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Confined Space Program



FERRIS STATE UNIVERSITY

SAFETY, HEALTH, ENVIRONMENTAL AND RISK MANAGEMENT

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1. PURPOSE

- a. This written Confined Space Entry Program establishes requirements that are to be followed by all Ferris State University Staff, Students, Contractors, or anyone else that may come across a confined space that is located on site at Ferris State. These requirements are designed to establish a safe means of working with, in, or around confined spaces of any type and to establish a written means of procedure that complies with MIOSHA General Industry – Part 90 and Part 490 Confined Spaces – Adoption of OSHA’s 1910.146 Permit-Required Confined Spaces.
- b. It is encouraged that all levels of workforce who are exposed, or may become exposed to, or have the potential to become exposed to confined spaces at any point in time to read through this Confined Space Entry Program, and we welcome any and all comments or suggestions for improving it.

2. APPLICABILITY AND SCOPE

- a. Not all employees are allowed to enter in a confined space. Prior to entry, all affected individuals performing confined space entry, supervision, or authorizer must go through a full training on confined spaces and understand the duties, hazards, and emergency protocol prior to establishing a permit before work can be performed. Management shall ensure all applicable employees go through this training on a regular basis. This Program only entails to confined spaces that are on-site or on location of a Ferris State University-owned property, or anywhere that FSU staff may enter while performing work.

3. DEFINITIONS

- a. Alternate Entry Confined Space – A type of entry into a confined space that may only take place under certain conditions that allow complete hazard elimination with *continuous* forced air ventilation. Even if the hazards can be completely eliminated with forced air ventilation, internal atmospheric testing must still be completed to ensure there are safe levels of oxygen content, no flammable gas and vapor concentrations, or any other potential hazardous or toxic air contaminates, prior to employee entry. Calculated ventilate forced ventilation must be completed prior to entry, and continuously ran throughout the duration of entry.
- b. Confined Space - A space that has all of the following characteristics is a confined space: I) Is large enough and so configured that an employee can bodily enter and perform assigned work; **and** II) 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 a limited means of entry); **and** III) Is not designed for continuous employee occupancy. Examples: A final or aeration tank, a sewer line, an air handler valve vault, vacuum truck, sump crock, material storage bin, pipe chase, elevator shaft and others.

- c. Permit Required Confined Space (PRCS) – A confined space that also has one or more of the following characteristics: I) Contains or has a potential to contain a hazardous atmosphere; **or** II) Contains a material that has the potential for engulfing an entrant; **or** III) Has 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; **or** IV) Contains any other recognized serious safety or health hazard. Examples: all sewer manholes, and valve vaults.

4. RESPONSIBILITIES

- a. Employees
 - i. No employee shall make entry into a confined space (permit-required or otherwise) without authorization. Any employee who has knowledge of an area they believe to be an undesignated confined space shall immediately report it to their supervisor. Any and all employees who violate the requirements of this policy shall be subject to progressive and corrective discipline including termination.
- b. Supervisor /Instructor / Department
 - i. No supervisor shall authorize an employee to enter a confined space (permit-required or not) that has not had a Risk/Hazard Assessment completed to determine its degree of hazard and application per MIOSHA and OSHA.
 - ii. If a supervisor has knowledge of a space that may be a confined space but has not been designated in the list in Appendix E, F, G, he/she shall immediately report it to the Department of Human Resources for assessment
- c. Environmental Health and Safety Department
 - i. Responsible to oversee the administration of this Program, but ultimate responsibility for its implementation rests with each department.
- d. (SEE ROLES AND RESPONSIBILITIES FOR CONFINED SPACE ENTRY ROLES)

5. IDENTIFICATION, EVALUATION, AND DESIGNATION OF CONFINED SPACES

- a. Initial Designation
 - i. Any undesignated confined space shall have a Hazard/Risk Assessment and will be evaluated to determine its hazards and designation, as a permit required confined space if the criteria for such are met.

- ii. At the Responsible Persons request, the Risk Management Department or designee will jointly conduct a Risk/Hazard Assessment and hazard determination; evaluate the space and determine its designation as a confined space, a permit-required confined space, or other appropriate designation. This plan will maintain the list of permit required confined spaces. Revisions will be documented, on the relevant department\division safety bulletin board and a copy sent by interoffice memorandum to the responsible department head.

Table 1

Department\Division	Responsible Person or Designee
Support for all departments	Department of Human Resources
Fire Department	Fire Chief or Designate
Public Service- Property Management	Building Maintenance Manager
Public Service - Property Management	Service Garage Manager
Public Service - Grounds Division	Public Works Supervisor
Public Service Operations and Maintenance	Senior Sewer Maintenance Supervisor
Public Service Engineering	University Engineer
Public Service Wastewater Division	Senior Plant Operations Supervisor

b. Annual Evaluation

- i. The Risk Management Department will schedule an annual review of the confined space program. During this annual review meeting, the Department of Risk Management and the Responsible Persons from the table above (TABLE 1) will review all confined space permits, cancelled entry permits for evidence of improvement involving procedural change, equipment or technology modification, any cases where an accident resulted in lost work time, or other proactive initiative. The Responsible Person, or his/her designee, will also inspect any equipment and review other documents related to entering the confined spaces related to or under their responsibility. Revisions shall be posted and the Confined Space Plan shall be updated, and on the relevant department\division safety bulletin board and a copy sent by interoffice memorandum to the responsible department head. Relevant changes will be communicated to applicable employees through training.

c. Hazard Evaluation

- i. All Confined Spaces shall be evaluated for hazards by the entry supervisor before entry procedures are started. Confined spaces have the potential to contain engulfing solids, liquids, hazardous machinery, flammable\explosive atmospheres, oxygen problems, toxic gases, physical hazards and more. These hazards shall all be identified and properly controlled and its hazards listed before entry is made. Hazard

Assessment shall be completed as specified in the Ferris State University Confined Space Entry Training Program.

- ii. Regardless of status or experience with the space to be entered, the entry team shall take appropriate precautions and effort to identify unrecognized hazards not previously identified and document all findings not already identified.
- iii. **All Permit Required Confined Spaces that can be physically marked with a sign shall be marked with a sign that reads "Permit Required Confined Space, Do Not Enter" with one exception. All manholes in the University are to be considered permit required with or without a sign (Per MIOSHA Appendix E Sewer Systems).**

6. REQUIRMENTS FOR A SAFE PERMIT ENTRY INTO A CONFINED SPACE

a. Unacceptable Entry Conditions

- i. A confined space shall not be entered by Ferris State employees and or any Contract employees who cannot provide supporting documents) who have failed to complete training for authorized entrants or emergency rescue services.
- ii. No Ferris State employee or Contractors shall enter a PRCS without following acceptable entry procedures. Acceptable entry procedures include but are not limited to;
 - 1. The presence of an appropriate entry team,
 - 2. Arrangement for emergency services,
 - 3. Completed permit by the entry supervisor,
 - 4. Air monitoring and/or continuous air ventilation.
 - 5. Retrieval equipment for vertical entries
- iii. It should always be considered that the most unfavorable situation exists in every confined space and that the danger of explosion, poisoning, and asphyxiation shall be present at the onset of entry. The entry team shall make a workplace assessment of hazards and conditions prior to entry to identify hazards that were not previously recognized on Risk/Hazard Assessment. Such assessment shall, at a minimum, identify the presence of:
 - 1. Hot objects
 - 2. Sparks
 - 3. Flames
 - 4. Unstable/uneven surfaces
 - 5. Slippery surfaces
 - 6. Chemicals
 - 7. Electrical Hazards
 - 8. Heat producing operations
 - 9. Confined Space Hazards
 - 10. Abrasive surfaces

- 11. Moving equipment and Materials
- 12. Climatic factors
- 13. Sharp objects
- 14. Unguarded openings
- iv. No Ferris State employee or Contractor employee shall make an entry into any confined space that is immediately dangerous to life or health unless they are trained, authorized, and equipped as Confined Space Emergency Rescue Team Members emergency responders, and an emergency rescue team is onsite during entry activities.
- v. Spaces listed in the NON Entry Space List (end of Appendix E) are designated as such because of the severe or difficult to control hazards identified. Any entry by the Ferris State University shall be approved by the appropriate Responsible Person and shall require onsite rescue team during entry activities.
- b. Hot Work
 - i. Hot work, welding, cutting, and riveting for example, should be avoided in confined spaces. Division RP's and maintenance personnel shall consider alternative means to complete the task before authorizing hot work in a confined space. The reason for this is the extra hazard created by hot work in confined spaces. Hot work depletes and displaces oxygen through combustion of torch fuels. Use of oxygen-acetylene torches introduces fuels to the space and possibly oxygen depletion or enrichment if equipment leaks, lines are severed or valves left on. The metal oxides produced during heating of metals may build up rapidly to toxic levels. Electric arc welding produces many of the same hazards. This is way all University and contract employees shall test all confine spaces prior to any work being completed and all test results shall be documented in intervals of Start, and every 15 minutes or set up continuous monitoring.
 - ii. For the reasons listed above, no work that is capable of providing a source of ignition (for example, riveting, welding, cutting, burning, and heating) shall be performed without authorization and completion of a hot work permit by the Division RP. The Division RP will personally issue any hot work permits required.
 - iii. Authorized entrants and possibly attendants require respiratory protection when welding or brazing in confined spaces for more than 15 minutes. Call the Department of Human Resources in the planning stage of the job to organize appropriate respiratory protection for employees. **Respiratory protection requires a physical, a fit test and training for the wearer and may require several days if person has not been previously qualified. (See appendix D for Hot Work Permit)

7. PROVISION OF NECESSARY EQUIPMENT

- a. All equipment necessary for an entry is determined through the Risk/Hazard Assessment identification and designation of confined spaces. Personal Protective Equipment identified, as necessary shall be provided at the University's expense (see #13. CONFINED SPACE ENTRY TRAINING AND EQUIPMENT INSPECTION REQUIREMENTS). It will be cared for and maintained by the employee it is issued to.
- b. General entry equipment such as hoists lines and air monitors shall be maintained and cared for by the employees who use it.
- c. All equipment shall be inspected prior to each use. Equipment found to be damaged or potentially not reliable should be tagged and locked out of service. Appropriate supervisors, including the Department of Risk Management shall be notified.

d. General Rules

- i. Tripods and Fall Rescue equipment shall meet or exceed ANSI Z359.1 and OSHA/MIOSHA regulations.
- ii. All personnel using bumper-mounted cranes to lower the entrant into spaces shall ensure that the entrant has the key to the truck ignition or the ignition is locked out with a lockout device before lowering into the space. The truck will be properly parked and wheels chocked in addition to the lockout requirement of the Ferris State University LOTO Procedures.
- iii. University limits for personnel shall not exceed manufactures specified requirements to include the following; weight of the user, clothing, tools, and other user borne objects.
- iv. Use extreme caution when working near energized electrical sources. Maintain a safe working distance.

8. ROLES AND RESPONSIBILITIES

- a. Each person designated as the Responsible Person for their department/division shall be responsible for designating personnel as entry supervisors, attendants, and authorized entrants. The RP shall ensure their department's\division's compliance with each part of this policy including, at a minimum, the requirements of Part 90 Confined Space Entry and MIOSHA Part 490 Permit Required Confined Space. See pages 4 and 6 for a copy of the confined and permit confined space flow charts. See page 7, table 1 for a listing of the Responsible Person for your department\division. The Department of Human Resources is responsible for the overall maintenance and review of the program in addition to specific tasks previously listed.

b. Authorized Entrant

- i. All authorized entries of PRCS shall have Authorized Entrants equipped with proper and necessary equipment to accomplish tasks in a safe and healthful manner. The entry supervisor shall ensure that the entrant is familiar with the following primary duties:
 1. Know space hazards, including information on the mode of exposure (e.g., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure
 2. How to use appropriate personal protective equipment properly (e.g., face and eye protection, and other forms of barrier protection such as gloves, aprons, and coveralls)
 3. As necessary, maintain communication (i.e., telephone, radio, visual observation) with attendants to enable the attendant to monitor the entrant's status as well as to alert the entrant to evacuate
 4. Exit from permit space as soon as possible when ordered by an authorized person, when the entrant recognizes the warning signs or symptoms of exposure exist, when a prohibited condition exists, or when an automatic alarm is activated
 5. Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist
 6. The use and function of all test equipment such as Air Monitor, Ventilation Equipment, Tri-Pod, Full Body Harness, and Retrieval Lines and Systems

c. Authorized Attendant

- i. All authorized entries of PRCS shall have posted at the entrance an attendant from the time of entry until the entry permit has been terminated. The entry supervisor shall ensure that the attendant is familiar with:

1. Responsibility to remain outside permit space during entry operations unless relieved by another authorized attendant
 2. Perform no-entry rescues when specified by employer's rescue procedure
 3. Know existing and potential hazards, including information on the mode of exposure, signs or symptoms, consequences of the exposure, and their physiological effects
 4. Maintain communication with and keep an accurate account of those workers entering the permit-required space and document
 5. Order evacuation of the permit space when a prohibited condition exists, when a worker shows signs of physiological effects of hazardous exposure, when an emergency outside the confined space exists, and when the attendant cannot effectively and safely perform required duties
 6. Summon rescue and other services during an emergency;
 7. Ensure that unauthorized persons stay away from permit spaces or exit immediately if they have entered the permit space
 8. Inform authorized entrant's and entry supervisor of entry by unauthorized persons
 9. Perform no other duties that interfere with the attendant's primary duties
 10. The use and function of all test equipment such as Air Monitor, Ventilation Equipment, Tri-Pod, Full Body Harness, and Retrieval Lines and Systems
- ii. The attendant shall meet with the authorized entrant prior to the entry. The attendant and the authorized entrant shall discuss and agree to the method of communication (e.g. radio, voice, hand signals, etc.) to be used and the basic health status of the entrant.
 - iii. Please note: the entry supervisor can also serve as the attendant and shall not have any other job function duties during the operation until such time the job has been completed or relieved by a certified Attendant or Supervisor.
- d. Attending multiple entrants
- i. It is the general policy of Ferris State University, that there is to be one attendant for each PRCS entry.
- e. Entry Supervisor
1. Know space hazards including information on the mode of exposure, signs, or symptoms and consequences of exposure
 2. Verify emergency plans and specified entry conditions such as permits, tests, procedures, and equipment before allowing entry
 3. Terminate entry and cancel permits when entry operations are completed or if a new condition exists
 4. Take appropriate measures to remove unauthorized entrants
 5. Ensure that entry operations remain consistent with the entry permit and that acceptable entry conditions are maintained
 6. Shall be trained in all levels of Confined Space Program
 7. Procedures for Summoning Rescue and Emergency Services
 8. Rescue from spaces, emergency medical treatment, hazardous materials response, and emergency transport to a hospital Emergency Department shall be provided by the University and Big Rapids Fire Department (BRFD). The BRFD Stations shall have the opportunity to access the PRCS sites within its jurisdiction annually. Joint emergency drills shall be conducted at confined spaces that are representative of the worst-case hazards presented by spaces. Drills shall be

conducted at least annually or more frequently as needed. Documentation of training drills shall be sent to the Department of Human Resources for retention of records.

f. Pre-Entry Procedure

- i. The Entry Supervisor shall contact the Emergency Communications Center (911 Dispatch) at the designated non-emergency number (XXX-XXX-XXXX) or alternative number (XXX-XXX-XXXX) (supervisor)) identified on the Entry Permit to ensure availability of the rescue service.
- ii. Information that must be communicated:
 1. Location of entry
 2. When entry will start
 3. Expected duration of entry
 4. Any hazards that BRFD may be confronted with when called upon to perform a rescue at that site
 5. Other pertinent information (if any)
- g. Dispatch will then contact the Battalion Chief (BC) for the entry area and replay all information. If for any reason (e.g. on a run or staff availability) the BC cannot support the entry the entry supervisor will be contacted and the entry canceled or postponed.
- h. The Entry Supervisor will call back Dispatch (911) when out of the permit confined space. Dispatch (911) will contact BRFD BC to let them know the permit confined space work has ended.

9. ENTRY PERMITS

- a. The entry supervisor shall fill out a blank permit before entering a confined space. All permits shall be returned to the RP upon completion and/or cancelation. The RP shall maintain a log of all permits for review. The minimum information on the log shall be date, location of work and recording of any problems incurred during the entry.
- b. The entry supervisor shall immediately correct any hazardous situations that are not adequately controlled by these procedures. The entry supervisor shall report and document the deficiency immediately on the Confined Space Hazard Correction Form (See appendix B) and notify their department. The entry supervisor shall ensure that no CS entries are authorized at that location until the hazard is adequately addressed and corrective procedures have been developed, implemented, and training has been provided.
- c. Reasons for cancelling a permit:
 - i. End of shift
 - ii. Authorized entrant or attendants leave the job for any reason
 - iii. Air monitor alarms after atmosphere is cleared for entry
 - iv. Any employee suffers a recordable injury
 - v. Any unsafe act occurs such as:
 1. Pedestrians, animals or vehicles encroach past barrier
 2. Significant rain increases risk of engulfment
 3. Release of refrigerant or other gas
 4. Any other serious safety hazard occurs or needs to be corrected
- d. All Items shall need to be documented on Hazard Correction Form (see Appendix B).
- e. Sample Entry Permit
 - i. See Appendix C for an entry permit.

- f. **PRCS Closure and Security**
 - i. The entry supervisor shall ensure the space is resealed and secure after the permit has been cancelled. The entry closure to the space will be replaced and properly secured. The entry supervisor shall ensure that all employees remove their personal locks and any lockout devices when appropriate. The entry supervisor shall follow the procedures for removal of energy isolating devices and restarting machinery when appropriate.
- g. **Multiple Employer Work sites**
 - i. It is not common or reasonably anticipated that University employees will make entry into PRCS to perform work with other non-University employees. For this reason, no entry is to be made jointly with other non-university employees without the approval of the RP from the relevant department.
- h. **Contractor Entry into Confined Spaces**
 - i. When the scope of a contract, awarded by the University, includes work requiring confined space access or entry, the RP for the Department awarding the contract shall ensure the completion of the following requirements.
 1. Inform the contractor by written notice of the confined spaces that may be involved in the scope of work. This can be done at the pre-bid or pre-construction meeting. It must be completed prior to the start of work.
 2. Inform the contractor of the hazards known or suspected to be present in the spaces involved that make it a confined space. Review in your notice, with the contractor, the University's experience with spaces involved in the scope of work. Review situations and conditions known to be hazardous (from our Risk/Hazard Assessment) such as dangerous atmospheric contaminants, previous injuries, and obscure hazards that have been discovered.
 3. Notify the contractor that no entry shall be made into permit-required spaces with the Ferris State University employees or other organizations without the written approval of the Responsible Person (RP). (See page 5 for a listing of RPs by Department) The RP (shall review and discuss the contractor's plan to enter confined spaces with University employees or other persons. The RP and the contractor shall agree on the procedures and precautions necessary for multiple employer entries into permit required spaces.
 4. When entries are made into permit-required spaces, the RP shall review the entry with the contractor, after work is completed, and note any unanticipated hazards encountered, or other items needing attention. The RP shall keep notes and copies of the actions required in this section in a file for each project.
 5. Contractor shall need to provide documents of training to the Ferris State University to show all employees involved have been properly trained per. MIOSHA Standards Part 90 and Part 490.

10. CONTRACTOR RESPONSIBILITY

- a. When a contract, awarded by the University, requires access or entry into permit required confined spaces the contractor shall complete all of the following:
 - i. Obtain any available information regarding permit space hazards and entry operations from the University

- ii. Prohibit its employees or agents from entering permit required spaces with University employees, or other persons, without the written approval of the Responsible Person from the University department awarding the contract.
- iii. Prohibit entry of permit-required spaces by any persons other than trained and authorized entrants. Provide a copy to the University of their Permit Required Confined Space Entry program that the contractor shall follow. The contractor shall inform the University of any Hazards encountered or created in permit-required spaces, when discovered or at the end of the entry.
- iv. The RP from the department awarding the contract for the University will keep a written record to be used for document.

11. FERRIS STATE UNIVERSITY CONFINED SPACE ENTRY TRAINING PROGRAM

- a. All employees who are required to enter a Confined Space (CS) or serve as an attendant and Supervisor shall be trained and properly equipped to recognize, understand, and have the competence to control hazards that may be encountered in the CS. All training shall be documented. This training record (certification) shall be available for inspection by employees and their authorized representative.
- b. Training shall be provided to each affected employee:
 - i. Before the employee is first assigned (any) duties under this section.
 - ii. Before there is a change in assigned duties.
 - iii. When there is a change in the permit space operations that present a hazard about which an affected employee has not previously been trained.
 - iv. Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.
- c. Confined Space Entry
 - i. All employees who are required to enter either a confined space or serve, as attendants shall receive training in the following areas:
 - ii. Associated safety and health hazards of the CSE
 - iii. Duties of entrants and attendants
 - iv. Air monitoring and attendants
 - v. Respiratory protection
 - vi. Emergency rescue procedures
 - vii. Lockout isolation procedures
- d. Training shall be provided to each affected employee:
 - i. Before the employee is first assigned CSE duties.
 - ii. Before there is a change in assigned duties.
 - iii. Whenever there is change in confined space operations that presents a hazard about which the employee has been previously trained.
- e. Personal Protective Equipment (PPE)
 - i. All employees who are required to either enter a CS and/or serve as attendants, shall receive training on the proper use of any PPE needed to perform the job safely, such as, protective clothing and suits, gloves, respiratory protection; confined space rescue equipment, body harnesses, hearing protection, and eye/face, hand, foot and head protection, monitoring equipment.
- f. Emergency Rescue Training

- i. An emergency rescue will be performed annually.

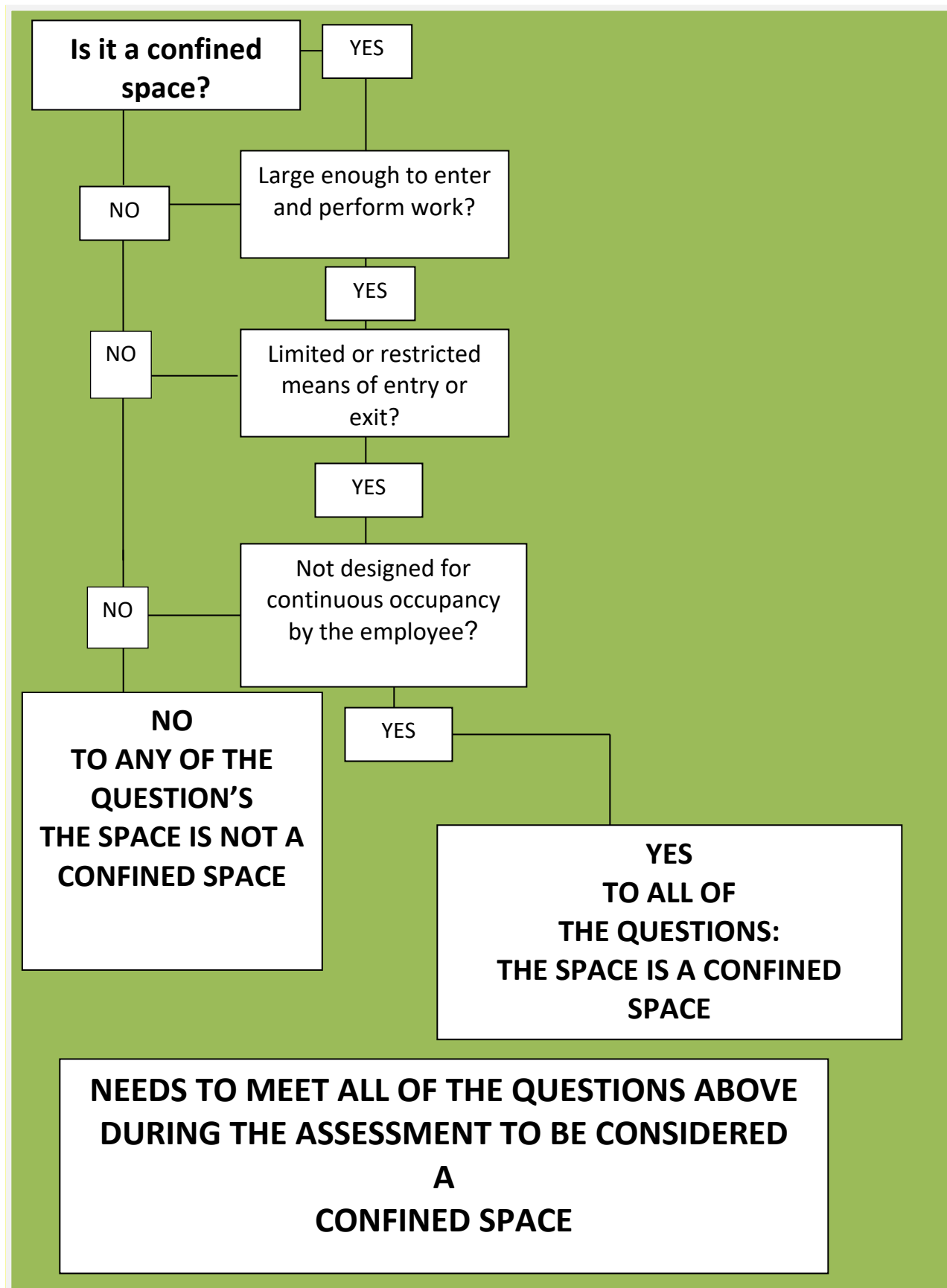
12. PLAN REVIEW AND AUTHORIZATION

- a. This plan is reviewed annually. It is the responsibility of the Department Director, Superintendent (if applicable), Manager (if applicable), Supervisor, Department of Risk Management), and employee doing the work to ensure these rules and those designated by the Michigan Occupational Health and Safety Act are enforced and followed to ensure a safe and healthful work environment free from recognized hazards.

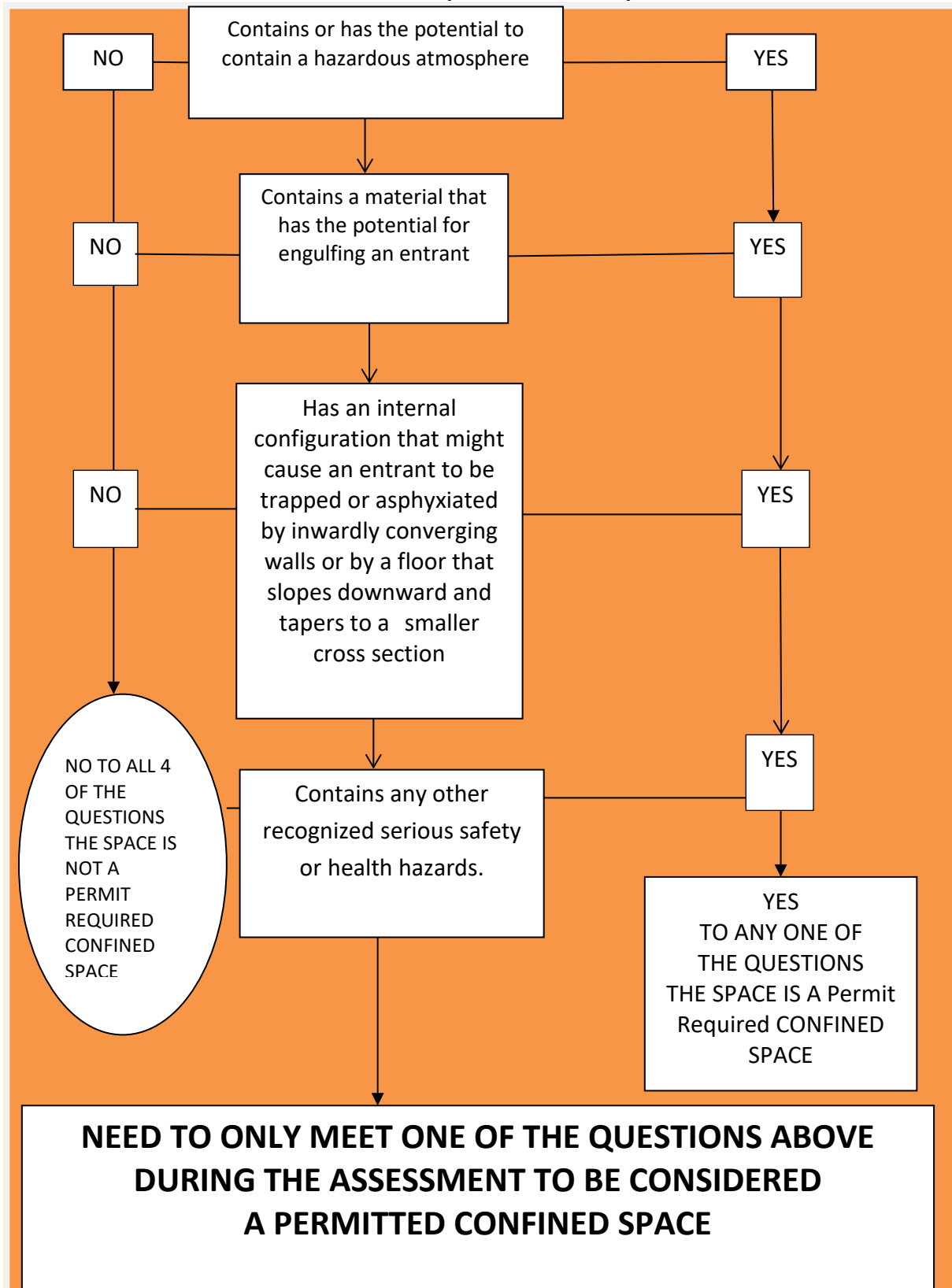
13. CONFINED SPACE ENTRY TRAINING AND EQUIPMENT INSPECTION REQUIREMENTS

- a. All equipment used to enter any confined space shall be inspected prior to any entry. In addition to inspections prior to use all rescue confined space equipment and equipment used in any confined space entry shall be inspected annually and documented. A record of annual inspections shall be sent to the Department of Risk Management for record retention.
 - i. Equipment List:
 - 1. Tripod
 - 2. Tripod winch
 - 3. Gas monitor
 - 4. Confined space ventilator
 - 5. Supplied air respirator cart system
 - 6. Breathing air lines
 - 7. Escape SABA packs
 - 8. Communication equipment
 - 9. Lockout/Tagout devices
 - 10. Spare air cylinders
 - 11. Face APR
 - 12. Full body harness
 - 13. Gloves
 - 14. Lights

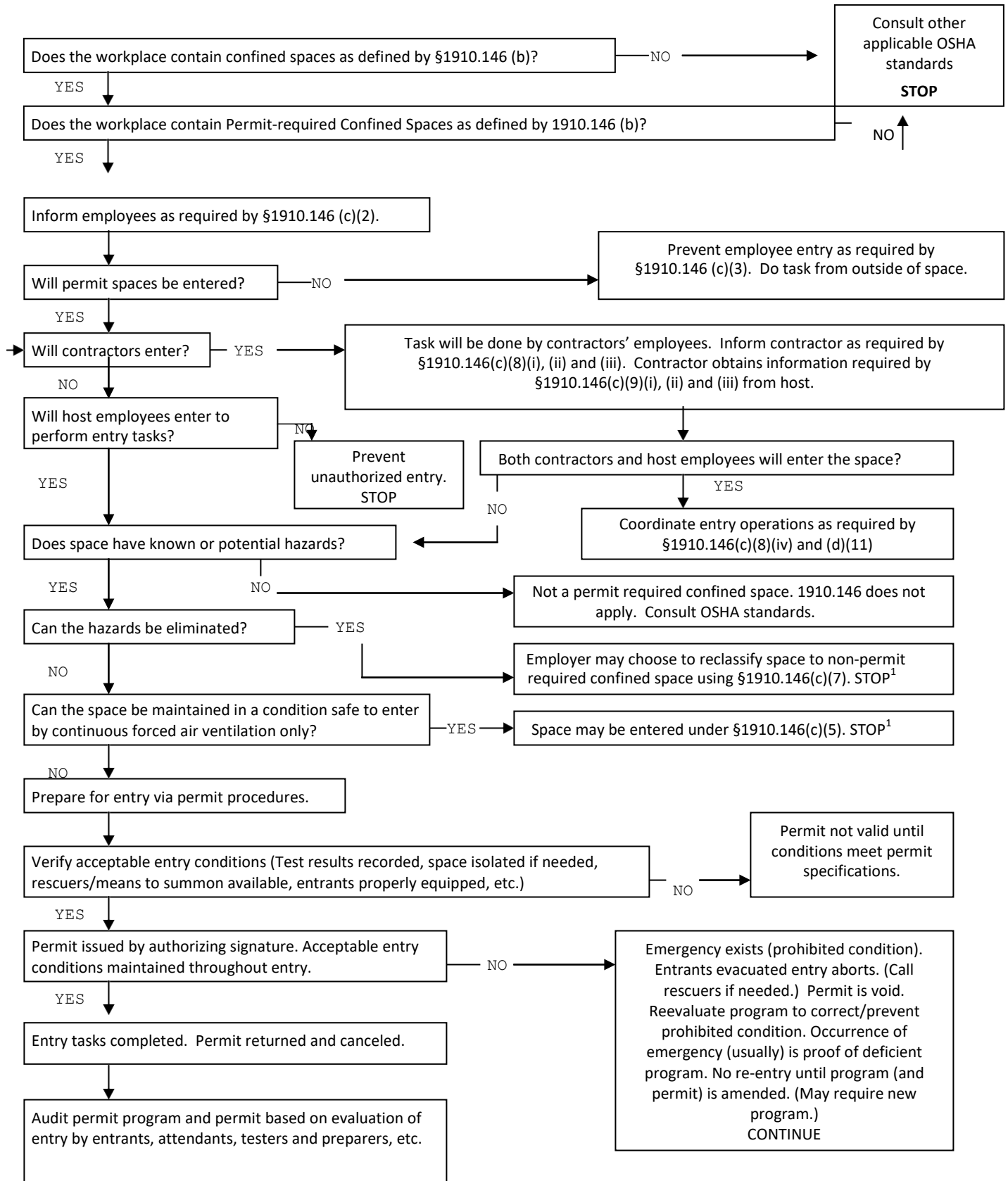
Any and all spaces that meet the requirements listed below shall be considered a confined space unless it has been otherwise designated.



Is it a Permit Required Confined Space?



APPENDIX A **PERMIT-REQUIRED CONFINED SPACE DECISION FLOW CHART**



¹Spaces may have to be evacuated and re-evaluated if hazards arise during entry

APPENDIX B - CONFINED SPACE HAZARD CORRECTION FORM

Use for the identification, temporary control, and correction of hazards not adequately controlled by the procedures listed in this plan.

Department/Division	Responsible Person (RP)	Date:
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Uncontrolled Hazard (RP completes)	Type	Describe how hazard was discovered
Temporary Site Security and Controls (RP completes)		Describe controls put in place below
Recommended Corrections and Controls (RP completes)		Describe recommended controls below
Temporary Corrections (Department of Human Resources completes)		Describe corrections to be maintained
Final Corrections		(Department of Human Resources Completes)

Required Actions:

- Secure site, prevent entry, attend to any injuries or immediate hazards
- Fill out form above
- Notify Department Head and send copy of completed form
- Notify Department of Human Resources and send copy of completed form

Signature of RP	Department Director	Department of Human Resources
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APPENDIX C - Ferris State UNIVERSITY CONFINED SPACE PERMIT (completed Permits shall be sent to HR)

LOCATION:	911 Dispatch Center XXX-XXX-XXXX	Date:
PURPOSE OF ENTRY AND DESCRIPTION OF WORK:		
POTENTIAL HAZARDS: (LIST: i.e. atmospheric, engulfment, mechanical)		
METHODS OF ISOLATION/CONTROL: (LIST: i.e. lockout, ventilation, block and bleed)		
COMMUNICATION PROCEDURES: (LIST: i.e. voice, radio, hand signals, light signals)		
EQUIPMENT USED: (LIST: i.e. tripod, air monitoring equipment, harness,)		

AUTHORIZED ENTRANTS:

name	time in	time out
name	time in	time out
name	time in	time out

ATTENDANT Name

ENTRY CONDITIONS (completed by Entry Supervisor) Continuous Air Monitoring is Mandatory

LOCATION	TIME	O2	%LEL	H2S	TOXICS	VOC*	Test conducted by: (print name)
i.e. Top, Middle, Bottom	Acceptable conditions	19.5-23.5%	<10%	<15PPM	ZERO	CHECK MSDS	

CONDITIONS ACCEPTABLE?	YES	NO
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Waste Water Division: CONTACT BASE 5

RESCUE TEAM IS Big Rapids FIRE DEPARTMENT CONTACT VIA RADIO OR DIAL 911

DURATION OF PERMIT	TIME INITIATED:	TERMINATED
ENTRY SUPERVISOR (Print and sign)		Called back 911 Center

Additional permits: (LIST: i.e. hot work)

Additional info:

APPENDIX D - HOT WORK PERMIT

Check Off ☒	Steps to Complete											
	Division Responsible Person describe why work cannot be avoided:											
	Describe hot work to be performed:											
	List hot work equipment to be used to complete work:											
	Permit Required Confined Space location:											
	Is the oxygen level between 19.5 and 21% ?											
	Continuous Monitor and verify combustible gases below 10% of the lower explosive limit LEL every hour											
	O₂ and Contaminants	Entry	.5	1hr	1.5	2hr	2.5	3hr	3.5	4	4.5	5hr
	Oxygen											
	Combustible Gases											
	Toxic cell H ₂ S											
	If welding, for more than 15 minutes, welder must wear approved respirator											
	Designate a firewatcher who watches for signs of ignition. Must be able to extinguish any fire immediately and be able to see entire space. Name											
	Have all combustible materials been removed from the space?											
	Have all holes in floors and walls been plugged or covered to prevent travel of sparks											
	Properly rated and charged fire extinguishers, or hose lines are staged and ready to use by watcher.											
	Compressed gases for torches are not in space.											
	Additional PPE required:											
	Date:						Permit expiration time					
	Authorized entrant(s) to perform hot work (if applicable):											
	Confined space is approved for Hot Work as indicated above											
Active Permit	Division Responsible Person 						Entry Supervisor 					
	Permit Cancellation:											
	Atmosphere must be monitored and verified safe each time entrants enter the space											
	Welding and cutting lines removed from the space and shut down											
	Work space has returned to normal temperature before reentry is allowed											
	Hot work in confined space has been completed and hot work permit canceled											
Canceled Permit	Division Responsible Person 						Entry Supervisor 					

APPENDIX E

LIST OF CONFINED SPACES

UNIVERSITY PLANT SERVICE – PROPERTY MANAGEMENT/BUILDING MAINTENANCE DIVISION

PUBLIC SERVICE - STREETS

Sewer Section

Grounds and Infrastructure

PUBLIC SERVICE – OTHER BUILDINGS

APPENDIX F

LIST OF PERMIT REQUIRED CONFINED SPACES

PUBLIC SERVICE – PROPERTY MANAGEMENT/BUILDING MAINTENANCE DIVISION

University Hall HVAC systems- Filter housings and Coil access chambers.

All water meter valve vaults

Pedway Manhole

All sewage ejector pits

All air handlers

Cooling tower at University Hall

PUBLIC SERVICE - O&M DIVISION

Sewer Section

All sewer access points

Siphon chambers at river

Grounds and Infrastructure

All water valve vaults

PUBLIC SERVICE - WASTE WATER TREATMENT PLANT DIVISION

North Primary

Valve chamber north of grit #1

Valve chamber east of grit #3

Valve vault on north end of property near humane society, for filtrate.

North Aeration

Valve vault at north basin.

Valve vaults bypass north tanks 2-4 (6).

Tertiary

Tertiary influent wells (two).

Tertiary effluent wells (two).

Four clear wells, building interior.
Backwash chamber between wings.
Filter (engulfment) (14).
Two influent wells below pumps.
List of

Chlorination

Valve vaults for Cl₂ distribution (two).
PEW meter vault north east end of Building.

FORCE MAINS

Location

Harton Force Main

Cleanout Structure
Air Release Valve

Hayford Force Main

Air Relief Structure
Air Relief Structure

Red Cedar Force Main

Air Relief Manhole
Cleanout & Valve Manhole
Air Release Manhole
Air release Manhole
Cleanout Manhole
Valve with Valve Box

Williams Street Force Main

Air Relief Structure
Blow-Off Structure
Air Relief Structure
Blow-Off Structure
Air Relief Structure
Blow-Off Structure

Francis Park Force Main

Blow-off Structure
Air Relief Structure
Blow-off Structure
Air Relief Structure
Blow-off Structure

Valve Box
Air Relief Structure
Blow-off Structure
Air Relief Structure

PUMP STATIONS VALVE VAULTS

Pump Station and Equalization Basin

BENNETT RD PUMP

Scott Park Pump Station
Valve Vault

Pump Station
Valve Manhole

All collection system and Plant sewer manholes unless otherwise specified.

Bio-solids

Bio-solids tanks.
Mixing tanks for bio-solids

Chlorination

PEW (influent wells) north and south.
Bypass Chamber to perimeter drain.

Digester & Maintenance

Digesters #1 - 10.
Blended Sludge feed well.
HTS supinate well.
Chamber underneath Zimpro loading dock.
Brine tanks between Scum Incinerator and Crib.
Raw Sewage wet well north of North Boiler building.
Scum Incinerator.
Scum Incinerator feed wells.
Ferric tanks 1 & 2 North of Scum Incinerator building.

Dewatering

Sludge storage tanks dewatering (3 sludge mixing & 1 lime storage).
BOD holding tanks (2).
Lime mixing tanks (2).

Incinerator.

WAS sludge storage wells (two) South of WAS building.

WAS Thickened sludge mix well south of WAS building.

Waste Thickened wells inside WAS building.

If ventilation was to fail:

Can pump station dry wells

Major pump station wet wells

Miscellaneous Locations outside the Plant

Vydock Station

Aurelius Road Well Meter Manhole

Pump Station

North Aeration

Aeration tank 1 & 2 influent trough.

Scum well for North Final Tanks, south of North gallery.

Waste well for North Final Tanks, south of North gallery.

North Primary

Ferric tanks

Distribution channel for primary tanks 1-16.

Scum well scum building #8

Scum well scum building #6

Scum well scum building #7

Sludge wells North Control east and west.

Distribution channel for primary tanks 17-24

Recycle and Raw Sewage

Recycle wet well.

Raw sewage influent chamber south of building.

Wet well access North East of building.

Screen Building

Diversion chamber from west side interceptor

Duall tower

Duall recirculation tank

Mixer chamber west side of screen building

Influent channels for mechanical bar screens 1-4

Influent channels for manual bar screens (2)

Parshall flume influent channels on the east side of the screen building

Old screen building flow wells/channels east and west side of building
flow bypass valve vault northeast of screen building and southwest structure

Scum Building

Scum Well

Side stream

Four reactor towers.

Effluent well on west of building.

Caustic holding tank.

South Plant Aeration

Weir chamber of south basin.

RAS return chamber south plant.

South chemical building Ferric tanks (three).

South chemical building Caustic tank.

South Plant Primaries

South plant west side interceptor chamber.

Scum wells for pre-aeration adjacent to sludge buildings 21 & 22.

Sludge wells 21 & 22.

Scum wells 21 & 22.

FORCE MAINS

Diversions Chambers

Street and River Street Intersection

PUMP STATIONS

ABC Street Pump Station and Equalization Basin

SLI Flow Control Chamber

Parking lot W of Pump Station

N Compartment of Equalization Basin

S Compartment of Equalization Basin

Basin Overflow Chamber

Influent Structure Channel

Parshall Flume Structure

Swirl Concentrator Structure

Pump Station

Screen Room Channels

Park Pump Station

Screen Room Channels

Odor Control System Silo

Other Spaces Not Otherwise Listed

Viaduct Flood Control wet well

Miscellaneous Plant Locations

Cl₂ contact chambers for north/south basins and effluent

UV channels (4)

Final Effluent tanks above and below the cascades

Parshall flume for final effluent flow

Final effluent outfall

Aeration Tanks

Basins

Final Tanks

Primary Tanks

Ferric Containment Area (two)

Sidestream Reactor Containment Area

All Air Handlers

APPENDIX G LIST OF ALTERNATE ENTRY REQUIRED CONFINED SPACES