BILLINGS LOGAN INTERNATIONAL AIRPORT

CONFINED SPACE PROGRAM

PREPARED BY

AVIATION AND TRANSIT DEPARTMENT
BILLINGS LOGAN INTERNATIONAL AIRPORT
BILLINGS, MONTANA

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CONFINED SPACE PROGRAM

I. INTRODUCTION

A. This Confined Space Program was developed to establish practices and procedures to help protect employees at the Billings Logan International Airport from the hazards that may be encountered from entering confined spaces. For the purposes of this Program, a confined space is defined as follows:

1. Confined Space is a space that:

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 (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).

c. Is not designed for continuous employee occupancy.

B. At the Billings Logan International Airport, two types of confined spaces have been identified. They are:

1. Non Permit Confined Space – Is 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.

2. Permit Required Confined Space – There are two types of Permit Required Confined Spaces. Each has its own specific entry procedures/requirements and are defined as follows:

a. Confined Spaces that only contain actual or potential hazardous atmosphere conditions.

b. Confined Spaces that contain or have the potential to contain:

(1) A material that has the potential for engulfing an entrant.

(2) An internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.

(3) Any other recognized serious safety or health hazard.

C. A survey has been conducted of the Airport facilities to preclassify all confined spaces into one of these two categories. Appendix A contains a listing of these spaces, and Sections III, IV, V, VI, and VII of this Program contain specific entry procedures.

In addition, all Permit Required Confined Spaces that could be readily accessible by the public or untrained employees will be posted with signage that reads: **DANGER – PERMIT REQUIRED CONFINED SPACE DO NOT ENTER.** However, many of the potential entry locations (storm sewer inlets) are within the fenced airfield area. Due to operational safety concerns and the number of inlet grates,

these potential entry points will not be signed. All Billings Logan International Airport employees, however, have been issued a Departmental Order concerning the need to not enter these spaces unless the procedures contained in this Program are followed. A copy of this written order is contained in Appendix E.

The Billings Logan International Airport is a dynamic operation and is in a constant state of change, renovation, and expansion. Therefore, from time to time new confined spaces may be added, old ones eliminated, and existing ones reclassified. Under these circumstances, a completed evaluation of each space will be made and classified according to the procedures and guidelines of this Program.

Finally, the following supervisors at the Billings Logan International Airport will serve as the primary enforcement, training, and permit issuers to support the Confined Space Program. They are:

1. Authorized to issue permits and primary training officers:

    a. Paul Totton, Airport Operations Supervisor
    b. Mick McCarthy, Airport Operations Supervisor

2. Authorized to issue permits only:

    a. Paul Totton, Airport Operations Supervisor
    b. Mick McCarthy, Airport Operations Supervisor
    c. Mark Evangeline, Airport Facilities Superintendent

II. GLOSSARY OF TERMS

A. Many of the following terms are used throughout this Program. The reader should familiarize himself/herself with each definition and refer to them as necessary.

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.

2. **Attendant** means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's Confined Space Program.

3. **Authorized Entrant** means an employee who is authorized by the Airport to enter a permit space.

4. **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.

5. **Confined Space** means a space that:

    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 (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).

c. Is not designed for continuous employee occupancy.

6. **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.

7. **Emergency** means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants or in fact, renders the entrant(s) incapable of self-evacuating the space.

8. **Engulfment** means the surrounding and effective capture of a person by a liquid 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.

9. **Entry** means the action by which a person passes through an opening into a permit required confined space. Entry includes ensuring work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

10. **Entry Permit (permit)** means the written or printed document that is provided by the Airport to allow and control entry into a permit space and that contains the information specified in the Airport's entry permit.

11. **Entry Supervisor** means the person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this Program. An entry supervisor also may serve as an attendant or as an authorized entrant as long as that person is trained and equipped as required by this Program for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

12. **Entry Termination** means entry to a confined space will be considered ended when entrant(s) have exited the space with no intent to re-enter, and the entry space cover has been closed/covered and secured.

13. **Evacuation** means evacuation of a confined space will be executed immediately by entrant(s) whenever a hazardous condition is presented within the space, or announced by the attendant monitoring from the exterior.

14. **Hazardous Atmosphere** means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

a. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL).

b. Airborne combustible dust at a concentration that meets or exceeds its LFL. This concentration may be approximated as a condition in which the dust obscures vision at a distance of five (5) feet (1.52m) or less.

c. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.

d. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G. Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, and which could result in employee exposure in excess of its dose or permissible exposure limit. An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

e. Any other atmospheric condition that is immediately dangerous to life or health.

15. **Hot Work Permit** means the Airport's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

16. **Immediately Dangerous to Life or Health (IDLH)** means any condition that poses an immediate or delayed threat to life, or that would cause irreversible adverse health effects, or that would interfere with an individual's ability to escape unaided from a permit space. Some materials, hydrogen fluoride gas and cadmium vapor, for example, may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

17. **Inerting** means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. This procedure produces an IDLH oxygen deficient atmosphere.

18. **Isolation** means 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 or lines, pipes, or ducts, a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

19. **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 volume, pressure, or temperature capable of causing injury.

20. **Non Permit Confined Space** means 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.

21. **Oxygen Deficient Atmosphere** means an atmosphere containing less than 19.5 percent oxygen by volume.

22. **Oxygen Enriched Atmosphere** means an atmosphere containing more than 23.5 percent oxygen by volume.

23. **Permit Cancellation** means a confined space entry permit will be canceled upon the entrant(s) and attendant notifying the issuing supervisor of their termination of entry.

24. **Permit Required Confined Space (permit space)** means a confined space that has one or more of the following characteristics:

    a. Contains or has a potential to contain a hazardous atmosphere.

    b. Contains a material that has the potential for engulfing an entrant.

    c. 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 smaller cross-section.

    d. Contains any other recognized serious safety or health hazard.

25. **Permit Required Confined Space Program** means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

26. **Permit System** means the Airport's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

27. **Prohibited Condition** means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

28. **Rescue Service** means the personnel designated to rescue employees from permit spaces. The City of Billings Fire Department will provide rescue services for this Program.

29. **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 spaces.

30. **Testing** means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space. Testing enables the Airport to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to and during entry.

III. LEVEL 1

CONFINED SPACE ENTRY PROCEDURES FOR **PERMIT REQUIRED** CONFINED SPACES THAT **CONTAIN ACTUAL HAZARDOUS ATMOSPHERE CONDITIONS**.

A. Before entry is authorized, a department supervisor shall complete the confined space entry permit authorizing the work activity in the space.

B. A minimum of two employees is required to work on any task associated with this type of space. One employee must remain outside the space and in constant radio contact with the employee who enters the space.

C. Any conditions making it unsafe to remove or open an entrance cover/door or opening shall be eliminated before the cover/opening is removed. Questions concerning unsafe entrance covers shall be immediately directed to one of the confined space enforcement supervisors.

D. When entrance covers/doors are removed/opened, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening or unintended entry, and that will protect each employee working in the space from foreign objects entering the space.

E. Before entering the space, the internal atmosphere shall be tested by a supervisor or employee that has completed pre-entry testing training, with a calibrated direct-reading instrument, for the following conditions in the order given:

1. Oxygen content.

2. Flammable gases and vapors.

3. Potential toxic air contaminants.

F. There may be no hazardous atmosphere within the space whenever any employee is inside the space.

G. Continuous forced air ventilation shall be used, as follows:

1. An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.

2. The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.

3. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

H. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

I. If a hazardous atmosphere is detected during entry:

1. Each employee shall leave the space immediately and an enforcement supervisor immediately notified.

2. The space shall be evaluated to determine how the hazardous atmosphere developed. The use of an outside testing firm will be employed if necessary.

3. Procedures as outlined in Section IV of this Program will then be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

IV. LEVEL 2

CONFINED SPACE ENTRY PROCEDURES FOR **PERMIT REQUIRED** CONFINED SPACES THAT **CONTAIN POTENTIAL HAZARDOUS ATMOSPHERE CONDITIONS**.

A. Before entry is authorized, a department supervisor shall complete the confined space entry permit authorizing the work activity in the space.

B. A minimum of two employees are required to work on any task associated with this type of space. One employee must remain outside the space and in constant radio contact with the employee who enters the space.

C. Any conditions making it unsafe to remove or open an entrance cover/door or opening shall be eliminated before the cover/opening is removed. Questions concerning unsafe entrance covers shall be immediately directed to one of the confined space enforcement supervisors.

D. When entrance covers/doors are removed/opened, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening or unintended entry, and that will protect each employee working in the space from foreign objects entering the space.

E. Before entering the space, the internal atmosphere shall be tested by a supervisor or employee that has completed pre-entry testing training, with a calibrated direct-reading instrument, for the following conditions in the order given:

1, Oxygen content.

2. Flammable gases and vapors.

3. Potential toxic air contaminants.

NOTE: Should isolation of the space be infeasible because the space is large (large crawl space) or part of a continuous system (sewer system), pre-entry testing shall be performed to the extent feasible before entry is authorized. If entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working. Ensure that the surrounding area is surveyed to avoid hazards such as drifting vapors from tanks, piping, or sewers.

F. There may be no hazardous atmosphere within the space whenever any employee is inside the space.

G. Continuous forced air ventilation shall be used, as follows:

1. An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.

2. The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.

3. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

H. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

I. If there are no non-atmospheric hazards present and if the pre-entry tests show there is no dangerous air contamination and/or oxygen deficiency within the space, and there is no reason to believe that any is likely to develop, entry into and work within may proceed. Continuous testing of the atmosphere in the immediate vicinity of the workers within the space shall be accomplished. The workers will immediately leave the permit space when any of the gas monitor alarm set points are reached as defined. Workers will not return to the area until a supervisor who has completed the gas detector training has evaluated the situation and determined that it is safe to enter.

J. If a hazardous atmosphere is detected during entry:

1. Each employee shall leave the space immediately and an enforcement supervisor immediately notified.

2. The space shall be evaluated to determine how the hazardous atmosphere developed. The use of an outside testing firm will be employed if necessary.

3. Procedures as outlined in Section IV of this Program will then be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

K. If an emergency presents itself, immediate notification of the Airport's ARFF Division and the Billings Fire Department shall be made.

V. LEVEL 3

CONFINED SPACE ENTRY PROCEDURES FOR **PERMIT REQUIRED** CONFINED SPACES THAT **CONTAIN OR HAVE THE POTENTIAL TO CONTAIN**.

A. **A material that has the potential for engulfing an entrant.**

B. **An internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.**

All work activities for these types of spaces will require a sufficient number of trained employees to fulfill the entry supervisor, attendant, and entrant responsibilities the same as those contained in Sections III and IV of this Program.

A. Before entry is authorized, the entry supervisor shall completely fill out and document on the entry permit (Appendix B) that permit space condition evaluations have been conducted as follows:

1. Testing of conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized. Should isolation of the space be infeasible because the space is large (large crawl space) or part of a continuous system (sewer system), pre-entry testing shall be performed to the extent feasible before entry is authorized. If entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working. Ensure that the surrounding area is surveyed to avoid hazards such as drifting vapors from tanks, piping, or sewers.

2. Testing and monitoring of the permit space shall be conducted as per Section III and Section IV, Paragraphs E. and F. above. Should a hazardous atmosphere be encountered by these tests, procedures for entry will revert to LEVEL 2 requirements.

B. If acceptable entry conditions exist entry may proceed, however, the following procedures shall be followed. **Should pre-entry testing show unacceptable entry conditions, refer to Paragraph C. of this Section.**

1. Review the confined space entry permit to ensure it has been completed and all items have been sufficiently accomplished.

2. A written record of the pre-entry test results are at the work site for review by affected employees.

3. All entry supervisors, attendants, and entrants have reviewed and received training concerning their responsibilities as outlined in this Program.

4. The duration of the permit may not exceed the time required to complete the assigned task as identified on the permit.

5. The permit space is isolated, if necessary.

6. The permit space is purged, inerted, or flushed as necessary to eliminate or control atmospheric hazards.

7. Pedestrian, vehicle, or other barriers are provided as necessary to protect entrants from external hazards.

8. The conditions in the permit space must remain acceptable for entry throughout the duration of the entry.

9. A written copy of operating and rescue procedures required for the entry shall remain at the work site for the duration of the job.

10. Confined spaces that carry a risk of engulfment shall be required to be shored and/or barriered to stabilize the engulfing material prior to other work commencing.

11. Confined spaces that carry a risk of entrapment due to configuration or obstacles such that it will directly impede either evacuation or rescue shall have:

    a. A description of the obstruction or layout of the space.

    b. A plan of the entrant's route to the work area.

    c. A rescue line attached to the entrant sufficient in length to allow it to extend from the entrant back to the entry point.

    d. An uninterrupted radio communication.

    NOTE: Entry operations will be terminated and the entry permit canceled if a condition is encountered that is not allowed under the entry permit conditions or when the entry operations covered by the permit have been completed.

C. Should pre-entry testing show that:

1. The existence of dangerous or deficient conditions and additional ventilation cannot reduce concentrations to safe levels, or

2. The atmosphere tested safe but unsafe conditions can reasonably be expected to develop, or

3. An emergency exists, immediate notification of the Airport's ARFF Division and the Billings Fire Department shall be made.

VI. LEVEL 4

CONFINED SPACE ENTRY PROCEDURES FOR **PERMIT REQUIRED** CONFINED SPACES THAT **CONTAIN**.

A. Energized Electrical.

B. Liquid Piping (pressurized/non-pressurized).

C. Hydraulic Lines.

D. Pneumatic Lines.

E. Mechanical Devices.

F. Any other recognized serious safety or health hazard.

G. Before entry is authorized, a department supervisor shall complete the abbreviated confined space entry permit authorizing the work activity in the space.

H. Procedures for lockout/tagout, disconnecting, blocking for the airfield lighting control system are in Appendix D, Departmental Order 015B, Lockout Procedures for the Airfield Lighting Control System.

VII. LEVEL 5

EMERGENCY PROCEDURES

THE FOLLOWING ENTRY PROCEDURES SHALL BE FOLLOWED ONLY IN **EXTREME EMERGENCIES** WHERE A LIFE IS AT RISK, AND WHERE THE RESCUERS HAVE THE SKILLS AND KNOWLEDGE TO PERFORM THE DUTIES. **NO PERSON SHALL ENTER A CONFINED SPACE TO ASSIST ANOTHER PERSON IN ANY WAY UNLESS THEY HAVE THE PROPER EQUIPMENT, BEEN ADEQUATELY TRAINED, AND HAVE AN AIRPORT SUPERVISOR'S DIRECT ASSISTANCE AT THE SCENE.**

A. All personnel must be trained in the duties they will perform and a self contained breathing apparatus shall be worn by any person entering the space. At least one worker shall stand by the outside of the space ready to give assistance in case of emergency. The standby worker shall have a self contained breathing apparatus available for immediate use. There shall be at least one additional worker within sight or call of the standby worker. Continuous powered communications shall be maintained between the worker within the confined space and standby personnel.

B. If at any time there is any questionable action or non-movement by the worker inside, a verbal check will be made. If there is no response, the worker will be moved immediately. **Exception:** If the worker is disabled due to falling or impact, he/she shall not be removed from the confined space unless there is immediate danger to his/her life. City of Billings Fire Department rescue personnel shall be notified immediately. The standby worker may only enter the confined space in case of an emergency (wearing the self contained breathing apparatus) and only after being relieved by another worker. A safety belt or harness with attached lifeline shall be used by all workers entering the space with the free end of the line secured outside the entry opening. The standby worker shall attempt to remove a disabled worker via his lifeline before entering the space.

C. When practical, spaces shall be entered through side openings, those within 3 1/2 feet (1.07m) of the bottom. When entry must be through a top opening, the safety belt shall be of the harness type that suspends a person upright and a hoisting device or similar apparatus shall be available for lifting workers out of the space.

In any situation where their use may endanger the worker, use of a hoisting device or safety belt and attached lifeline may be discontinued.

D. When dangerous air contamination is attributable to flammable and/or explosive substances, lighting and electrical equipment shall be Class 1, Division 1 rated per National Electrical Code, and no ignition sources shall be introduced into the area.

Continuous gas monitoring shall be performed during all confined space operations. If alarm conditions change adversely, entry personnel shall exit the confined space and a new confined space permit issued.

E. In every instance where the procedures in this Section must be implemented, the Airport's ARFF Division and Billings Fire Department services will be notified

immediately for rescue assistance. Where immediate hazards to injured personnel are present, workers at the site shall implement emergency procedures to fit the situation.

VIII. NON PERMIT CONFINED SPACE ENTRY PROCEDURES

The only non permit confined space identified at the Billings Logan International Airport is the HVAC air handlers filter cabinets. No formal documentation for entry into this space is required; however, in each case where entry is to be made, a supervisor must be notified of the intention to enter, the time expected to be in the space, and the entrant must advise the supervisor upon exiting the space.

IX. ENTRY SUPERVISOR RESPONSIBILITIES

A. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

B. Verify that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted, and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

C. The entry supervisor is responsible for ensuring that the termination process is completed properly by confirming that the entrant(s) to the confined space have fully exited and are accounted for. Cancellation of the permit can follow by noting on the permit the date and time of cancellation along with a confirming signature that the termination process has been completed.

D. Verify that rescue services are available and that the means for summoning them are operable.

E. Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operation.

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

G. Summon rescue and other emergency services as soon as he/she determines that authorized entrants may need assistance to escape from permit space hazards.

H. Performs non-entry rescues as specified by the rescue procedures contained in Section XV.

I. Performs no other duties that might interfere with his/her primary duty to monitor and protect the authorized entrants.

X. ATTENDANT RESPONSIBILITIES

A. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

B. Is aware of possible behavioral effects of hazard exposure in authorized entrants.

C. Continuously maintains an accurate count of authorized entrants in the permit space and ensures that he/she can identify authorized entrants either by name or radio call sign.

D. Remains outside the permit space during entry operations until relieved by another attendant.

E. Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space, if necessary.

F. Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:

1. He/she detects a prohibited condition.

2. If he/she detects the behavioral effects of hazard exposure in an authorized entrant.

3. If he/she detects a situation outside the space that could endanger the authorized entrants.

4. He/she cannot effectively and safely perform all the duties required of him/her under their attendant responsibilities as outlined in this Section.

G. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway.

1. Warn the unauthorized persons that they must stay away from the permit space.

2. Advise the unauthorized persons that they must exit immediately if they have entered the permit space.

3. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

XI. ENTRANT RESPONSIBILITIES

A. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

B. Properly use equipment as required by Section XII of this Program.

C. Communicate with the attendant as necessary to enable the attendant to monitor the entrant(s) status and to also enable the attendant to alert the entrant(s) of the need to evacuate the space should the space's environment or physical condition change (e.g., exceed hazardous atmospheric thresholds, power failure, failure of lockout/blocking processes, etc.).

D. Alert the attendant whenever:

1. The entrant recognized any warning sign or symptom of exposure to a dangerous situation.

2. The entrant detects a prohibited condition.

E. Exit from the permit space as quickly as possible whenever:

1. An order to evacuate is given by the attendant, the entry supervisor, or another entrant.

2. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.

3. The entrant detects a prohibited condition.

4. An evacuation alarm is activated.

XII. CONFINED SPACE PROGRAM EQUIPMENT

The following equipment is available to meet the requirements of this Program and all employees that will serve as an entrant, attendant, or supervisor will be trained on its use.

A. Testing and monitoring equipment needed to test for conditions in the permit space to determine if acceptable entry conditions exist.

B. Ventilating equipment needed to obtain acceptable entry conditions.

C. Communications equipment necessary for entrants, supervisors, and attendants to communicate during entry operations.

D. Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees to include self contained breathing apparatus (SCBAs), if necessary.

E. Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency.

F. Barriers and shields to protect entrants from external hazards from pedestrians or vehicles.

G. Equipment, such as ladders, needed for safe ingress and egress by authorized entrants.

H. Rescue and emergency equipment needed to comply with Section XV of this Program, except to the extent that the equipment is provided by rescue services.

I. Any other equipment that may be necessary depending on the conditions and work environment for safe entry into and rescue from permit spaces.

XIII. TRAINING REQUIREMENTS

A. All employees who may have responsibilities under this Program will receive the necessary training to safely and skillfully perform their duties prior to undertaking any confined space operations. Additionally, employees will be trained:

1. Should their duties be changed (example: an employee who is initially trained as an entrant must also receive attendant training before serving in this capacity).

2. When there is a change in permit space operations that presents a hazard, which the employee has not previously been trained for.

3. Should an employee demonstrate inadequacies in his/her entry procedures skill/knowledge.

4. When deviations are made by employees in following permit space entry procedures.

5. When revised procedures are implemented for compliance with the confined space regulation.

B. Training certification:

1. Appendix C contains the Billings Logan International Airport Confined Space Employee Certification Form. No employee may participate in confined space activities at the Billings Logan International Airport unless he or she has completed training for their respective responsibilities under this Program.

XIV. CONTRACTOR CONFINED SPACE REQUIREMENTS

A. When contractors are employed to perform activities that involve permit space entry, the Billings Logan International Airport will:

1. Inform the contractor that the Billings Logan International Airport contains permit spaces and that permit space entry is allowed only through compliance with a confined space program meeting the requirements of this Program and OSHA standards contained in Part 1910.146.

2. Apprise the contractor of the elements, including the hazards identified and the Airport's experience with the space, that make the space in question a permit space.

3. Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.

4. Coordinate entry operations with the contractor, when both Airport personnel and contractor personnel will be working in or near permit spaces.

5. Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.

B. Additionally, the contractor shall:

1. Obtain any available information regarding permit space hazards and entry operations from the Airport.

2. Coordinate entry operations with the Airport, when both Airport personnel and contractor personnel will be working in or near permit spaces.

3. Inform the Airport of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

XV. RESCUE AND EMERGENCY SERVICES

A. The Airport's ARFF Division and the City of Billings Fire Department will work cooperatively to perform permit space rescue for the Billings Logan International Airport. They have been given a copy of this Program to ensure they know the hazards that they may confront when called to perform rescue activities.

B. Additionally, they will be provided access to all permit spaces from which rescue may be necessary so that they may develop appropriate rescue plans and practice rescue operations.

C. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

D. On entry operations that require the use of a retrieval system due to the hazards of the confined space, the retrieval system shall meet the following requirements:

1. Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness when the use of a chest or fully body harness is infeasible or creates a greater hazard, and that the use of wristlets is the safest and most effective alternative.

2. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than five (5) feet deep.

E. If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDS) or other similar written information is required to be kept at the worksite, that MSDS or written information shall be made available to the medical facility treating the exposed entrant.

APPENDIX A
PERMIT REQUIRED CONFINED SPACES

The following Level 1, Level 2, and Level 3 spaces are considered permit required confined spaces at the Billings Logan International Airport. Potential hazards, control, and entry procedures are contained for each type of space in the remainder of this Appendix A.

- Electrical Vaults/Manholes
- Crawl Spaces
- Water Meter Vaults/Water Tower
- Storage Tank
- Storm/Sanitary Sewers

The following Level 4 space may be considered permit required confined space where the abbreviated permit form may be used.

- Terminal Building Crawl Space

The following Level 5 space is considered non-permit required confined space.

- HVAC Air Handler Filter Cabinets

APPENDIX A
PERMIT REQUIRED CONFINED SPACES

ELECTRICAL VAULT/MANHOLE ENTRY

1. POTENTIAL HAZARDS

A. Live electrical.
B. Presence of toxic gases. Equal to more than 10 ppm hydrogen sulfide. If the presence of other toxic contaminants is suspected, specific monitoring programs will be developed.
C. Presence of explosive/flammable gases. Equal to or greater than 10% of the lower flammability limit (LFL).
D. Oxygen deficiency. A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume.

2. CONTROL OF ELECTRIC CONDUCTORS

When possible, all live electrical to the confined space in question will be disconnected, locked, and tagged out in accordance with the Billings Logan International Airport lockout tagout procedures in Appendix D. It must also be recognized that under certain circumstances electrical power to spaces of this nature cannot be disconnected without infringing on the public and operational safety. In these instances, some duct banks must be necessarily kept live. All entrants into these spaces must be advised and pay particular attention to the potential of live electrical conductors in the space. No electric conducting tethers will be used in these spaces.

3. CONTROL OF ATMOSPHERIC HAZARDS

Although no known atmospheric hazard exists in these spaces, a survey of the space before entry shall be made using an approved atmospheric testing meter to measure for atmospheres as specified above. If atmospheres are above the threshold levels specified, then remedial action must be developed with the supervisor in accordance with Level 2 procedures before entry may be made. Forced air ventilation will be used whenever there is to be entry into these areas.

4. ENTRY PROCEDURES

Level 2 confined space entry procedures shall be followed before entering this type of space.

APPENDIX A
PERMIT REQUIRED CONFINED SPACES

CRAWL SPACE ENTRY

1. POTENTIAL HAZARDS

A. Pressurized piping.
B. Live electrical conductors.
C. Presence of toxic gases. Equal to more than 10 ppm hydrogen sulfide. If the presence of other toxic contaminants is suspected, specific monitoring programs will be developed.
D. Presence of explosive/flammable gases. Equal to or greater than 10% of the lower flammability limit (LFL).
E. Oxygen deficiency. A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume.

2. CONTROL OF PRESSURIZED PIPING

All instances of pressurized piping in the confined space must be blocked and tagged out before entry. If the reason for the entry is to perform work on this piping, then the lines must be blocked, tagged out, and bled before entry. An abbreviated confined space entry permit must be completed to document the above actions.

3. CONTROL OF ATMOSPHERIC HAZARDS

Although no known atmospheric hazard exists in these spaces, a survey of the space before entry shall be made using an approved atmospheric testing meter to measure for atmospheres as specified above. If atmospheres are above the threshold levels specified, then remedial action must be developed with the supervisor in accordance with Level 2 procedures before entry may be made. Forced air ventilation will be used whenever there is to be entry into these areas.

4. Entry procedures.

Level 4 confined space entry procedures shall be followed before entering this type of space.

APPENDIX A
PERMIT REQUIRED CONFINED SPACES

WATER METER VAULTS/WATER TOWER ENTRY*

1. POTENTIAL HAZARDS

A. Elevations.
B. Presence of toxic gases. Equal to more than 10 ppm hydrogen sulfide. If the presence of other toxic contaminants is suspected, specific monitoring programs will be developed.
C. Presence of explosive/flammable gases. Equal to or greater than 10% of the lower flammability limit (LFL).
D. Oxygen deficiency. A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume.

2. CONTROL OF ELEVATION HAZARDS

Before ascending any ladders, a definite need must exist (vs. being able to hoist equipment/materials). If the need exists to ascend, proper equipment and apparel will be in use, including but not limited to, hard hat, life belt with life line attached, fall protection devices while climbing, helmet mounted lighting, and retrieval/hoist rope and container.

3. CONTROL OF ATMOSPHERIC HAZARDS

Although no known atmospheric hazard exists in these spaces, a survey of the space before entry shall be made using an approved atmospheric testing meter to measure for atmospheres as specified above. If atmospheres are above the threshold levels specified, then remedial action must be developed with the supervisor in accordance with Level 2 procedures before entry may be made. Forced air ventilation will be used whenever there is to be entry into these areas.

4. ENTRY PROCEDURES

Level 2 confined space entry procedures shall be followed before entering this type of space.

* The Billings Public Utilities Department owns the water tower and does not consider it a confined space. Due to the Airport's need to perform maintenance on the rotating Airport beacon at this elevation, for the Airport's purposes, this structure will continue to be considered a **permit required confined space**, even though the main entry door is not so marked. (The first level landing of the tower ***does*** have this placard in place.)

APPENDIX A
PERMIT REQUIRED CONFINED SPACES

STORAGE TANK

1. POTENTIAL HAZARDS

A. Presence of toxic gases. Equal to more than 10 ppm hydrogen sulfide. If the presence of other toxic contaminants is suspected, specific monitoring programs will be developed.
B. Presence of explosive/flammable gases. Equal to or greater than 10% of the lower flammability limit (LFL).
C. Oxygen deficiency. A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume.

2. CONTROL OF ATMOSPHERIC HAZARDS

Although no known atmospheric hazard exists in these spaces, a survey of the space before entry shall be made using an approved atmospheric testing meter to measure for atmospheres as specified above. If atmospheres are above the threshold levels specified, then remedial action must be developed with the supervisor in accordance with Level 2 procedures before entry may be made. Forced air ventilation will be used whenever there is to be entry into these areas.

3. ENTRY PROCEDURES

Level 2 confined space entry procedures shall be followed before entering this type of space.

APPENDIX A
PERMIT REQUIRED CONFINED SPACES

STORM/SANITARY SEWER ENTRY

1. POTENTIAL HAZARDS

A. Engulfment.
B. Presence of toxic gases. Equal to more than 10 ppm hydrogen sulfide. If the presence of other toxic contaminants is suspected, specific monitoring programs shall be developed.
C. Presence of explosive/flammable gases. Equal to or greater than 10% of the lower flammable limit (LFL).
D. Oxygen Deficiency. A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume.

2. CONTROL OF ATMOSPHERIC AND ENGULFMENT HAZARDS

A. Pumps and Lines. All pumps and lines that may reasonably cause contaminants to flow into the space shall be disconnected, blinded, and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. Not all laterals to sewers or storm drains require blocking. However, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment into an occupied sewer, then all affected laterals shall be blocked. If blocking and/or isolation require entry into the space, the provisions for entry into a permit required confined space must be implemented.

B. Surveillance. The surrounding area shall be surveyed to avoid hazards such as drifting vapors from the tanks, piping, or sewers.

C. Space Ventilation. Mechanical ventilation systems, where applicable, shall be set at 100% outside air. Where possible, open additional manholes to increase air circulation. Use portable blowers to augment natural circulation if needed. After a suitable ventilating period, repeat the testing. Entry may not begin until testing has demonstrated that the hazardous atmosphere has been eliminated.

3. ENTRY PROCEDURES

Level 1 confined space entry procedures shall be followed before entering this type of space.

APPENDIX B

CONFINED SPACE ENTRY PERMIT

DATE: _____ TIME: _____ EXPIRATION DATE: _____ TIME: _____

SPACE #: _____ ENTRY DURATION: _____ EXIT DATE: _____ TIME: _____

LOCATION: _____

DESCRIPTION: _____

ENTRY PURPOSE: _____

NAMES OF ENTRANTS: _____

NAMES OF ATTENDANTS: _____

SUPERVISOR'S NAME: _____

AVAILABLE BY PHONE: _____ Y _____ N RADIO: _____ Y _____ N

ENTRANTS/ATTENDANTS TRAINED: _____ Y _____ N PRE-ENTRY BRIEFING: _____ Y _____ N

OFF SITE RESCUE BY BILLINGS FIRE DEPARTMENT DIAL 911 OR 657-8200

CONFINED SPACE ATMOSPHERE

PRIOR	RETEST
O_2 (19.5%) _____ FLAMMABLE (10% LEL) _____	O_2 (19.5%) _____ FLAMMABLE (10% LEL) _____
TOXIC CHEM. NAMES MSDS PEL DETECTED	TOXIC CHEM. NAMES MSDS PEL DETECTED
_____	_____
_____	_____
INSTRUMENT: _____ CALIBRATE: _____	INSTRUMENT: _____ CALIBRATE: _____

AREA NOT PREVIOUSLY KNOW TO CONTAIN HAZARDOUS ENVIRONMENT _____ Y _____ N

CONFINED SPACE ISOLATION

(CONDUCT APPROPRIATE ISOLATION AND LOG BELOW BEFORE ENTRY)

	LOCKOUT	TAGOUT	DISCON	BLOCK	BLEED	BLANK	OTHER
ELECTRICAL							
PIPING							
HYDRAULIC							
PNEUMATIC							
MECHANICAL							
OTHER (DESCRIBE)							
_____							

APPENDIX B
CONFINED SPACE ENTRY PERMIT

SPACE HAZARDS

EXISTING CONTENTS: _____

PRIOR CONTENTS: _____

CONFIGURATION: _____

NATURE OF WORK: _____

EQUIPMENT REQUIRED

RESPIRATORY PROTECTION: _____

PERSONAL PROTECTIVE EQUIP: _____

COMMUNICATIONS EQUIP: _____

LIGHTING: _____ VENTILATION: _____ CFM: _____

ENTRY EQUIPMENT: _____

RESCUE EQUIPMENT: _____

COMMENTS

PERSON COMPLETING PERMIT FORM: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

OFF SITE RESCUE BY BILLINGS FIRE DEPARTMENT DIAL 911 OR 657-8200

APPENDIX B
CONFINED SPACE ENTRY PERMIT
ABBREVIATED

DATE: _____ TIME: _____ EXPIRATION DATE: _____ TIME: _____

SPACE LOCATION: _____

DESCRIPTION: _____

ENTRY PURPOSE: _____

NAMES OF ENTRANTS: _____

NAMES OF ATTENDANTS: _____

PRE-ENTRY SURVEY COMPLETED: _____Y _____N

RESULTS: _____

ISOLATION PROCEDURES CONDUCTED: _____

_____

PERSONAL PROTECTIVE EQUIPMENT TO BE IN PLACE: _____

_____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

Available comment space on reverse.

_____

CONFINED SPACE ISOLATION

_____

(CONDUCT APPROPRIATE ISOLATION AND LOG BELOW BEFORE ENTRY)

	LOCKOUT	TAGOUT	DISCON	BLOCK	BLEED	BLANK	OTHER
ELECTRICAL							
PIPING							
HYDRAULIC							
PNEUMATIC							
MECHANICAL							
OTHER (DESCRIBE)							

_____

OFF SITE RESCUE BY BILLINGS FIRE DEPARTMENT DIAL 911 OR 657-8200

_____

APPENDIX C

CONFINED SPACE EMPLOYEE TRAINING CERTIFICATION

_____ has received training and may serve as an:
(Print Name)

- ☐ Entry Supervisor
- ☐ Attendant
- ☐ Entrant

(Check all that apply)

For the following confined spaces at the Billings Logan International Airport. List spaces that apply.

_____

_____

_____

_____

_____

_____

Supervisor Certifying to Training: _____
(Print Name)

_____
(Signature)

Date: _____

APPENDIX D

CITY OF BILLINGS
AVIATION AND TRANSIT DEPARTMENT
BILLINGS LOGAN INTERNATIONAL AIRPORT
1901 Terminal Circle, Room 216 • Billings, Montana 59105-1996
(406)657-8495 • (406)657-8438 FAX
www.flybillings.com

January 15, 2019

DEPARTMENTAL ORDER
ORDER NUMBER 015B

MEMORANDUM

TO:	All ARFF/AFM Personnel
FROM:	Paul Totton, Airport Operations Supervisor
SUBJECT:	**LOCKOUT PROCEDURES FOR THE AIRFIELD LIGHTING CONTROL SYSTEM**
CANCELLATION NO:	015A
EFFECTIVE DATE:	January 15, 2019
APPROVED BY:	Shane Ketterling, A.A.E., Assistant Director of Aviation and Transit SRK

To ensure that all employees and contractors are protected from electrical shock while installing and/or servicing any high voltage airfield lighting circuits at Billings Logan International Airport, the following lockout procedures have been established and must be followed without exception:

- Notification to the Airport Electrician, Supervisor, or designate, prior to any servicing or installation of high voltage airfield lighting circuits.
- Notification to the Billings Air Traffic Control Tower prior to taking control of the airfield lighting to ensure that aircraft traffic is not impaired.
- Hard hats shall be worn in areas marked for hard hat use.
- The location of all high voltage circuits affected by service repair or installation must be verified by the Airport Electrician, Supervisor or designate, prior to implementing lockout procedures.
- On the airfield lighting computer, perform a maintenance lockout on the desired circuit.
- Put desired regulator in the "off" mode using the selector switch.
- Disconnect and rotate the isolation block to the appropriate "off" position.
- Disconnect and lockout/tagout power for regulators in the main distribution panel.
- Verify all personnel working on or around powered circuits are clear of these areas prior to restoring power back to the airfield electrical system.
- To reestablish power for airfield lighting circuits, the disconnects must be installed prior to turning on circuit breakers.
  - Follow in reverse order, the procedures used for the lockout originally.
- Verify that all airfield lighting circuits are operating properly by visually inspecting the entire runway and taxiway lighting system.
- Return control of the airfield lighting to the Air Traffic Control Tower.

PT:mdb

cc: Departmental Orders
Chrono
Office Binder
K. Ploehn
S. Ketterling
All Airport Division Supervisors
Human Resources Department

DO–015B (01/19)

APPENDIX E

CITY OF BILLINGS
AVIATION AND TRANSIT DEPARTMENT
BILLINGS LOGAN INTERNATIONAL AIRPORT
1901 Terminal Circle, Room 216 • Billings, Montana 59105-1996
(406)657-8495 • (406)657-8438 FAX
www.flybillings.com

January 15, 2019

DEPARTMENTAL ORDER
ORDER NUMBER 016A

MEMORANDUM

TO:	All Airport Department Personnel
FROM:	Shane Ketterling, A.A.E., Assistant Director of Aviation and Transit SRK
SUBJECT:	**CONFINED SPACE PROGRAM**
CANCELLATION NO:	016
EFFECTIVE DATE:	January 15, 2019
APPROVED BY:	Kevin Ploehn, Director of Aviation and Transit

Each Division has been provided a copy of the Department's Confined Space Program. This Program establishes important safety guidelines that all employees and contractors must follow before entry and working in confined spaces at the Billings Logan International Airport.

The Program specifically defines all confined spaces at the Airport, and establishes new pre-entry and work procedures that must be followed.

It is important to emphasize that a confined space is any space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hopers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

Examples of these types of spaces at the Airport are:

- Storm and Sanitary Sewers
- Electrical Manholes
- Water Meter Manholes
- Crawl Spaces
- Storage Tanks

You may no longer enter these or any space that meets the requirements of the definition unless the Department's Program is followed.

Again, these are very important safety requirements that will change how we have previously accessed many of these locations. All questions should be directed to your Division Supervisor or the Assistant Director of Aviation and Transit.

SK:mdb

cc: Departmental Orders
Chrono
Office Binder
K. Ploehn
S. Ketterling
All Airport Division Supervisors
Human Resources Department

DO–016A (01/19)