapment hazard because of converging walls or internal configuration.
 - 14.1.4 The space does not contain any other serious safety or health hazards (i.e., hazardous energies or fall hazards) that could cause death or serious injury.
- 14.2 All hazards and/or potential hazards must be eliminated to the greatest extent practical prior to entry. If entry is required to perform tests or to eliminate a hazard, then permit-required entry procedures must be followed for initial entry and remain in place until all hazards have been verified or controlled. If there is a question about hazards or potential effects, contact EH&S.
- 14.3 Entry into a confined space must be communicated to the shop supervisor.
- 14.4 Preparation for entry:
 - 14.4.1 The immediate supervisor must be informed of the confined space entry and its location prior to entry.
 - 14.4.2 Entrants must have a means of communication to summon assistance in an emergency.
 - 14.4.3 Isolate and identify the work area using barricades, signage and / or hazard banner tape.

14.5 During entry

14.5.1 All entrants must utilize all Personal Protective Equipment required for the assigned task.

14.5.2 All entrants must remain alert for the sudden development of a hazardous condition and immediately evacuate the confined space if a hazard is detected or perceived.

14.6 Emergency procedures

14.6.1 All confined space entrants will immediately vacate the space if a hazardous condition is detected or perceived. The shop supervisor shall be immediately notified. No re-entry will be made until the space is re-evaluated and EH&S authorizes re-entry.

14.6.2 In the event of an emergency situation, use the nearest communication device (telephone or radio) to initiate a 911 response. Identify the full situation so that appropriate emergency service can be dispatched.

15.0 **PERMIT-REQUIRED CONFINED SPACE PROCEDURES**

15.1 Entry into a permit-required confined space must be authorized by EH&S.

15.2 All confined spaces identified as permit-required confined spaces are listed on Attachment C-2. Spaces that have not been classified shall initially be considered a “permit-required confined space” until hazard evaluations demonstrate otherwise. Permit-required confined space entry procedures shall be observed when all serious hazards, actual or potential, such as hazardous atmosphere, engulfment, entrapment or other recognizable serious hazards, can not be eliminated prior to entry into the confined space.

15.3 Entry into a permit-required confined space must be documented using a properly completed confined space entry permit (see Attachment A). The completed permit must be present and posted at the job site during the work in the confined space. The Entry Permit shall:

15.3.1 Define the scope of work to be performed.

15.3.2 Identify all potential hazards:

15.3.3 Inherent to the confined space (i.e., toxic gases, explosive/flammable gases, oxygen deficiency, potential engulfment material(s), space configuration, pressure systems, electrical equipment, chemicals, moving mechanical equipment, etc.)

- 15.3.4 Created by the work being performed (i.e., welding cutting, chemical / solvent use, grinding etc);
- 15.3.5 Associated with chemicals taken into the space for the work being performed (i.e., gases, corrosives, etc.);
- 15.3.6 Other safety hazards (i.e., slipping/tripping hazards, lighting, low ceilings, strike against hazards, struck by hazards, etc.)
- 15.3.7 Identify the means and methods to control the hazards through;
 - 15.3.7.1.1 Engineering controls, ventilation, isolation of the space and lockout / tagout;
 - 15.3.7.1.2 Modification of the work practices;
 - 15.3.7.1.3 Proper selection and use of personal protective equipment;
 - 15.3.7.1.4 Procedures needed in the event of an emergency situation.
- 15.4 Any hot-work to be performed in the confined space must be authorized on the entry permit.
- 15.5 Prior to Entry
 - 15.5.1 Isolate and identify the work area using barricades, signage and/or hazards banner tape.
 - 15.5.2 Secure and isolate the confined space according to the entry permit requirements (i.e., lockout / tagout all equipment and machinery as necessary, and double block and bleed all hazardous inflow material, etc.). Department heads or their designated representatives will determine mechanical and physical hazards. They should list all items and energy that will require lockout / tagout, blanking and bleeding, disconnecting, or securing. Physical hazards should also be listed.
 - 15.5.3 Drain, rinse and/or purge the confined space as determined by the planning and entry permit.
 - 15.5.4 Test the confined space atmosphere with appropriate instrumentation and record results on the entry permit (confined space entrants should be involved with atmospheric testing.) It is recommended that atmospheric tests be conducted by the entry supervisor prior to the opening of any covers or entrances of potential confined spaces. The entry supervisor will

determine the oxygen content and describe the testing procedures and equipment used to the entry employees. The entry supervisor will then determine flammable gas content and again describe the testing procedures and type of analyzer used

15.5.5 If the readings for available oxygen, flammable gases and toxics are within acceptable levels, continue to sample the atmosphere by lowering the instrument probe through the lid opening until it reaches near the floor. Allow adequate time for the instrument to draw the sample up the extended hose and conduct the analysis. This sample will analyze for heavier-than-air gases, which would be found near the bottom of the space.

15.5.6 Ventilate the confined space with a suitable blower, ensuring the intake air for the blower is from a clean area.

15.6 During Entry

15.6.1 The attendant or stand-by person must be present at the entrance to the confined space and must maintain contact with the entrants.

15.6.2 All entrants must be wearing a five-point safety harness attached to a retrieval line, unless such equipment creates a significant hazard or inhibits self-rescue. A tripod or equivalent mechanical retrieving device shall be set up and attached to the entrant's harness if the space is greater than 5 feet in depth. Exemptions from the use of a safety harness must be approved by EH&S.

15.6.3 The atmosphere in the confined space must be monitored periodically. Any abnormal air monitoring results, outside limits stated in the entry permit, requires the immediate evacuation of the confined space.

15.6.4 Continue to provide clean ventilation air into the confined space during the work.

15.6.5 All entrants must utilize Personal Protective Equipment as required by the entry permit and the entry supervisor.

15.6.6 All entrants and attendants must be alert for the sudden development of a hazardous condition in the confined space, and immediately require an evacuation if a hazard is detected or perceived.

15.7 Emergency Procedures

15.7.1 All confined space entrants will immediately vacate the space if directed out by the attendant or if a hazardous condition is detected or perceived. The entry supervisor shall be immediately notified. No entry will be made until the space is re-evaluated and the entry supervisor authorizes re-entry.

15.7.2 If the entrant is attached to a lifeline, and cannot extricate himself, the attendant(s) will attempt extrication from the confined space. The attendant shall not enter the confined space to perform an unassisted confined space rescue.

15.7.3 In the event of an emergency situation, use the nearest communication device (telephone or radio) to initiate a 911 response. Identify the full situation so that appropriate emergency services can be dispatched. See details in 16.2.1.

16.0 EMERGENCY RESPONSE PROCEDURES

16.1 If an emergency situation within a confined space occurs, the entrant will be extricated from the space by the team performing the work or DEFS on stand-by duty. If a first aid response is necessary, the University will rely on rescue personnel from the NMSU DFES. Campus Police will assist in crowd and traffic control during an emergency. These emergency services must be accessible within 4 minutes.

16.2 If an acute threat to safety and health is observed or perceived, all personnel shall immediately exit the confined space by the nearest means of egress and:

16.2.1 Call 911 for emergency assistance. If emergency assistance is required, use either the nearest telephone to call 911 or utilize cellular phones or two-way radios. If using a cellular telephone, call 646-5600. This number connects to the NMSU 911 dispatcher. Clearly state to the 911 dispatcher “this is an emergency” and provide the following information:

16.2.1.1 Location of the emergency

16.2.1.2 Telephone number from where the call originates,

16.2.1.3 Your name;

16.2.1.4 What happened; nature of the emergency;

16.2.1.5 What assistance is needed;

16.2.1.6 Help or first aid that is being provided;

16.2.2 If telephone communication is used, stay on the line until all information requested by the dispatcher is provided and let the dispatcher hang-up first.

- 16.2.3 Rescue services that can be performed safely from outside of the confined space (e.g. hoisting a harnessed entrant) shall be undertaken. Other entrants in the space shall immediately exit the space and only provide such assistance as will not endanger themselves;
- 16.2.4 Secure the jobsite;
- 16.2.5 Contact the supervisor/manager of the job, and
- 16.2.6 Not re-enter the confined space until the hazard is identified, evaluated and eliminated.
- 16.2.7 In the event of any emergency situation requiring rescue from a confined space, employees shall not attempt to enter the space to perform rescue. In no case shall the attendant be required to relay emergency information through a third party unless the third party location is fully staffed during the entire entry.
- 16.2.8 Emergency response services will be provided for all confined space emergencies by the NMSU DFES.
- 16.3 Station someone at a highly visible location along the street to flag down and direct any emergency response personnel and vehicles to the scene of the emergency.
- 16.4 If so trained, render appropriate and prudent first aid until emergency personnel arrive on the scene.
- 16.5 In compliance with the OSHA Standard, the University has provided the NMSU DFES with a list of the permit-required confined spaces on campus and the hazards associated with each, as far as are known. The University also extends to the DFES the opportunity to access any of those permit required confined spaces for the purpose of developing necessary rescue plans and practicing rescue operations.

ATTACHMENT B

**EVALUATION / SURVEY
CONFINED SPACES & PERMIT-REQUIRED
CONFINED SPACES**

SECTION I - CONFINED SPACE DETERMINATION

- | | | |
|-----|----|--|
| YES | NO | Is the “space” large enough and so configured that an employee can bodily enter and perform assigned work; and
(Note: Primarily intended for full or whole body entry) |
| YES | NO | Has limited or restricted means for entry or exit (i.e., tanks, vessels, silos, storage bins, hoppers, vaults); and
(Note: Doorways and other portals through which a person <u>can walk</u> are not considered to be limited means of entry or exit) |
| YES | NO | Is not designated for continuous employee occupancy.
(Note: A <u>vented</u> telecommunications vault would be designated for continuous occupancy. An unvented vault would not) |

IF ALL THREE ANSWERS ARE YES, THIS IS CLASSIFIED AS A CONFINED SPACE.

PROCEED TO SECTION II

SECTION I - PERMIT-REQUIRED CONFINED SPACE DETERMINATION

- | | | |
|-----|----|--|
| YES | NO | Contains or has potential to contain a hazardous atmosphere.
(Note: Exposures to combustible dusts or flammable mixtures, oxygen deficiencies, that may expose employees to the risk of death, incapacitation, acute illness or impair self-rescue) |
| YES | NO | Contains a material that has the potential for engulfing an entrant
(Note: Primarily liquid or finely divided (flowable) solid) |
| YES | NO | Has an internal configuration such that the entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes. |
| YES | NO | Contains any other recognized serious safety or health hazard
(Note: May include radiation, noise, electricity, and moving parts of machinery) |

YES NO Will the work to be performed cause the atmosphere to become hazardous or create a hazardous situation?
(Note: Examples of which are welding, use of toxic chemicals or opening an energy source)

INSTRUCTIONS:

To survey, identify and evaluate for confined spaces & permit-required confined spaces, follow the instructions below:

1. In order to be classified as a confined space, the space makeup must be able to answer all three questions in Section I as yes;
2. If a "NO" answer is given, then the space is not a confined space. However, further evaluation may be needed to determine if other regulations apply, such as Control of Hazardous Energy (Lockout/Tagout), Exposure to Toxic & Hazardous Chemicals (29 CFR 1910.1000, Table Z), Respiratory Protection, Emergency Action Plans, etc.
3. If a "YES" answer is given, then the space is a confined space. Further evaluation is needed to determine if the confined space is capable of being considered a "Permit-Required Confined Space" as defined by Section II.
4. If all five questions in Section II are answered "NO", then the space remains a confined space (no entry permit required) and should be evaluated periodically to determine whether the space should or should not be reclassified.
5. If any of the five questions in Section II are answered "YES", then the space must be classified as a "Permit-Required Confined Space", and the program regarding access, entrance, use of, and egress for "permit-Required Confined Spaces" shall be followed.

If the space is classified as "Permit-Required Confined Space", the space shall be identified as a "Permit-Required Confined Space" and all access must be accomplished under a Entry Permit and procedures according to OSHA Standards.

NOTE: Although a confined space may not qualify as a "Permit-Required Confined Space", any entry procedure or protection needed to ensure employee safety and health must be observed.

ATTACHMENT C-1

CONFINED SPACES LISTING, NMSU CAMPUS				
BLDG NAME	Bldg No	ROOM/AREA	DESCRIPTION	POTENTIAL HAZARD
Air Test Facility	343	105	Air Test Chamber	Pressure Vessel
Air Test Facility	343	ERF Facility	Air Test Chamber	Mechanical Configuration
Astronomy Building	225	2	Basement	Mechanical Configuration
Branson Library	278	M1G	Utility Chase	Space Configuration
Branson Library	278	M1E	Utility Chase	Space Configuration
Branson Library	278	M1D	Utility Chase	Space Configuration
Branson Library	278	M1A	Utility Chase	Space Configuration
Branson Library	278	M2E	Utility Chase	Space Configuration
Branson Library	278	M2G	Utility Chase	Space Configuration
Branson Library	278	M2C	Dumbwaiter	Mechanical Configuration
Branson Library	278	305	Utility Chase	Space Configuration
Branson Library	278	M3G	Utility Chase	Space Configuration
Branson Library	278	405	Utility Chase	Space Configuration
Branson Library	278	Roof	Penthouse Air Handling Unit(PH03)	Mechanical Configuration
Branson Library	278	Roof	Penthouse Air Handling Unit (PH02)	Mechanical Configuration
Branson Library	278	Roof	Penthouse Air Handling Unit (PH01)	Mechanical Configuration
Branson Library	278	Elevator Shaft(s)	Elevator Shaft(s)	Mechanical Configuration
Breland Hall	184	100A	Utility Chase	Space Configuration
Breland Hall	184	100B	Utility Chase	Space Configuration
Breland Hall	184	169	Utility Chase	Space Configuration
Breland Hall	184	166	Utility Chase	Space Configuration
Breland Hall	184	200A	Utility Chase	Space Configuration
Breland Hall	184	200B	Utility Chase	Space Configuration
Breland Hall	184	300A	Utility Chase	Space Configuration
Breland Hall	184	300B	Utility Chase	Space Configuration
Breland Hall	184	M400	Air Plenum Access	Space Configuration
Breland Hall	184	M400	Air Handling Unit	Mechanical Hazards
Business Complex Building	386	EL-1	Elevator Shaft	Mechanical Hazards
Business Complex Building	386	M100	Utility Chase	Space Configuration
Business Complex Building	386	M200	Utility Chase	Space Configuration
Business Complex Building	386	M300	Utility Chase	Space Configuration
Business Complex Building	386	M401	Air Handling Unit	Space / Mechanical Config.
Chemistry Building	187	W010	Basement Air Handling	Space / Mechanical Config.

			Unit #3	
Chemistry Building	187	W0101	West Basement Air Handling Unit	Space / Mechanical Config.
Chemistry Building	187	W010	Basement Air Handling Unit #2	Space / Mechanical Config.
Chemistry Building	187	W0101	Basement Air Handling Unit #1	Space / Mechanical Config.
Chemistry Building	187	39	HVAC Vault	Fume Hazards
Chemistry Building	187	26A	Utility Vault	Fume Hazards
Chemistry Building	187	25	Mechanical Vault Air Handling Unit	Space / Mechanical Config.
Chemistry Building	187	142	HVAC Vault	Space Configuration
Chemistry Building	187	M193	HVAC Access	Space Configuration
Chemistry Building	187	M111A	Utility Chase	Space Configuration
Chemistry Building	187	227	Utility Chase Tunnel	Space / Mechanical Config.
Chemistry Building	187	M11B	Utility Chase	Space Configuration
Chemistry Building	187	Roof	Air Handling Unit	Space / Mechanical Config.
Chemistry Building	187	M274	HVAC Access	Space Configuration
Chemistry Building	187	W286A	HVAC Access	Space Configuration
Chemistry Building	187	239	HVAC Access	Space Configuration
Chemistry Building	187	W365A	HVAC Access	Space Configuration
Chemistry Building	187	339	Utility Chase	Space Configuration
Chemistry Building	187	400	Roof Air Handling Unit	Space / Mechanical Config.
Chemistry Building	187	EL01	EL-1 Elevator Shaft	Space / Mechanical Config.
Computer Center	126	137	Utility Chase	Space Configuration
Computer Center	126	M200	Air Handling Unit	Space / Mechanical Config.
Computer Center	126	M200	Air Handling Unit Plenum	Space Configuration
Computer Center	126	M010	Air Handling Unit	Space / Mechanical Config.
Computer Center	126	M012	Air Handling Unit	Space / Mechanical Config.
Computer Center	126	EL100	Elevator Shaft	Space / Mechanical Config.
Corbett Center	285	EL 1-5	Elevator Shaft(s)	Space / Mechanical Config.
Corbett Center	285	B3	Mechanical Room Sump	Engulfment Hazards
Corbett Center	285	B8 & B9	Utility Chase	Space Configuration
Corbett Center	285	B15	Utility Chase	Space Configuration
Corbett Center	285	143	Mechanical Room AHU	Space / Mechanical Config.
Corbett Center	285	265	Mechanical Room AHU	Space / Mechanical Config.
Corbett Center	285	265	Air Plenum Access	Space Configuration
Corbett Center	285	265	Utility Chase	Space Configuration
Corbett Center	285	328 & 342	Mechanical Room AHU	Space / Mechanical Config.
Corbett Center	285	306	Mechanical Room AHU	Space / Mechanical Config.
Corbett Center	285	306	Mechanical Room Air Plenum Access	Space Configuration
DABCC, General Classrooms	480	EL170	Elevator Shaft(s)	Space / Mechanical Config.
DABCC, General	480	South of Main	Exterior Mechanical	Space / Mechanical Config.

Classrooms		Bldg.	Room	
DABCC, General Classrooms	480	East of Main Bldg.	Exterior Air Handling Unit	Space / Mechanical Config.
DABCC, General Classrooms	480	Main Mechical Room	Air Handling Unit	Space / Mechanical Config.
DABCC, Health & Public Services	540	EL1	Elevator Shaft(s)	Space / Mechanical Config.
DABCC. Learning Resources	479	EL1	Elevator Shaft(s)	Space / Mechanical Config.
DABCC. Learning Resources	479	M166	Air Handling Unit	Space / Mechanical Config.
Dove Hall	56	56	Dumbwaiter	Space / Mechanical Config.
Dove Hall	56	10A	Basement AHU	Space / Mechanical Config.
Dove Hall	56	10C	Sewer Manhole	Engulfment / Mechanical Configuration
Dove Hall	56	EL100	Elevator Shaft(s)	Space / Mechanical Config.
Educational Services Center	338	802	Utility Chase	Space Configuration
Educational Services Center	338	M007	Basement AHU	Space / Mechanical Config.
Educational Services Center	338	M300	3rd Floor AHU	Space / Mechanical Config.
Engineering Complex I	363	148A	Utility Chase	Space Configuration
Engineering Complex I	363	135A	Utility Chase	Space Configuration
Engineering Complex I	363	223A	Utility Chase	Space Configuration
Engineering Complex I	363	225	Mechanical Room AHU	Space / Mechanical Config.
Engineering Complex I	363	M300	Air Handling Unit	Space / Mechanical Config.
Engineering Complex I	363	EI100	Elevator Shaft(s)	Space / Mechanical Config.
Engineering Complex III	541	Roof	Air Handling Units 1, 2, 3, 4, 5, 6	Space / Mechanical Config.
Engineering Complex III	541	EL1	Elevator Shaft(s)	Space / Mechanical Config.
English Building	364	EL-01	Elevator Shaft(s)	Space / Mechanical Config.
English Building	364	M108	Utility Chase	Space Configuration
English Building	364	214A	Utility Chase	Space Configuration
English Building	364	230	Mechanical Room AHU	Space / Mechanical Config.
Foster Hall	34	102	Basement AHU	Space / Mechanical Config.
Foster Hall	34	EL-1	Elevator Sahft(s)	Space / Mechanical Config.
Foster Hall	34	M3B	Utility Chase	Space Configuration
Foster Hall	34	M5	Air Handling Unit	Space / Mechanical Config.
Frenger Food Court	262	M099	Exterior Utility Chase	Space Configuration
Frenger Food Court	262	M100	Interior Utility Chase	Space Configuration

Garcia Annex	154	18	Basement Utility Chase	Space Configuration
Garcia Annex	154	16	Basement Utility Chase	Space Configuration
Garcia Annex	154	M3B	Utility Chase	Space Configuration
Garcia Annex	154	M3A	Utility Chase	Space Configuration
Garcia Annex	154	231B	Air Handling Unit	Space / Mechanical Config.
Garcia Annex	154	EL-1	Elevator Shaft	Space / Mechanical Config.
Gardiner Hall	188	M400	Penthouse Air Handling Unit #1	Space / Mechanical Config.
Gardiner Hall	188	EL010	Elevator Shaft(s)	Space / Mechanical Config.
Gardiner Hall	188	M050	Utility Chase - Tunnel	Space Configuration
Gardiner Hall	188	M050	Utility Wall Penetration	Space Configuration
Gardiner Hall	188	J109	Utility Chase	Space Configuration
Gardiner Hall	188	151	Utility Chase	Space Configuration
Gardiner Hall	188	252	Utility Chase	Space Configuration
Gardiner Hall	188	350	Utility Chase	Space Configuration
Gardiner Hall	188	M400	Penthouse Air Handling Unit #2	Space / Mechanical Config.
Gerald Thomas Hall	244	Roof	Air Handling Unit	Space / Mechanical Config.
Gerald Thomas Hall	244	EL100	Elevator Shaft(s)	Space / Mechanical Config.
Goddard Hall	10	600	Attic / Tower Access	Space / Fall Hazards
Goddard Hall	10	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Goddard Hall	10	M91	Air Handling Unit	Space / Mechanical Config.
Guthrie Hall	288	M001	Basement Air Handling Unit	Space / Mechanical Config.
Guthrie Hall	288	EL-1	Utility Chase	Space / Mechanical Config.
Guthrie Hall	288	117	Utility Chase	Space Configuration
Guthrie Hall	288	210A	Utility Chase	Space Configuration
Guthrie Hall	288	305A	Utility Chase	Space Configuration
Guthrie Hall	288	415	Utility Chase	Space Configuration
Guthrie Hall	288	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Hadley Hall	172	117A	Wall Penetration / Utility Chase	Space Configuration
Hadley Hall	172	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Hadley Hall	172	19C	Wall Penetration / Utility Chase	Space Configuration
Hardman Hall	323	213	HVAC Entry	Space Configuration
Hardman Hall	323	103	HVAC Entry	Space Configuration
Hardman Hall	323	102	Utility Chase	Space Configuration
Hardman Hall	323	113	Utility Chase	Space Configuration
Hardman Hall	323	111	Utility Chase	Space Configuration
Hardman Hall	323	205	Utility Chase	Space Configuration
Hardman Hall	323	203	Utility Chase	Space Configuration
Hardman Hall	323	215	Utility Chase	Space Configuration
Health & Social Services	161	EL-1 & EL-2	Elevator Shafts	Space / Mechanical Config.

Health & Social Services	161	M118	Utility Chase	Space Configuration
Health & Social Services	161	M218	Utility Chase	Space Configuration
Health & Social Services	161	Roof	Air Handling Unit #1 & #2	Space / Mechanical Config.
Herschell Zohn Theatre	249	M300	Air Handling Unit # 1	Space / Mechanical Config.
Herschell Zohn Theatre	249	103A	Utility Chase	Space Configuration
Jacobs Hall	250	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Jacobs Hall	250	M100	Utility Chase	Space / Mechanical Config.
Jacobs Hall	250	M200	Communications Chase	Space Configuration
Jacobs Hall	250	M300	Roof Air Handling Unit	Space / Mechanical Config.
James B. Delamater Activity Center	321	113	Utility Chase	Space Configuration
James B. Delamater Activity Center	321	114	Utility Chase	Space Configuration
James B. Delamater Activity Center	321	Roof	Air Handling Unit	Space / Mechanical Config.
James B. Delamater Activity Center	321	Roof	Air Handling Unit #2	Space / Mechanical Config.
James B. Delamater Activity Center	321	Roof	Air Handling Unit #3	Space / Mechanical Config.
James B. Delamater Activity Center	321	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Jett Annex	190	M010	Basement Air Handling Unit	Space / Mechanical Config.
Jett Annex	190	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Jett Annex	190	M100	Utility Chase	Space Configuration
Jett Annex	190	10A	Utility Chase	Space Configuration
John Whitlock Hernandez Hall	397	118	Utility Chase	Space Configuration
John Whitlock Hernandez Hall	397	M200	Utility Chase	Space Configuration
John Whitlock Hernandez Hall	397	M300	Air Handling Unit	Space / Mechanical Config.
John Whitlock Hernandez Hall	397	Roof	Air Handling Unit #1	Space / Mechanical Config.
John Whitlock Hernandez Hall	397	EL1	Elevator Shaft(s)	Space / Mechanical Config.
Jornada USDA Exp. Range HQ (Wooton Hall)	585	Roof	Air Handling Units 1, 2, 3	Space / Mechanical Config.
Jornada USDA Exp. Range HQ (Wooton Hall)	585	EL - 1	Elevator Shaft(s)	Space / Mechanical Config.
Kent Hall	33	2	Basement Utility Chase	Space Configuration

Kent Hall	33	103A	Utility Chase	Space Configuration
Kent Hall	33	EL-1	Elevator Shaft(s)	Space Configuration
Knox Hall	368	Roof	Roof Air Handling Units 1, 2, 3	Space / Mechanical Config.
Knox Hall	368	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Knox Hall	368	M011	Mechanical Room Sm Tunnel Access	Space Configuration
Knox Hall	368	142B	Air Handling Unit	Space / Mechanical Config.
Knox Hall	368	346B	Air Handling Unit	Space / Mechanical Config.
Knox Hall	368	239B	Air Handling Unit	Space / Mechanical Config.
Milton Hall	83	69A	Air Handling Unit #1	Space / Mechanical Config.
Milton Hall	83	EL - 1 & 2	Elevator Shaft(s)	Space / Mechanical Config.
Milton Hall	83	155A	Air Handling Unit	Space / Mechanical Config.
Milton Hall	83	155A	Wall Penetration / Utility Chase	Space Configuration
Milton Hall	83	M101	Utility Chase	Space Configuration
Milton Hall	83	M100	Utility Chase	Space Configuration
Milton Hall	83	41	Utility Chase	Space Configuration
Milton Hall	83	26A	Utility Chase	Space Configuration
Milton Hall	83	74E	Air Handling Unit	Space / Mechanical Config.
Music Building	389	211A	HVAC Chase Access	Space Configuration
Music Building	389	100E	Air Handling Unit	Space / Mechanical Config.
Music Building	389	M104	Utility Chase	Space Configuration
Music Building	389	M101	Utility Chase	Space Configuration
Music Building	389	M100	Mechanical Room AHU	Space / Mechanical Config.
Music Building	389	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
Music Building	389	M11D	Air Plenum Access	Space Configuration
Music Building	389	M202	Utility Chase	Space Configuration
Music Building	389	Penthouse	HVAC Air Handling Units 1, 2, 3, 4	Mechanical Configuration
Music Building	389	M200	Mechanical Room AHU #4	Space / Mechanical Config.
New Mexico Dept. of Agriculture	330	M001	Basement Air Handling Unit	Space / Mechanical Config.
O'Donnell Hall	287	EL-1	Elevator Shaft(s)	Space / Mechanical Config.
O'Donnell Hall	287	132	Utility Chase	Space Configuration
O'Donnell Hall	287	132	Utility Chase in Hallway by Room 132	Space Configuration
O'Donnell Hall	287	202	Utility Chase	Space Configuration
O'Donnell Hall	287	202	Utility Chase in Hallway by Room 202	Space Configuration
O'Donnell Hall	287	302	Utility Chase	Space Configuration
O'Donnell Hall	287	302	Utility Chase in Hallway by Room 302	Space Configuration
O'Donnell Hall	287	M400	Mechanical Room AHU	Space / Mechanical Config.

OFS Central Heating Plant	269	Roof	Air Handling Unit	Space / Mechanical Config.
OFS Central Heating Plant	269	Ext. Cooling Towers	Exterior Cooling Towers	Space / Engulf. / Configuration
PSL Phys. Science Labs	1	EB513	PSL / Mechanical Room AHU	Space / Mechanical Config.
PSL Phys. Science Labs	1	W412	PSL / Mechanical Room AHU	Space / Mechanical Config.
PSL Phys. Science Labs	1	WB104	PSL / Mechanical Romm AHU	Space / Mechanical Config.
PSL Phys. Science Labs	1	Roof	PSL / Air Handling Unit	Space / Mechanical Config.
PSL Phys. Science Labs	1	C0124	PSL / Attic Utility Access	Space / Mechanical Config.
PSL Phys. Science Labs	1	EL - 1 & 2	PSL / Elevator Shaft(s)	Space / Mechanical Config.
Science Hall	391	EL-1	Elevator Shaft	Space / Mechanical Config.
Science Hall	391	104	Utility Chase	Space Configuration
Science Hall	391	104	ceiling Utility Chase	Space Configuration
Science Hall	391	240	Utility Chase	Space Configuration
Science Hall	391	10	Basement Utility Chase	Space Configuration
Science Hall	391	400	Penthouse Air Handling Unit	Space / Mechanical Config.
Skeen Hall	551	M400	Air Handling Units 1, 2, 3, 4	Space / Mechanical Config.
Skeen Hall	551	EL - 1 & 2	Elevator Shaft	Space / Mechanical Config.
Skeen Hall	551	M010	Utility Steam Tunnel	Space / Mechanical Config.
Skeen Hall	551	M400	Air Handling Unit Duct-way	Space / Mechanical Config.
Skeen Hall	551	M400	West end Air Handling Unit	Space / Mechanical Config.
Softball Press Box	581	EL - 1	Elevator Shaft(s)	Space / Mechanical Config.
Speech Building	365	EL - 1	Elevator Shaft(s)	Space / Mechanical Config.
Speech Building	365	241A	Utility Chase	Space Configuration
Speech Building	365	314A	Utility Chase	Space Configuration
Student Health Center	261	M154	Utility Chase	Space Configuration
Thomas & Brown Hall	301	316	Utility Chase	Space Configuration
Thomas & Brown Hall	301	12	Basement Air Handling Unit	Space / Mechanical Config.
Thomas & Brown Hall	301	117	Utility Chase	Space Configuration
Thomas & Brown Hall	301	214	Utility Chase	Space Configuration
Thomas & Brown Hall	301	216	Utility Chase	Space Configuration
Thomas & Brown	301	314	Utility Chase	Space Configuration

Hall				
Thomas & Brown Hall	301	EL - 1	Elevator Shaft(s)	Space / Mechanical Config.
Walden Hall	276	EL - 1	Elevator Shaft(s)	Space / Mechanical Config.
Walden Hall	276	Roof	Air Handling Unit	Space / Mechanical Config.
Wells Hall	355	M100A	Utility Chase	Space Configuration
Wells Hall	355	M200A	Utility Chase	Space Configuration
Wells Hall	355	M300A	Utility Chase	Space Configuration
Wells Hall	355	M400A	Utility Chase	Space Configuration
Wells Hall	355	M500A	Utility Chase	Space Configuration
Wells Hall	355	M600A	Utility Chase	Space Configuration
William B. Conroy Honors Center	35	EL1	Elevator Shaft(s)	Space / Mechanical Config.
William B. Conroy Honors Center	35	M303	Attic Plenum	Space Configuration
William B. Conroy Honors Center	35	Attic	Air Handling Unit	Space / Mechanical Config.
Williams Hall	60	Exterior	Exterior Air Handling Unit	Space / Mechanical Config.
Williams Hall	60	EL - 1	Elevator Shaft(s)	Space / Mechanical Config.
Young Hall	32	103	Exterior Utility Vault HVAC Entry	Space Configuration
Young Hall	32	Roof	Air Handling Unit	Space / Mechanical Config.
Young Hall	32	EL - 1	Elevator Shaft(s)	Space / Mechanical Config.
Young Hall	32	203	Ceiling HVAC Access	Space Configuration
Zuhl Library	461	302A	Utility Chase	Space Configuration
Zuhl Library	461	EL - 1-3	Elevator Shaft(s)	Space / Mechanical Config.
Zuhl Library	461	106A	Utility Chase	Space Configuration
Zuhl Library	461	202A	Utility Chase	Space Configuration
Zuhl Library	461	97	Basement Air Handling Unit	Space / Mechanical Config.

ATTACHMENT C-2

PERMIT-REQUIRED CONFINED SPACES, NMSU CAMPUS					
BLDG NAME	BLDG #	ROOM / AREA	AREA ID	DESCRIPTION	POTENTIAL HAZARD
Chemical Waste Facility	383	Overflow A	CWF-A	Overflow tank from facility	Space / Atmosphere / Configuration
Chemical Waste Facility	383	Overflow B	CWF-B	Overflow tank from facility	Space / Atmosphere / Configuration
Coca Cola Training Facility	468	Underground Vault	UV-01	MS Fertilizer Injection Vault	Space / Mechanical / Engulf
Garcia Residence Hall	275	173	UA-01	Utility Tunnel Access	Space / Configuration
Garrett Residence Hall	80	B-2	UA-02	Mechanical Room /access hole in wall	Space / Configuration
Grain Silo	0	Corrals west of DABCC	GS-01	30' dia metal storage silos	Engulfment / Space Hazards / Config.
Grain Silo	0	Corrals west of DABCC	GS-02	30' dia metal storage silos	Engulfment / Space Hazards / Config.
Nataorium	251	112	GS-02	Pump room / ~4ft./ pipes underwater	Space / Engulfment
OFS Central Heating Plant	269	100	B-01	Boiler #1 (NM0927)	Space / Atmosphere / Mechanical
OFS Central Heating Plant	269	100	B-02	Boiler #2 (NM0926)	Space / Atmosphere / Mechanical
OFS Central Heating Plant	269	100	B-03	Boiler #3 (NM0925)	Space / Atmosphere / Mechanical
OFS Central Heating Plant	269	Cool Pool	CP-01	Underground Cooling Tank	Space / Atmosphere / Engulfment
PSL Phys. Science Labs	1	Roof	MS-01	PSL / West Mechanical Shaft	Space / Mechanical / Fall Hazards
PSL Phys. Science Labs	1	Roof	MS-02	PSL / East Mechanical Shaft	Space / Mechanical / Fall Hazards
PSL Phys. Science Labs	1	South Exterior	CT-01	PSL / Cooling Tower Vault	Space / Engulfment / Mechanical
Water Tank	0	A-Mountain	WT-01	250,000 gallon vertical tank	Engulfment / Space Hazards / Config.
Water Tank	0	Golf Course Overlook	WT-02	4,000,000 gallon metal tank	Engulfment / Space Hazards / Config.

ATTACHMENT D

NEW MEXICO STATE UNIVERSITY ENTRY PLAN for UTILITY TUNNEL SYSTEMS

1.0 Purpose

- 1.1 The utility tunnel system presents a unique situation in regards to confined space entry procedures and compliance with OSHA's Confined Space Standard 29 CFR 1910.146.
- 1.2 The utility tunnel system falls within a regulatory gray area. It is difficult to define the entire system as a confined space, and it is equally difficult to identify specific areas or passages as confined spaces. More importantly, normal confined space entry procedures are both impractical and do little to protect the health and safety of employees entering the utility tunnel system.

2.0 Significant Factors

- 2.1 The utility tunnel system is a controlled access work area. Authorization is required to enter the utility tunnel system. Signs should be posted on utility tunnel access doors stating that the utility tunnel system is a restricted access area. Specific utility tunnel entry procedures are being developed and will be implemented.
- 2.2 A considerable portion of the main tunnel system is designed for employees to enter through building equipment room doors, walk through the tunnel passages and perform equipment maintenance. Blind ends, smaller tunnels, and tunnel sections accessible only through manholes do exist in certain areas.
- 2.3 Two main means of egress (doors and manholes) exist in the main tunnel system except for blind ends.
- 2.4 Identifying areas within the tunnels that truly meet the criteria of a confined space as defined in 29 CFR 1910.146(b) would be difficult and confusing to employees.
- 2.5 An air quality survey of the tunnel system demonstrates that under normal operating conditions the existence of a hazardous atmosphere is a remote possibility.
- 2.6 Although means of egress in some areas and/or conditions are restricted or limited, engulfment hazards as defined in 29 CFR 1910.146(b) do not exist in the main utility tunnel system. These include surrounding and effectively capturing a person by a flowable solid that can cause death by filling the respiratory system or can exert enough force on the body to cause death by strangulation, constriction,

or crushing.

- 2.7 Under normal operating conditions, engulfment hazards as defined in 29 CFR 1910.146(b) do not exist in the utility tunnel system.
 - 2.8 Other serious hazards (i.e., exposed energized electrical conductors, moving machinery or lines that discharge hazardous materials into the space) as defined in 29 CFR 1910.146(b) do not exist in the main tunnel system under normal operating conditions.
 - 2.9 The most serious hazard is the potential for steam line rupture. This potential hazard can be significantly reduced through periodically scheduled and proper preventive maintenance and engineering controls, such as installing additional means of egress and elimination of mechanical devices that might impede escape.
 - 2.10 Normal confined space entry procedures, i.e., the use of an attendant, retrieval equipment and air monitoring devices, are not practical and do not protect employees (and might actually hinder self-rescue) from the most significant potential hazard, a steam line rupture. Use of the "buddy system" and requiring all entrants to carry two-way communication equipment are a more effective method to protect employee health and safety.
 - 2.11 Data collected on the utility tunnels is routinely reviewed with all affected employees who have participated in the development of the utility tunnel entry procedure and Environmental Health & Safety (EH&S).
- 3.0 Utility tunnel Entry Procedure
- 3.1 Pre-Planning For Work In Utility tunnels
 - 3.1.1 Prior to entering utility tunnels, the service department supervisor and workers shall discuss the scope and sequence of the work.
 - 3.1.2 Pre-planning shall include a discussion of all potential hazards, means and methods of hazard control and emergency plans including:
 - 3.1.2.1 Identities and locations of energized steam lines
 - 3.1.2.2 Identities and locations of energized compressed air lines
 - 3.1.2.3 Identities and locations of energized high voltage electrical conductors
 - 3.1.2.4 Locations of hot surfaces
 - 3.1.2.5 Signs and symptoms of heat exhaustion and heat stroke

- 3.1.2.6 Lighting
- 3.1.2.7 Means of communication
- 3.1.2.8 Means of entry and egress
- 3.1.2.9 Hazards created by work activity (i.e., chemical products and welding/cutting)
- 3.1.2.10 External hazards (i.e., work in roadways and walkways)
- 3.1.4.11 Identities of any job-site specific hazards
- 3.1.4.12 Means to control hazards (e.g., Personal Protective Equipment, ventilation/local exhaust or lockout/tagout)
- 3.1.4.13 Steam line de-energization and lockout procedures
- 3.1.4.14 Potential emergency situations and plans
- 3.1.5 The locations of entry and egress from potentially dangerous work conditions will be identified to all personnel working in the tunnel. When deemed appropriate and prudent, multiple accesses shall be opened to provide alternate means of egress.
- 3.1.6 The "buddy system" will be used by HSD and any other employees entering the utility tunnel system for any purpose.
- 3.1.7 Employees working in the tunnel system shall carry a portable flashlight and two-way communication equipment at all times.
- 3.1.8 Protective leather gloves shall be worn when working in utility tunnels.
- 3.1.9 Other items of Personal Protective Equipment, required to control job specific hazards, shall be identified in job planning and will be worn by all personnel.
- 3.1.10 Supervisor and workers shall discuss job specific emergency procedures. HSD management and/or EH&S will advise when necessary.
- 3.1.11 Welding, cutting and brazing requires authorization by the HSD Manager. When this work is performed, forced ventilation shall be provided and the atmosphere shall be monitored for flammable gases, oxygen content and carbon monoxide. Standard size welding gas cylinders shall not be taken into utility tunnels.
- 3.1.12 Tunnels without forced ventilation and/or accessibility only through

manholes shall be entered following non-permit required confined space entry procedures.

4.0 Access Key Procedures

- 4.1 Procedures for acquiring tunnel keys for use by outside contractors, other NMSU departments seeking access to the tunnels and persons not affiliated with steam fitting / heat distribution personnel are under revision and will be inserted here at a later date.
- 4.2 Steam fitters and heat distribution personnel should be issued their own key for access to the tunnels as part of the job function.
 - 4.2.1 All persons, regardless of department affiliation or job routine, shall notify appropriate supervisory personnel prior to tunnel entry. Such notification shall address duration of habitation and approximate location.

5.0 Utility Tunnel Emergency Procedures

- 5.1 If an acute threat to safety and health is observed or perceived, all personnel shall immediately exit the tunnel by the nearest means of egress and:
 - 5.1.1 assist any injured personnel to escape;
 - 5.1.2 secure the job site;
 - 5.1.3 contact the supervisor/manager of the job; and
 - 5.1.4 do not re-enter the tunnel until the hazard is identified, evaluated and eliminated.
- 5.2 If emergency assistance is required, use either the nearest telephone to call 911 or contact CUP on the two-way communication equipment. Clearly state to the dispatcher, "this is an emergency" and provide the following information:
 - 5.2.1 Location of the emergency
 - 5.2.2 Telephone number from where the call is being made (if telephone is used)
 - 5.2.3 Your name
 - 5.2.4 What happened; nature of the emergency
 - 5.2.5 What assistance is needed

5.2.6 Help or first aid that is being provided

- 5.3 If telephone communication is used, stay on the line until all information requested by the dispatcher is provided and let the dispatcher hang-up first.
- 5.4 Station someone at a highly visible location along the street to flag down and direct any emergency response personnel and vehicles to the scene of the emergency.
- 5.5 If required and trained, attending personnel may render appropriate and prudent first aid until emergency personnel arrive on the scene.

ATTACHMENT F

**PERMIT REQUIRED CONFINED SPACE
DECISION FLOW CHART**

