

M&M EXCAVATING

SAFETY

PROGRAM

SAFETY & QUALITY
PRIDE & INTEGRITY
FAMILY & COMMUNITY

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CONTENTS

1. Introduction
2. Safety Standards
3. Accident Prevention Program / General Safety Rules
4. Confined Space Program
 - a. Sample Air Data Collection Sheet
5. Lead Awareness
6. Hazmat Procedures
7. Emergency Response Program
8. Hazard Communication Program (Right to Know Program)
9. Equipment Grounding Conductor Program
10. Responsibilities of Superintendent / Qualified Employee
11. Superintendent / Qualified Employee Safety Checklist
12. Personal Protective Equipment Policy
 - a. Acknowledgement and Receipt
 - b. Memo
 - c. Disciplinary Policy
 - d. Sample Disciplinary Report
13. Tool Box Talk Report Form
14. Annual Inspection of Excavators
15. Shoring Designs
16. Employee Sign-Off Sheet

INTRODUCTION

It is the policy of **M & M Excavating Company** to provide a safe workplace for its employees. To this end, the company, in concert with employees, will seek to comply with all applicable standards promulgated pursuant to the Michigan Occupational Safety and Health Act.

Since the most important component of any safety policy or program is implementation, it is our intent to communicate the contents of this program to our employees. In turn, all employees are expected to comply with this document and will be disciplined if found to be in non-compliance.

Any questions regarding this document should be addressed to:

Safety Coordinator: Mathew Southwick

M & M EXCAVATING COMPANY
SAFETY STANDARDS

It is the policy of this company to keep its employees informed of all safety rules contained in the Construction Safety Standards and the Occupational Health Standards.

Any employee may obtain a copy of any of the above referenced standards by contacting the company Safety Coordinator.

M & M EXCAVATING COMPANY
ACCIDENT PREVENTION PROGRAM/GENERAL SAFETY RULES

1. It is the policy of **M & M Excavating Company** to furnish each employee employment, which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to such employee.
2. **M & M Excavating Company** designates **Mathew Southwick** as corporate Safety Coordinator. This person is responsible for the implementation of the Company's safety program. If any employee needs to know who the company Safety Coordinator is, they can find out by asking any Superintendent.
3. When practical, employees of **M & M Excavating Company** will participate in safety seminars sponsored by MITA, Inc., and/or other organizations.
4. The Safety Coordinator shall designate a qualified employee on each crew or project who will have the following responsibilities:
 - a. Instruct each employee regarding operating procedures, hazards and safeguards of tools and equipment when necessary to perform the job.
 - b. Inspect the construction site, tools and equipment to assure unsafe conditions that may create a hazard are eliminated.
 - c. Instruct each employee in the recognition and avoidance of hazards.
 - d. Instruct each employee, where known harmful plants, reptiles, animals or insects are present, as to the potential hazards, how to avoid injury, and applicable first aid procedures to be used in the event of an injury.
 - e. Instruct each employee required to handle or use known poisons, toxic materials, caustics and other harmful substances regarding the potential hazards, safe handling, use, personal hygiene, protective measures required and applicable first aid procedures to be used in the event of injury.
 - f. Instruct each employee required to enter a confined space regarding the hazards involved, the necessary precautions to be taken, the use of personal protective equipment, and the procedures to be followed if an emergency occurs.

- g. Instruct all employees in the steps to be taken in case of an injury or accident.
- 5. **M & M Excavating Company** shall not knowingly permit an employee to work while under the influence of intoxicating beverages or substances which would impair the employee's ability to perform a task in a safe manner. Additionally, no employee shall possess/use intoxicating beverages or controlling substances at any **M & M Excavating Company** facility. Any employee violating this policy is subject to immediate dismissal.
- 6. The job Superintendent will inspect all machines, tools and equipment on a regular basis to make certain that no defect is present that will affect the safety of employees.
- 7. All employee complaints or concerns regarding safety shall be immediately brought to the attention of the Safety Coordinator.
- 8. Periodic meetings will be held to inform all employees of the company safety program.
- 9. This safety program shall be made available to all employees.
- 10. A copy of the MITA *Trench Safety Handbook* shall be made available to all employees who are involved in working in open excavations.
- 12. A safety bulletin board will be located at the main office along with one at each job trailer. The board will include required safety postings. An EEO Manual is available for your review in the main office.
- 11. Employees will adhere to the following Safety Rules:

A. MISCELLANEOUS RULES

- a. Do not use tools or equipment that you have not been trained or authorized to use. This rule also applies to power-actuated tools.
- b. Gasoline must be stored and transported in approved cans only. Engines must be shut off when refueling and no smoking anywhere near flammable liquids.
- c. Immediately report all injuries, whether to yourself or a co-worker, to your Superintendent.
- d. Do not distract the attention of fellow workers.

B. TRENCHING RULES

- a. Spoil must be at least 2 feet back from the lip of the trench.

- b. All employees working in excavations or trenches must always stay within the protective system (trench shield, shoring, sloping).
- c. Never climb on shoring, trench shields, or sloped walls or ride on any lift, hook, chain, cable, sling, or other equipment parts.
- d. Ladders in a trench must extend at least 3 feet above the top of the trench. All employees working in a trench must be within 25 feet of a ladder or ramp.
- e. For further excavation information, refer to the *MITA Trench Safety Handbook*.
- f. All trenches over 5' deep must be cut to the angle of repose, sheeted or shored.

C. CONFINED SPACE RULES

- a. Do not enter an area classified as a confined space unless you are properly trained and authorized by the company's qualified person. If you don't understand the definition of a confined space, ask your Superintendent.
- b. Atmospheric tests shall be made before any employee enters a confined space or goes underground and the results recorded. If a dangerous atmosphere is encountered, the space shall be ventilated and air quality must be acceptable before entry is allowed. Any positive reading of toxic or explosive gas and any excessive or low levels of oxygen shall be reported to your Superintendent. No employee shall enter the confined space under these conditions until such time that the readings are at an acceptable level. For more complete rules, see the Confined Space section of this program.

CI. PERSONAL PROTECTIVE EQUIPMENT RULES

- a. All employees shall wear a hard hat (that meets MIOSHA standards) when working under a load, a bucket or there is imminent threat of an overhead hazard. Although the wearing of hard hats is not required at all times it is recommended that all employees wear hard hats whenever outside of a cabbed vehicle.
- b. If it is mandated that a project includes a 100% hard hat or PPE policy, all employees must comply.
- c. Wear proper eye protection (goggles, safety glasses, etc.) when necessary.
- d. Hearing protection shall be used where loud noise is present.
- e. Always wear safety vest, hard hats, and boots when directing traffic.
- f. Proper clothing will be worn, including hard toe work boots when required, shirts and pants.

E. HEAVY EQUIPMENT RULES

- a. Every employee, not just the equipment operator, must be fully aware of all safety aspects of heavy construction equipment.
- b. Be constantly alert when working around heavy equipment. The operator cannot always see other personnel around his equipment. Stay out from under suspended loads, away from moving equipment, and counterweights.
- c. Only designated individuals shall be permitted to operate or service heavy equipment.
- d. Perform frequent and periodic inspection as required.
- e. The equipment operator must wear the seat belt when required.
- f. No employee is permitted to ride on any part of the equipment.
- g. It is the responsibility of all employees to make certain that back-up alarms on obstructed rear view heavy equipment be in operable condition. Use a flagger to move equipment when back up alarms are inoperable.
- h. Maintain a 10' minimum clearance from energized lines; use a spotter in difficult areas.

F. FALL PROTECTION

- a. All manholes which present a fall hazard should be covered and identified as a hole.
- b. Guardrails around open shafts and bore pits deeper than 6' should be 42" plus or minus 3" high.
- c. The intermediate rail should be positioned halfway between the floor and top rail.
- d. The threshold for fall protection use is 6'. Fall protection may be accomplished by guarding, personal fall arrest systems or safety nets. Ask your qualified person.

G. TRAFFIC

- a. All traffic control devices are to be placed under the direction of the Qualified Employee. While flagging or directing vehicular traffic, a

reflectorized, fluorescent Class 2 or 3 warning vest, and hard hat shall be worn at all times. Flag people are to be courteous at all times.

- b. A six foot staff two-sided paddle sign with “STOP” on one side and “SLOW” on the other shall be used to control traffic.
- c. Traffic control devices shall be installed and maintained as prescribed by Part 6 of the Michigan Manual of Uniform Traffic Control Devices.
- d. When working in or adjacent to vehicular traffic always face the flow of traffic or use of a spotter.
- e. Replace traffic control devices that have been damaged or downed signs as soon as possible.
- f. Cover construction traffic control when work is not in progress if possible.
- g. Consult the qualified person with traffic regulation questions.

H. TUNNEL RULES

- a. Always use the in and out board.
- b. Always wear the proper PPE depending on job assignment.
- c. Never stand under suspended loads being lowered into shaft.
- d. Prior to tunneling be sure the proper rescue equipment is in place and the tunnel rescue team is assembled.
- e. Inspect haulage equipment regularly.
- f. Always have a top-man when employees are working in the tunnel.
- g. Tunnels longer than 225’ must be equipped with a means of communication at the following points:
 - a) The working face
 - b) The top of the shaft
 - c) the bottom of the shaft
 - d) Hoisting station if provided
 - e) Each 1,000’ of tunnel
 - f) The office if provided
- h. Test the atmosphere of the tunnel as often as necessary to assure air quality of at least 19.5% and no more than 22% oxygen, record results.

I. AUGER OPERATIONS

- a. Remain a safe distance from rotating augers.
- b. Remove excess dirt when augers come to a complete stop.
- c. Never work on auger equipment unless controls have been locked out, or keys removed to prevent accidental operation
- d. Cover open holes until dewatering system is installed.

J. CRANE OPERATIONS

- a. Always complete a daily visual inspection of a crane before operation.
- b. A current annual written inspection should be maintained at each jobsite where a crane is used.
- c. A rated capacity chart should be in the cab of each crane.
- d. Always barricade the swing radius of a crane.
- e. Operators should never leave a load unattended.
- f. Maintain 10' minimum clearance from energized lines; use a spotter in difficult areas.
- g. Discard nylon slings with any wear cord exposure.
- h. Only use tagged chains of appropriate size for items being lifted.
- i. When using hand signals, remain in a position in which the operator can clearly see all hand signals.
- j. Wire ropes must be taken out of service if 6 random wires are broken in one lay, or 3 broken wires in one strand in 1 lay exists.
- k. Wire ropes must be taken out of service if severely worn or distorted.

K. FALL PROTECTION & GUARDING

- a. Perimeter cables constructed of 3/8" cable with danger signs midway between the cable supports may be used as a fall protection device.
- b. Perimeter cables should be 42" above floor with a maximum of 6" deflection.

c. When guarding work areas, adhere to the following:

1. Never use resteel (rebar) for guardrail construction.
2. Guardrail support posts should be spaced not more than 8' apart.
3. Guardrail height should be 42" plus or minus 3".
4. The intermediate rail should be halfway between the floor and top rail.
5. Open-sided floors and work platforms 6' high or greater should be guarded unless a harness is used.

L. SIGNALS, SIGNS AND BARRICADES

- a. The Michigan Manual of Traffic Control Devices (MMUTCD) is utilized for some traffic layouts on other projects. MDOT has developed plans for placement of these devices, please consult your qualified person regarding proper placement of traffic control devices.
- b. A handheld stop/slow paddle with 6' staff is required when controlling traffic.
- c. Barricades may be used to direct vehicular traffic whenever work is being done on a public right-of-way. Ask your Superintendent.
- d. When working in or adjacent to vehicular traffic *always* face the flow of traffic or use a spotter.

LI. SCAFFOLDING

- a. Scaffolding should only be erected under the direction of a qualified employee.
- b. Keep scaffolding free from excess tools, materials and debris.
- c. All scaffolding 6' or higher must have a guardrail system installed on any open side.
- d. Remove from service any wood or laminated planks in poor condition, along with any bent scaffolding members.
- e. Maintain a 6' clearance from energized lines.
- f. A fall arrest device must be worn when working on a scaffold at or above 10'.

N. PORTABLE LADDERS

- a. Only use type 1A or type 1 ladders for construction purposes.
- b. Always extend ladders 3' above the landing surface to which the ladder is used to gain access.
- c. Never use a step ladder as a straight ladder by leaning it against a wall or support.
- d. all ladders used in conjunction with platforms must be secured at top and bottom.

O. WELDING AND CUTTING

- a. Always wear the appropriate personal protective equipment when welding or cutting, i.e., aprons, leggings, safety shoes, hard hats and proper goggles, shield or safety glasses for the operations being performed.
- b. Store full and empty cylinders valve-end up and secured with chain or bracket. Be sure to place caps in cylinders not in use.
- c. Always use backflow devices on gas and oxygen hoses.
- d. Never weld or cut in a confined space without taking the proper precautions.
- e. Only use welding and cutting equipment if you have been trained and authorized to do so.
- f. Clean all drums, barrels and tanks of toxic or flammable, combustible material before performing welding or cutting operations.

P. AERIAL WORK PLATFORMS

- a. Aerial work platforms should only be operated by employees who have been trained and issued a permit to use this equipment.
- b. The permit issued may only be used when performing work for the employer who issued the permit.
- c. All occupants of aerial work platforms must use a harness with lanyard attached to the appropriate points of the platform.
- d. Never tie off to an adjacent structure when working from an aerial platform.

- e. Never stand on rails or planks to achieve additional working height.
- f. Always maintain a minimum 10' clearance from energized electrical lines.

Q. SAFETY NETS

- a. Safety nets, when used, should be installed in the following manner:

Vertical distance from working level to horizontal plane of net.	Minimum required horizontal distance of outer edge of net from the edge of the working surface.
up to 5 feet	8 feet
> 5 feet up to 10 feet	10 feet
more than 10 feet	13 feet

- b. Clear all tools and scrap materials which have fallen into safety nets as soon as possible.
- c. All safety nets should have a drop test performed on them after installation and every 6 months thereafter. Drop testing is done by dropping 400 lbs. bag of sand into the net, unless net can be certified without the drop test.

R. PERSONAL FALL ARREST SYSTEMS

- a. Personal fall arrest systems must be worn when workers are exposed to falls 6' or greater.
- b. the attachment point of harness shall be located in the center of the wearer's back, near the shoulder level.
- c. Never use body harnesses as material handling devices.
- d. Do not re-use fall protection devices that have been subjected to impact loading until they have been inspected and considered suitable for use

by a qualified employee. Tag this equipment out of service until such an inspection can be performed.

- e. Visually inspect all harnesses before use.
- f. Do not attach fall protection devices to guardrail systems.

S. PILEDIVING SAFETY

- a. All hose connections to piledriver hammers, pile extractors, or jet pipes shall be securely attached, with an adequate length of cable to prevent whipping if the joint is broken.
- b. Hanging or swinging leads of piledrivers shall have fixed ladders. Fixed leads shall be provided with rings or attachment points so that the aloft worker may engage his/her safety harness lanyard to the leads.
- c. Landings or leads shall not be used for storage of any kind.
- d. Piledriver leads shall have stop blocks to prevent the hammer from being raised against the head block.
- e. Pilehammers shall be lowered to the bottom of the leads while the piledriver is being moved.
- f. Hoisting of steel piling shall be done by use of a closed shackle or other positive attachment that will prevent accidental disengagement.
- g. If piling cannot be pulled without exceeding the load rating of equipment, a pile extractor shall be used.
- h. Piling shall not be pulled by tipping the crane, releasing the load brake momentarily, and catching the load before the crane has settled.
- i. A blocking device shall be provided for placement in the leads under the hammer at all times while employees are working under the hammer.
- j. Guards shall be provided across the top of the head block to prevent the cable from jumping out of the sheaves.
- k. Steam or air line controls shall consist of two shutoff valves, one of which shall be a quick-acting lever type within easy reach of the hammer operator.

- l. All employees shall be kept clear when piling is being hoisted into the leads.
- m. When driving jacked piles, all access pits shall be provided with ladders and bulkheaded curbs to prevent material from falling into the pit.

T. PIPE BORING & JACKING OPERATIONS

- a. Construct pit in accordance to design unless otherwise directed by the qualified person on site.
- b. Barricade pit properly this may be done with one or a combination of the following:
 1. Snow fencing at least 6' back from edge of pit.
 2. Railing at least 42" high with mid-rail.
 3. Steel plates driven in a manner that provides 42" of fall protection.
- c. The area in front of the excavator will remain unbarricaded during work hours for equipment reach and operator visibility reasons. No employees are permitted between the excavator and open side of the pit. During non-working hours this area requires barricading.
- d. Entry into any casing requires the following:
 1. Test and record air monitoring results prior to entry. Continuous monitoring during occupation.
 2. Never enter a small diameter casing without anklets and a lifeline in place.
 3. The use of a rolling cart is recommended in small diameter casings.
 4. Never enter a casing without an attendant present.
 5. Have ventilation equipment available and use if necessary.
 6. Five minute air packs must be available on site prior to entering any casing.
- e. Ingress and egress should be accomplished by use of an approved ladder free from defects. All ladders must be secured from accidental displacement and extend 36" above the landing area.

U. RESPIRATORY PROTECTION

(Mandatory) Information for employees using respirators when not required under the standard.

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazard substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and head all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U. S. Department of Health and Human Services, certification should appear on the respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect you against. For example, a respirator designed to filter dust particles will not protect you against gasses, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator sp that you do not mistakenly use someone else's respirator.

Dust masks will be made available to employees for voluntary use. You may wish to consider the use of these masks during work operations that create dust environments.

V. UTILITY LOCATING—BEST PRACITCES

Prior to Excavating

The MISS DIG System must be contacted at **800-482-7171** at least 72 hours in advance of construction, but not more than 14 calendar days. Retain your ticket number and be specific about the limits concerning the proposed area of excavation.

Positive Response

All participating utility owners are required to notify MISS DIG via an automated response system. This useful tool will allow you to determine if all of the utilities in your proposed area of excavation have been located. If a utility owner has no facilities in the area, this information will also be part of the positive response. This information is administered by MISS DIG and available through the web at www.missdig.org or the automated phone system at **800-763-3888**.

No Marks

If the excavator, having commenced excavation within the 14 calendar day period on or after the dig start date and time as set forth in the Dig Notice, has cause to be concerned about the presence of an unmarked facility(s) **because:**

- (i) there is visible evidence of a facility(s),**
- (ii) a notified Underground Facility Owner failed to provide a positive response, or**
- (iii) there exists a positive response indicating a location was**

marked, but the marks are missing,

then the excavator shall give notice to the potential unmarked Underground Facility Owners(s) by contacting MISS DIG. Upon notification of this situation to MISS DIG, the Underground Facility Owner shall respond within three (3) hours; unless a later time period for response is agreed upon by the excavator and the Underground Facility Owner.

Additional Assistance

If the precise location of a marked facility cannot be determined and assistance is requested during normal working hours (7 a.m. to 5 p.m.) on a business day, the system facility owner has 3 hours to respond to the request or meet at a mutually agreed time.

Requests for additional assistance must be made through MISS DIG: 800-482-7171.

Excavating

Excavating must commence within **14 days** of the dig start date on the MISS DIG ticket. If excavating has not occurred within this time frame, a new ticket number must be obtained prior to excavating.

Safe Zone

Your intended area of excavation has been divided into two areas with regard to excavating. The first area is as follows:

Safe zone - Relates to the area at least **48" or farther away** from either side of

the mark(s) provided by the utility owner. No hand digging or facility verification is required when excavating in the safe zone. Be sure to remain diligent regarding evidence of unmarked facilities.

Caution Zone

Your intended area of excavation has been divided into two areas with regard to excavating. The first area was discussed above. The second area is as follows:

- **Caution Zone** - Means the area **within 48" of either side** of the mark(s) provided by the utility owner. If excavating must occur within the caution zone, all facilities must be located prior to excavating by hand digging or other means of soft excavation. Excavations that run parallel to a facility in a caution zone require hand dug test holes at intervals as often as reasonably necessary to establish the precise location of the underground facility. You may commence excavation with powered equipment once you have established the location of the facility.

Diagram of Safe Zone and Caution Zone



Marks

Paint, stakes, and/or flags may be utilized to mark underground facilities. Often times, a combination of all three are used to identify facilities. Color-coding is used to differentiate the various marks of facilities to be encountered. The following should help determine the type of facility being dealt with.

- indicates either natural gas, oil, steam, petroleum, or other gases

Orange - indicates phone and cable

Red - indicates electric

Blue - indicates water

Green - indicates storm drains

Brown - indicates sewer

W. CONCRETE OPERATIONS

1. Always wear rubber over boots when working with concrete, These boots will be provided.
2. Avoid contact with eyes and skin. If contact occurs, flush area with clean water. If irritation continues, consult SDS binder for additional information
3. When finishing concrete, wear kneepads for protection.
4. Be aware of concrete shutes and pump hose. These swinging apparatuses present a hazard when moving.
5. Watch for Traffic when doing road pours. Always try to face traffic and be aware of float poles that may extend outside of closed lanes.

X. DEMOLITION OPERATIONS

1. Prior to demolition a survey will be conducted to determine: building condition, weather adjacent structures will be affected by demolition, check for any other conditions that may threaten employee safety. A copy of the written report should be kept in the field office.
2. Be sure all utilities have been shut off.
3. Manual demolition should be performed under the direction of the qualified person.
4. Do not torch-cut painted steel unless it has been determined that it does not contain lead.
5. Asbestos should be removed by an associate contractor prior to demolition. If you suspect or find asbestos material cease work and bring it to the attention of your Superintendent.
6. Do not use mechanical equipment on a floor or other working surface unless it is capable of supporting the equipment and its intended load.
7. Use curbs or stop logs to prevent mechanical equipment from tracking over an edge or drop.
8. Only the employees necessary to the operation of mechanical demolition shall be permitted in the demo area.

9. When possible or feasible use water to control dust created during the demolition process.

CONFINED SPACE PROGRAM

GENERAL

CONFINED SPACE DEFINITION

1. A **confined space** is a space having all of the following criteria: (1) is large enough and so configured that an employee can bodily enter, (2) has a limited or restricted means for entry and exit, and (3) is not designed for continuous employee occupancy.

Examples of locations where confined spaces may occur include, but are not limited to, storage tanks, manholes, sewers, water mains, storm drains, underground utility vaults, concrete pier columns, precast concrete manhole units, drilled shafts, pipelines, gatewells, ducts, catch basins and open top spaces such as pits, tubs, vaults, and vessels.

CONFINED SPACE CLASSIFICATIONS

1. **Non-Permit Space** is a confined space that does not contain existing or potential physical or atmospheric hazards. A space having only *physical hazard(s)* that have been isolated or eliminated can be reclassified as a non-permit space. Reclassifying is not allowed when a space contains an existing or potential *atmospheric hazard(s)* (i.e. existing sewers, manholes, and other similar locations).
2. **Alternate Entry Space** is a permit space that contains no physical hazards (or the physical hazards have been eliminated or isolated); the existing or potential atmospheric hazards can be controlled by continuous mechanical forced air ventilation; and, in the event the ventilation system stops working, entrants can exit the space safely. Alternate entry procedures are less stringent than full permit space procedures.
3. **Full Permit Space** is a permit space that contains existing or potential physical and/or atmospheric hazards. Full permit space entry procedures are required when workers enter the space.

MIOSHA STANDARD REFERENCES

1. The requirements for confined spaces in construction are covered in Construction Safety Standard (CS) [Part 35 – Confined Space in Construction](#). Additional requirements for welding activities are covered in CS [Part 7 – Welding and Cutting](#) and General Industry Standard [Part 12 – Welding and Cutting](#).

Part 35 – Confined Space in Construction does not apply to certain construction work activities such as diving, excavations, and underground construction (i.e. tunnels, shafts, cofferdams, and caissons). The requirements for these activities are covered in CS [Part 9 – Excavation Trenching & Shoring](#) and [Part 14 – Tunnels, Shafts, Cofferdams, and Caissons](#); and Occupational Health Standards [Part 504 - Diving Operations](#) and [Part 665 - Underground Construction, Caissons, Cofferdams, and Compressed Air](#).

EMPLOYEE RESPONSIBILITIES

1. Employees must not enter a confined space until properly trained and authorized by the supervisor/Superintendent. If unsure whether an area or space is considered a confined space, contact your supervisor or Superintendent.

EMPLOYEE TRAINING

1. Every employee shall receive training and instruction as to the existence, location, and dangers posed by permit spaces and that they must not enter such spaces without authorization by the supervisor/Superintendent.
2. Employees who are involved in alternate entry and full permit space entry work operations shall receive specific training to ensure they have the knowledge, understanding and skills to perform their duties safely; understand the hazards in the permit spaces and the methods used to isolate, control or protect workers; and the dangers of attempting entry rescue unless authorized.
3. Employee names, trainer names, specific duties training, and dates of training shall be recorded and maintained at the office. The training records shall be made available to employees upon request.

FIRST STEP: INITIAL WORK SITE EVALUATION

1. Before work begins, the competent person (typically the Superintendent) must evaluate the worksite to determine if there are any spaces that workers may enter into that meet the definition of a confined space.
2. Employees are not authorized to enter a confined space until the Superintendent has determined which of the following classifications and entry procedures will be used to enter the space:

- a. [Non-Permit Space Entry](#)
- b. [Alternate Entry Space](#)
- c. [Full Permit Space Entry](#)

Use the **Classifying Confined Spaces** flowchart ([See Appendix A](#)) for assistance in determining classification and entry procedures.

3. Each confined space must be evaluated for existing and/or potential physical and atmospheric hazards. Whenever possible, the initial evaluation shall be completed without entering the space. If entry into the space is necessary to complete an initial evaluation, full permit space entry procedures are required.
4. The atmosphere in the space must be tested prior to changing the space's natural ventilation. Direct-reading instruments must be calibrated per manufacturers' specification and used to test for oxygen content, flammable gases and vapors, and potential toxic air contaminants, **in this order**. The testing will determine whether the following hazards are present or could be introduced by the work operation:

- a. Oxygen deficiency (concentration less than 19.5 %) or excess (concentration above 23.5 %).
 - b. Concentration of any flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL).
 - c. Airborne combustible dust at a concentration equal to or greater than its lower explosive limit.
 - d. Atmospheric concentration of any substance that can cause death, incapacitation, impairment of ability to self-rescue, injury or acute illness.
5. **Section 1** of the **Pre Entry Checklist** ([See Appendix B](#)) must be completed for each confined space that employees may enter into and kept available at the job site. The Pre-Entry Certification (PEC) is necessary to document the results of the initial evaluation and atmospheric testing; and is the rationale used to classify the space and the entry procedures.

NON-PERMIT SPACE ENTRY

1. If a space does not have an existing or potential physical or atmospheric hazard, it is classified as a non-permit space, and employees may enter. **Danger signs are not required for non-permit spaces.**
2. If a space contains an existing or potential physical hazard(s) only, the space can be reclassified as a non-permit space if the physical hazards have been eliminated or isolated. The rationale must be documented in **Section 1** on the Pre Entry Certification (PEC). Reclassifying is not allowed when a space contains an existing or potential atmospheric hazard (i.e. existing sewers, manholes, and other similar locations). In this situation, go to the [Alternate Entry Space](#) section.
3. Periodic atmospheric testing and evaluations may be necessary to ensure employee safety in a non-permit space, especially when a work operation (i.e. welding, cutting, using toxic materials) could introduce a new hazard into the space. Anytime a periodic or subsequent atmospheric test is conducted, the results must be documented and kept at the work site. ([See Appendix C](#)): **Confined Space Atmospheric Testing Data Sheet**. Atmospheric test results are not required to be documented if *continuously monitoring* the atmosphere within the space.
4. Employees must exit the space immediately if a hazard is introduced or detected. The space is then reclassified as a full permit space until additional testing and evaluation demonstrate that the space is safe for re-entry. The event, hazards, and steps taken to eliminate or isolate the hazard in order to prevent another occurrence must be documented in **Section 3** on the PEC. The Superintendent must include his/her signature authorizing re-entry into the space. In addition, the GC must be informed of any hazards that occurred or were created in the space during entry.

ALTERNATE ENTRY SPACE

1. Alternate entry space procedures are less stringent requirements that may be used in lieu of the full permit space procedures, provided all of the following criteria can be obtained:

- a. All physical hazards in the space are eliminated or isolated;
 - b. The only hazard is an actual or potential hazardous atmosphere that can be made safe for entry using continuous forced air ventilation; and
 - c. In the event the ventilation system stops working, entrants can exit the space safely.
2. Prior to entry, the Superintendent must inform the controlling contractor of the existence, location, and hazards likely to be confronted or created during entry, and that alternate entry procedures will be used to enter the space. When another employer's employee(s) is working in the space at the same time, or when work activities that could result in a hazard are performed in the space at the same time, the alternate entry procedures must be coordinated with the controlling contractor and the other affected employer.
3. DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER signs must be posted at each alternative entry space location to prevent unauthorized entry.
4. **Sections 1 and 2** on the PEC must be completed prior to entering the space when using alternate entry procedures. This will document the hazards, precautions, entry procedures and the supporting data for using alternate entry procedures and to verify the space is safe for entry. The PEC must be made available to each employee entering the space or to their authorized representative, as applicable, and kept at the job site.
5. Any conditions making it unsafe to remove an entrance cover (i.e. manhole cover) must be eliminated before the cover is removed. If an entrance cover is removed, the opening must be immediately guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and will protect employees from falling objects when working in the space.
6. Continuous mechanical forced air ventilation must be set up and used to ventilate the space. Exhaust ventilation and natural ventilation are not acceptable substitutes for forced air ventilation. The forced air ventilation must be directed to ventilate the immediate areas where each employee will be working within the space and must continue until all employees have left the space. The air supply for the forced air ventilation must be from a clean source and must not increase the hazards in the space.
7. After the space has been ventilated, the atmosphere must be re-tested prior to entry to ensure that the forced air ventilation is preventing the accumulation of a hazardous atmosphere. After re-testing, the atmosphere must be continuously monitored unless periodic monitoring is sufficient to ensure that the atmosphere remains nonhazardous. Anytime a periodic, subsequent or re-test of the atmosphere is conducted, the results must be documented and kept at the work site. **(See Appendix C): Confined Space Atmospheric Testing Data Sheet.** Atmospheric test results are not required to be documented if ***continuously monitoring*** the atmosphere within the space.
8. Monitoring instruments must be equipped with an early warning audible alarm that is capable of alerting employees of any atmospheric hazard that may have entered into the space and provides sufficient time to exit the space.
9. If the ventilation system is equipped with an audible alarm, employee(s) must immediately leave the space on their own if the ventilation stops for any reason when the alarm sounds.

If the ventilation system is not equipped with an audible alarm, an employee stationed at the top of the space opening (top man) must be readily available to monitor the ventilation system and be able to effectively communicate with the employees within to immediately exit the space on their own should the ventilation stop for any reason.

10. A safe method of entering and exiting the space must be provided. Any hoisting system that is used must either be designed or manufactured for personnel hoisting or be approved for personnel hoisting by a registered professional engineer prior to use.
11. Confirm local emergency units are readily available in the case of an emergency.
Attendants, rescue equipment and rescue teams are not required during alternate entry procedures unless the space is reclassified as a full permit space.
12. If a hazard is detected while employees are working within the space, the Superintendent must ensure each worker leaves the space immediately. The space is then reclassified as a full permit space until additional testing and evaluation demonstrate that the space is safe for re-entry. The Superintendent must document the event, hazards, and steps taken to eliminate or isolate that hazard to prevent another occurrence in **Section 3** on the PEC. The Superintendent must include his/her signature authorizing re-entry into the space.
13. The GC must be notified when work has been completed and informed of any hazards that occurred or were created in the space during entry. Document this in **Section 4** on the PEC.

FULL PERMIT SPACE ENTRY

1. Complete Section 1 of the PEC to verify the conditions of the permit space during the initial work site evaluation and prior to entry. When hazards or potential hazards within a space cannot be eliminated, isolated, controlled with ventilation, or entrants are unable to exit the space in the event the ventilation system stops working, full permit space entry procedures must be established and implemented.
2. DANGER – PERMIT-REQUIRED CONFINED SPACE – DO NOT ENTER signs must be posted at each full permit space location to prevent unauthorized entry.
3. Prior to entry, the Superintendent must inform the controlling contractor of the existence, and location, of hazards (including any hazards likely to be confronted or created), and that full permit entry procedures will be used to enter the space. The entry procedures must be coordinated with the controlling contractor when another employer's employee(s) is working in the permit space at the same time and when a work activity that could result in a hazard is performed in the space at the same time.
4. Full permit entry procedures must be developed and implemented to ensure safe entry into the space. The entry procedures must include, at a minimum, all of the following:
 - a. Specify the acceptable entry conditions;
 - b. Provide entrants or their authorized representative an opportunity to observe any monitoring or testing of space;
 - c. Isolate the space and physical hazards within the space;

- d. Purging, inerting, flushing, or ventilating the space as necessary to eliminate or control atmospheric hazards;
 - e. Determine that, in the event the ventilation system stops working, the monitoring procedures and equipment will detect an increase in atmospheric hazard levels in sufficient time for entrants to safely exit the space;
 - f. Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards;
 - g. Verify that conditions within the space are acceptable throughout entry.
5. Provide the following equipment, maintain the equipment, and ensure employees use the equipment properly:
- a. Testing and monitoring equipment;
 - b. Ventilating equipment;
 - c. Communication equipment;
 - d. Personal protective equipment when engineering and work-practice controls do not adequately protect employees;
 - e. Approved lighting equipment;
 - f. Barriers and shields;
 - g. Equipment, such as ladders, for safe access and egress;
 - h. Rescue and emergency equipment, unless equipment is provided by rescue services; and
 - i. Any other equipment necessary for safe entry into, safe exit from, and rescue.
6. Full permit space conditions must be evaluated as follows during entry:
- a. Test the atmosphere in the space before entry to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made. If isolation of the space is infeasible, due to being large or is part of a continuous system (such as a sewer), all of the following must be conducted:
 - i. Perform pre-entry atmospheric testing to the extent feasible before entry;
 - ii. Continuous monitoring of conditions in the areas where entrants are working;
 - iii. Provide an early-warning system that continuously monitors for non-isolated engulfment hazards and alerts entrants and attendants in sufficient time to safely exit the space.
 - b. Continuously monitor atmospheric hazards unless periodic monitoring is sufficient to ensure that the atmosphere remains nonhazardous.
 - c. When testing the atmosphere, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.
 - d. Allow entrants or their authorized representative to observe any testing.
 - e. Reevaluate the space as requested by the entrant or their authorized representative and provide them with the results of any testing.
7. The authorized entrant(s), attendant(s), and foremen each have specific duties whenever work is performed in a permit space. Their specific duties are listed below:

Authorized entrants must:

- a. Know space hazards, including information on the means of exposure such as inhalation or skin contact, and symptoms of the exposure;
- b. Use appropriate personal protective equipment properly;

- c. Stay in communication with attendant as necessary to enable the attendant to monitor the entrant's status and alert to evacuate when necessary;
- d. Exit from the permit space as soon as possible when:
 - i. Ordered by the attendant or Superintendent;
 - ii. When he/she recognizes the warning signs or symptoms of exposure;
 - iii. A prohibited condition exists; or
 - iv. An automatic alarm is activated.
- e. Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.

Attendants must:

- a. Remain outside the permit space during entry operations unless relieved by another authorized attendant;
- b. Perform non-entry rescues when specified by the rescue procedure;
- c. Know existing and potential hazards, including information on the types of exposure, signs or symptoms, consequences, and other effects;
- d. Maintain communication with and keep an accurate account of the workers within the space;
- e. Assess conditions inside and outside the space and order evacuation of the permit space when:
 - i. A prohibited condition exists;
 - ii. A worker shows behavioral effects of hazard exposure;
 - iii. A situation exists outside the confined space that could endanger the employees within the space; and
 - iv. The attendant cannot effectively and safely perform required duties.
- f. Summon rescue and other services during an emergency and when a worker becomes injured or ill;
- g. Ensure that unauthorized people stay away from permit spaces or exit immediately if they have entered into the space;
- h. Inform entry employees and Superintendent if any unauthorized person enters the permit space; and
- i. Perform no other duties that interfere with the attendant's primary duties.

Foremen must:

- a. Know space hazards including information on the mode of exposure, signs or symptoms and consequences;
 - b. Verify that specified entry conditions are satisfied, including permits, tests, procedures and equipment before allowing entry;
 - c. Terminate entry and cancel or suspend permits when entry operations are completed or if a condition that is not allowed under the permit arises;
 - d. Verify that rescue services are available and that the means for summoning them are operable;
 - e. Take appropriate measures to remove unauthorized entrants; and
 - f. Ensure that entry operations remain consistent with the entry permit and that acceptable entry conditions are maintained.
8. At least one attendant must be stationed outside the permit space when workers are working within, and maintain communication with all entrants and keep track of their conditions. If one or more entrants suffers an injury or illness and is unable to exit the space without help, the attendant must initiate a rescue. When an attendant is required to

monitor multiple permit spaces, additional procedures must be implemented in the event of an emergency within one or more of those spaces.

9. **Rescue and emergency** procedures must be established for summoning rescue and emergency services and preventing unauthorized personnel from attempting rescue.
 - a. **Non-entry rescue:** It is preferable if the entrant(s) can be rescued without others entering the space to avoid having additional personnel exposure to the hazard that caused the illness or injury. Therefore, non-entry rescue procedures using retrieval equipment must be implemented, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant, such as when obstructions can snag the retrieval line or the line can become entangled with air lines or electric cords. The attendant must be prepared to perform non-entry rescues if needed.

When non-entry procedure is selected, each entrant must wear a chest or full body harness, with a retrieval line attached at the D-ring in the center of the back or another point which positions the entrant so that he or she is small enough to be pulled out of the space. The other end of the retrieval line must be attached to a mechanical device or a fixed point outside the permit space. A mechanical device must be available to retrieve someone from vertical type permit spaces more than 5 feet deep. Wristlets or anklets may be used instead of a chest or full body harness only if the employer can demonstrate that use of a chest or full body harness is infeasible or creates a greater hazard.

When a non-entry rescue procedure is selected, the Superintendent must also confirm, before entry begins, that emergency assistance (typically the local fire department) is available if the non-entry rescue fails.

- b. **Entry rescue:** When non-entry rescue is not feasible, the only way to rescue an entrant is for others to enter the permit space. For entry rescue, an on-site rescue team consists of our employees or another contractor's employees. An off-site rescue service is a local fire department or other rescue service. The off-site rescue service must be able to respond in time to get the entrant out of the space to receive medical treatment, which requires the Superintendent to contact the rescue service prior to entering the space and informing them of the nature and hazards involved in the space. In some cases, this may require a standby rescue team, such as when the entrant is working in an atmosphere that is immediately dangerous to life or health (IDLH) and is wearing an airline respirator or a self-contained breathing apparatus.

When entry rescue takes place, an attendant must be stationed outside the permit space so that additional help can be summoned if needed. If the original attendant is to enter the space as part of the rescue team, a new attendant must be in position before the first attendant enters the space.

- c. **Training requirements for rescue teams and off-site rescue services:** All members of a rescue team must receive the training that is required for authorized entrants and have been trained to perform their assigned rescue duties. Rescue team members must be provided with personal protective and rescue equipment,

including respirators, and must be instructed on how to use it. All rescuers must be trained in first aid and CPR. At a minimum, one rescue team member must be certified in first aid and CPR. Rescuers must be informed of the hazards within the permit space before entering. Rescue team practices or exercises must take place at least yearly. Off-site rescue services must be provided access to all permit spaces, if requested, in order to practice rescue operations.

Off-site rescue services must notify the Superintendent in the event that their service is unavailable. The permit space work can be postponed or another off-site rescue service can be used.

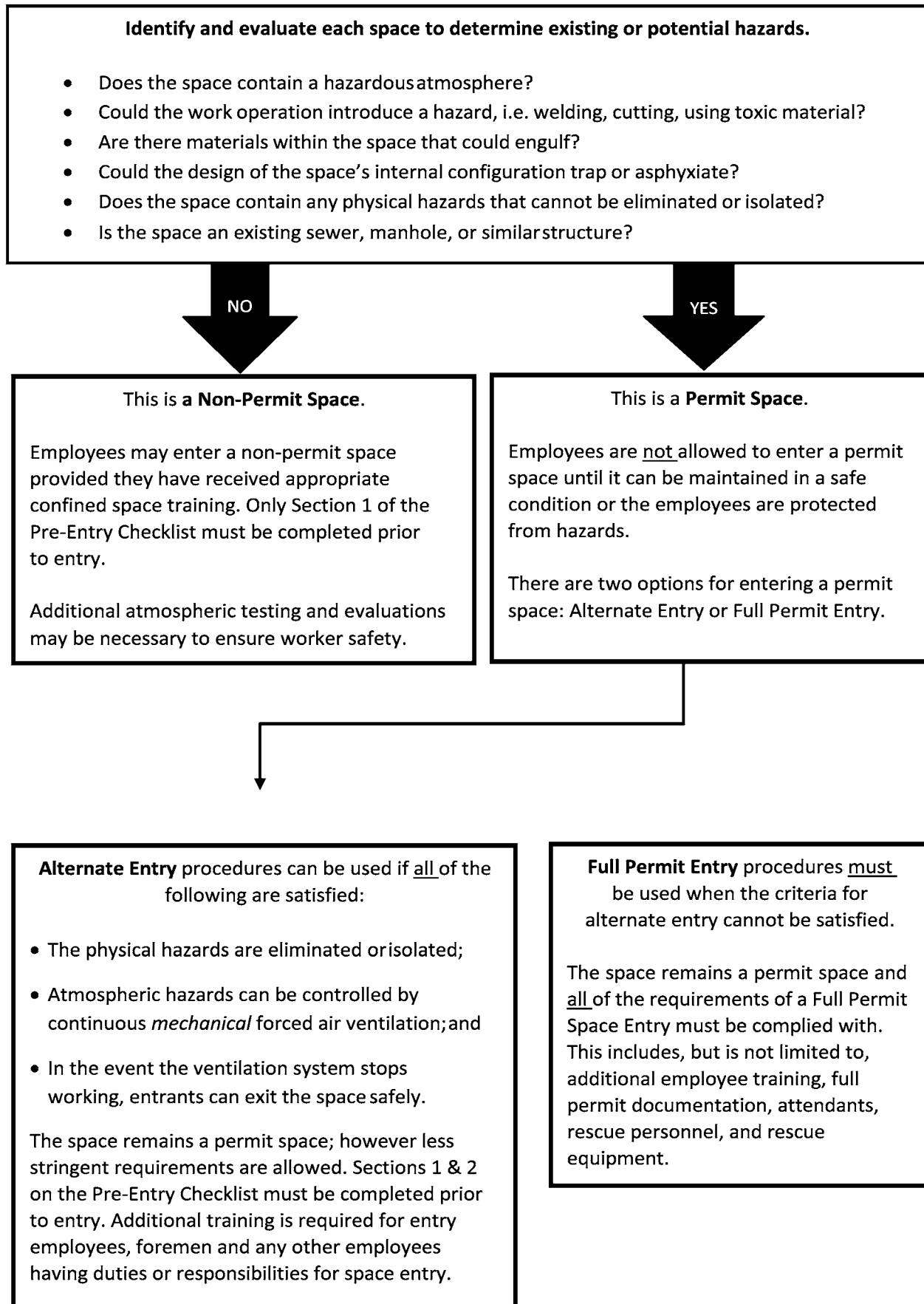
If using an off-site rescue service, the Superintendent must determine that the service has the ability and equipment to carry out a rescue in the particular permit space or type of permit space that entrants are working in. The Superintendent must contact the rescue service to make sure that it will be able to respond in a timely manner whenever an entrant is in the permit space.

10. Full permit space entry procedures must be reviewed and deficiencies must be corrected whenever it is discovered that the procedures established may not be protecting employees adequately. Circumstances requiring a review include an injury or near misses, unauthorized entry, detection of a new hazard or condition prohibited by the Entry Permit, or an employee complaint about the program's effectiveness. In addition, the Full Permit Space Procedures will be reviewed annually for effectiveness using the cancelled entry permits.
11. Prior to entry, a **Full Permit Space Entry Permit** ([See Appendix D](#)) must be completed for each full permit space that employees may enter into. The entry permit includes all of the following information:
 - a. Name of the permit space to be entered, authorized entrants(s), current attendants, and current entry foremen;
 - b. Purpose of entry;
 - c. Date and authorized duration of entry;
 - d. Means of detecting an increase in atmospheric hazard levels;
 - e. Name and signature of Superintendent who authorizes entry;
 - f. Known hazards in the space;
 - g. Measures to be taken to isolate permit spaces and to eliminate or control space hazards;
 - h. Acceptable entry conditions;
 - i. Test results, date and time of tests(s), and the tester's initials or signature;
 - j. Name and telephone numbers of rescue and emergency services and means to be used to contact them;
 - k. Communication procedures and equipment to maintain during entry;
 - l. Special equipment and procedures, including personal protective equipment and alarm systems;
 - m. Any other information needed to ensure employee safety; and
 - n. Additional permits, such as for hot work, that have been issued authorizing work in the permit space.

12. The Superintendent must cancel entry permits when work has been completed within the space or when new hazards or conditions occur. Once a permit is cancelled, entry under it is no longer permitted. New hazards or conditions must be noted on the cancelled permit and used in revising the permit space program. Once the work has been completed and the entry permit cancelled, it must be kept for a least one year.
13. The Superintendent may suspend an entry permit instead of cancelling it if a temporary condition has occurred in or near the space that, once corrected, is not expected to reoccur. The permit may be reinstated and entry may occur under the permit if the entry supervisor has determined that the conditions in the space match the allowable conditions listed on the permit.
14. The GC shall be informed when work has been completed within the space and of any hazards that occurred or were created in the space during entry.

APPENDIX A

CLASSIFYING CONFINED SPACES



APPENDIX B PRE-ENTRY CHECKLIST

SECTION 1: INITIAL WORK SITE EVALUATION

Date of Initial Evaluation:	Identify space being entered:	Person completing the evaluation:
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Can the initial evaluation be completed without entering? Yes <input type="checkbox"/> Continue to next box. No <input type="checkbox"/> STOP! –Use full permit space procedures.	If a cover or guard has to be removed to perform the initial evaluation or testing, have all hazardous conditions been eliminated, isolated, or controlled? Yes <input type="checkbox"/> N/A <input type="checkbox"/>
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Atmospheric Hazard Assessment

Record initial atmospheric testing: <table style="width:100%; border: none;"> <tr><td style="width:70%;">Oxygen</td><td style="width:30%;">%</td></tr> <tr><td>Flammable/Explosive Gas</td><td>% LEL</td></tr> <tr><td>Hydrogen Sulfide (H2S)</td><td>PPM</td></tr> <tr><td>Carbon Monoxide (CO)</td><td>PPM</td></tr> <tr><td>Other (Specify)</td><td></td></tr> </table> Record subsequent atmospheric testing on the Confined Space Atmospheric Testing Data Sheet (Appendix C).	Oxygen	%	Flammable/Explosive Gas	% LEL	Hydrogen Sulfide (H2S)	PPM	Carbon Monoxide (CO)	PPM	Other (Specify)		Does the space contain a hazardous atmosphere? No <input type="checkbox"/> Yes <input type="checkbox"/> (Only Alternate Entry or Full Permit Entry procedures are allowed.)
Oxygen	%										
Flammable/Explosive Gas	% LEL										
Hydrogen Sulfide (H2S)	PPM										
Carbon Monoxide (CO)	PPM										
Other (Specify)											
	Could a hazardous atmosphere possibly enter the space after the initial testing, (i.e. sewers and manholes) <u>or</u> could a hazard be introduced from a work operation (i.e. welding, cutting, applying toxic material)? No <input type="checkbox"/> Yes <input type="checkbox"/> (Only Alternate Entry or Full Permit Entry procedures are allowed.)										

Physical Hazard Assessment

Are there existing or potential physical hazards in the space (i.e. electrical, mechanical, engulfment)? No <input type="checkbox"/> Yes <input type="checkbox"/> (Check applicable boxes below) <table style="width:100%; border: none; margin-top: 10px;"> <tr><td><input type="checkbox"/> Electrical</td><td><input type="checkbox"/> Entrapment</td></tr> <tr><td><input type="checkbox"/> Mechanical</td><td><input type="checkbox"/> Converging Walls</td></tr> <tr><td><input type="checkbox"/> Engulfment/Water</td><td><input type="checkbox"/> Fall Hazard</td></tr> <tr><td><input type="checkbox"/> Hydraulic/Pneumatic</td><td><input type="checkbox"/> Temp. Extreme</td></tr> <tr><td><input type="checkbox"/> Other (Specify): _____</td><td></td></tr> </table>	<input type="checkbox"/> Electrical	<input type="checkbox"/> Entrapment	<input type="checkbox"/> Mechanical	<input type="checkbox"/> Converging Walls	<input type="checkbox"/> Engulfment/Water	<input type="checkbox"/> Fall Hazard	<input type="checkbox"/> Hydraulic/Pneumatic	<input type="checkbox"/> Temp. Extreme	<input type="checkbox"/> Other (Specify): _____		If physical hazards were detected in the space, were they eliminated or isolated? No <input type="checkbox"/> Yes <input type="checkbox"/> (Check applicable boxes below) <table style="width:100%; border: none; margin-top: 10px;"> <tr><td><input type="checkbox"/> Lock out/Tag out</td><td><input type="checkbox"/> Personal Fall Arrest/Rest.</td></tr> <tr><td><input type="checkbox"/> Isolate/Guard</td><td><input type="checkbox"/> Install Work Platform</td></tr> <tr><td><input type="checkbox"/> Purge/Drain/Clean</td><td><input type="checkbox"/> Guard Rails/Hole Covers</td></tr> <tr><td><input type="checkbox"/> Blank/Block/Bleed</td><td><input type="checkbox"/> Ventilation/Ice Vest</td></tr> <tr><td><input type="checkbox"/> Other (Specify): _____</td><td></td></tr> </table>	<input type="checkbox"/> Lock out/Tag out	<input type="checkbox"/> Personal Fall Arrest/Rest.	<input type="checkbox"/> Isolate/Guard	<input type="checkbox"/> Install Work Platform	<input type="checkbox"/> Purge/Drain/Clean	<input type="checkbox"/> Guard Rails/Hole Covers	<input type="checkbox"/> Blank/Block/Bleed	<input type="checkbox"/> Ventilation/Ice Vest	<input type="checkbox"/> Other (Specify): _____	
<input type="checkbox"/> Electrical	<input type="checkbox"/> Entrapment																				
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<input type="checkbox"/> Hydraulic/Pneumatic	<input type="checkbox"/> Temp. Extreme																				
<input type="checkbox"/> Other (Specify): _____																					
<input type="checkbox"/> Lock out/Tag out	<input type="checkbox"/> Personal Fall Arrest/Rest.																				
<input type="checkbox"/> Isolate/Guard	<input type="checkbox"/> Install Work Platform																				
<input type="checkbox"/> Purge/Drain/Clean	<input type="checkbox"/> Guard Rails/Hole Covers																				
<input type="checkbox"/> Blank/Block/Bleed	<input type="checkbox"/> Ventilation/Ice Vest																				
<input type="checkbox"/> Other (Specify): _____																					

SPECIFY THE APPROPRIATE CLASSIFICATION AND ENTRY PROCEDURES

- Non-Permit Space.** There are no existing or potential physical hazards or atmospheric hazards. Periodic atmospheric testing may be necessary. Employees may enter the space.
- Alternate Entry Space.** There are no physical hazards. There are existing or potential atmospheric hazards that can be controlled by ventilation; and if the ventilation system stops working, entrants can exit the space safely on their own. Continue to Section 2: Alternate Entry Space.
- Full Permit Space.** There are physical hazards that cannot be eliminated or isolated and/or there are existing or potential atmospheric hazards that cannot be controlled by ventilation. Full permit space entry procedures are required.

SECTION 2: ALTERNATE ENTRY SPACE

Confined space danger sign posted at the space? Yes <input type="checkbox"/>	Are local emergency services readily available? Yes <input type="checkbox"/>
GC notified of the work and entry procedure? Yes <input type="checkbox"/> N/A <input type="checkbox"/>	Alternate entry training provided to employees? Yes <input type="checkbox"/>
<p>Check applicable boxes describing the existing or potential atmospheric hazards detected in the space:</p> <p><input type="checkbox"/> Oxygen Deficiency <input type="checkbox"/> Carbon Monoxide (CO) <input type="checkbox"/> Flammable/Explosive Gases/Vapors (Specify):</p> <p><input type="checkbox"/> Welding/Cutting <input type="checkbox"/> Hydrogen Sulfide (H₂S) <input type="checkbox"/> Other (Specify):</p>	
<p>Check applicable boxes that describe how the atmospheric hazards will be isolated or controlled in order to protect entrants:</p> <p><input type="checkbox"/> Mechanical ventilation system set at 100% outside air <input type="checkbox"/> Open additional manholes to increase air circulation</p> <p><input type="checkbox"/> Use portable blowers to augment natural ventilation <input type="checkbox"/> Repeat atmospheric testing after ventilating the space</p> <p><input type="checkbox"/> Continuous air monitoring during and after entry <input type="checkbox"/> No burning, cutting, or welding operations in the space</p> <p><input type="checkbox"/> Use intrinsically safe lighting in the space <input type="checkbox"/> Other (Specify):</p>	
<p>In the event the ventilation system stops working, check applicable boxes that describe how the atmospheric hazards will remain at safe levels long enough for entrants to recognize the problem and safely exit the space:</p> <p><input type="checkbox"/> Fully ventilated space while unoccupied to get non-detect readings for atmospheric hazards; then shut down ventilation and monitored air quality. If atmospheric hazards are detected that reach maximum limits, full permit space procedures will be implemented.</p> <p><input type="checkbox"/> The atmospheric testing equipment is equipped with an audible alarm to alert entrants to exit the space.</p> <p><input type="checkbox"/> Entrants are wearing personal air monitors that are equipped with an audible alarm to alert them to exit the space.</p> <p><input type="checkbox"/> The ventilation system is equipped with an audible alarm to alert entrants to exit the space.</p> <p><input type="checkbox"/> A top man is readily available to monitor the ventilation system and alert the entrants to exit the space.</p> <p><input type="checkbox"/> Other (Specify):</p>	
<p>Check applicable boxes that describe how employees are able to safely exit the space on their own:</p> <p><input type="checkbox"/> A fixed ladder is located in the space and safe for entrants to use to exit the space.</p> <p><input type="checkbox"/> A portable ladder will remain in the manhole during the time entrants are working in the space.</p> <p><input type="checkbox"/> A work platform has been installed in the space for egress.</p> <p><input type="checkbox"/> Other (Specify):</p>	
<p>Check appropriate boxes that describe any additional steps or monitoring to be taken to ensure conditions are safe from physical hazards: <input type="checkbox"/> Periodic inspections <input type="checkbox"/> Early warning system <input type="checkbox"/> Other (Specify):</p>	
SECTION 3: COMPLETE ONLY WHEN A HAZARD IS DETECTED IN THE SPACE AFTER THE INITIAL EVALUATION	
<p>Were employees evacuated from the space when the hazard was detected? Yes <input type="checkbox"/></p>	
<p>Describe the event, hazard, and steps taken to eliminate or isolate the hazard to prevent another occurrence:</p> <p>_____</p> <p>_____</p>	
<p>Is the space safe for re-entry?</p> <p>Yes <input type="checkbox"/> <i>Employees may re-enter the space.</i> Superintendent Signature: _____</p> <p>No <input type="checkbox"/> <i>Employees must not enter the space. This is now re-classified as a full permit space. Full permit space procedures are required until space has been made safe for re-entry.</i></p>	
SECTION 4: AFTER WORK HAS BEEN COMPLETED IN THE SPACE	
<p>GC informed that work has been completed? Yes <input type="checkbox"/> GC informed of any hazards detected during entry? Yes <input type="checkbox"/> N/A <input type="checkbox"/></p>	

FULL PERMIT SPACE ENTRY PERMIT

1. Permit space to be entered (i.e. sewer, tank, manhole, crawlspace, attic):		Host, GC and Subs notified of the work? Yes <input type="checkbox"/> NA <input type="checkbox"/>
2. Purpose of entry:		Location:
3. Date of entry:	Auth. duration of entry permit:	Entry supervisor print name/contact information:
4. Rescue type selected: Non-entry <input type="checkbox"/> or Entry <input type="checkbox"/> Equipment: Tri-pod/Davit arm <input type="checkbox"/> or Emergency service <input type="checkbox"/> Emer. Service Available (Permit Space only): Onsite <input type="checkbox"/> or <input type="checkbox"/> Off-site (name & phone): Rescuer(s) trained in 1 st Aid/CPR (Permit Space only): <input type="checkbox"/> (Note: Part 1 1 st Aid requirements)		Communication Equipment: Radio <input type="checkbox"/> Voice <input type="checkbox"/> Cell Phone <input type="checkbox"/> Air Horn <input type="checkbox"/> <input type="checkbox"/> Other (Specify):

5. Authorized entrants (Print Names) Use back or attach page for more entrants	Entry time		Entry time		Entry time		Entry time	
	In	Out	In	Out	In	Out	In	Out

6. Attendant (Print Name)	Date and Time	7. Current training for confined space workers verified? Yes <input type="checkbox"/> No <input type="checkbox"/>
	<input type="checkbox"/> AM <input type="checkbox"/> PM	
	<input type="checkbox"/> AM <input type="checkbox"/> PM	

8A. Identify, evaluate and record hazards of space to be entered.	Yes	No	8B. Specify equipment and measures required to eliminate/control hazards before and during entry
A. Lack of Oxygen or Inert Gas Present (i.e. Argon, Nitrogen)	<input type="checkbox"/>	<input type="checkbox"/>	Continuous forced air ventilation <input type="checkbox"/> Blank, Block and Bleed <input type="checkbox"/>
B. Flammable Gas/Vapor (%LEL)	<input type="checkbox"/>	<input type="checkbox"/>	Purge, Clean, Drain <input type="checkbox"/> Intrinsically Safe Lighting <input type="checkbox"/>
C. Toxic Gas/Vapor (i.e. CO and H ₂ S)	<input type="checkbox"/>	<input type="checkbox"/>	Respiratory Protection: Supplied Air with Escape Bottle <input type="checkbox"/> SCBA <input type="checkbox"/>
D. Chemical (impairs self-rescue)	<input type="checkbox"/>	<input type="checkbox"/>	Other (list) <input type="checkbox"/>
E. Electrical	<input type="checkbox"/>	<input type="checkbox"/>	Lockout/Tagout <input type="checkbox"/> Isolate/Guard <input type="checkbox"/>
F. Mechanical	<input type="checkbox"/>	<input type="checkbox"/>	Blank, Block and Bleed <input type="checkbox"/> Other (list) <input type="checkbox"/>
G. Hydraulic/Pneumatic	<input type="checkbox"/>	<input type="checkbox"/>	
H. Temp. Extreme	<input type="checkbox"/>	<input type="checkbox"/>	Continuous forced air ventilation <input type="checkbox"/> Ice Vest <input type="checkbox"/> Other (list) <input type="checkbox"/>
I. Engulfment	<input type="checkbox"/>	<input type="checkbox"/>	Drain <input type="checkbox"/> Pump <input type="checkbox"/> Other (list) <input type="checkbox"/>
J. Entrapment/Converging Walls	<input type="checkbox"/>	<input type="checkbox"/>	Install Work Platform <input type="checkbox"/> Hole Covers <input type="checkbox"/> Guard Rails <input type="checkbox"/> Personal Fall Arrest/Restraint <input type="checkbox"/>
K. Fall Hazard	<input type="checkbox"/>	<input type="checkbox"/>	Other (list) <input type="checkbox"/>
L. Introduced Hazards (i.e. Chemical, Hot Work)	<input type="checkbox"/>	<input type="checkbox"/>	Fire extinguisher <input type="checkbox"/> Hot Work Permit <input type="checkbox"/> Other (list) <input type="checkbox"/>
M. Other	<input type="checkbox"/>	<input type="checkbox"/>	Warning signs posted at access <input type="checkbox"/> Additional PPE <input type="checkbox"/>

9. Gas tester(s)/monitor model(s)/type(s):	Serial/unit no(s):
	Bump test to confirm function? Yes <input type="checkbox"/> Verified: On-site test <input type="checkbox"/> Documentation <input type="checkbox"/>

Test Required	Permissible levels	Initial test levels (before vent)	Subsequent test type: Sample Continuous (take readings before EACH entry into space)				
			Test 2	Test 3	Test 4	Test 5	Test 6
A. Oxygen (O ₂)	19.5 to 23.5%						
B. Combustible gas/vapor (LEL)	10% LEL						
C. Hydrogen sulfide (H ₂ S)	5 PPM						
D. Carbon monoxide (CO)	< 25 PPM						
E. Other							
	Tester initials						
	Test Times						

10. Are entry conditions acceptable? (Remove debris and other obstructions from entry point) Yes No

Entry Suspended (time): _____ AM PM Time of reentry: _____ AM PM

Reason for suspending permit: _____

Permit Canceled date/time _____ / _____ AM PM Unanticipated Hazards? No Yes If yes, describe below: _____

Debriefing occurred after entry? Yes No _____

Entry Supervisor Signature: _____

M & M EXCAVATING COMPANY
LEAD ABATEMENT OPERATIONS

GENERAL

NIOSH and the Occupational Safety and Health Administration (OSHA) have recently recommended that exposure to lead dust and fumes be minimized by the use of engineering controls and work practices, and by the use of personal protective equipment (PPE) including respirators.

Workers are potentially exposed to lead during work on bridges or other steel structures such as water and fuel storage tanks. Workers who may be exposed to lead include abrasive blasters, inspectors, iron workers, painters and laborers.

1. HEALTH EFFECTS

Lead can be absorbed into the body by inhalation (breathing) and ingestion (eating). Lead is a cumulative poison. It accumulates in the blood, bones and organs. Cumulative exposure to lead, which is typical in construction settings, may result in damage to the blood, nervous system, kidneys, bones, heart and reproductive system and contributes to high blood pressure.

A. The symptoms of lead poisoning include the following:

- a. Headache
- b. Poor appetite
- c. Dizziness
- d. Irritability / anxiety
- e. Constipation
- f. Pallor
- g. Excessive tiredness
- h. Numbness
- i. Metallic taste in mouth
- j. Muscle & joint pain or soreness
- k. Sleeplessness
- l. Hyperactivity
- m. Weakness
- n. Reproductive difficulties
- o. Nausea
- p. Fine Tremors
- q. Insomnia
- r. "Lead line" on gums
- s. "Wrist drop" weakness of extensor muscles

2. EMPLOYEE SAFETY PRACTICES FOR LEAD PROTECTION

A. Personal Hygiene Practices

- a. All workers exposed to lead should wash their hands and faces before eating, drinking or smoking, and they should not eat, drink, or use tobacco products in the work area.
- b. Contaminated work clothes should be removed before eating.
- c. Workers should change into work clothes at the worksite. Street clothes should be stored separately from work clothes in a clean area. Workers should change back into their street clothes after washing or showering before leaving the worksite to prevent the accumulation of lead dust in the workers' cars and homes and thereby protect family members from exposure to lead.
- d. Personal vehicles taken to the worksite should be parked where they will not be contaminated with lead.

A. Personal Protective Equipment (PPE)

- a. Protective clothing should be worn in order to minimize the accumulation of lead on the worker's skin and hair. Workers should change into work clothes immediately before entering the work area, and change out of these clothes before leaving the jobsite.
- b. Employees are provided with a half mask respirator as protection against airborne lead concentrations. Sandblasters are provided with a supplied air sandblast hood. All respirators use NEPA filters or equal.

3. ENGINEERING CONTROLS FOR LEAD PROTECTION

- A. Warning signs are to be used to mark the boundaries of lead-contaminated work areas.
- B. Blood tests for lead level will be required on an annual basis of all employees at risk of being exposed to lead.
 - a. Blood lead levels of 1 to 49 are within the acceptable range.
 - b. Blood lead levels of 40 or above require a medical examination of worker and consultation.
 - c. Blood lead levels of 50 or above call for removal of worker from any job with potential lead exposure.
- C. Air monitoring will be performed at the worksite to determine:
 - a. Composition of the paint.

b. Measure worker exposure to airborne lead and other hazardous agents e.g., silica and solvents.

c. Select the engineering controls and PPE required.

D. When performing abrasive blasting, scaling, chipping, grinding or other operations to remove lead-based coatings, all available work practices will be utilized in order to decrease air-borne lead dust and fumes (e.g. negative air, wet plastering, daily clean-up of lead-containing and abrasives).

E. Workers will be trained /notified on the following topics as they relate to lead exposure:

a. Information about the potential adverse health effects of lead exposure.

b. Information about the early recognition of lead intoxication.

c. Instruction about heeding signs that mark the boundaries of lead-contaminated work areas.

d. Discussion of the importance of personal hygiene practices.

e. Instruction about the use and care of appropriate protective equipment.

4. **SAFE WORK PRACTICES**

A. Use the exhaust ventilation system, where provided.

B. Use the correct, clean respirator.

C. Keep the worksite clean. Use only a vacuum with a HEPA filter or wet cleaning methods when removing lead dust. Never use compressed air for cleaning.

D. Eat, drink, or smoke in areas outside the worksite. Keep all lunch boxes and coffee cups away from the work area. Use a separate lunchroom.

E. Wash hands and face before eating, drinking, smoking or applying cosmetics.

F. Use protective clothing. Store street clothes separately from work clothes. Never wear contaminated clothes home.

5. **TRAINING**

Construction standards, require that a potentially exposed employee be informed of the hazards of lead and be trained in the precautions to take when working around it. The employee shall also be instructed in proper work practices, personal equipment, such as eye and face protection, head protection, coveralls and respirators.

M & M EXCAVATING COMPANY
HAZWOPER PROGRAM

A. HAZMAT INFORMATION

The following employees of **M & M Excavating Company** have been trained and are certified in HAZMAT procedures.

Hazardous materials for job will be stored at:

PPE Specifications for HAZMAT

Task	Level	Body	Head	Respirator
General work uniform when no chemical exposure is anticipated	D	Work clothes; steel-toe, steel-shank leather work boots; work gloves	Hardhat , Safety glasses, Ear protection	None required
All tasks with potential for chemical exposure	Modified D	COVERALLS: UncoatedTyvek® BOOTS: Steel-toe, Steel-shank chemical resistant boots or Steel-toe, steel-shank leather work boots with outer rubber boot covers. Gloves: Inner surgical-style nitrile glove and outer chemical-resistant nitrile glove.	Hardhat, splash shield, Safety glasses, Ear protection.	None required

Not Authorized	C	<p>COVERALLS: UncoatedTyvek®</p> <p>BOOTS: Steel-toe, Steel-shank chemical resistant boots or Steel-toe, steel-shank leather work boots with outer rubber boot covers.</p> <p>Gloves: Inner surgical-style nitrile glove and outer chemical-resistant nitrile glove.</p>	Hardhat, splash shield, Ear protection, Spectacle insrets	APR, full-face, MSA Ultratein or equivalent; with GME-H cartridges or equivalent.
Not Authorized	B	<p>COVERALLS: UncoatedTyvek®</p> <p>BOOTS: Steel-toe, Steel-shank chemical resistant boots or Steel-toe, steel-shank leather work boots with outer rubber boot covers.</p> <p>Gloves: Inner surgical-style nitrile glove and outer chemical-resistant nitrile glove.</p>	Hardhat, splash shield, Ear protection, Spectacle insrets	Positive pressure demand self-contained breathing apparatus (SCBA): MSA ultralite or equivalent.

REASONS FOR UPGRADING OR DOWNGRADING LEVEL OF PROTECTION

<p>UPGRADE</p> <ul style="list-style-type: none"> • Request from individual performing task. • Change in work task that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurrence of gas or vapor emission. • Known or suspected presence of dermal hazards. • Instrument action levels (section 6) exceeded. 	<p>DOWNGRADE</p> <ul style="list-style-type: none"> • New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decreases the hazard. • Change in work task that will reduce contact with hazardous materials.
--	--

Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
Boot wash /rinse Glove wash /rinse Outer-glove removal Body-suit removal Inner-glove removal Respirator removal Hand wash /rinse Face wash /rinse Shower ASAP PPE disposal method, Bag and dispose on-site. Water disposal method: none anticipated.	Wash /rinse equipment Solvent-rinse equipment Solvent disposal method:	Power wash Steam clean Water disposal method:

Diagram of Personnel Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SSC should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

The following diagram illustrates a typical establishment of work zones, including the decontamination line. Work zones are to be modified by the SSC to accommodate task-specific requirements.

ADDITIONAL DOCUMENTS

MIOSHA Publication 85-115 Standard Operating Safety Guides, US EPA and the Occupational Safety and Health Guidance manual for Hazardous Waste Site Activities, are available to view with the Superintendent at the **M & M Excavating Company** office located at: 17 Old State Rd, Gaylord, MI 49735

I. HAZMAT EMERGENCY RESPONSE

1. As part of its safety program it is the policy of **M & M Excavating Company** to make certain that all employees have been instructed as to proper procedures in case of an injury or accident.
2. **M & M Excavating Company** designates the 911 system as its first response in the event of a medical emergency and/or rescue operation.
3. A list of emergency phone numbers will be posted at the jobsite when practical. If no suitable or convenient location exists, the list will be kept by the project **Superintendent**.

4. All injuries and/or accidents shall be reported to the job Superintendent immediately.
5. All accidents and/or injuries shall be reported to the Safety Coordinator as soon as is practical.
- 6 **M & M Excavating Company** will provide a person at each job site who is trained in CPR and First Aid procedures as required by any applicable Safety & Health Standards.
7. Never move an injured person unless absolutely necessary. Further injury may result. Keep the injured comfortable and utilize available first aid equipment until an ambulance arrives.

EMERGENCY EQUIPMENT AND SUPPLIES

Emergency equipment & supplies	Location
First Aid Kit	In field vehicle
Eye wash	In field vehicle
Portable water	In field vehicle
Additional equipment (specify) portable phone	In field vehicle

INCIDENT RESPONSE

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down site operations and evacuate work area.
- Account for personnel at the designated area(s).
- Notify appropriate response personnel.
- Assess the need for site evacuation, and evacuate the site as warranted.

EVACUATION SIGNALS

SIGNAL	MEANING
Grasping throat with hand	Emergency-help me
Thumbs up	OK, Understood
Grasping buddy's wrist	Leave area now
Continuous sounding of horn	Emergency, leave site now.

EMERGENCY RESPONSE PHONE NUMBERS

Site Address:

Police: 911*

Fire: 911*

Ambulance: 911*

Water: MISSDIG 1-800-482-7171 OR

Gas: MISSDIG 1-800-482-7171

Electric MISSDIG 1-800-482-7171

*When using a cellular phone outside the telephone's normal calling area, exercise caution in relying on the cellular phone to activate 911. When the caller is outside the normal calling area, the cellular service carrier should contact the caller with emergency services in the area where the call originated, but this may not occur. Telephone numbers of backup emergency services should be provided if a cellular phone is relied on to activated 911.

M & M EXCAVATING COMPANY
EMERGENCY RESPONSE PROGRAM

1. As part of its safety program it is the policy of **M & M Excavating Company** to make certain that all employees have been instructed as to proper procedures in case of an injury or accident.
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- 6 **M & M Excavating Company** will provide a person at each job site who is trained in CPR and First Aid procedures as required by any applicable Safety & Health Standards.
7. Never move an injured person unless absolutely necessary. Further injury may result. Keep the injured comfortable and utilize available first aid equipment until an ambulance arrives.

M & M EXCAVATING COMPANY
HAZARD COMMUNICATION PROGRAM
"RIGHT TO KNOW PROGRAM"

GENERAL

The following hazard communication program has been established for **M & M Excavating Company** and will be available for review by all employees.

1. **HAZARD DETERMINATION**

The Safety coordinator will be relying on safety data sheets from suppliers to meet determination requirements.

2. **LABELING**

- A. The Safety coordinator will be responsible for seeing that all containers coming in are properly labeled.
- B. All labels shall be checked for:
 - a. Identity
 - b. Hazard
 - c. Name & address of responsible party
- C. Each Superintendent shall be responsible for seeing that all portable containers used in their work are labeled with identity & hazard warning.

3. **SAFETY DATA SHEETS (S.D.S.)**

- A. The Safety coordinator will be responsible for compiling the master S.D.S. file. It will be kept at: 17 Old State Road, Gaylord, MI 49735
- B. Copies of M.S.D.S. for all hazardous chemicals to which employees may be exposed will be made available to all employees upon request.
- C. Each Superintendent will be provided with the required MIOSHA Right-To-Know posters & postings notifying employees of new or revised M.S.D.S. within five (5) days of receipt of new or revised M.S.D.S.

4. **EMPLOYEE INFORMATION AND TRAINING**

- A. The Safety coordinator shall coordinate & maintain records of training conducted for **M & M Excavating Company**.
- B. Before starting work, or as soon as possible thereafter, each new employee will attend a safety briefing. In that class, each employee will be given information on:

- a. Chemicals & their hazards in the workplace.
- b. How to lessen or prevent exposure to these chemicals.
- c. What the company has done to lessen or prevent workers exposure to these chemicals.
- d. Procedures to follow if they are exposed.
- e. How to read & interpret labels & M.S.D.S.
- f. Where to locate M.S.D.S. and from whom they may obtain copies.

C. The employee will be informed that:

- a. The employer is prohibited from discharging, or discriminating against, an employee who exercises the rights regarding information about hazardous chemicals in the workplace.

CI. Attendance will be taken at training sessions. The records will be kept by the Safety Coordinator.

CII. Before any new hazardous chemical is introduced into the workplace, each employee will be given information in the same manner as during the safety briefing.

5. HAZARDOUS NON-ROUTINE TASKS

A. On occasion, employees may be required to do work in potentially hazardous areas (e.g. confined spaces). Prior to starting work in such areas, each employee will be given information about the hazards involved in these areas. This information will include:

- a. Specific chemical hazards.
- b. Protection/safety measures the employee can take to lessen risks.
- c. Measures the company has taken to lessen the hazards including ventilation, respirators, the presence of another employee, and emergency procedures.

B. It is the policy of **M & M Excavating Company** that no employee will begin work in a confined space, or any non-routine task, without first receiving a safety briefing.

6. INFORMING CONTRACTORS

A. It is the responsibility of the Safety Coordinator to provide any subcontractors with employees on the job site exposed to our chemicals with the following information:

- a. Hazardous chemicals with which they may come in contact.
- b. Measures the employees may take to lessen the risks.

- c. Where to get S.D.S. for all hazardous chemicals.
- d. SDS book is located 17 Old State Road, Gaylord, MI 49735 _____

B. It is the responsibility of the Safety coordinator to obtain chemical information from contractors when they will expose our employees to hazardous chemicals which they may bring into our workplace.

7. LISTS OF HAZARDOUS CHEMICALS

The list of the chemicals used by **M & M Excavating Company** can be obtained by reviewing M.S.D.S.

This Workplace Covered by the Michigan Right To Know Law



Employers must make available for employees in a readily accessible manner, Safety Data Sheets (SDS) for those hazardous chemicals in their workplace.

Employees cannot be discharged or discriminated against for exercising their rights including the request for information on hazardous chemicals.

Employees must be notified and given direction (by employer posting) for locating Safety Data Sheets and the receipt of new or revised SDS(S).

When the employer has not provided a SDS, employees may request assistance in obtaining SDS from the:

Michigan Department of Licensing and Regulatory Affairs
Michigan Occupational Safety and Health Administration
General Industry Safety and Health Division
(517) 284-7750
Construction Safety and Health Division and Asbestos Licensing
(517) 284-7680
www.michigan.gov/miosha
MIOSHA/CET #2105 (Rev. 05/18)



LARA
LICENSING AND REGULATORY AFFAIRS
CUSTOMER DRIVEN. BUSINESS MINDED.

SDS(s) For This Workplace Are Located At

Location(s)

Location(s)

Person(s) responsible for SDS(s)

Phone

LARA is an equal opportunity employer/program.

As Required by the Michigan Right To Know Law



TO BE POSTED THROUGHOUT THE
WORKPLACE NEXT TO THE SAFETY DATA SHEETS (SDS)
LOCATION POSTERS

New or Revised SDS

New or Revised	Receipt Date	Posting Date	Location of New or Revised SDS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Michigan Department of Labor and Economic Opportunity (LEO)
Michigan Occupational Safety and Health Administration
Consultation Education and Training Division
(517) 284-7720

Paid in part with
Federal OSHA funds.
MIOSHA/CET #2106 (Revised 12/19)
LEO is an equal opportunity employer/program.



For further information visit our website at:
www.michigan.gov/miosha

M & M EXCAVATING COMPANY
EQUIPMENT GROUNDING CONDUCTOR PROGRAM

This program is designed to inform employees of the inspection and testing of all electrical cords, plugs and tools to prevent injuries from occurring. The Superintendent in conjunction with the shop is responsible for implementing this program.

- A. All extension cords, plugs, electrical tools and equipment shall be visually inspected before each days use for external defects or damage and for possible internal damage. Damaged or defective cords, plugs, electrical tools or equipment shall not be used or sent to the shop for repair.

- B. For the generators equipped with ground fault interrupters, please adhere to the following:
 - a. Check all ground fault interrupters every time the generator is started.
 - b. If the reset button pops out, the ground fault interrupter is good.
 - c. If the reset button does not pop out, the ground fault interrupter is bad.
 - d. A bad ground fault interrupter will cause shocking to occur.
 - e. Call the shop to repair or replace a bad ground fault interrupter.
 - f. Do not wire the throttle. It will cause the ground fault interrupter to go bad.
 - g. The frame of all welders must be grounded.

- C. The following tests shall be performed:
 - a. All equipment grounding conductors shall be tested for electrical continuity.
 - b. Each receptacle or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

- D. All required tests shall be performed:
 - a. Before first use.
 - b. Before equipment is returned to service following any repairs.
 - c. Before equipment is used after any incident which can be reasonably suspected to have caused damage.
 - d. At intervals not exceeding 3 months, except that extension cords and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months

Tests performed as required by MIOSHA shall be recorded. The records shall identify each extension cord or electrical equipment that passed the test and shall indicate the last date it was tested or the interval it was tested. This record shall be maintained until replaced by a more current record. The record shall be made

available at the jobsite for inspection by a MIOSHA director or representative, and any affected employee.

M & M EXCAVATING COMPANY
RESPONSIBILITIES OF SUPERINTENDENT / QUALIFIED
EMPLOYEE

A "Qualified Person" means a person who, by possession of a recognized degree or professional standing, or who, by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

1. Assure that the safety program is implemented.
2. Inspect the job site to assure that no unsafe conditions exist.
3. Make sure that necessary protective equipment is on hand and used when required.
4. Instruct all employees in safe procedures and job safety requirements. Follow up and insist on compliance.
5. Discuss safety with employees on every operation. Have periodic safety meetings.
6. See that all injuries are cared for properly and reported promptly.
7. Investigate all accidents. File a complete accident report with the Safety Coordinator and correct the causes immediately. USE OSHA FORM 300, 300A, 301.
8. Be familiar with the rules pertaining to safety.
9. Report any hazardous conditions to the Safety coordinator even if the condition has been corrected.
10. Recommend reprimands for employees found in non-compliance of safety program and related materials.

M&M EXCAVATING SAFETY CHECKLIST

Superintendent:

Job # and Location:

Date Inspected:

Inspector:

	Yes	No
1. Emergency phone numbers posted.	<input type="checkbox"/>	<input type="checkbox"/>
2. First Aid/CPR certified employee on each job site.	<input type="checkbox"/>	<input type="checkbox"/>
A. First-aid kits available.	<input type="checkbox"/>	<input type="checkbox"/>
B. CPR mask.	<input type="checkbox"/>	<input type="checkbox"/>
C. Rubber gloves.	<input type="checkbox"/>	<input type="checkbox"/>
D. Haz Mat disposal bag.	<input type="checkbox"/>	<input type="checkbox"/>
3. Drinking water with cups available.	<input type="checkbox"/>	<input type="checkbox"/>
4. Toilet facilities provided or available.	<input type="checkbox"/>	<input type="checkbox"/>
5. Personal safety equipment in use.		
A. Hard hats.	<input type="checkbox"/>	<input type="checkbox"/>
B. Eye protection.	<input type="checkbox"/>	<input type="checkbox"/>
C. Ear protection.	<input type="checkbox"/>	<input type="checkbox"/>
D. Hand protection.	<input type="checkbox"/>	<input type="checkbox"/>
E. Foot Protection.	<input type="checkbox"/>	<input type="checkbox"/>
F. Clothing protection.	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
6. Fuel Storage.		
A. Fuel storage area marked “NO SMOKING” Appropriate extinguisher available in area.	<input type="checkbox"/>	<input type="checkbox"/>
B. All fuel cans safety type-transport only.	<input type="checkbox"/>	<input type="checkbox"/>
7. Traffic and pedestrian control devices properly used.	<input type="checkbox"/>	<input type="checkbox"/>
A. Construction signs.	<input type="checkbox"/>	<input type="checkbox"/>
B. Proper barricades.	<input type="checkbox"/>	<input type="checkbox"/>
C. Traffic cones.	<input type="checkbox"/>	<input type="checkbox"/>
D. Flagpersons with six foot staff with red flags and Class 2 or 3 vest.	<input type="checkbox"/>	<input type="checkbox"/>
E. Flagpersons properly instructed.	<input type="checkbox"/>	<input type="checkbox"/>
F. Flagpersons used to assist trucks and vehicles in and out of traffic.	<input type="checkbox"/>	<input type="checkbox"/>
8. Tools.		
A. Air tool connections secured with safety chains.	<input type="checkbox"/>	<input type="checkbox"/>
B. Portable electric tools provided with approved systems of double insulation and GFCI.	<input type="checkbox"/>	<input type="checkbox"/>
C. Extension cords are three wire type and in good condition.	<input type="checkbox"/>	<input type="checkbox"/>
D. Portable lights equipped with bulb guards.	<input type="checkbox"/>	<input type="checkbox"/>
E. Protective guards on portable saws in good order.	<input type="checkbox"/>	<input type="checkbox"/>
F. Ladder in good condition.	<input type="checkbox"/>	<input type="checkbox"/>
G. All hand tools in good condition, no cracked or splintered handles.	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
9. Trucks and equipment.		
A. Parking brakes set when not in use.	<input type="checkbox"/>	<input type="checkbox"/>
B. Type ABC fire extinguishers available in trucks.	<input type="checkbox"/>	<input type="checkbox"/>
C. All horns and lights in good working order.	<input type="checkbox"/>	<input type="checkbox"/>
D. Seats firmly secured on vehicles used to transport employees.	<input type="checkbox"/>	<input type="checkbox"/>
E. A copy of the most recent equipment inspection checklist on site.	<input type="checkbox"/>	<input type="checkbox"/>
F. Roll over protection and seat belts in good order.	<input type="checkbox"/>	<input type="checkbox"/>
G. Equipment safety chains in good order and in use.	<input type="checkbox"/>	<input type="checkbox"/>
H. Registration cards in all trucks.	<input type="checkbox"/>	<input type="checkbox"/>
I. Equipment and vehicle properly lubricated and maintained.	<input type="checkbox"/>	<input type="checkbox"/>
J. All drivers with valid licenses.	<input type="checkbox"/>	<input type="checkbox"/>
K. Back-up alarms in good working order.	<input type="checkbox"/>	<input type="checkbox"/>
L. Windshield void of cracks/wipers and defoggers in operable condition.	<input type="checkbox"/>	<input type="checkbox"/>
10. Excavation, trenching, shoring, pipe laying.		
A. Qualified person makes periodic inspections of soil conditions and shoring systems.	<input type="checkbox"/>	<input type="checkbox"/>
B. Effort made to locate underground installations by inspection and notification to MISS DIG	<input type="checkbox"/>	<input type="checkbox"/>
C. Excavated material stored 3 feet from edge of excavation.	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
D. Materials used for shoring in good working condition - trench box inspected for broken welds.	<input type="checkbox"/>	<input type="checkbox"/>
E. Walls on manhole and ditch excavations more than 5 feet deep shored or sloped or otherwise protected.	<input type="checkbox"/>	<input type="checkbox"/>
F. Means of ingress/egress provided every 25 feet in trenches over 4 feet deep.	<input type="checkbox"/>	<input type="checkbox"/>
G. Warning signs posted on truck cranes and excavating equipment. Maintain minimum 10 foot clearance when working near electrical lines.	<input type="checkbox"/>	<input type="checkbox"/>
 11. Working in confined spaces.		
A. Confined space tested for gas before entry.	<input type="checkbox"/>	<input type="checkbox"/>
B. Confined space ventilated with blowers before entry.	<input type="checkbox"/>	<input type="checkbox"/>
C. Smoking or open flame not permitted within 25 feet of confined space.	<input type="checkbox"/>	<input type="checkbox"/>
D. Upstream utilities tagged and locked out.	<input type="checkbox"/>	<input type="checkbox"/>
 12. Handling and storage of materials		
A. Rigging equipment inspected at beginning of each shift.	<input type="checkbox"/>	<input type="checkbox"/>
B. Chains are alloy steel with permanent tag showing size, grade, rated capacity and manufacturer's name.	<input type="checkbox"/>	<input type="checkbox"/>
C. Material staked, raked, blocked, interlocked or otherwise secured to prevent sliding, falling or collapse during storage or transit.	<input type="checkbox"/>	<input type="checkbox"/>
D. Inspect hooks for stretching or twisting.	<input type="checkbox"/>	<input type="checkbox"/>
E. Slings in good condition and built properly.	<input type="checkbox"/>	<input type="checkbox"/>
13. MIOSHA safety poster displayed.	<input type="checkbox"/>	<input type="checkbox"/>

- | | Yes | No |
|--|--------------------------|--------------------------|
| 14. Accident report filled out promptly and completed after each accident. Phoned in to office for typing and mailing. | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Safety manual on jobsite. | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. New employees given brief orientation as to company policies. | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. Conduct one 20 minute Job Safety Analysis with crew each week. Conduct one 10 minute Safety Meeting with crew each day. Records of topic and attendance must be turned into home office. | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. SDS booklet and poster. | <input type="checkbox"/> | <input type="checkbox"/> |

REMARKS

SIGNED: _____

M & M EXCAVATING COMPANY
PERSONAL PROTECTIVE EQUIPMENT POLICY

It is the policy of **M & M Excavating Company** that all employees comply with the Michigan Occupational Safety and Health Act standards in regards to the use of personal protective equipment. Violation of this policy will be subject to discipline as outlined in this section.

1. This company shall provide all personal protective equipment as required in Part 6 of the MIOSHA standards.
2. All employees outside of a cabbed vehicle or a covered piece of equipment must wear a hard hat if there are any hazards requiring a hard hat. There will be no exceptions to this rule.
3. All employees must wear required hand protection, gloves, etc., when an employee is exposed to hazards such as radiation, alkalis, acids, adhesives and temperature extremes other than those caused by weather conditions. Appropriate hand protection other than ordinary work gloves will be supplied by the company.
4. Any employee directing vehicular traffic must wear a fluorescent Class 2 or 3 vest.
5. All employees must wear long pants and a shirt with sleeves (no tanks).
6. All employees must wear proper foot protection if conditions on the job are likely to cause foot injury. Tennis shoes or similar footwear is strictly forbidden.
7. The use of face and eye protection will vary according to the task performed. All employees must consult with the qualified employee to determine the proper method of protection and this protective gear must be worn.
8. Any personal protective equipment that is found to be defective shall be immediately reported to the safety Coordinator or qualified person.
9. Acknowledgment of receipt of personal protective equipment will be kept on file at the company office.
10. A company disciplinary policy is in effect regarding personal protective equipment and is available to all employees upon request.

M & M Excavating Company
Disciplinary Policy

It is the policy **M & M Excavating Company** to supply its employees with a workplace which is free from recognized hazards. **M & M Excavating Company** will provide to each employee the proper tools, equipment, training and instruction so that every job is accomplished effectively and safely. **M & M Excavating Company** is concerned with your safety and requires you to take advantage of these measures for your protection.

In order to ensure your compliance with this policy, the following schedule of disciplinary action shall apply to any employee found to be in violation of the required procedures:

First Offense -	Written warning filed in employees permanent file (effective for one year from date of issue).
Second Offense -	Written warning filed in employees permanent file (effective for one year from date of issue).
Third Offense -	Subject to suspension without pay for a length of time to be determined at time of offense.
Subsequent Offenses-	Subject to dismissal or suspension without pay for a length of time to be determined at time of offense.

Safety is everyones' responsibility. The safety rules of **M & M Excavating Company** are in place to protect you and your fellow employees and these rules will be enforced.

Employee Signature: _____

Date: _____

M & M Excavating Company
Disciplinary Policy

It is the policy of **M & M Excavating Company**, to supply its employees with a workplace which is free from recognized hazards. **M & M Excavating Company** will provide to each employee, the proper tools, equipment, training and instruction so that every job is accomplished effectively and safely. **M & M Excavating Company** is concerned with your safety and requires you to take advantage of these measures for your protection.

In order to ensure your compliance with this policy, the following schedule of disciplinary action shall apply to any employee found to be in violation of the required procedures:

- | | |
|-----------------------|---|
| First Offense - | Written warning filed in employee's permanent file (effective for one year from date of issue). |
| Second Offense - | Reduction of pay by \$1.00 per hour for one week. |
| Third Offense - | Reduction of pay by \$2.00 per hour for two weeks. |
| Subsequent Offenses - | Subject to dismissal or a reduction in pay of an amount and length of time to be determined at the time of offense. |

Safety is everyone's responsibility. The safety rules of **M & M Excavating Company** are in place to protect you and your fellow employees and these rules will be enforced.

Employee Signature _____

Date _____

EMPLOYEE DISCIPLINE REPORT

Job Location _____

Employee _____

Describe the job condition or employee action that led to disciplinary action:

Support reprimand: Determine if this was a violation of company policy and if the individual being reprimanded was aware of the policy and received any training in this regard (i.e. safety program, Trench Safety Handbook, Bridge Safety Handbook or conferences).

Action taken to correct situation:

Discipline Taken:

- | | |
|---------------------|--------------------|
| A. Verbal warning | B. Written warning |
| C. Suspension | D. Discharged |
| E. Other – describe | |

Issued by: _____ Date: _____

M & M EXCAVATING COMPANY
TOOL BOX TALK
REPORTING FORM

Supervisor: _____

Date: _____

SAFETY ISSUE(S)/TOPIC(S) DISCUSSED:

EMPLOYEES IN ATTENDANCE:

ANNUAL INSPECTION OF EXCAVATORS

Owner: _____
Date: _____
Make: _____
Serial #: _____

	Yes	No
1. Boom and Stick.		
a. Corrosion.	<input type="checkbox"/>	<input type="checkbox"/>
b. Cracks.	<input type="checkbox"/>	<input type="checkbox"/>
2. Loose bolts or rivets.	<input type="checkbox"/>	<input type="checkbox"/>
3. Worn, Cracked or Distorted.		
a. Pins.	<input type="checkbox"/>	<input type="checkbox"/>
b. Bearings.	<input type="checkbox"/>	<input type="checkbox"/>
c. Bushings.	<input type="checkbox"/>	<input type="checkbox"/>
d. Gears.	<input type="checkbox"/>	<input type="checkbox"/>
e. Locking devices.	<input type="checkbox"/>	<input type="checkbox"/>
4. Excessive wear on brake or clutch systems.	<input type="checkbox"/>	<input type="checkbox"/>
5. Malfunction in steering, braking or locking devices.	<input type="checkbox"/>	<input type="checkbox"/>
6. Hydraulic System.		
a. Flexible hose connection leaking.	<input type="checkbox"/>	<input type="checkbox"/>
b. Deformation/blistering of hose coating or covering.	<input type="checkbox"/>	<input type="checkbox"/>

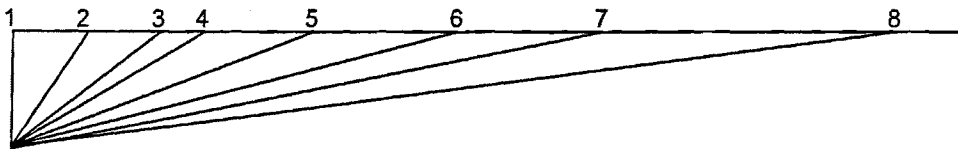
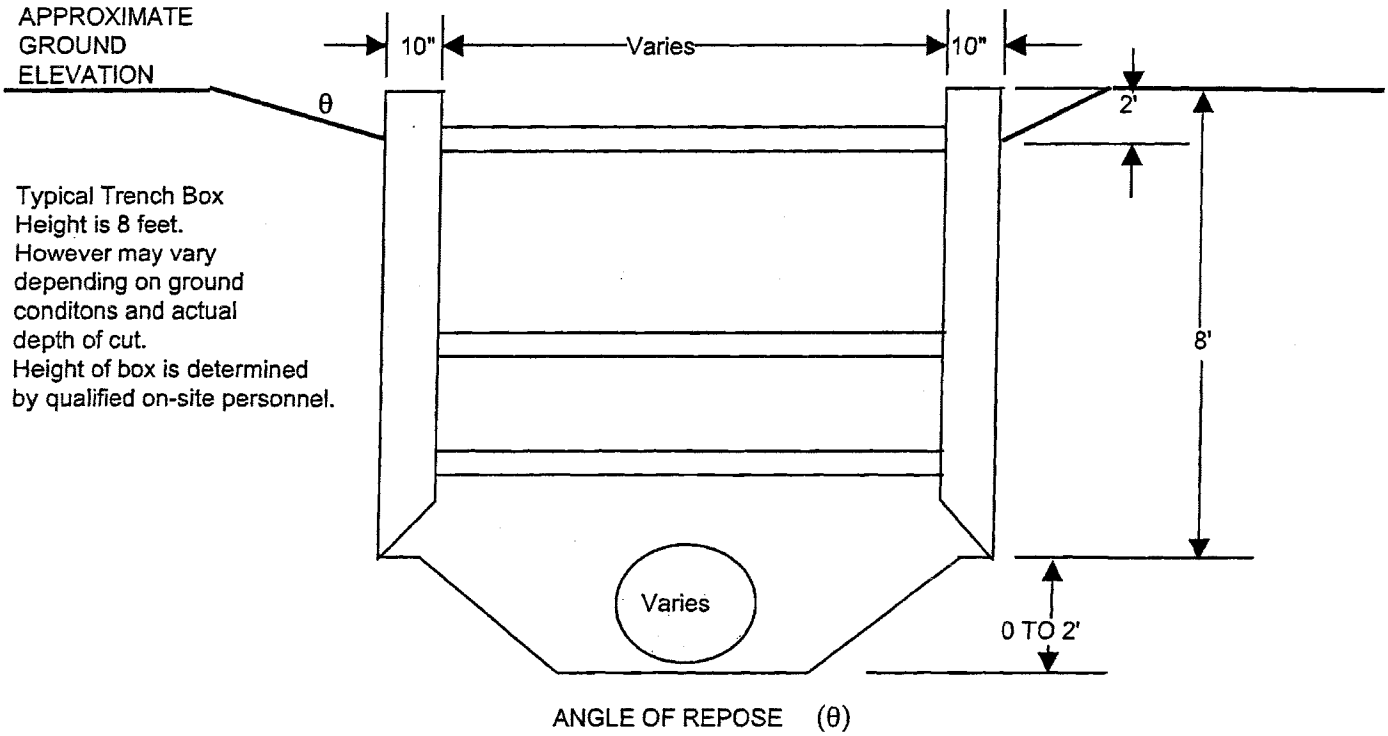
- | | | |
|--|--------------------------|--------------------------|
| c. Leaking at threaded or clamped joints. | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Excessive abrasion on hoses. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Hydraulic Pumps. | | |
| a. Loose bolts / fasteners. | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Leaks at joints between sections. | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Shaft gear leaks. | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Unusual noises or vibration. | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Loss of operating speed. | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Loss of pressure. | <input type="checkbox"/> | <input type="checkbox"/> |
| g. Excessive fluid heat. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Hydraulic Valves. | | |
| a. Cracks in housing. | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Leaks at joints. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Hydraulic Cylinders. | | |
| a. Fluid leaking past piston causing drifting. | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Leaking rod seals. | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Welded joints leaking. | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Dented case(s). | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Loose / deformed rod end or connecting joints. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Evidence of rubber particles or metal chips in filter. | <input type="checkbox"/> | <input type="checkbox"/> |

Annual con't.

- 11. Control Mechanisms.
 - a. Excessive wear.
 - b. Free of lubricants, etc.
- 12. Safety Devices Functioning.
- 13. Hydraulic System.
 - a. Deterioration.
 - b. Leakage.
- 14. Hooks.
 - a. Throat opening expanded to 115% of original size.
 - b. Twisted more than 10° from vertical.
 - c. Are any visible cracks.
- 15. Operable back-up alarms.

PROJECT NAME _____
 LOCATION _____
 PROJECT NO. _____
 DEI JOB NO. _____
 PREPARED BY _____
 DATE _____ SHEET _____ OF _____

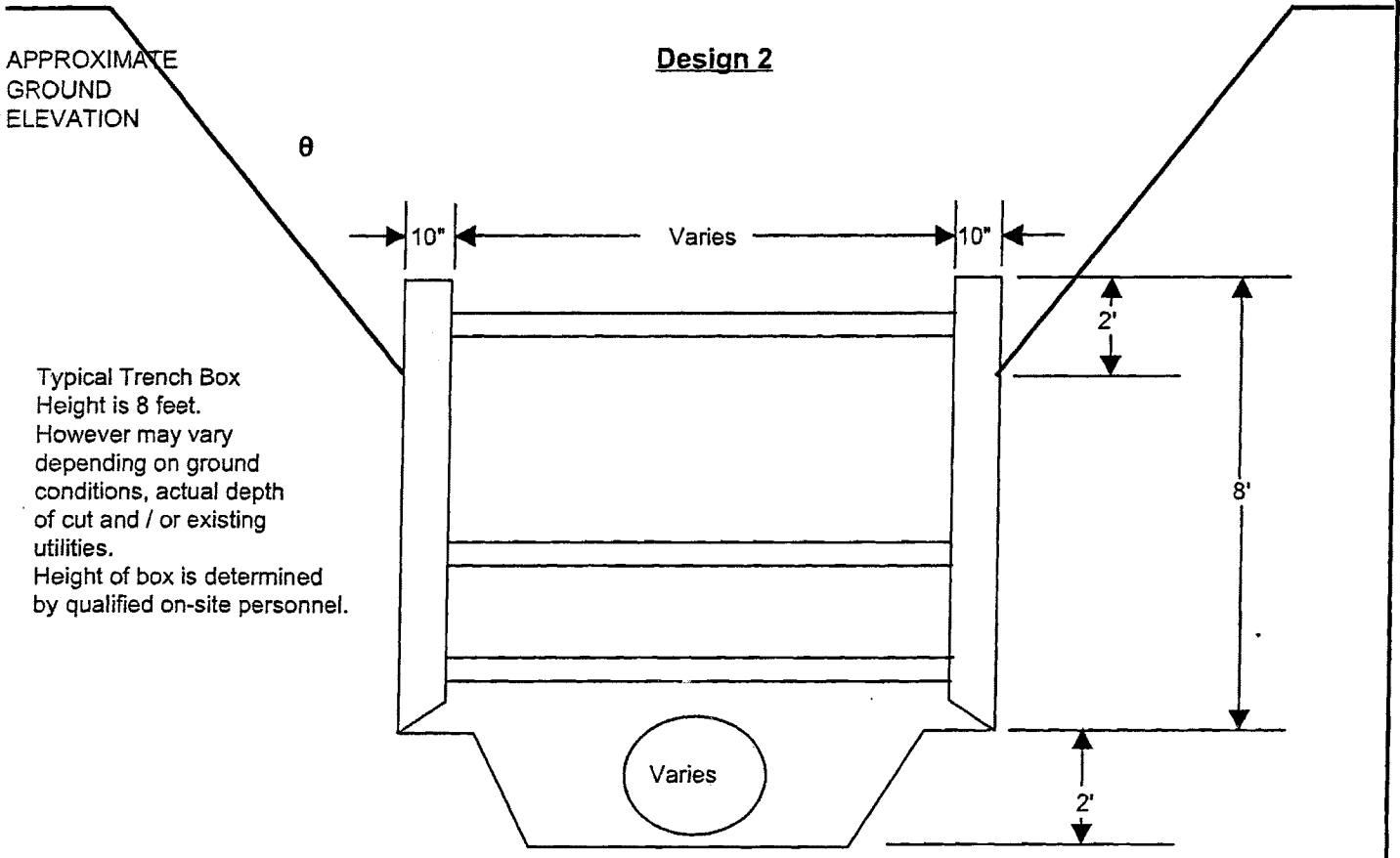
Design 1



1. SOLID ROCK FORMATION (90 DEGREES)
2. FRACTURED ROCK FORMATION (75 DEGREES) 1/4:1
3. STIFF CLAY (63 DEGREES) 1/2:1 ; 2.5 TSF MINIMUM
4. FIRM CLAY (56 DEGREES) 2/3:1 ; 1.5 TSF MINIMUM
5. GRANULAR SOIL - DRY (45 DEGREES) 1:1 ; 1.0 TSF MINIMUM
6. GRANULAR SOIL - WET (34 DEGREES) 1 1/2:1 ; <1.0 TSF
7. SATURATED GRANULAR SOIL (26 DEGREES) 2:1
8. RUNNING SOIL (18 DEGREES) 3:1

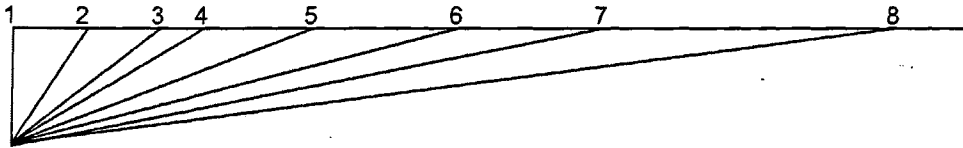
*Design acceptable for pipe installation from 0 to 10' in depth.

PROJECT NAME _____
 LOCATION _____
 PROJECT NO. _____
 DEI JOB NO. _____
 PREPARED BY _____
 DATE _____ SHEET _____ OF _____



Typical Trench Box Height is 8 feet. However may vary depending on ground conditions, actual depth of cut and / or existing utilities. Height of box is determined by qualified on-site personnel.

ANGLE OF REPOSE (θ)

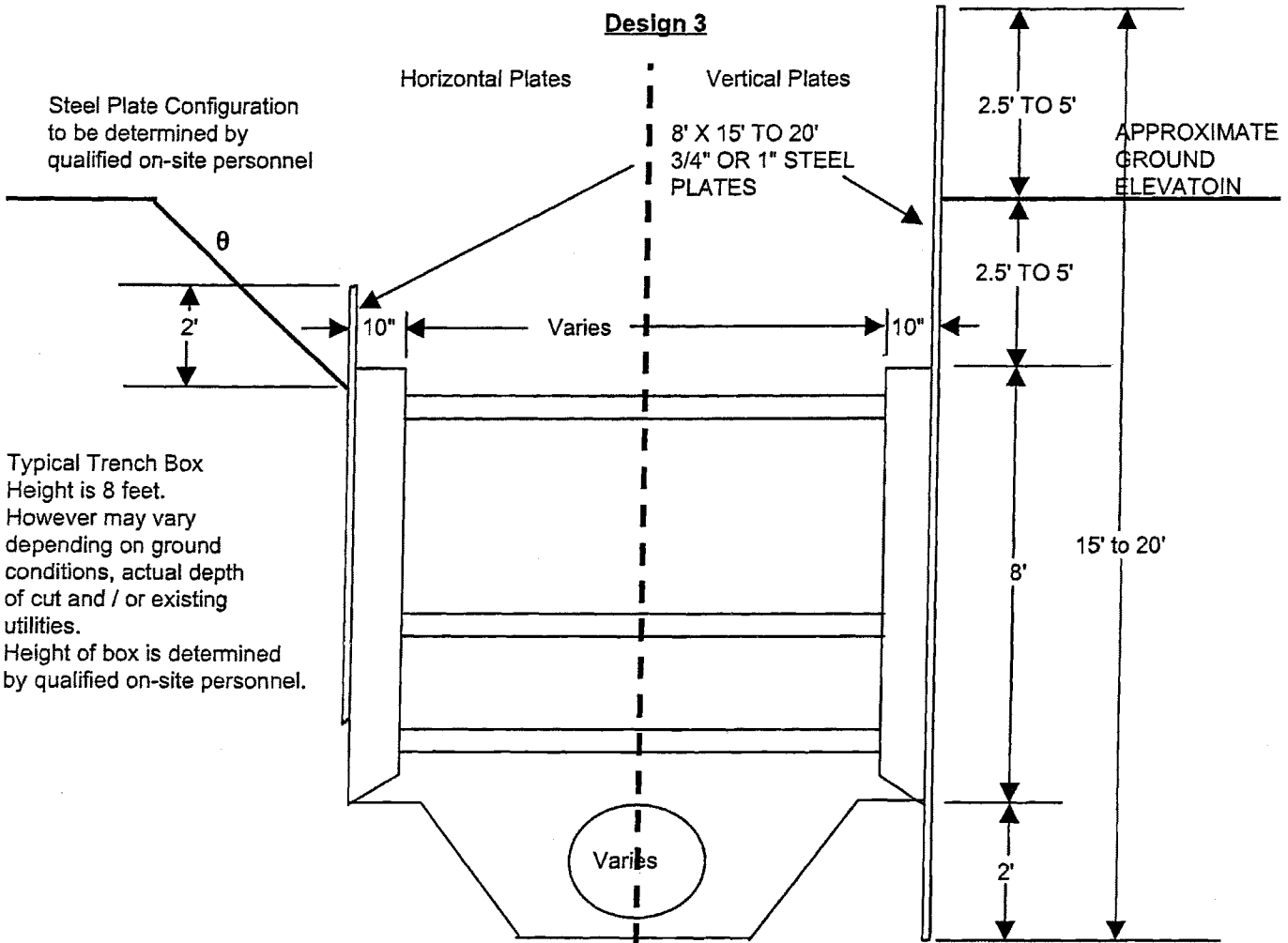


1. SOLID ROCK FORMATION (90 DEGREES)
2. FRACTURED ROCK FORMATION (75 DEGREES) 1/4:1
3. STIFF CLAY (63 DEGREES) 1/2:1 ; 2.5 TSF MINIMUM
4. FIRM CLAY (56 DEGREES) 2/3:1 ; 1.5 TSF MINIMUM
5. GRANULAR SOIL - DRY (45 DEGREES) 1:1 ; 1.0 TSF MINIMUM
6. GRANULAR SOIL - WET (34 DEGREES) 1 1/2:1 ; <1.0 TSF
7. SATURATED GRANULAR SOIL (26 DEGREES) 2:1
8. RUNNING SOIL (18 DEGREES) 3:1

*Design Acceptable for Pipe Installation from 10' to 15' in depth

PROJECT NAME _____
 LOCATION _____
 PROJECT NO. _____
 DEI JOB NO. _____
 PREPARED BY _____
 DATE _____ SHEET _____ OF _____

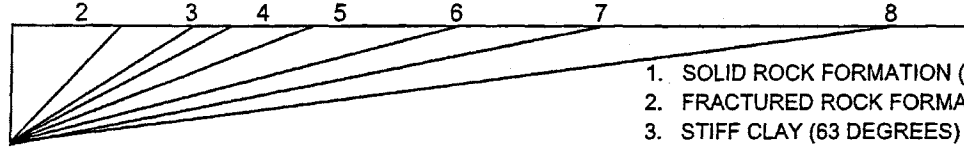
Design 3



Steel Plate Configuration to be determined by qualified on-site personnel

Typical Trench Box Height is 8 feet. However may vary depending on ground conditions, actual depth of cut and / or existing utilities. Height of box is determined by qualified on-site personnel.

ANGLE OF REPOSE (θ)



1. SOLID ROCK FORMATION (90 DEGREES)
2. FRACTURED ROCK FORMATION (75 DEGREES) 1/4:1
3. STIFF CLAY (63 DEGREES) 1/2:1 ; 2.5 TSF MINIMUM
4. FIRM CLAY (56 DEGREES) 2/3:1 ; 1.5 TSF MINIMUM
5. GRANULAR SOIL - DRY (45 DEGREES) 1:1 ; 1.0 TSF MINIMUM
6. GRANULAR SOIL - WET (34 DEGREES) 1 1/2:1 ; <1.0 TSF
7. SATURATED GRANULAR SOIL (26 DEGREES) 2:1
8. RUNNING SOIL (18 DEGREES) 3:1

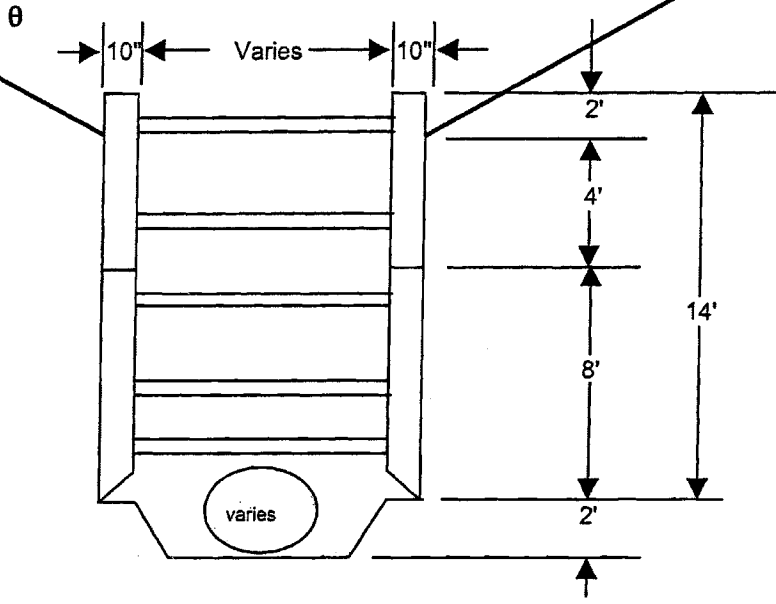
*Design Acceptable for Pipe Installation from 10' to 20' in Depth

PROJECT NAME _____
 LOCATION _____
 PROJECT NO. _____
 DEI JOB NO. _____
 PREPARED BY _____
 DATE _____ SHEET _____ OF _____

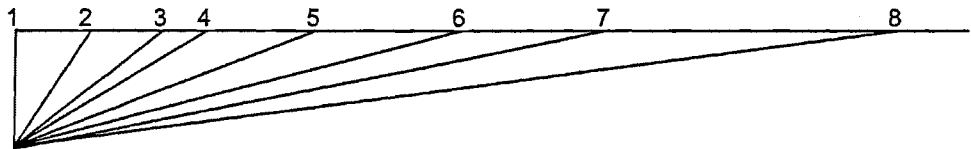
Design 4

APPROXIMATE
GROUND
ELEVATION

Typical Trench Box
Height is 8 feet.
However may vary
depending on ground
conditions, actual depth
of cut and / or existing
utilities.
Height of boxes is determined
by qualified on-site personnel.



ANGLE OF REPOSE (θ)

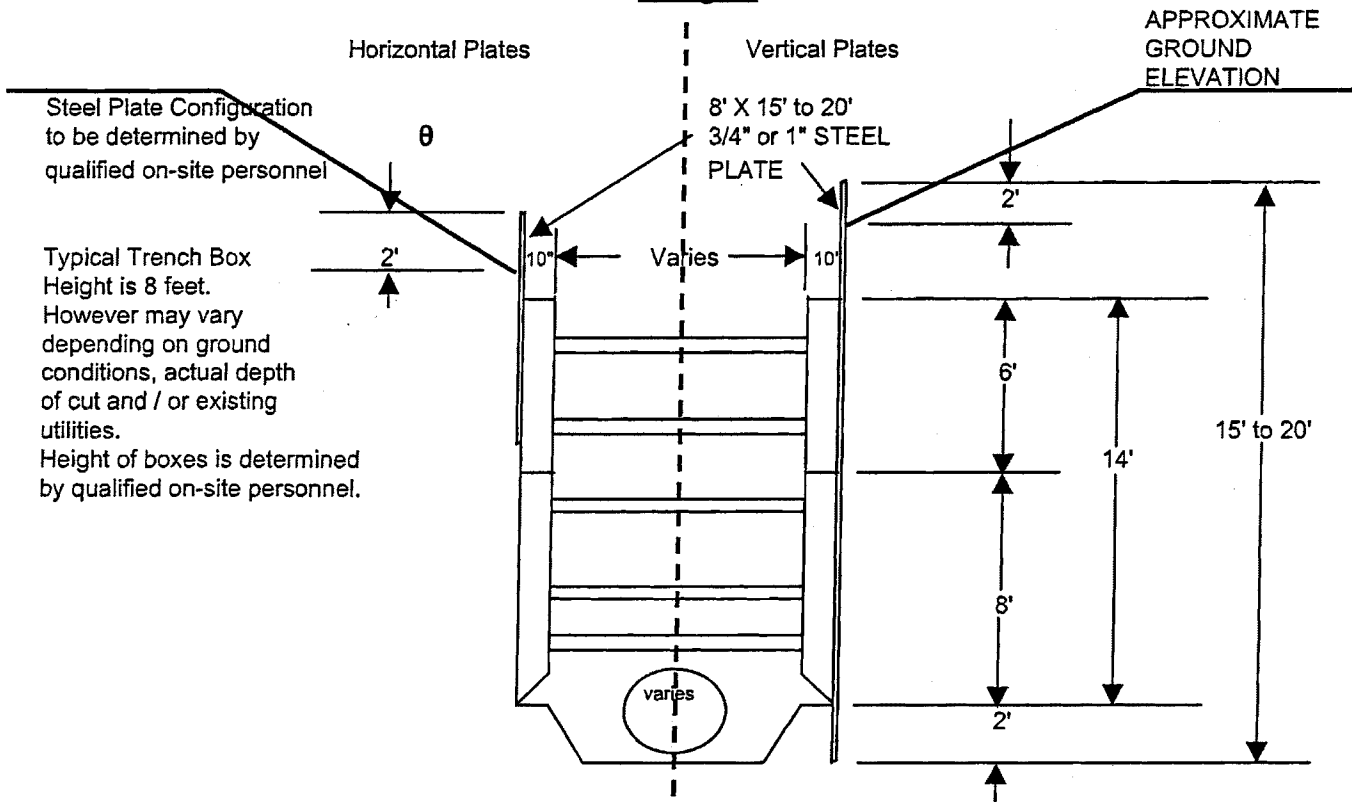


1. SOLID ROCK FORMATION (90 DEGREES)
2. FRACTURED ROCK FORMATION (75 DEGREES) 1/4:1
3. STIFF CLAY (63 DEGREES) 1/2:1 ; 2.5 TSF MINIMUM
4. FIRM CLAY (56 DEGREES) 2/3:1 ; 1.5 TSF MINIMUM
5. GRANULAR SOIL - DRY (45 DEGREES) 1:1 ; 1.0 TSF MINIMUM
6. GRANULAR SOIL - WET (34 DEGREES) 1 1/2:1 ; <1.0 TSF
7. SATURATED GRANULAR SOIL (26 DEGREES) 2:1
8. RUNNING SOIL (18 DEGREES) 3:1

*Design Acceptable for pipe installation from 10' to 24' in depth.

PROJECT NAME _____
 LOCATION _____
 PROJECT NO. _____
 DEI JOB NO. _____
 PREPARED BY _____
 DATE _____ SHEET _____ OF _____

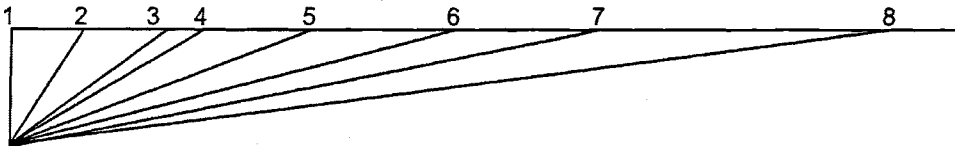
Design 5



Steel Plate Configuration to be determined by qualified on-site personnel

Typical Trench Box Height is 8 feet. However may vary depending on ground conditions, actual depth of cut and / or existing utilities. Height of boxes is determined by qualified on-site personnel.

ANGLE OF REPOSE (θ)

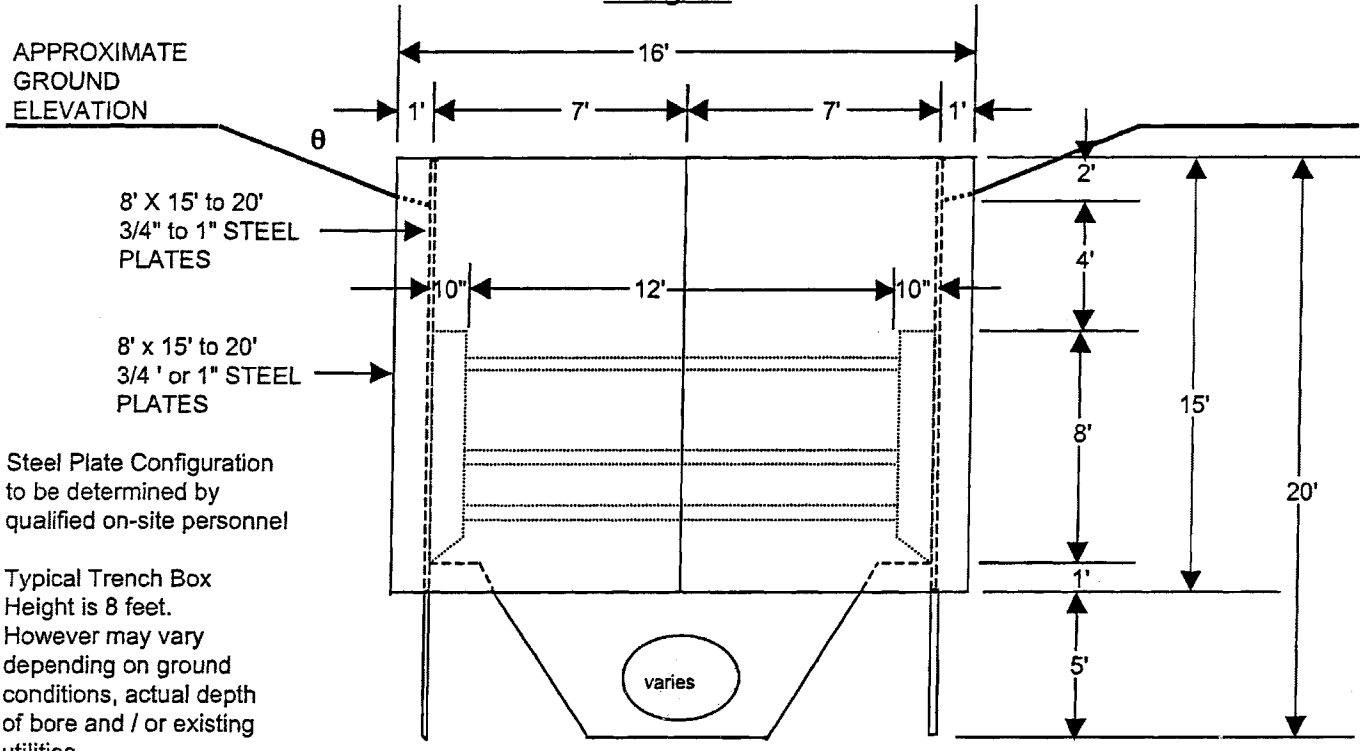


1. SOLID ROCK FORMATION (90 DEGREES)
2. FRACTURED ROCK FORMATION (75 DEGREES) 1/4:1
3. STIFF CLAY (63 DEGREES) 1/2:1 ; 2.5 TSF MINIMUM
4. FIRM CLAY (56 DEGREES) 2/3:1 ; 1.5 TSF MINIMUM
5. GRANULAR SOIL - DRY (45 DEGREES) 1:1 ; 1.0 TSF MINIMUM
6. GRANULAR SOIL - WET (34 DEGREES) 1 1/2:1 ; <1.0 TSF
7. SATURATED GRANULAR SOIL (26 DEGREES) 2:1
8. RUNNING SOIL (18 DEGREES) 3:1

*Design Acceptable for pipe installation from 10' to 24' in depth

PROJECT NAME _____
 LOCATION _____
 PROJECT NO. _____
 DEI JOB NO. _____
 PREPARED BY _____
 DATE _____ SHEET _____ OF _____

Design 6



APPROXIMATE
GROUND
ELEVATION

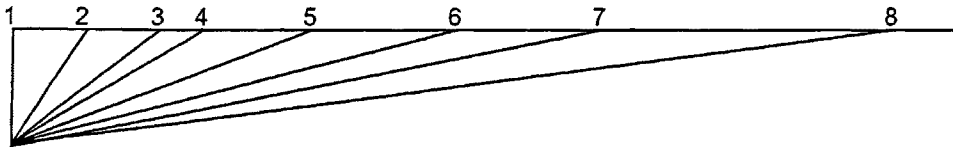
8' X 15' to 20'
3/4" to 1" STEEL
PLATES

8' x 15' to 20'
3/4 ' or 1" STEEL
PLATES

Steel Plate Configuration
to be determined by
qualified on-site personnel

Typical Trench Box
Height is 8 feet.
However may vary
depending on ground
conditions, actual depth
of bore and / or existing
utilities.
Height of box is determined
by qualified on-site personnel.

ANGLE OF REPOSE (θ)



1. SOLID ROCK FORMATION (90 DEGREES)
2. FRACTURED ROCK FORMATION (75 DEGREES) 1/4:1
3. STIFF CLAY (63 DEGREES) 1/2:1 ; 2.5 TSF MINIMUM
4. FIRM CLAY (56 DEGREES) 2/3:1 ; 1.5 TSF MINIMUM
5. GRANULAR SOIL - DRY (45 DEGREES) 1:1 ; 1.0 TSF MINIMUM
6. GRANULAR SOIL - WET (34 DEGREES) 1 1/2:1 ; <1.0 TSF
7. SATURATED GRANULAR SOIL (26 DEGREES) 2:1
8. RUNNING SOIL (18 DEGREES) 3:1

*Design Acceptalbe for Bores 0' to 24' in depth.

AN EQUAL OPPORTUNITY EMPLOYER

M & M EXCAVATING COMPANY
EMPLOYEE SIGN-OFF SHEET

_____, an employee of **M & M Excavating Company** understands this company safety policy. I also understand that if I have any questions concerning the safety policy or safety in general I may contact the company safety Coordinator for clarification. Further, I understand that safety is everyone's responsibility, including my own.

Signed: _____

Date: _____