

LAKE COUNTY

BOARD OF COUNTY COMMISSIONERS

CONFINED SPACE ENTRY SAFETY PROCEDURE 510.003

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**CONFINED SPACE ENTRY
SAFETY PROCEDURE 510.003**

I. PURPOSE

To establish procedures for entry into confined spaces on County owned or leased property, as well as County road right of ways and easements.

II. OBJECTIVES

- A. To specify the precautions that shall be taken to ensure safe conditions are provided when County employees or contractors enter and perform work in confined space at County owned or operated facilities.
- B. To provide guidance for identifying confined spaces and their associated hazards.
- C. To comply with State and Federal requirements for establishing Confined Space Entry Procedures.

III. DEFINITIONS

Refer to Appendix A - Glossary of Terms.

IV. DISCUSSION

"Confined space" means a space that:

- 1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- 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
- 3. Is not designed for continuous employee occupancy.

Entry into a confined space has the potential of placing an employee at risk from suffocation, fire or explosion, exposure to toxic chemicals, engulfment and/or entrapment by moving parts.

It is an unfortunate but true statement that confined space accidents frequently result in multiple fatalities. In one survey of confined space accidents conducted by the National Institute of Occupational Safety and Health (NIOSH) it was noted that more than half of the fatalities occurred among rescue personnel, who were well intentioned but ill prepared for the tasks.

It is imperative that all Lake County Directors, Managers and Supervisors appreciate the hazards of any

confined spaces under their control. They must also be aggressive in ensuring that their employees are made aware of the hazards of the confined spaces in their work areas. Additionally, they must ensure that any of their employees who are required to enter confined spaces and perform work are provided with adequate training and equipment prior to entry.

V. RESPONSIBILITIES:

A. Department/Division Directors and Managers are responsible for:

1. The success of the Confined Space Entry Procedures Program in all facilities under their control; and
2. Assuring compliance with applicable Federal, State and local requirements; and
3. Assuring that all immediate supervisors promulgate the procedures set forth in this policy and that the training requirements are complied with.

B. Supervisors are responsible for:

1. Training all of their employees on this policy. Training will be completed within thirty days of employment and at least annually thereafter; and
2. Assuring that the actions set forth in this Safety Procedure are followed.

C. Other employees who conduct business with Lake County (such as contractors) and their employees are required to comply with this and all other Safety Procedures where applicable as set forth by Federal, State and local ordinance.

D. The Risk Manager will:

1. Assist with confined space entry training program and safety meetings to reinforce Safety Procedures for all supervisors and employees; and
2. Monitor all aspects of the Confined Space Entry Procedure for conformance and consistency.

VI. CONFINED SPACE IDENTIFICATION

- A. Appendix B is a list of known County controlled confined spaces and their associated hazards. A sign stating "**CAUTION - CONFINED SPACE - ENTER BY PERMIT ONLY**" shall be posted in the vicinity of all known confined spaces except as indicated in Appendix B.
- B. The List of Confined Spaces found in Appendix B is not necessarily a complete listing and there is

no claim that every confined space has been identified. Continued surveillance must be an ongoing process by supervisors to identify confined spaces.

- C. If an employee discovers an area they believe to be an unidentified confined space, they shall contact either their supervisor or the Risk Manager prior to entry. If the Department/Division determines the area to be a confined space, appropriate signs will be placed at the entrance by the controlling Department/Division and Risk Management must be notified in writing of the address/location of the area.

VII. PREVENTION OF UNAUTHORIZED ENTRY:

Entry into a confined space shall only be authorized after a bonafide need has been established to the satisfaction of the respective Department Director/Division Manager. Only properly trained personnel will be allowed to enter the confined space and then only after permit requirements have been met (i.e. the necessary safety precautions and equipment have been placed in effect.) This procedure will be followed during every confined space entry.

VIII. DUTY TO OTHER EMPLOYEES:

The employer (contractor, etc.) will normally provide any personal protective and safety equipment required by their employees to perform the work. All equipment will be adequate in quantity based on the anticipated scale of operations and sufficient in quality to meet NIOSH, ANSI or other appropriate safety standards. Contact the Risk Management Office if any questions arise or if clarification is required regarding this issue.

IX. TRAINING AND DUTIES:

Department/Division Directors and Managers or other employers, as discussed above, will ensure that employees who supervise, authorize or perform work involving entry into confined spaces receive training based on the following assigned duties during confined space entry.

- A. Authorized Entrants Authorized entrants will receive the appropriate training to allow them to perform their assigned duties under the entry permit program, as follows:
 - 1. Hazard Recognition.
 - a. They must know the hazards which they face during entry.
 - b. They must be aware of the signs and symptoms of exposure to the hazard.
 - c. They must understand the consequences of exposure to the hazard.
 - 2. Communication.

- a. They will be trained on the operation of any communication equipment provided and the requirement to maintain contact with the attendant.
 - b. They must know to inform the attendant when they self-initiate evacuation of a confined space.
3. Protective Equipment.
- a. They must be aware of the personal protective equipment, such as retrieval lines, respirators or clothing needed for safe entry and exit.
 - b. They must be trained on the proper operation of the safety equipment that is provided.
 - c. They must be aware of the external barriers needed to protect entrants from external hazards and the proper use of those barriers.
4. Self-Rescue. Authorized entrants must understand the requirement to exit the confined space unless it is physically impossible to do so when:
- a. The attendant orders evacuation;
 - b. An automatic alarm is activated; or
 - c. The authorized entrants perceive they are in danger.
- B. Attendants. An attendant must be stationed and remain outside the confined space(s) at all times during entry operations. Employees who work as attendants will receive the appropriate training to allow them to perform their assigned duties under the entry permit program, as follows:
1. Number of Entrants. Attendants must maintain an accurate count of all persons in the space.
 2. Hazard Recognition. Attendants must know of and recognize potential confined space hazards and how to monitor activities inside and outside the confined space to determine if it is safe for entrants to remain in the space.
 3. Communication. Supervisors will ensure that attendants:
 - a. Are trained on the operation of any communication equipment provided and the requirement to maintain contact with authorized entrants during entry;

- b. Are trained to order authorized entrants to evacuate the confined space immediately when:
 - (1) The attendant observes a condition which is not allowed in the entry permit;
 - (2) The attendant detects behavioral effects of hazard exposure;
 - (3) The attendant detects a situation outside the space which could endanger the entrants;
 - (4) The attendant detects an uncontrolled hazard within the confined space;
 - (5) The attendant is monitoring entry in more than one confined space and must focus attention on the rescue of entrants from one of those spaces; and
 - (6) The attendant must leave their work station.
 - c. Know how to summon rescue and other emergency services as soon as the attendant determines that authorized entrants need to escape from confined space hazards; and
 - d. Understand the need to take the following actions as necessary, when unauthorized persons approach or enter a permit space while entry is underway;
 - (1) Warn unauthorized persons away from the space;
 - (2) Request unauthorized persons to exit immediately if they have entered the confined space; and
 - (3) Inform the authorized entrants and the attendant's supervisor if unauthorized persons have entered the confined space.
4. Rescue. Attendants will receive training on the proper use of any rescue equipment provided for their use, without entering the confined space.

WARNING:

Attendants must not attempt to enter the confined space themselves to attempt rescue.

C. Supervisors in Charge of Entry. Supervisors who authorize or are in charge of confined space entry will receive the appropriate training to allow them to perform their assigned duties under the entry permit program, as follows:

1. **Entry Authorization and Supervision.** Prior to authorizing entry supervisors will:
 - a. Ensure the entry permit is correctly filled out;
 - b. Determine that the necessary procedures, practices and equipment for safe entry are in effect;

NOTE:

Entrants must also be protected from external hazards. Therefore supervisors will ensure that all pedestrian, vehicle or other barriers necessary to protect entrants from external hazards are provided.

- c. Determine, at appropriate intervals, that entry operations remain consistent with the terms of the entry permit, and that acceptable entry conditions are present; and
 - d. Cancel the entry authorization and terminate entry operation, whenever acceptable entry conditions are not present; and
 - e. Take the necessary measures for concluding an entry operation, such as closing off a confined space and canceling the permit, once the work authorized by the permit has been completed.
2. **Dealing With Unauthorized Personnel.** Supervisors who authorize or are in charge of a confined space entry shall take the appropriate measures to remove unauthorized personnel who are in or near entry permit confined spaces.

X. ENTRY PERMITS:

A. Types of Permits.

1. Standard permit, 30 Day Duration.
 - a. A Standard Permit for a 30 day period may be used for each lift station pump room.
 - b. This permit shall remain at the entrance to the confined space and be signed by each entrant before he enters the confined space. The sign off by each entrant indicates that all requirements of the checklist have been met.

- c. Completed permit forms will be turned into the supervisor at the end of each 30 day period by the person in charge of entry.
 2. Standard Permit, One Time Entry.
 - a. A Standard Permit will be used for each entry into wet wells, tanks, valve pits, or other spaces defined as a confined space.
 - b. This permit will be completed by the person in charge of entry, signed by a supervisor authorized to approve confined space entries, and returned to that Supervisor by the person in charge of entry once the entry and work have been completed.
 3. Special Permit, One Year Duration. A Special Permit for entry into low hazard confined spaces may be valid for up to one year, so long as all conditions under which the permit was issued are maintained. Special Permits require prior approval by the Risk Manager.
 4. Hot Work Permits. Hot Work Permits, in addition to Standard Permits, are required for entry into confined spaces when work involving welding, cutting, burning or heating is to be performed.
- B. Completing Entry Permit Forms. All Confined Space Entry Permits will contain the following information as a minimum:
 1. The hazards of the Confined space;
 2. The measures for isolation of the confined space;
 3. The measures, such as lockout/tagout, equipment and procedures for purging, inerting, ventilating and flushing, used to remove or control potential hazards;
 4. Acceptable environmental conditions, quantified with regard to the hazards identified in the confined space, which must be maintained during entry;
 5. Testing and monitoring equipment and procedures by which the supervisor will verify that acceptable environmental conditions are being maintained during entry;
 6. The rescue and other services which would be summoned in case of emergency and the means of communications with those services;
 7. Rescue equipment to be provided on-site, if necessary;

8. The communication procedures and equipment used by authorized entrants and attendants to maintain contact;
9. The personal protective equipment, such as respirators, clothing and retrieval lines, provided in order to ensure employee safety; and
10. Any other information whose inclusion is necessary, given the circumstances of the particular confined space, in order to ensure employee safety.

C. Additional Required Information. If the person in charge of entry is not in direct charge of the entry for its duration, then the following items must also be completed, at a minimum, on the permit in addition to the checklist items required in the preceding list:

1. The identity of the confined space;
2. The purpose of the entry;
3. The date of the entry;
4. A list of authorized entrants;
5. A list of eligible attendants;
6. A list of individuals eligible to be in charge of the entry; and
7. The signature, together with the name printed or otherwise legible, of the individual authorizing the entry, verifying that all actions and conditions necessary for safe entry have been performed.

XI. STANDARD ENTRY AND EXIT:

A. Preparation.

1. Entry is to be made by authorized personnel only.
2. An attendant is to be present whenever entry is made into any confined space, unless otherwise authorized by Special Permit. The attendant shall remain at the entrance and have available a lifeline and any other safety equipment necessary to facilitate a rescue. This equipment can include, but is not limited to:
 - a. A rescue tripod,
 - b. Body harness,

- c. Anklets/wristlets, and
 - d. A 30 minute air pack.
3. A permit will be filled out by the person in charge of entry and approved by the appropriate Supervisor prior to the actual entry, and be kept at an accessible area near the confined space.
 4. A sign or other means of posting that a confined space is being entered will be placed at the opening of the confined space. The posting shall read: **"CAUTION - CONFINED SPACE - ENTER BY PERMIT ONLY."**
 5. A pre-entry briefing will be conducted with Entrants and Attendant(s) to review their respective duties and procedures.
- B. Ventilation. All permit entry confined spaces are to be purged with fresh air (not pure oxygen) for a minimum of 15 minutes prior to gas testing and then continuously thereafter until work has been completed and the entrants have left the space. Air movers, blowers or "intrinsically safe or explosion proof" fans are an effective means of ventilating.

WARNING:

Air mover and blower intakes must be located far enough away and upwind from any source of hazardous gases (for example a vehicle exhaust pipe) to preclude intake air contamination. Additionally, exhaust air from an air mover or fan should not be blown into another work area, near a source of ignition, or near an intake to a building ventilation system.

- C. Lockout/Tagout. Follow Lockout/Tagout procedures for isolation of any electrical, mechanical, chemical or other energy hazards which could cause injury to entrants.
- D. Communications. Prior to entry of the confined space, the Attendant will establish communications with Lake Communication on the County Operations Net. As a minimum, the Attendant will provide the following information to the Communications Specialist:

"Lake, this is (Attendant's call sign). ____ (Number) employees of ____ (Work Center or Division) will be entering a confined space at this location. Our location is ____ (lift station or other facility, as appropriate) located at (provide the nearest address or street intersection and nearest municipality). The expected length of time for this confined space entry is ____ (expected length of time). I will notify you as soon as the last entrant has left the confined space."

NOTE:

If the Attendant is unable to establish satisfactory communications directly, an alternative communication link must be established prior to entry.

E. Atmosphere Monitoring.

1. After purging the confined space, and before entry, the space will be tested using an appropriate direct reading instrument and a remote sampling probe testing in the follow sequence: Oxygen concentration, combustible gas or vapor, and potential toxic contaminants. All gas testing equipment will be tested for operation and safety before reaching the job site.
2. It is important when testing a confined space to sample the gases near the bottom of the space or, if this is not feasible, at least the lowest anticipated working level. This is because chemicals with a vapor density greater than air tend to form greater concentrations in confined spaces at the lowest levels and may achieve hazardous concentrations there. Where entry is made through an opening on top, the gas detecting device sensor may be lowered through the access with the meter secured safely outside. In other cases, it will be necessary to thrust the sensor through the access by hand and take readings prior to entry.
3. All confined spaces will be tested for the following:
 - a. Oxygen deficiency (minimum of 19.5% by volume);
 - b. Oxygen enrichment (maximum of 22% by volume);
 - c. Explosive gases (methane - calibrated to maximum of 10% LEL); and
 - d. Toxic gases as necessary (H₂S, CO - calibrated to maximum of 10 ppm.- 8 hr. time weighted average)

F. Test Results. The initial air sampling test results and the final meter readings following the departure of the last entrants from the confined space will be recorded in the entry permit. The following steps will be taken based on the initial test results:

1. If the test results are positive (alarm activates) - ventilate again for fifteen minutes, and retest.
2. If results are negative (no alarms) - the area is cleared for entry and will be tested and ventilated continuously while in use.

3. If a negative result can not be attained after ventilating for a reasonable period of time - contact the Supervisor or the Risk Manager for assistance.

G. Personal Protective Equipment (PPE). Personal Protective Equipment required for entry into a confined space will be noted on the entry permit and provided as follows:

1. Eye and face protection is to be provided whenever employees are exposed to flying objects or glare. Chemical splash goggles are to be provided whenever employees are exposed to sewage, eye irritating chemicals, vapors, or dusts.
2. Foot protection is to be provided whenever the hazard of falling objects or slipping and falling is present.
3. Full body protection (Tyvek coveralls/boots and appropriate gloves) are to be provided whenever employees risk coming into direct contact with chemicals or sewage.
4. Hearing protection is to be provided whenever the noise exposure to employees exceeds a time weighted average of 85 DBA or an instantaneous noise level of 115 DBA. If a supervisor is in doubt regarding noise levels at the work site or if they are uncertain whether or not their employees are being exposed to excessive noise, they should contact the Risk Management office.
5. Respiratory protection (either air line supplied or demand type self contained breathing apparatus) will be used if work activities generate a hazardous environment in the confined space or if it is not possible to isolate the confined space from all potential respiratory hazards (i.e. lift stations, storm water drains and lines etc. where incoming lines can not be sealed off). Contact the Risk Manager for the proper procedures and safety equipment to enter the space safely whenever environmental conditions, as tested by the gas detector, exceed the limitations prescribed above.

WARNING:

Air purifying respirators (those without an air supply) must never be used in an oxygen-deficient or IDLH atmosphere.

6. A full body harness, anklets or wristlets and a lifeline shall be worn by personnel in a confined space under the following conditions:
 - a. Anytime respiratory equipment is used;
 - b. Anytime a worker is inside piping;
 - c. Anytime a worker is lowered into a confined space; or

- d. Anytime IDLH conditions exist.

H. Lifelines and Harnesses.

1. All lifelines, harnesses, D-rings and any other equipment needed for entry or exit shall be inspected for defects before entry.

NOTE:

"Lifelines, safety belts and lanyards shall be used only for employee safeguarding. Any lifeline, safety belt, lanyard actually subjected to in-service loading, as distinguished from static load testing, shall be immediately removed from service and shall not be used again for employee safeguarding." . . (29CFR 1926.104)

2. When entry into a confined space is done through a top opening, the harness shall be of a type which suspends a person in an upright position.
3. A lifeline shall be attached to the harness of all entry personnel and will be sufficient in length to extend 10 feet out of the entrance. If entry personnel are suspended in a full body harness from a wench, then a separate safety line will be required as a back-up to provide a personnel fall protection system. The two lines will be securely anchored separately outside the confined space. If the confined space is a large diameter gravity storm or sewer line, a rescue tripod will be used to prevent entrants from being swept down the main.
1. Hot Work. In addition to all other precautions previously stated, the following steps will be taken while performing Hot Work:
 1. A fire extinguisher will be located nearby;
 2. Welding and cutting equipment will be pre-inspected prior to each use in a confined space. In particular, gas welding and cutting equipment will be checked closely for gas leaks;
 3. Aerosol containers shall not be used in a confined space when hot work or any other spark producing operation is being performed. If aerosol materials must be used, all hot work shall be stopped, and
 4. Compressed gas cylinders used in Hot Work shall not be allowed inside a confined space

unless special authorization is given by the Risk Manager. The shut-off valves for compressed gas cylinders should be within easy reach of the attendant.

5. Torches and hoses will be removed from the confined space whenever the hot work is completed or the confined space is exited.

J. Portable Tools, Equipment and Temporary Services.

1. Whenever flammable vapors or gases may be present: all tools used will be non-sparking (air powered tools are considered to have a safety advantage over electric tools in confined spaces and are recommended where feasible); lighting must be explosion proof, and all portable electrical equipment will either be protected by a Ground Fault Circuit Interrupter (GFCI) located outside the space or be of the low voltage type (12 or 24 Volts DC).
2. If there is risk of electrical shock (i.e. electrical power lines are fed through the entrance and workers must come in contact with them, or the floors are damp and the worker may be grounded) then lighting must be explosion proof and all portable electrical equipment will either be protected by a GFCI or be of the low voltage type as discussed previously.
3. If a portable ladder is used for entry, it shall be secured in a fixed position and remain in place as long as workers are inside the confined space.

K. Excavations and Trenches. Supervisors who plan to have employees enter confined spaces where excavating and trenching operations are being conducted must ensure that all work activities are in compliance with 29 CFR 1926.650 through 652 (Subpart P - Excavations). Shoring should be used in all trenches five feet or more in depth that are dug in type "C" soil unless the sides are sloped at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal).

L. Entry and Work. After all safety equipment is in place and determination of an acceptable environmental condition exists, the gas detector will be attached to the entrant or secured at the working level and safe entry can begin. Ventilation will continue throughout the entry and work procedures.

M. Work Completion. Once the work has been finished, the entrant will:

1. Remove tools, any other equipment brought in and then exit the space. The gas detector will be removed last and the area secured.
2. Notify Lake Communications that the entry and work has been completed, that all entrants have left the confined space and that the space has been secured.

VII. EMERGENCY PROCEDURES:

The following actions will be taken either by the Attendant or the Supervisor in charge at the worksite in the event an entrant becomes incapacitated in the confined space for whatever reason. The procedures are designed to get the entrant out as quickly as possible without jeopardizing anyone attempting a rescue. If an entrant goes down, the following steps will be taken to facilitate a safe rescue:

- A. Contact Lake Communications and relay the following information:
 - 1. State your name and radio call number;
 - 2. State the nature of the request ("Worker injured inside lift station. Need a fire/rescue unit, police, etc."); and
 - 3. State your location (provide sufficient information to allow a response team to locate you).
- B. If Lake Communications does not answer: Call your Division Operating Base Radio and request they call 911 by conventional telephone. Have them forward your emergency request.
- C. If unable to contact Lake Communications or your base radio;
 - 1. Proceed to the nearest phone and dial 911;
 - 2. State the nature of your request ("Worker injured inside lift station. Need a fire/rescue unit, police, etc."); and
 - 3. State your location (provide sufficient information to allow a response team to locate you).
- D. Once help is notified, the Attendant may attempt to pull the downed entrant out via the lifeline. **Under no circumstances will the Attendant enter the confined space.** In all cases, Lake Communications will be notified to alert professional rescue services.
- E. All rescue attempts will be conducted by the appropriate Fire/Rescue personnel in accordance with established procedures.

XIII. ENTRY PROCEDURES FOR LOW HAZARD CONFINED SPACES:

When Department/Division Directors and Managers determine, based on documentation which appears on the entry permit, that the confined spaces they plan to have employees enter are low-hazard confined spaces, the Supervisor may give a blanket authorization for entry into the confined space without providing an Attendant, for a period of up to one year. This **Special Permit** must be approved by the

Risk Manager and it must comply with the County's Confined Space Program and permit procedures as well as the following provisions, as applicable:

- A. Inspection and Checking. Supervisors who plan to have employees periodically enter low-hazard confined spaces on a routine basis, solely to inspect or check meters or other equipment, shall ensure that authorized entrants receive the necessary training and that:
1. Appropriate entry practices and procedures are in effect before authorizing or allowing entry, and are followed throughout the entry;
 2. In confined spaces with a potential for atmospheric hazard, the confined space atmosphere shall be tested prior to each entry and as the entry proceeds, using an appropriate direct reading instrument and a remote sampling probe and testing in the following sequence:
 - a. Oxygen concentration by volume,
 - b. Combustible gas or vapor, and
 - c. Potential toxic contaminants;
 3. No confined space hazard is present immediately before each entry;
 4. The authorized entrant neither takes anything into the confined space nor takes any action which could cause a hazard to arise;
 5. If the space has a potential for a hazardous atmosphere and the entry requires the entrant to move through areas which were not tested prior to entry, the authorized entrants shall have an appropriate direct reading instrument and remote sampling probe throughout the entry so that the entrant can determine using the testing sequence in paragraph XIII.A.2. of this procedure, at the appropriate intervals, if the confined space conditions remain acceptable for entry;
 6. The entry permit is revoked when the direct reading instruments being used or some circumstance indicates that conditions in the space are no longer acceptable for entry; and
 7. When an entry permit has been revoked because unacceptable conditions have arisen in a space, subsequent entry may not be made by Special Permit until the confined space is restored to Special Permit conditions.
- B. Minor Maintenance Work. Supervisors who plan to have employees enter low-hazard confined spaces to perform minor maintenance work, such as tightening a packing nut, which would not generate a serious hazard shall ensure that authorized entrants receive the necessary training and that;

1. Appropriate entry practices and procedures are in effect before authorizing or allowing entry, and are followed throughout the entry;
2. If the confined space has a potential for a hazardous atmosphere, the confined space atmosphere shall be shown to be, and to remain, acceptable for entry using one of the following means, as appropriate to make that determination:
 - a. Ventilation of the confined space prior to entry, using a mechanically powered ventilator for at least the time specified in the nomograph prepared for that ventilator, and continuously throughout the entry; or
 - b. A combination of mechanically powered ventilation and atmospheric testing; or
 - c. Continuous atmospheric monitoring; or
 - d. Frequent atmospheric testing.
3. The entry permit is revoked when the conditions become unacceptable for entry; and
4. When an entry permit is revoked because unacceptable conditions have arisen in a confined space, any subsequent entry is made with an attendant stationed outside the confined space.

C. Entry Into Certain Diked Areas. Supervisors who plan to have employees enter diked areas that have dikes six feet or more in height and are regulated as confined spaces shall ensure that authorized entrants receive the necessary training and that:

1. Appropriate entry practices and procedures are in effect before authorizing or allowing entry, and are followed throughout the entry;
2. There has been no escape of flammable, toxic or corrosive materials or other change in the space which causes a confined space hazard to be present;
3. Any line breaking is performed using the appropriate equipment and in accordance with the appropriate procedures including procedures for the authorization of line breaking through a permit which could be attached to the entry permit;
4. The entry permit is revoked when the conditions become unacceptable for entry; and
5. When an entry permit has been revoked because unacceptable conditions have arisen in a confined space, any subsequent entry is made with an attendant stationed outside the permit space.

IV. PROGRAM EVALUATION:

Because of the seriousness of the hazards associated with confined space entry, the County' Confined Space Entry Procedure shall be reviewed periodically to ensure program integrity and the continued operating effectiveness of all program elements. At the request of the Safety Executive Committee, supervisors representing Public Services - Road Department, Fire & Emergency Services - Fire/Rescue or Technical Services Divisions and the Risk Management Office will be selected to conduct a review of this procedure and the following aspects of the County's Confined Space Entry Program:

- A. Compliance with State and Federal safety regulations;
- B. Adequacy of established emergency procedures and protective equipment;
- C. The effectiveness of training programs; and
- D. The adequacy of current record keeping procedures.

Comments and recommendations based on their findings will be prepared by the Risk Management Office and forwarded to the County Manager for consideration and the assignment of corrective action.

XV. APPLICABLE STANDARDS AND REFERENCES:

- A. Occupational Safety and Health Administration (OSHA) regulations:
 - 1. Proposed Occupational Safety and Health Standard for General Industry - 29 CFR 1910.146 (Permit Required Confined Spaces)
 - 2. 29 CFR 1926.650 (Excavations) - Construction Industry Standards and Interpretations
- B. National Safety Council publications:
 - 1. Accident Prevention Manual for Industrial Operations - Engineering and Technology, Chapter 1, "Industrial Buildings and Plant Layout"
 - 2. Public Employee Safety & Health Management, Chapter 12, "Occupational Health Programs"
- C. American National Standard Institute - Safety Requirements for Confined Spaces, ANSI Z 117.1 -1989

GLOSSARY OF TERMS

"Acceptable Environmental Conditions" - means confined space workplace conditions in which uncontrolled hazardous atmospheres are not present, and which include any additional environmental criteria the employer may require for employee entry into a permit required confined space.

"Attendant" - means an individual stationed outside the permit required confined space who is trained as required by this procedure and who monitors the authorized entrants inside the permit required confined space. An attendant may monitor not more entrants nor more permit spaces than the entry permit specifically authorizes.

"Authorized Entrant" - means an employee who is authorized by a Division Manager to enter a permit required confined space. Authorized entrants may rotate duties, serving as attendants if the entry permit so states.

"Blanking" or "Blinding" - means the absolute closure of a pipe, line or duct, by fastening across its bore a solid plate or "cap" which completely covers the bore; which extends at least to the outer edge of the flange at which it is attached; and which is capable of withstanding the maximum upstream pressure.

"Confined Space" - see "Permit Required Confined Space."

"Double Block and Bleed" - means the closure of a line, duct or pipe by locking and tagging a drain or vent which is open to the atmosphere in the line between two locked-closed valves.

"Emergency" - means any occurrence (including any failure of hazard control or monitoring equipment) or event(s) internal or external to the confined space which could endanger entrants.

"Engulfment" - means the surrounding and effective capture of a person by a liquid or finely divided solid substance.

"Entry" - means the act by which a person intentionally passes through an opening into a permit required confined space. The entrant is considered to have entered as soon as any part of the entrant's face breaks the plane of an opening into the space.

"Entry Permit" - means the written or printed documented established by the employer, the content of which is based on the employer's hazard identification and evaluation of that confined space (or class or family of confined spaces if a number of spaces may contain similar hazards) and is the instrument by which the employer authorizes his or her employees to enter that permit required confined space. The entry permit: Defines the conditions under which the permit space may be entered; states the reason(s) for entering the space; the anticipated hazards of the entry; for entries where the individual authorizing the entry does not assume direct charge of the entry, lists the eligible attendants, entrants and the individuals who may be in charge of the entry; and establishes the length of time (not to exceed one year) for which the permit may remain valid.

GLOSSARY OF TERMS (CONTINUED)

"Entry Permit System" - means the employer's written procedures for preparing and issuing permits for preparing and issuing permits for entry and returning the permit space to service following termination of entry, and designates by name or title the individuals who may authorize entry.

"Hazardous Atmosphere" - means an atmosphere which exposes employees to a risk of death, incapacitation, injury or acute illness from one or more of the following causes:

- A. A flammable gas, vapor, or mist in excess of 10 percent of its Lower Flammable Limit (LFL);
- B. An airborne combustible dust at a concentration that obscures vision at a distance of five feet or less;
- C. An atmosphere oxygen concentration below 19.5 percent or above 22 percent;
- D. An atmosphere concentration of any substance for which a permissible exposure limit is published in Subpart Z of 29 CFR 1910 and could result in employee exposure in excess of its permissible limit(s). (When an air contaminant for which OSHA has not determined a permissible exposure limit may be present in the confined space atmosphere, OSHA recommends employers consult other sources of information, such as Material Safety Data Sheets which comply with the Hazard Communication Standard, 29 CFR 1910.1200, for guidance in establishing the acceptable environmental conditions for entry by their employees.)
- E. Any atmospheric condition recognized as immediately dangerous to life or health.

"Hot Work Permit" - means the employer's written authorization to perform operations which could provide a source of ignition, such as riveting, welding, cutting, burning or heating.

"Immediately Dangerous to Life or Health (IDLH)" - means any condition which poses an immediate threat of loss of life; may result in irreversible or immediate-severe health effects; may result in eye damage; irritation or other conditions which could impair escape from the confined space.

"Immediate-severe Health Effects" - means any acute clinical sign(s) of a serious, exposure-related reaction manifested within 72 hours after exposure.

"Inerting" - means rendering the atmosphere of a confined space non-flammable, non-explosive or otherwise chemically non-reactive by such means as displacing or diluting the original atmosphere with steam or a gas that is non-reactive with respect to that space.

GLOSSARY OF TERMS (CONTINUED)

"Isolation" - means the separation of a confined space from unwanted forms of energy which could be a serious hazard to confined space entrants. Isolation is usually accomplished by such means as blanking or binding; removal or misalignment of pipe sections or spool pieces; double block and bleed; or lockout and/or tagout.

"Line Breaking" - means the intentional opening of a pipe, line or duct that is or has been carrying flammable, corrosive or toxic material, an inert gas, or any fluid at a pressure or temperature capable of causing injury.

"Low-hazard Confined Space" - means a confined space where there is an extremely low likelihood that an IDLH or engulfment hazard could be present, and where all other serious hazards have been controlled.

"Not Permitted Condition" - means any condition or set of conditions whose hazard potential exceeds the limits stated in the entry permit.

"Oxygen Deficient Atmosphere" - means an atmosphere containing less than 19.5 percent oxygen by volume.

"Oxygen Enriched Atmosphere" - means an atmosphere containing more than 22 percent oxygen by volume.

"Permit Required Confined Space" (Confined Space) - means an enclosed space which:

- A. Is large enough and so configured that an employee can bodily enter and perform assigned work;
- B. Has limited or restricted means for entry or exit (some examples are tanks, vessels, silos, storage bins, hoppers, vaults, pits and diked areas);
- C. Is not designed for continuous employee occupancy; and
- D. Has one or more of the following characteristics:
 1. Contains or has a known potential to contain a hazardous atmosphere;
 2. Contains a material with the potential for engulfment of an entrant;
 3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross-section; or
 4. Contains any other recognized serious safety or health hazard.

"Permit Required Confined Space Program" - means the employer's program for preventing unauthorized employee entry and for ensuring safe entry into and work within confined spaces by authorized employees.

GLOSSARY OF TERMS (CONTINUED)

"Person in Charge of Entry" - means the trained individual who completes the permit and authorizes entry into the confined space. This can be the Supervisor, Attendant or an Authorized Entrant.

"Retrieval Line" - means a line or rope secured at one end to the worker by a full-body harness, wristlets or anklets and with its other end secured to either a lifting (or other retrieval device, or to an anchor point located outside the portal.

LOCATION OF CONFINED SPACES

(To be supplied)

Permit # _____

CONFINED SPACE ENTRY PERMIT					
Type of Permit: (check one or more categories)		Standard -	One Time <input type="checkbox"/>	Special <input type="checkbox"/>	Hotwork <input type="checkbox"/>
			30 Day <input type="checkbox"/>		
DEPARTMENT:			DIVISION:		
Supervisor in charge of entry:			Location of space:		
Date/Time of Permit:			Expiration Date/Time:		
<u>AUTHORIZED ENTRANTS</u>		<u>ATTENDANTS</u>		<u>FIRE WATCH</u>	
_____		_____		_____	
_____		_____		_____	
_____		_____		_____	
Description of work:					
SAFETY EQUIPMENT PROVIDED:					
		YES	N/A		
Air Line Respirator/SCBA	<input type="checkbox"/>	<input type="checkbox"/>	Gas Meter		<input type="checkbox"/> <input type="checkbox"/>
Life Line/Harness	<input type="checkbox"/>	<input type="checkbox"/>	Tripod/Winch		<input type="checkbox"/> <input type="checkbox"/>
Eye Protection	<input type="checkbox"/>	<input type="checkbox"/>	Blower (Ventilation)		<input type="checkbox"/> <input type="checkbox"/>
Tyvek Clothing	<input type="checkbox"/>	<input type="checkbox"/>	Spark Proof Tools		<input type="checkbox"/> <input type="checkbox"/>
Hard Hat	<input type="checkbox"/>	<input type="checkbox"/>	Explosive Proof Lighting		<input type="checkbox"/> <input type="checkbox"/>
Hearing Protection	<input type="checkbox"/>	<input type="checkbox"/>	Communications System		<input type="checkbox"/> <input type="checkbox"/>
GFCI/Low Voltage Power	<input type="checkbox"/>	<input type="checkbox"/>	Fire Extinguisher		<input type="checkbox"/> <input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>			
SAFETY PRECAUTIONS TAKEN <input checked="" type="checkbox"/>					
		YES	N/A		
Employee Training	<input type="checkbox"/>		Permit Posted	<input type="checkbox"/>	<input type="checkbox"/>
Pre-Entry Briefing	<input type="checkbox"/>		Signs/Barricades	<input type="checkbox"/>	<input type="checkbox"/>
Ventilation	<input type="checkbox"/>		Seminole Communications Notified	<input type="checkbox"/>	<input type="checkbox"/>
Lock out/Tag out	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input type="checkbox"/>
PRE-ENTRY ATMOSPHERIC TESTING		Reading:		Time:	Initials:
1. Test for Oxygen Content:		_____ %O ₂		_____	_____
2. Test for Flammable Concentration:		_____ %LEL		_____	_____
3. Test for Toxic Concentration:		_____ PPM of _____ (TWA = _____)		_____	_____
4. Test for Toxic Concentration:		_____ PPM of _____ (TWA = _____)		_____	_____
5. Test for Toxic Concentration:		_____ PPM of _____ (TWA = _____)		_____	_____
FINAL TESTING RESULTS		(Peak Reading):		Time:	Initials:
1. Test for Oxygen Content:		_____ %O ₂		_____	_____
2. Test for Flammable Concentration:		_____ %LEL		_____	_____
3. Test for Toxic Concentration:		_____ PPM of _____ (TWA = _____)		_____	_____
4. Test for Toxic Concentration:		_____ PPM of _____ (TWA = _____)		_____	_____
5. Test for Toxic Concentration:		_____ PPM of _____ (TWA = _____)		_____	_____
PERMIT AUTHORIZATION: I certify that I have inspected the work area for safety and reviewed all safety precautions recorded on this permit.					
Permit Authorized By (SIGNATURE): _____					

