

Date of Issue: October 1995

Affected Publication: API Publication 1663E, *Underground Storage Tank Removal Workbook*, First Edition, January 1995 (first printing)

ERRATA

On page 5, revise Question 19 to read as follows:

19. If people are going to have to work in the excavation, OSHA regulations require shoring or sloping the sides of excavations and trenches which are more than _____ feet deep in stable soil. four
- Compared to excavating around the tanks, sloping requires the removal of (more/less) dirt. more

Pages 52 and 53 were inadvertently omitted, they should appear as follows:

Date of Issue: October 1995

Affected Publication: API Publication 1663E, *Underground Storage Tank Removal Workbook*, First Edition, January 1995 (first printing)

ERRATA

On page 5, revise Question 19 to read as follows:

19. If people are going to have to work in the excavation, OSHA regulations require shoring or sloping the sides of excavations and trenches which are more than _____ feet deep in stable soil. four
- Compared to excavating around the tanks, sloping requires the removal of (more/less) dirt. more

Pages 52 and 53 were inadvertently omitted, they should appear as follows:

OSHA Regulations

Examples of Site Safety Checklist Elements

Some examples of equipment needed for or tasks related to compliance with relevant OSHA requirements are noted. Other OSHA requirements may apply. It does not include all equipment or tasks that may be required for compliance. For further information, see OSHA regulations, API Standard 2015 and API Publication 1200. Also consult federal, state and/or local regulatory personnel.

<u>OSHA Cite Example</u>	<u>Subject</u>	<u>Example of Some Related Equipment/Tasks</u>
1910.38	Emergency Response Plans and Fire Prevention Plans	Site Safety & Health Plan
1910.132	Personal Protective Equipment	
1910.132	Protective Clothing	Long sleeve Fire Resistant Shirts
1910.132(f)	Employee Training	Safety Meeting Held?
1910.133	Eye and Face Protection	Safety Glasses/Face Shields
1910.134	Respiratory Protection	Respirators
1910.135	Head Protection	Hard Hats
1910.136	Foot Protection	Steel Toed Boots/Shoes
1910.138	Hand Protection	Gloves
1910.145	Accident Prevention Signs/Tags	Signs Warning Lights
1910.146	Permit Required Confined Spaces Internal Atmosphere Oxygen Content Flammable Gases & Vapors Potential Toxic Air Contaminants Temporary Barriers Hazard Information Entry Supervisor Emergency Service Contacts	Oxygen Meter Explosimeter Appropriate Detection Equipment Barrier Material Post MSDS on Job-Site Site Safety Supervisor Post Emergency Numbers & Means of Contact
1910.147	Control of Hazardous Energy	Lockout/Tagout Devices
1926.104	Safety Belts, Lifelines, and Lanyards	Safety Belts/Harnesses
NFPA 10	Standard for Portable Fire Extinguishers	2-20 lb fire extinguishers B:C

* All references are to *29 Code of Federal Regulations* (OSHA regulations). For further information, also refer to API standard 2015 and API Pub 1200.

RP 1604	Removal and Disposal of Used Underground Petroleum Storage Tanks
PUB 1200	Federally Mandated Training and Information
STD 2015	Safe Entry and Cleaning of Petroleum Storage Tanks, Planning and Managing Tank Entry from Decommissioning Through Recommissioning
PUB 2009	Safe Welding and Cutting Practices in Refineries, Gasoline Plants and Petrochemical Plants
PUB 2202	Dismantling and Disposing of Steel from Aboveground Leaded Gasoline Storage Tanks
PUB 2219	Safe Operating Guidelines for Vacuum Trucks in Petroleum Service

* To order copies of these publications, please call 202-682-8375.

* All references are to *29 Code of Federal Regulations* (OSHA regulations). For further information, also refer to API standard 2015 and API Pub 1200.

Underground Storage Tank Removal Exhibit Book

API PUBLICATION 1663E
JANUARY 1995



American Petroleum Institute
1220 L Street, Northwest
Washington, D.C. 20005



STEP

One of the most significant long-term trends affecting the future vitality of the petroleum industry is the public's concerns about the environment. Recognizing this trend, API member companies have developed a positive, forward looking strategy called STEP: Strategies for Today's Environmental Partnership. This program aims to address public concerns by improving industry's environmental, health and safety performance; documenting performance improvements; and communicating them to the public. The foundation of STEP is the API Environmental Mission and Guiding Environmental Principles. API standards, by promoting the use of sound engineering and operational practices, are an important means of implementing API's STEP program.

API ENVIRONMENTAL MISSION AND GUIDING ENVIRONMENTAL PRINCIPLES

The members of the American Petroleum Institute are dedicated to continuous efforts to improve the compatibility of our operations with the environment while economically developing energy resources and supplying high quality products and services to consumers. The members recognize the importance of efficiently meeting society's needs and our responsibility to work with the public, the government, and others to develop and to use natural resources in an environmentally sound manner while protecting the health and safety of our employees and the public. To meet these responsibilities, API members pledge to manage our businesses according to these principles:

- To recognize and to respond to community concerns about our raw materials, products and operations.
- To operate our plants and facilities, and to handle our raw materials and products in a manner that protects the environment, and the safety and health of our employees and the public.
- To make safety, health and environmental considerations a priority in our planning, and our development of new products and processes.
- To advise promptly appropriate officials, employees, customers and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
- To counsel customers, transporters and others in the safe use, transportation and disposal of our raw materials, products and waste materials.
- To economically develop and produce natural resources and to conserve those resources by using energy efficiently.
- To extend knowledge by conducting or supporting research on the safety, health and environmental effects of our raw materials, products, processes and waste materials.
- To commit to reduce overall emissions and waste generation.
- To work with others to resolve problems created by handling and disposal of hazardous substances from our operations.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

Underground Storage Tank Removal Exhibit Book

Manufacturing, Distribution and Marketing Department

API PUBLICATION 1663E

JANUARY 1995

American
Petroleum
Institute



SPECIAL NOTES

1. API PUBLICATIONS NECESSARILY ADDRESS PROBLEMS OF A GENERAL NATURE. WITH RESPECT TO PARTICULAR CIRCUMSTANCES, LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS SHOULD BE REVIEWED.
2. API IS NOT UNDERTAKING TO MEET THE DUTIES OF EMPLOYERS, MANUFACTURERS, OR SUPPLIERS TO WARN AND PROPERLY TRAIN AND EQUIP THEIR EMPLOYEES, AND OTHERS EXPOSED, CONCERNING HEALTH AND SAFETY RISKS AND PRECAUTIONS, NOR UNDERTAKING THEIR OBLIGATIONS UNDER LOCAL, STATE, OR FEDERAL LAWS.
3. INFORMATION CONCERNING SAFETY AND HEALTH RISKS AND PROPER PRECAUTIONS WITH RESPECT TO PARTICULAR MATERIALS AND CONDITIONS SHOULD BE OBTAINED FROM THE EMPLOYER, THE MANUFACTURER OR SUPPLIER OF THAT MATERIAL, OR THE MATERIAL SAFETY DATA SHEET.
4. NOTHING CONTAINED IN ANY API PUBLICATION IS TO BE CONSTRUED AS GRANTING ANY RIGHT, BY IMPLICATION OR OTHERWISE, FOR THE MANUFACTURE, SALE, OR USE OF ANY METHOD, APPARATUS, OR PRODUCT COVERED BY LETTERS PATENT. NEITHER SHOULD ANYTHING CONTAINED IN THE PUBLICATION BE CONSTRUED AS INSURING ANYONE AGAINST LIABILITY FOR INFRINGEMENT OF LETTERS PATENT.
5. GENERALLY, API STANDARDS ARE REVIEWED AND REVISED, REAFFIRMED, OR WITHDRAWN AT LEAST EVERY FIVE YEARS. SOMETIMES A ONE-TIME EXTENSION OF UP TO TWO YEARS WILL BE ADDED TO THIS REVIEW CYCLE. THIS PUBLICATION WILL NO LONGER BE IN EFFECT FIVE YEARS AFTER ITS PUBLICATION DATE AS AN OPERATIVE API STANDARD OR, WHERE AN EXTENSION HAS BEEN GRANTED, UPON REPUBLICATION. STATUS OF THE PUBLICATION CAN BE ASCERTAINED FROM THE API AUTHORIZING DEPARTMENT [TELEPHONE (202) 682-8000]. A CATALOG OF API PUBLICATIONS AND MATERIALS IS PUBLISHED ANNUALLY AND UPDATED QUARTERLY BY API, 1220 L STREET, N.W., WASHINGTON, D.C. 20005.

Copyright © 1995 American Petroleum Institute

FOREWORD

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any federal, state, or municipal regulation with which this publication may conflict.

Suggested revisions are invited and should be submitted to the director of the Manufacturing, Distribution and Marketing Department, American Petroleum Institute, 1220 L Street, N.W., Washington, D.C. 20005.

EXHIBIT 1

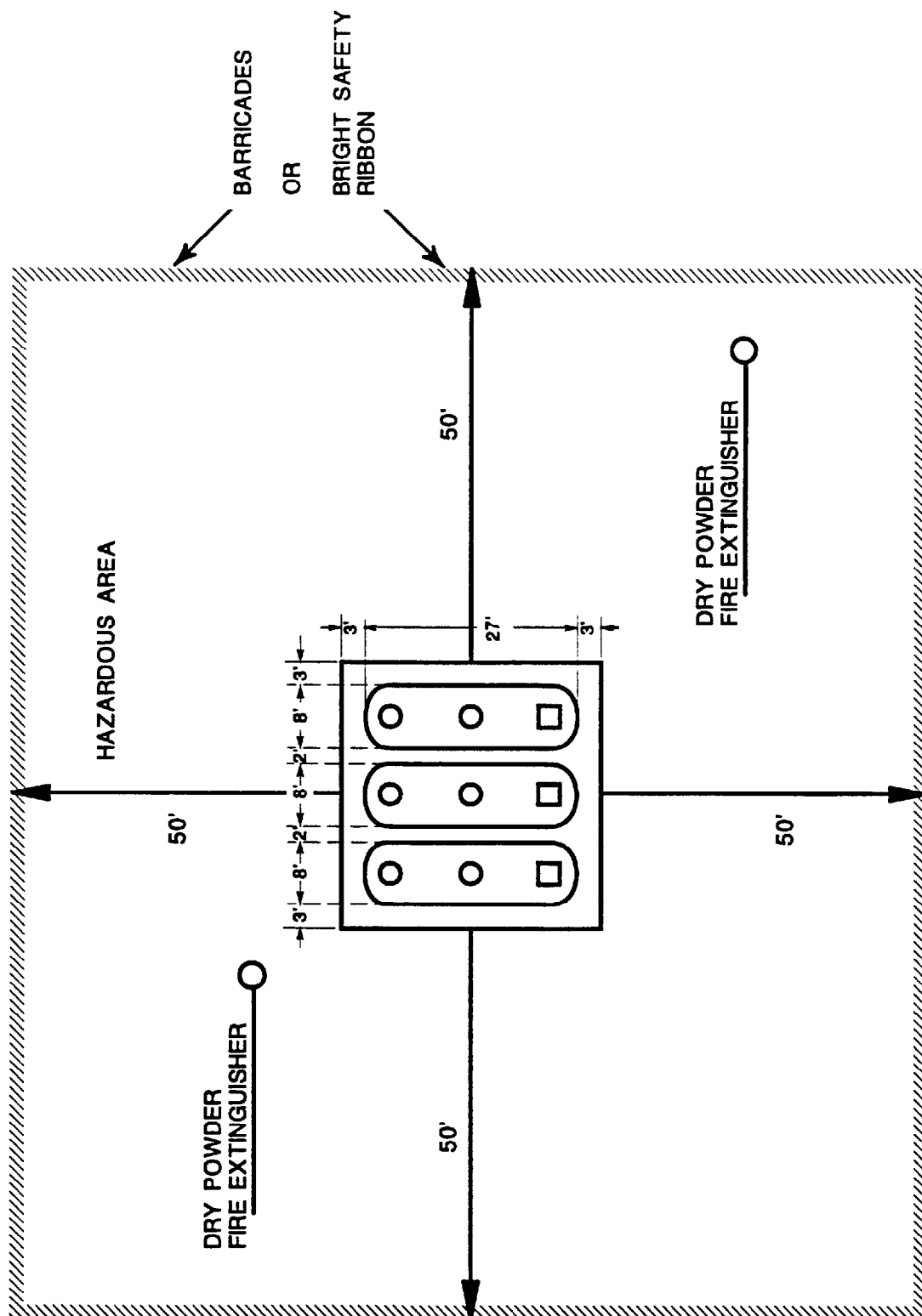


EXHIBIT 2

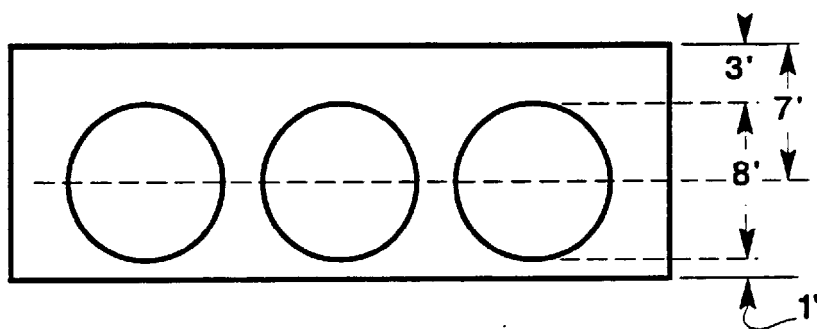
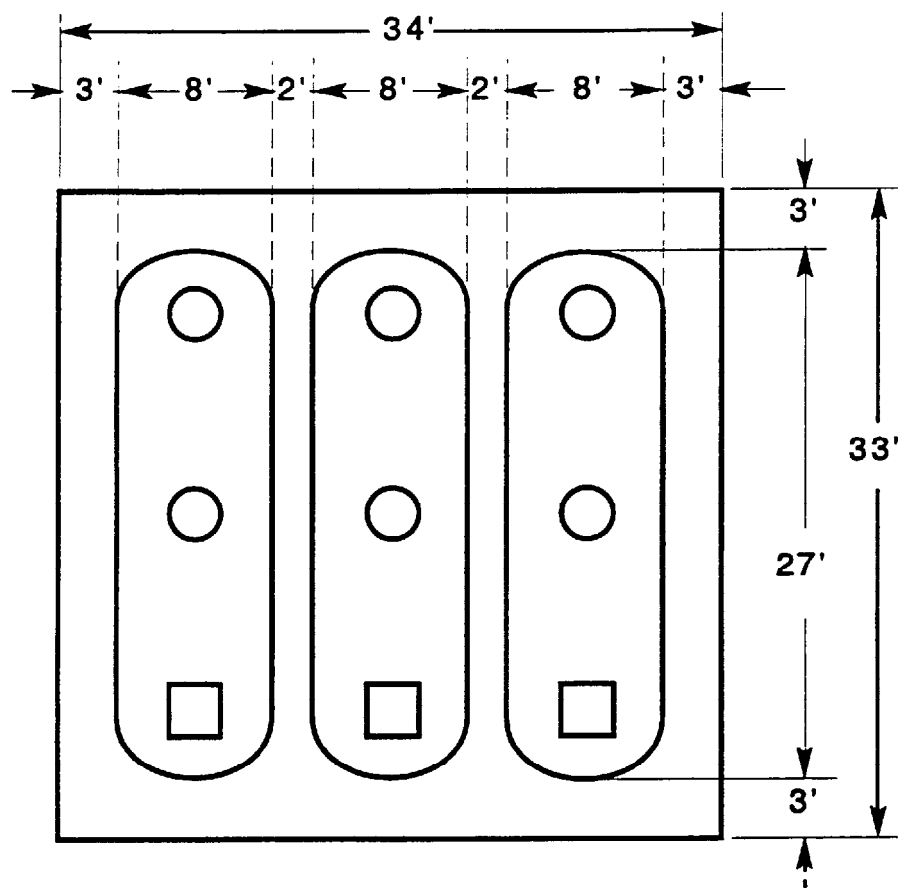


EXHIBIT 3

The OSHA Excavation Standard (29 CFR 1926.650-652) requires that each employee in an excavation be protected from cave-ins by an adequate safeguard system (slope / stability, shoring, shielding, etc.) The Standard further requires that this system must have the capacity to resist, without failure, all loads that are either intended, or could reasonably be expected, to be applied or transmitted to the system. Also, according to the Standard, a "competent person" must be present to recognize safety hazards, one who has the authority to eliminate or correct any unsafe conditions that may occur.

For protective systems, there are four options permissible by law: (If different options result in different slope angles, you may use the steepest slope.)

1. Slope excavation at an angle not steeper than 1½ feet horizontal to 1 foot vertical and in accordance with Type C soil described in 29 CFR 1926.650-652, Subpart P, Appendix B;
2. Slope excavation in accordance with the OSHA simplified soil classification system and 29 CFR 1926.650-652, Subpart P, Appendices A and B (see next page);
3. Use tabulated data sealed by a registered professional engineer in the state of the excavation for the protective system design;
4. Use a site-specific protective system design sealed by a registered professional engineer in the state of the excavation.

Although Option Number 4 is probably the most commonly used, the information provided below is based on Option Number 2.

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPE (H:V) FOR EXCAVATIONS LESS THAN 20 FEET DEEP	
Stable Rock	Vertical	90 Degrees
Type A Soil	¾:1*	53 Degrees
Type B Soil	1:1	45 Degrees
Type C Soil	1½:1	34 Degrees

Type A: Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) or greater. Examples of cohesive soils include clay, silty clay, sandy clay, clay loam, and, in some cases, silty clay loam and sandy clay loam.

Type B: Cohesive soils with an unconfined compressive strength greater than 0.5 tsf but less than 1.5 tsf, or granular cohesionless soils including angular gravel (similar to crushed rock), silt, silt loam, sandy loam, and, in some cases, silty clay loam and sandy clay loam.

Type C: Cohesive soils with an unconfined compressive strength of 0.5 tsf or less, or granular soils including gravel, sand, and loamy sand.

Unstable soils are soils which have an unconfined compressive strength of less than 750 tsf.

*OSHA regulations allow a maximum slope of ½:1 under the following conditions:

1. The excavation is in Type A soil;
2. The excavation is not open for more than 24 hours;
3. The depth of the excavation is 20 feet or less.

EXHIBIT 4

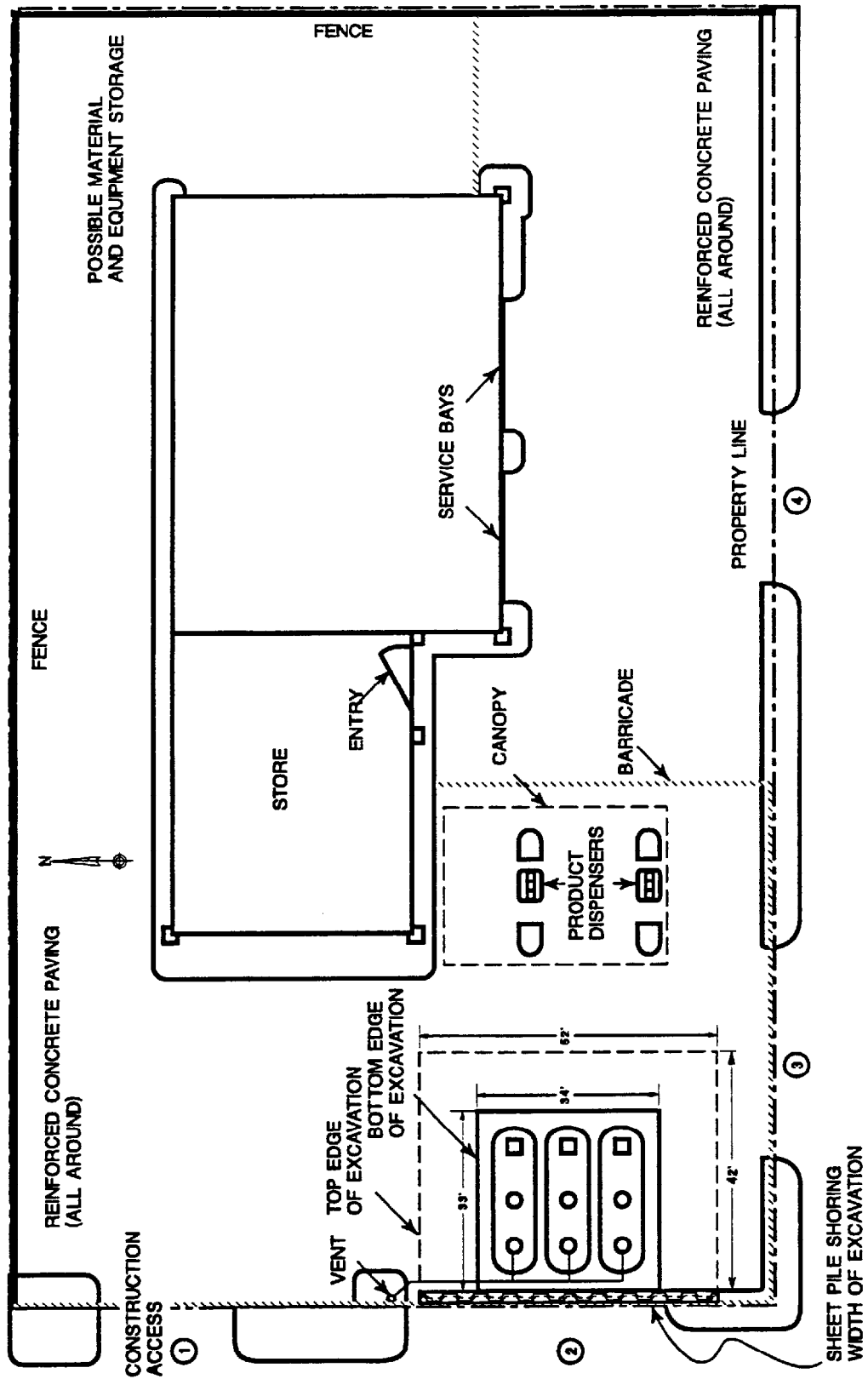


EXHIBIT 5

SUMMARY OF HAZARDOUS AREA CLASSIFICATIONS

CLASS specifies type of hazard

In underground tank work, the hazard is likely to be Class 1, flammable liquids, vapors, or gases (see NFPA 325M).

GROUP specifies type of material

In underground tank work, the hazardous material is likely to be Group D, which includes gasoline and most solvents (see NFPA 497M).

DIVISION specifies the likelihood of exposure

In underground tank work, the likelihood of exposure could be:

Division 1: Normal or frequent, or

Division 2: Abnormal or occasional (see NFPA 497A).

EXHIBIT 6

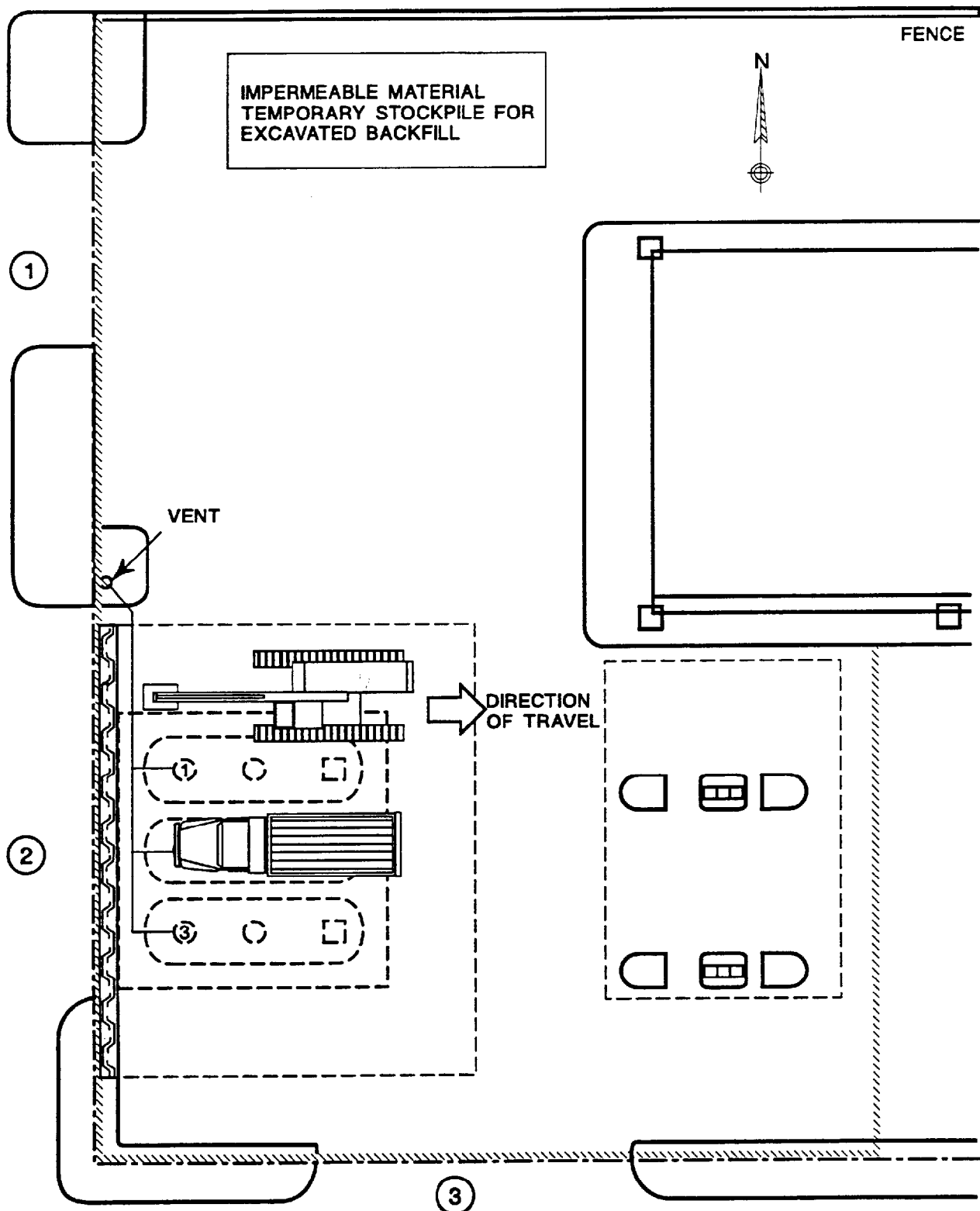


EXHIBIT 7

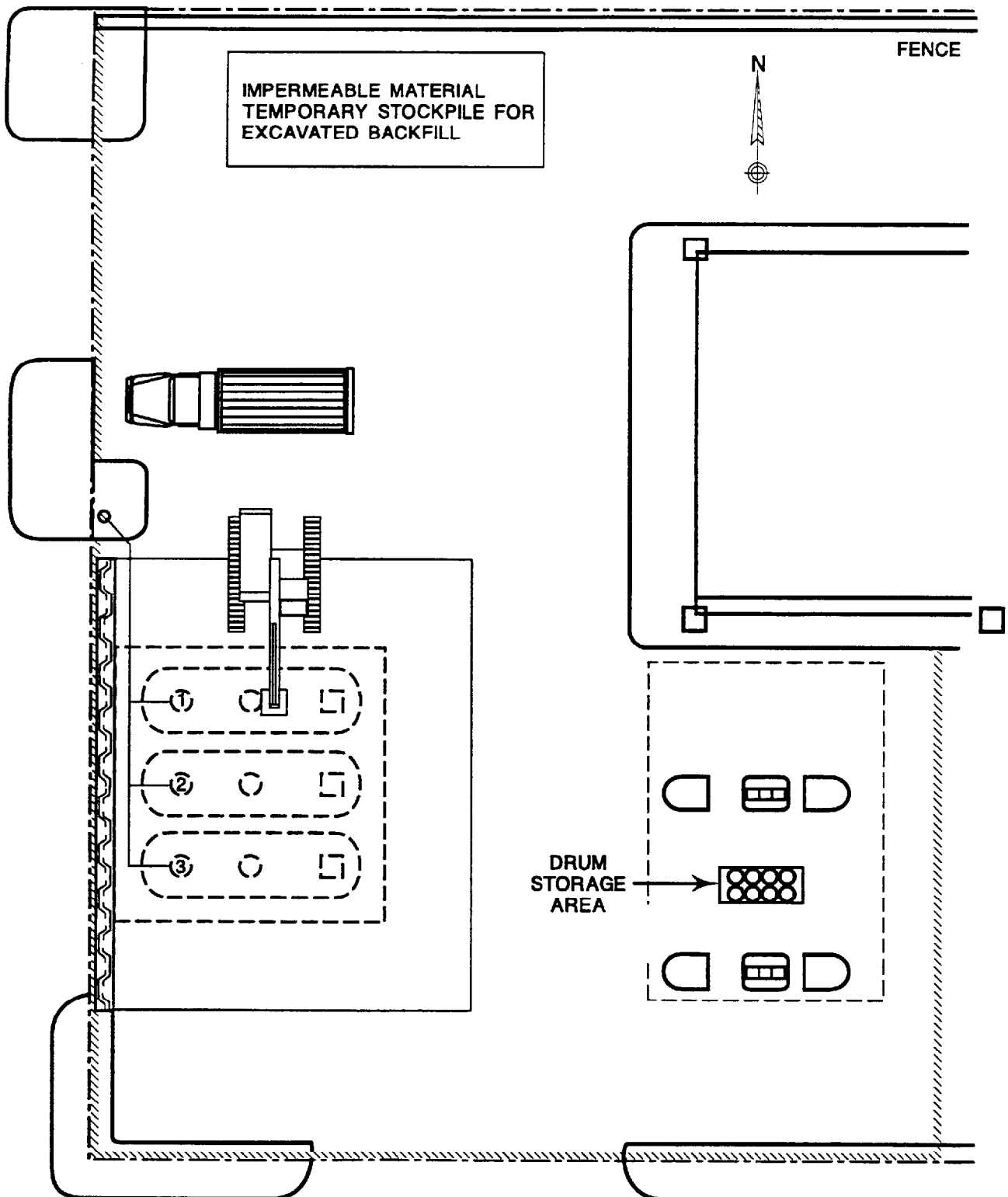


EXHIBIT 8

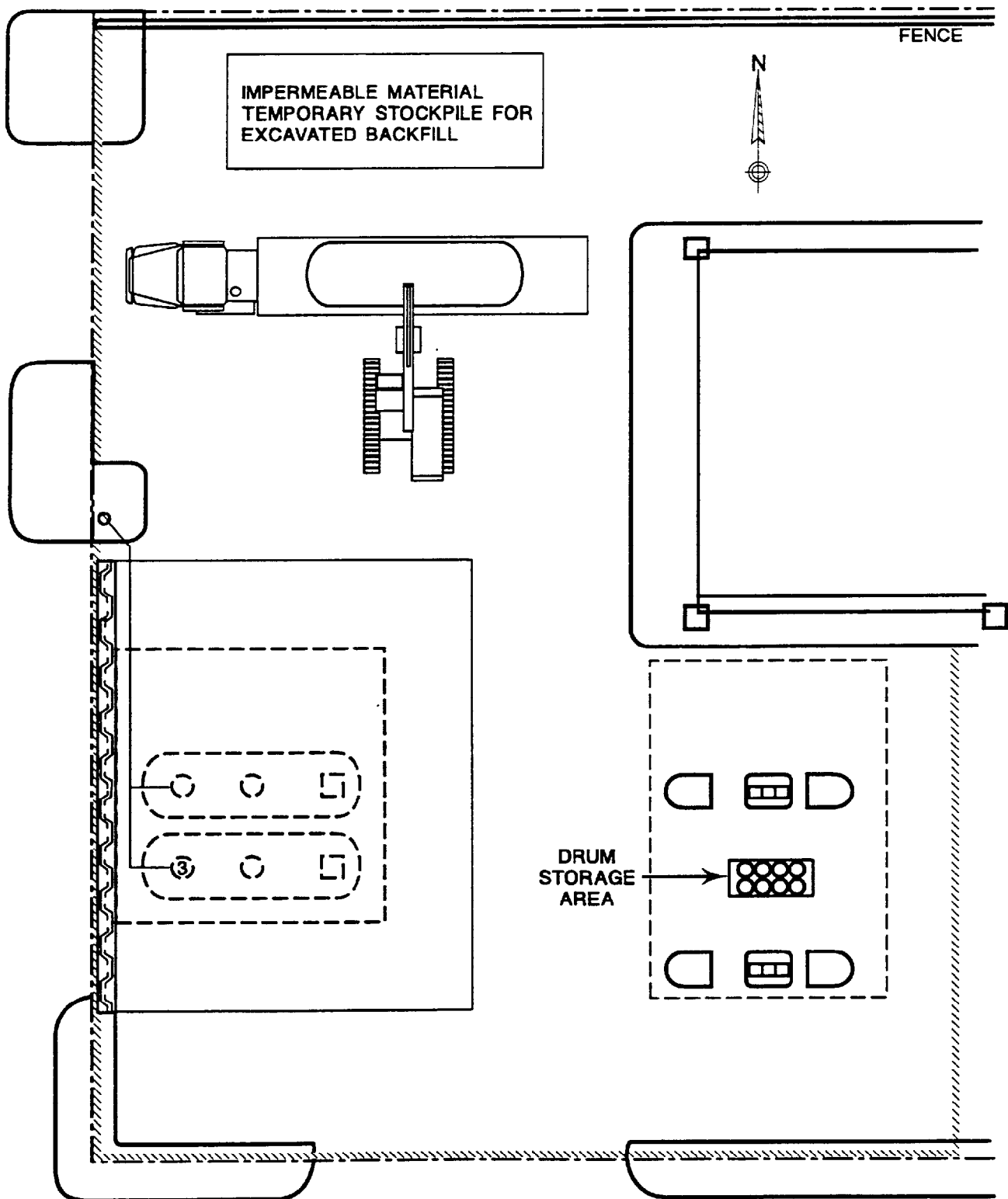


EXHIBIT 9

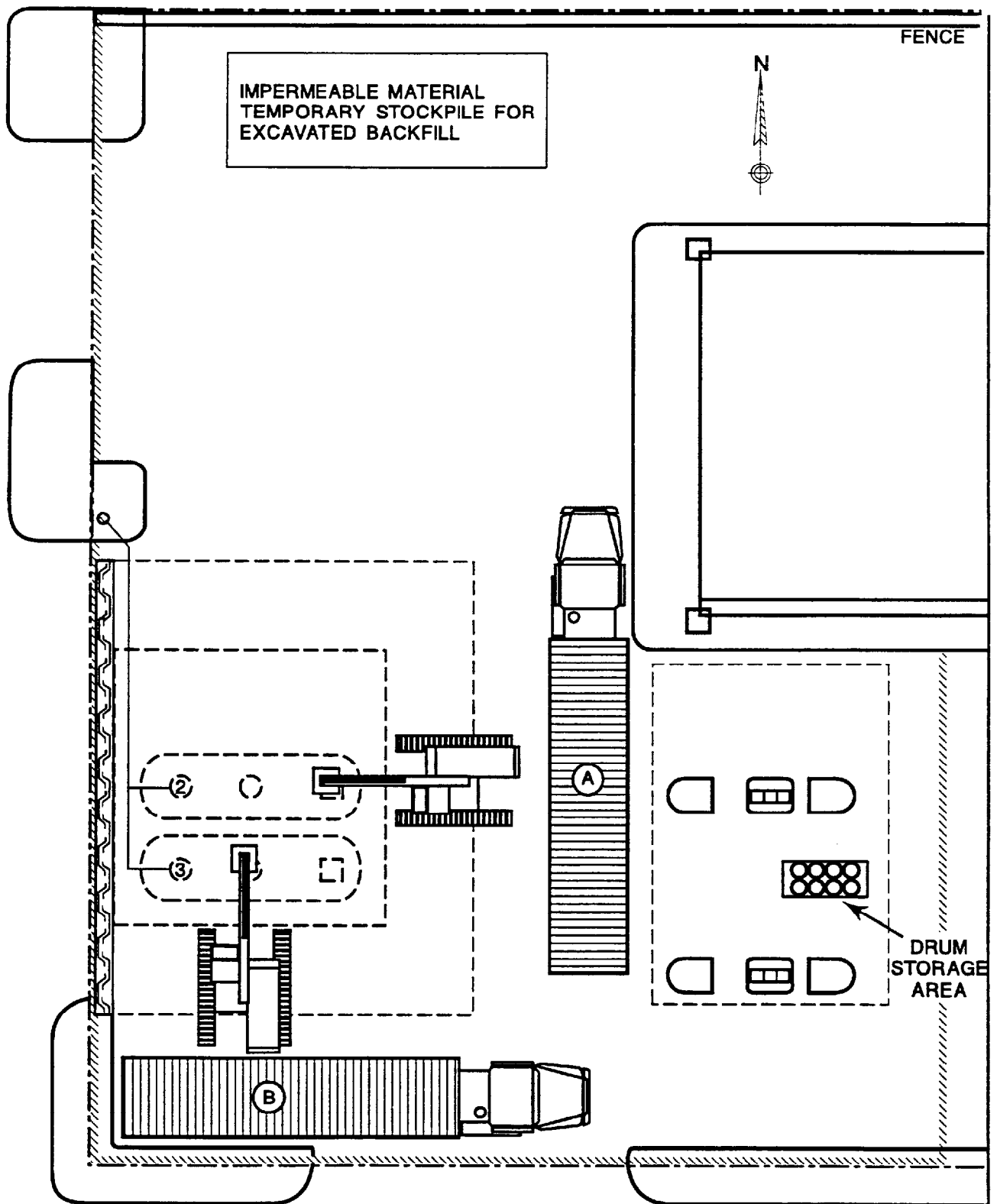
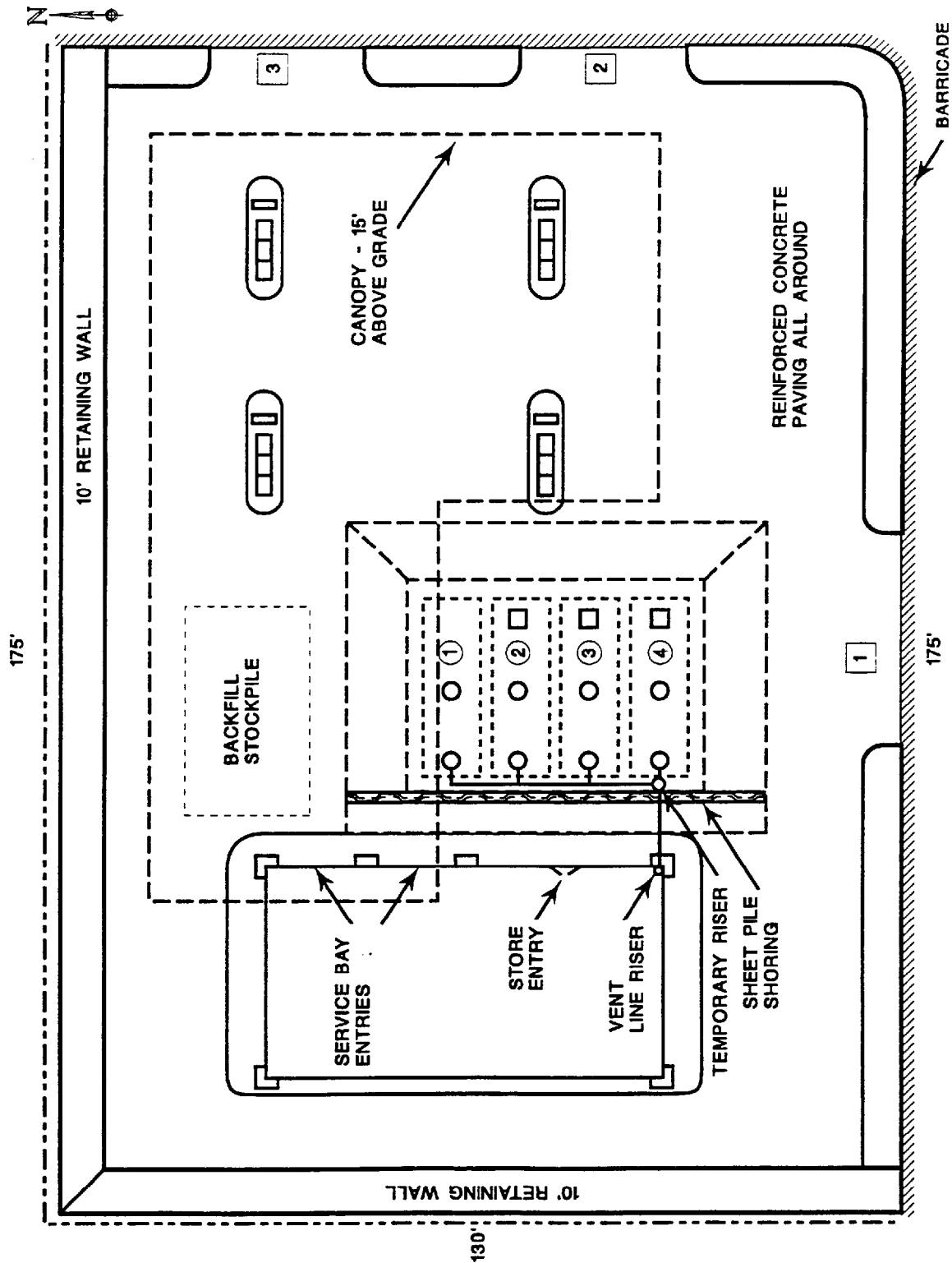
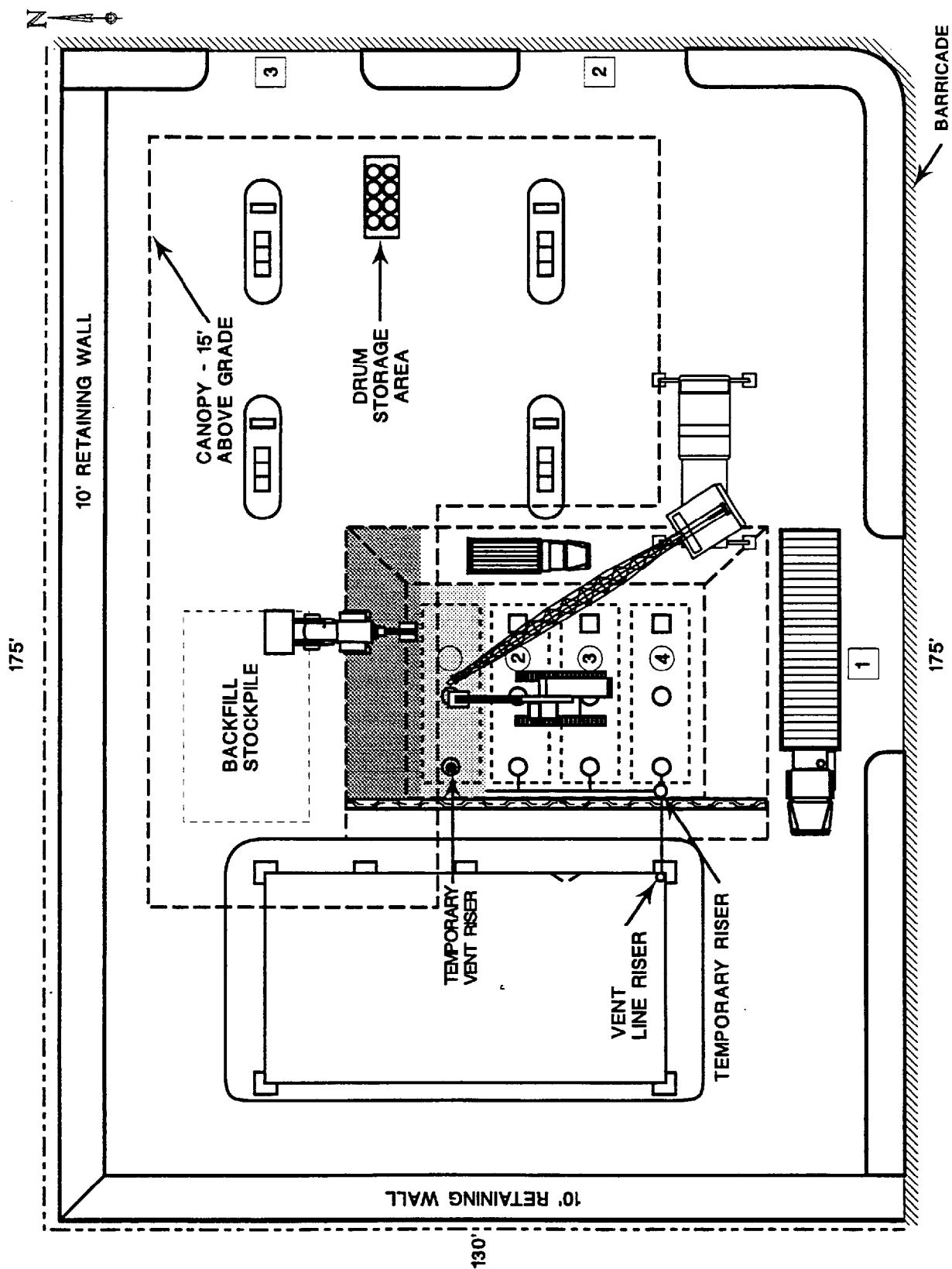


EXHIBIT 10





1-01400— 1/95—4C(3E)

American Petroleum Institute
1220 L Street, Northwest
Washington, D.C. 20005



Order No. 804-1663E

Underground Storage Tank Removal Workbook

API PUBLICATION 1663E
JANUARY 1995



American Petroleum Institute
1220 L Street, Northwest
Washington, D.C. 20005



STEP

One of the most significant long-term trends affecting the future vitality of the petroleum industry is the public's concerns about the environment. Recognizing this trend, API member companies have developed a positive, forward looking strategy called STEP: Strategies for Today's Environmental Partnership. This program aims to address public concerns by improving industry's environmental, health and safety performance; documenting performance improvements; and communicating them to the public. The foundation of STEP is the API Environmental Mission and Guiding Environmental Principles. API standards, by promoting the use of sound engineering and operational practices, are an important means of implementing API's STEP program.

API ENVIRONMENTAL MISSION AND GUIDING ENVIRONMENTAL PRINCIPLES

The members of the American Petroleum Institute are dedicated to continuous efforts to improve the compatibility of our operations with the environment while economically developing energy resources and supplying high quality products and services to consumers. The members recognize the importance of efficiently meeting society's needs and our responsibility to work with the public, the government, and others to develop and to use natural resources in an environmentally sound manner while protecting the health and safety of our employees and the public. To meet these responsibilities, API members pledge to manage our businesses according to these principles:

- To recognize and to respond to community concerns about our raw materials, products and operations.
- To operate our plants and facilities, and to handle our raw materials and products in a manner that protects the environment, and the safety and health of our employees and the public.
- To make safety, health and environmental considerations a priority in our planning, and our development of new products and processes.
- To advise promptly appropriate officials, employees, customers and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
- To counsel customers, transporters and others in the safe use, transportation and disposal of our raw materials, products and waste materials.
- To economically develop and produce natural resources and to conserve those resources by using energy efficiently.
- To extend knowledge by conducting or supporting research on the safety, health and environmental effects of our raw materials, products, processes and waste materials.
- To commit to reduce overall emissions and waste generation.
- To work with others to resolve problems created by handling and disposal of hazardous substances from our operations.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

Underground Storage Tank Removal Workbook

Manufacturing, Distribution and Marketing Department

API PUBLICATION 1663E
JANUARY 1995

American
Petroleum
Institute

